THE GETTY COLLEGE OF
Arts and Sciences

David P. Peltier, Dean

Divisions and Departments
Fine Arts Art; Music; Communication Arts.
Humanities English; Foreign Languages; Philosophy and Religion.
Mathematical and Natural Sciences Biological Sciences; Chemistry; Mathematics and Computer Science; Physics.
Social Sciences History, Political Science, and Public Administration; Psychology, Sociology, and Social Work.
Teacher Education Education, Health and Physical Education; Industrial Technology.

Principles and Objectives
The Getty College of Arts and Sciences is a community with resources and opportunities for learning. Its students come from all colleges of the University, representing individual differences and diverse goals and experiences. The faculty encourages and assists students to use fully their abilities while they are learning, developing personal goals, and discovering means to achieve their goals.

Students learn to understand themselves and their environment by exploring a variety of academic disciplines. These general educational experiences help them perceive relationships among many kinds of knowledge. Students also achieve proficiency in one or more areas of study where they learn skills and cultivate insights enabling them to make beneficial contributions to society through personal relationships, community service, and career employment. Students are prepared for a lifetime of learning in a changing world by learning to reason logically, to communicate effectively, and to apply knowledge thoroughly. The College of Arts and Sciences attempts to instill in the student an appreciation for human values and a personal commitment to ethical and religious ideals which are vital throughout life.

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 may enroll 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 Bachelor of Arts Degree Program
General and Advanced Courses The first two years of study are usually devoted to the student's general education. These courses furnish the foundation and background for advanced education. Work in the student's major is mostly taken on the advanced level, along with advanced electives.

General Education Requirements The following list is the prescribed general education courses required of all students. The list is by academic divisions; alternative subject disciplines within each division are indicated.

Fine Arts
Art 100 or Music 100
Speech Communication 100 or Theatre 105

Humanities
English 107, 108, 109
Philosophy 100 or 234 or 237 or 238
Religion 105, 106, 107, or 108
Foreign Language 100, 101, or 102, 103, or 104, 105

Social Sciences
Psychology 100 or Sociology 105
History 100 or Political Science 105
Economics 100
Mathematics and Natural Sciences
Mathematics—any 3-credit mathematics or computer science course
Biology 100 or 105
Chemistry 100 or 171 or 181 or Physics 100

Teacher Education
Education 100
All students are required to take three hours of physical education credit. (See Department of Health and Physical Education.)

In-Depth Requirements The College of Arts and Sciences further requires that each student complete two additional courses (six credit hours) in each academic division except the Education Division and division in which the student's major resides to attain the Bachelor of Arts (B.A.) degree. The purpose is to add depth to the general education courses. These two courses are required to be in the same subject discipline in which the student has completed his general education courses; however, the choice of the discipline belongs to the student.

In-depth courses are not required for students pursuing Bachelor of Science (B.S.) degree.

Completing a Major The degree candidate is required to complete in a logical sequence a major of not less than 45 quarter hours. The faculty adviser assists the student in planning his major by the third quarter of his 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 Department of Education for a professional adviser. 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 with 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 toward the Bachelor of Arts degree in the College of Arts and Sciences:
Art
- Ceramics
- Painting
- Printmaking
- Sculpture

Biology
Chemistry
College Student Personnel
Communication Arts
- Speech
- Theatre
- Organizational Communication
- Public Relations
Computer Science
Elementary Education
English
French
Gerontology
History
Industrial Technology
Mathematics
Music
Music Education
Music Performance
Health Education
Philosophy
Philosophy and Religion
Physical Education
Physics
Political Science
Public Administration
Psychology
Religion
Social Work
Sociology
Spanish
Sports Medicine
Writing (second major only)

Minors A formal program of academic minors is available in several of the subject matter areas. Consult the chairman of the department in question for specific procedural instructions. Minors require a minimum of 30 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, Bachelor of Science in Medical Technology Degree Programs
The patterns of courses and the policies listed under the Bachelor of Arts degree program are also applicable to the Bachelor of Music, Bachelor of Fine Arts, and Bachelor of Science degree programs, except for the In-Depth requirement which is not applicable. A candidate for the Bachelor of Music
degree may major in music education or performance. A candidate for the Bachelor of Fine Arts degree may concentrate in painting, printmaking, sculpture, ceramics or graphic design. A candidate for the Bachelor of Science degree may major in biology, medical technology, mathematics, chemistry, industrial technology, or computer science. A candidate for the Bachelor of Science in Medical Technology degree must complete the clinical year as well as other prescribed requirements.

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. (See the Department of Education listing for details.)

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 2.25 in the major field courses with no grade less than "C”; completed at least three-fourths of the prescribed freshman and sophomore course work; and have favorable recommendations from faculty members (as outlined in the Education Department section of this catalog). The Committee on Teacher Education, representing the five divisions of the College of Arts and Sciences, 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 advisers in the Department of Education to assist them with the scheduling of professional education courses and the completion of clinical/field experiences. The adviser in the student's major department continues to advise the student on the requirements for his major.

Students with degrees from other accredited universities may qualify for teacher certification by completing the required courses in the Department of Education. The Department of Education 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 with representatives from biology, chemistry, mathematics, physics, pharmacology, and a representative from outside the Division of Mathematics and Natural Sciences advises students in the areas of the medical sciences. 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. Ohio Northern University has experienced outstanding success in placing premedical students in medical schools.

A representative of the committee meets with all new premedical students at summer orientation and regularly during their undergraduate careers. The committee provides a guideline and a timetable to help a student pursue his career goals. 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 plans to apply. For further information contact Dr. Howard L. Haight, Chairman, Medical Sciences Advisory Committee.

Medical Technology Most 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. degree in medical technology. Ohio Northern University is affiliated with St. Rita's Medical Center in Lima.

For additional information see Department of Biological Sciences program descriptions in this catalog. For detailed curriculum information contact the Medical Technology Adviser, Department of Biological Sciences.

Pretheology The recommendations of the American Association of Theological Schools are followed in counseling the pretheological student in planning his program leading to the
Bachelor of Arts degree. An interdisciplinary major in the Department of Philosophy and Religion or a major in another appropriate department may be selected.

The chairman of the Department of Philosophy and Religion serves as adviser to the pretheological student in planning his preprofessional program, along with a departmental adviser in his major, if the student elects a major outside the Department of Philosophy and Religion.

Prelaw The College of Arts and Sciences in cooperation with the Ohio Northern University College of Law has developed a unique prelaw program which offers an excellent opportunity for superior students preparing for a career in law. At the present time Ohio Northern is unaware of any other comparable program in the United States which prepares undergraduate students for law school and then guarantees them preferential treatment in admission to law school after they have successfully completed the program.

Students in the prelaw program select a major and complete the necessary requirements as do other liberal arts students. It is open to students enrolled in any academic department of the College of Arts and Sciences. There is a "prelaw core" for each department comprised of 36 hours of courses to be taken outside the major in addition to general education courses (or their equivalents) prescribed at the 100 level. Courses in the prelaw core may count toward in-depth requirements.

Students are required to take at least one course from each of the prescribed lists of recommended courses. They then are free to select any other courses as prelaw electives from the recommended courses for a total of 36 hours. Prelaw students are encouraged to have a minor or a second major in one of the core disciplines. In that event, the same courses can be counted both toward the prelaw core and the second major or minor.

Prelaw students need a 3.30 G.P.A. overall to qualify for automatic admission to the Ohio Northern College of Law. Students cannot take prelaw core courses on a S-U option basis.

Additional information is available from Dr. David Saffell, Chairman of the Prelaw Advisory Committee, or from the department chairman of the student's major.

Combination Curricula

Four- and Five-Year Combination Curricula The Arts-Engineering and Arts-Pharmacy programs are five-year curricula for the student challenged by the rewards of in-depth study in both the arts and sciences and the professional fields of engineering or pharmacy. The student pursues degrees simultaneously in the College of Arts and Sciences and Engineering or Pharmacy and Allied Health Sciences, pays tuition at the engineering or pharmacy college rate, has an adviser in each college, and receives an appropriate degree in each college upon graduation.

Students taking the dual degree in the colleges of Arts and Sciences and Engineering are required to take advanced mathematics in the first year. The curriculum outline is listed in the engineering section of this catalog.

Students taking a dual degree in the College of Arts and Sciences and College of Pharmacy and Allied Health Sciences are required to meet the three-year residency requirement to qualify for graduation from the College of Pharmacy and Allied Health Sciences.

Dual degree students meet all requirements in each college in the same way as students graduating with one degree.

European Studies

A European Studies minor is offered within the College of Arts and Sciences to enhance other major programs of study with in-depth study of some aspect of European language, culture, and history in close consultation with an adviser identified by the dean. A student must complete study in the following areas:

1. Language French, German, Spanish, or other continental European language beyond the elementary level. (8 credits)

2. Core Requirements
   History 221 Contemporary Europe
   History 377-378 History of Modern Europe I-II

3. Recommended cognate courses
   (15 credits)
   Study will be in a focused area of European studies identified by the student with an adviser.
Suggested cognate courses:
Art 305, 315, 325, 335
French 219, 319, 327-328
German 291, 337, 491
Spanish 353, 447, 448, 452, 453
History 324-325, 326, 327, 328, 329
Political Science 334, 335, 421, 422, 455, 456-457
Music 245, 321-322-323
English 221-222-223
Philosophy 331, 345, 348, 349, 350
Religion 262, 346, 347, 353
Theatre 241-242
Education 401, 465
Economics 385, 411, 443

General Regulations
1. A student may not register for more than 19 hours of academic work unless he 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. 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 in their major field, normally in the fall quarter.
3. A student indicates his choice of a major field by filling out a declaration of major form available in the office of his department chairman.
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 chairman, 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. The freshman English courses—English 107, 108, 109—should be taken in sequence and not more than one course may be taken at the same time. One of the three courses must be scheduled every quarter until the student has received credit in all three (unless the student is specifically excused by the academic dean).

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 option basis, with the following stipulations:
1. The student must be a full-time student in Arts and Sciences.
2. The student must have sophomore, junior, senior or post-graduate standing.
3. The requested course cannot be in the department of the student's major.
4. The requested 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. The grade of "U" is equated with D or F.
7. The student cannot change his mind about the grading system after the second week of class.
8. Divisional "in-depth" courses may be taken S/U under the above guidelines.

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 Probation
A grade point average of 2.00 is required for graduation. If a student's cumulative grade point average falls below 2.00 within a given quarter, that student is placed on probation, and participating in extracurricular activities is reviewed by his/her advisor, by the Vice President for Student Affairs and by the dean of the college. If a student's cumulative grade point average falls below 1.60 within a given quarter, that student cannot participate in extracurricular activities unless approval is granted by the dean of the college.

Any student on probation whose work for the following quarter continues 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 suspension or dismissal.

Senior Comprehensive Examination
The requirement of a Senior Comprehensive Examination is a matter of departmental pol-
icy. Each department has the authority to decide and to determine all policies regarding senior comprehensive examinations.

Students should consult the departmental sections of this catalog and the department chairman in order to determine the existing policy for senior comprehensive examinations within the respective departments.

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 prescribed 16 general education courses, appropriate divisional electives, three quarter hours in physical education, service courses, complete an approved major, and have an accumulative point average of at least 2.00.

To graduate with a Bachelor of Music degree, a student is required to complete a minimum of 182 quarter hours with the concentrations in performance or 193 quarter hours with the concentration in music education. The minimum includes the 16 general education courses, three quarter hours of physical education, and service courses. However, no in-depth courses are required.

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 degree in Medical Technology the student must complete the three year pre-clinical 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.

121. CAREER PLANNING 1 hour Principles, methods, and practice in career planning with emphasis on self analysis, career information, exploration of careers, and career opportunities. The course is designed for freshmen who are uncertain about their career plans.

190. SPECIAL TOPICS 1-3 hours
290. SPECIAL TOPICS 1-3 hours
390. SPECIAL TOPICS 1-3 hours
490. SPECIAL TOPICS 1-3 hours

Army ROTC
101. ROTC AND THE NATIONAL DEFENSE ORGANIZATION 2 hours History, organization, programs, benefits and objectives of Army ROTC. Organization and functions of national defense establishment with emphasis on the role of the US Army. No military obligation or prerequisites. Freshmen and sophomores only.

102. RAPPELLING/PRACTICAL SKILLS 2 hours Understanding and application of rappelling and pioneering skills. Integrated use of rope, snaplink and natural/artificial anchors. No military obligation or prerequisites. Freshmen and sophomores only.

103. MAP READING 2 hours Understanding and application of basic map reading skills, terrain evaluation, military grid reference systems, integrated use of a map and compass. No military obligation or prerequisites. Freshmen and sophomores only.

104. THE SOVIET ARMY 2 hours A study of the Soviet threat from the tactical level through the Ministry of Defense. A review of Soviet weapons, equipment and tactics introduced into Soviet military science since World War II and US countermeasures. Soviet Warsaw Pact capabilities vs. those of the United States and the North Atlantic Treaty Organization (NATO). No military obligation or prerequisites. For freshmen and sophomores only.

201. SURVIVAL 2 hours Discussion and application of knowledge and skills needed in basic human survival situations in urban, rural and wilderness environments. Topics to include land navigation, radio communications, first aid, survival kits, adverse weather conditions, shelter and food. No military obli-
202. MANAGEMENT SIMULATION PROGRAM 2 hours A workshop in leadership and management of organization. Realistic simulation and role-playing exercises designed to illustrate specific leadership/management skills are used. Discussion of military principles. No military obligation or prerequisites. Freshmen and sophomores only.

204. MILITARY TACTICS 2 hours A study of Army tactics, principles of engagement, written military orders, and usage of military maps. Simulation exercises and war games will be played in class highlighting military tactics. Methods of instruction will also be discussed. No military obligation or prerequisites. For freshmen and sophomores only.

301. PROFESSIONALISM/LEADERSHIP 4 hours Professionalism and leadership required of the US 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: department permission and completion of one of the following: ROTC basic course at BGSU; ROTC Basic Camp at Fort Knox, KY; prior active duty service; Army Reserve/ANG basic training; or JROTC.

302. SMALL UNIT OPERATIONS 5 hours 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: department permission.

401. UNIT MANAGEMENT AND OFFICER DEVELOPMENT 4 hours Concepts and fundamentals of Army administration, supply and material readiness. Professional officerhip techniques and military ethics. Management at the small unit level. Organizing, planning and participating in field training exercises. Prerequisite: department permission.

402. UNIT MANAGEMENT, MILITARY WRITING AND CORRESPONDENCE 5 hours Organization and concepts of the US 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: department permission.

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Air Force ROTC

111. AIR FORCE ORGANIZATION I 1 hour Organization of the United States Air Force, mission function and employment of strategic forces, capabilities of Army in a limited war and counterinsurgency, Naval forces structure and employment, enemy threat assessment. Leadership laboratory activities.

112. AIR FORCE ORGANIZATION II 2 hours U.S. general purpose force capabilities, mission, resources, operation of tactical air forces, defensive forces, airlift forces, structure and function of logistics support weapons systems development. Leadership laboratory activities.

211. AIR FORCE HISTORY I 1 hour Development of air power from the first lighter-than-air vehicles through to the establishment of the Department of the Air Force as an independent military force. Various concepts of employment of air power and factors which have prompted research and technological change. Examples of impact of air power on strategic thought. Leadership laboratory activities.

212. AIR FORCE HISTORY II 2 hours Development of air power since the establishment of the independent Air Force to the present. Various concepts of employment of air power and factors which have prompted research and technological change. Examples of impact of air power on strategic thought. Leadership laboratory activities.

311. AIR FORCE MANAGEMENT I 4 hours 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: department approval.
312. AIR FORCE MANAGEMENT II
5 hours 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.

371. FLIGHT INSTRUCTION PROGRAM: GROUND SCHOOL 4 hours Basic aerodynamics, aircraft systems and performance, flight instruments, medical facts, Federal Aviation Administration/National Transportation Safety Board regulations, National Airspace System, flight publications, meteorology and weather services. Aviation map and chart interpretation, flight computer, dead reckoning and piloting, navigation, radio navigation, radio communication, airport operations, wake turbulence, flying safety. Required of AFROTC pilot candidates. Special departmental approval required for all others.

372. AFROTC FLIGHT INSTRUCTION PROGRAM 3 hours Aircraft operation, flight safety, rules of the air, instruction in advanced flight maneuvers, navigation techniques. Required of and limited to AFROTC pilot candidates.

411. AIR FORCE OFFICERSHIP I 4 hours The Air Force officer as part of national security forces in contemporary American society, armed forces as an integral element of society. American civil military relations and environmental context in which defense policy is formulated. Formulation and implementation of U.S. defense policy, framework of defense policy including domestic and international. Leadership laboratory activities. Prerequisite: departmental approval.

412. AIR FORCE OFFICERSHIP II 5 hours The Air Force officer and his part in the evolution of defense strategy since World War II. Strategy and management of conflict, arms interaction and control, limited war, insurgency, counter-insurgency, international terrorism, military law. Initial Active Duty Orientation! Leadership laboratory activities. Prerequisite: Departmental approval.

The Departmental Courses

ART (Department 151)
Professors DeVore (Chairman), Gordon, West; Associate Professor Chesser
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 76 hours for the major including 151, 152, 153, 161, 162, 210 (6 hours), 255, 265, 350, 489; 6 hours selected from 270, 280, 370; 9 hours selected from 250, 251, 355, 420; and 9 hours selected from 305, 315, 325, 335.

A candidate for the Bachelor of Fine Arts degree must complete 97 hours for the major including 151, 152, 153, 161, 162, 210 (6 hours), 222, 255, 265, 350, 360, 489; 9 hours selected from 270, 280, 370, 380; 9 hours selected from 250, 251, 355, 420; and 12 hours selected from 305, 315, 325, 335. Students concentrating in ceramics, painting, printmaking, or sculpture must complete a minimum of 24 hours in the area of major concentration. Students concentrating in graphic design must complete six hours of 222, 223; six hours from 142-322, 142-330; and 15 hours of 471.

46 ART
A student may obtain a minor in art by completing 151, 152, 161, 162, and 18 quarter 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 Department of Education.

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 degrees. A comprehensive exam is also required prior to the exhibition.

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.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, university catalog, and library. Required of all majors in the department.

100. ART 3 hours Analysis of the visual arts through selected works from the past and present. Illustrated lecture.

114. ART FOR ELEMENTARY TEACHERS 3 hours For the prospective elementary teacher with emphasis on the creative and mental growth of children in relationship to their work in art. Illustrated lectures.

115. ART FOR ELEMENTARY TEACHERS 3 hours For the prospective elementary teacher with emphasis on teaching demonstrations, media, and methods in art, and the elements within. Illustrated lectures. Prerequisite: Art 114.

151. DRAWING I 3 hours Introduction to methods and media of drawing. Required of all art majors.

152. DRAWING II 3 hours Extended problems of rendering in line and tone, studies in perspective.

153. DRAWING III 3 hours Advanced problems in drawing involving complex forms including the human figure. Emphasis on the development of drawing as finished expressive work. May repeat for a total of 6 hours.

161. DESIGN I 3 hours Introduction to and application of the elements and principles of plastic and graphic design. Required of all art majors.

162. DESIGN II 3 hours Organization of elements and principles in three dimensions.

210. FIGURE DRAWING 3 hours Drawing and anatomical study of the human figure. May repeat for credit to total of 12 hours.

221. JEWELRY 3 hours Use of a variety of materials in the making of jewelry. Emphasis on design and the development of technical skills. May repeat for credit once.

222. GRAPHIC DESIGN I 3 hours Basic letter forms, emphasis on proportion, theory, rendering technique and applications of lettering in commercial art.

223. GRAPHIC DESIGN II 3 hours A continuation of 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 6 hours.

250. PAINTING I 3 hours An introduction to techniques and modes of painting. Emphasis on theory and use of color.

251. PAINTING II 3 hours Techniques and modes of painting in oil. May repeat for credit to a total of 12 hours. Prerequisite: Painting I.

255. CERAMICS I 3 hours 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 I 3 hours 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.

270. PRINTMAKING I 3 hours Methods and techniques of the Intaglio and Relief printmaking processes, including etching, woodcut, engraving, and linocut. May repeat for total of 12 hours. Prerequisites: Art 152, 162.

280. SERIGRAPHY 3 hours Methods and techniques. May repeat for total of 6 hours.

290. SPECIAL TOPICS IN ART 1-3 hours
305. ANCIENT AND MEDIEVAL ART
3 hours Art forms and styles from prehistoric times through the 14th century. Not available to students who have received credit for 344 or 345. Offered alternate years.

315. RENAISSANCE AND BAROQUE ART 3 hours The development of European Art and architecture from the 15th through the 18th century. Not available to students who have received credit for 346 or 347. Offered alternate years.

325. IMPRESSIONISM-POST IMPRESSIONISM 3 hours Emphasis on developments in French art between the Revolution of 1784 and 1900. Offered alternate years.

335. CONTEMPORARY TRENDS 3 hours Emphasis on formation and development of basic artistic movements from the beginning of the 20th century to the present. Offered alternate years.

350. CERAMICS II 3 hours Methods and techniques of forming, decorating, glazing and firing clay bodies. Emphasis on wheel throwing. May repeat for a total of nine (9) hours credit. Prerequisite: Art 255.

355. WATERCOLOR 3 hours Techniques and modes of painting in aqueous media. May repeat for credit to a total of 9 hours.

360. SCULPTURE II 3 hours The design and rendering of sculptural forms in a variety of media and techniques. May repeat to total of 9 hours. Prerequisite: Art 265.

370. LITHOGRAPHY 3 hours Methods and techniques. May repeat to total credit of 6 hours. Prerequisites: Art 152, 162, and 210.

410. ADVANCED CERAMICS 3 hours Directed study. May repeat to total credit of 12 hours. Prerequisite: 9 hours of Art 350.

415. ADVANCED PRINTMAKING 3 hours Directed study. May repeat to total credit of 12 hours. Prerequisite: 6 hours of printmaking.

420. ADVANCED PAINTING 3 hours Directed study. May repeat to total credit of 12 hours. Prerequisite: 6 hours of Art 250 and 251.

425. ADVANCED SCULPTURE 3 hours Directed study. May repeat to total credit of 12 hours. Prerequisite: 9 hours of Art 360.

457. ART EDUCATION METHODS 3 hours Laboratory-seminar dealing with materials, techniques, and methods of secondary classroom instruction in art. Meets professional education requirement in methods area. Includes approximately 30 hours of field experience.

471. INTERNSHIP 15 hours Supervised field experience in an approved commercial art studio, agency, or design department; full time five days a week. Prerequisites: senior rank; Art 222, 6 hours of Art 223, Industrial Tech 322 and 330; and permission of the department. 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.

489. SENIOR THESIS 1 hour 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 1-3 hours

494. SEMINAR IN ART 1-3 hours

497. INDEPENDENT STUDY IN ART 1-3 hours

BIOLOGICAL SCIENCES
(Department 121)

Professors Butler, Moore (Chairman), Nelson; Associate Professors Hoagstrom, Keiser, Laing; Assistant Professor Mayer; Instructor McGraw; Adjunct Faculty, St. Rita's Medical Center, Cheng, Evans.

The objectives of the department are to give each student the opportunity to develop understanding of the nature and content of the biological sciences. Biology 100 is a principle course with a major emphasis on the study of the cell and genetics. 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 112 which surveys microbial, plant and animal life, evolution and ecology, and Biology 113 which covers the anatomy and physiology of flowering plants and of the human. These courses also provide a firm foundation for advanced work in biology and the related applied sciences.
The Bachelor of Arts and Bachelor of Sciences degrees are available to biology majors with the opportunity to specialize in pre-medical sciences, field biology or secondary education. Requirements for both degrees are Biology 100, 112, 113, 195, one advanced systematic survey course such as Biology 204, or Biology 223, one advanced organicism course such as Biology 205, 300, 301, 231 or 331, or 351, one field biology course such as Biology 213 or 251, with 252, 355, 383, 423; one course in Genetics 430 with 431, and 495. A minimum of 16 hours is to be elected from among the following courses, excluding those which have been taken as required courses: Biology 204, 205, 213, 223, 231, 232, 233, 244, 251, 252, 290, 297, 300, 301, 321, 331, 332, 333, 343, 351, 355, 383, 423, 424, 425, 441, 451, 461, 490, 497. In addition, from the College of Pharmacy and Allied Health Sciences 361, 362, 372, and 462 are accepted as electives. Departmental advisors will assist students in selecting relevant electives. No student may receive biology credit for both 231 and 331, nor 232 and 332. A minimum of 45 hours of biology courses is required not counting Biology 195. Required cognates include three quarters of chemistry, two quarters of mathematical sciences, one quarter of physics or one additional quarter of mathematics, which may be satisfied by a course in computer programming. A minimum of 25 quarter hours of cognates is required in the departments of chemistry, mathematics and physics. Biochemistry 341 and 342, taught in the College of Pharmacy and Allied Health Sciences, may count as cognate courses, as well as the earth science courses taught in the College of Engineering with permission of the biological science faculty.

The requirements for the B.S. degree include all of the preceding requirements for the B.A. degree plus 20 additional hours to be taken in the Division of Mathematical and Natural Sciences in the College of Arts and Sciences and/or the colleges of Engineering and Pharmacy and Allied Health Sciences. These 20 hours are subject to the approval of the advisor and replace the six in-depth courses required by the college of Arts and Sciences for the B.A. program.

A student may minor in biology. A minimum of 30 quarter hours of biology is required. Required courses are the same as for a major in biology with the exception of 195 and 495 which are not required. Two to three hours of biology electives will be required to complete the requirement of 30 quarter hours of biology. Required cognate courses include 12 quarter hours in the Division of Mathematical and Natural Sciences, not including biology.

The Department of Biological Sciences offers a medical technology program in affiliation with St. Rita's Medical Center of Lima. The program consists of three pre-technical years on campus, during which time the following curriculum will be completed: Biology 100, 112, 113, 195, 223, 301, 321, 331, 343, 430, 431, 495 and Microbiology 362 offered in the College of Pharmacy and Allied Health Sciences. Preparation in other areas of natural science include Chemistry 171, 172, 173, 231, 232, 233 and Biochemistry 341 offered in the College of Pharmacy and Allied Health Sciences, eight quarter hours of mathematics, including computer programming, and basic electronics offered in the physics department. Upon the successful completion of the clinical year the student graduates with a B.S. in medical technology from Ohio Northern University. The medical technology student may also choose to graduate with a B.S. degree with a major in biology, and then after graduation complete the clinical year. A student interested in this option should consult with the medical technology advisor. The 16 courses taken during the clinical year at St. Rita's Medical Center are listed below and numbered from 460 to 475.

The Department of Biological Sciences has developed an internship program and has formed working relationships with a number of organizations and institutions. For juniors and seniors, the one quarter internship provides an off-campus practical experience in a field of biology with the earning of 15 hours of credit. Examples of possible internships include toxic waste control, environmental testing, zoo care, wildlife management, laboratory research, biomedical computer, and hospital and technical health programs. Before embarking on an internship, faculty approval is required and students must have completed at least two years of courses in fundamental biology and related areas.
100. BIOLOGY (4 + 1) 4 hours Biological principles and concepts of plant and animal life with emphasis on life at the cellular level and genetics. Laboratory material is made available and discussed when appropriate.

105. BIOLOGY FOR NON-MAJORS (3 + 1) 3 hours Biological concepts of plant and animal life with emphasis on classical biological principles and contemporary problems. Discussion in the presence of laboratory materials when appropriate. This is a terminal course which will not serve as a prerequisite for any other biology course and cannot be used as a basis for an in-depth sequence.

112. GENERAL BIOLOGY (4 + 1) 4 hours The diversity that exists among living organisms and exemplified by the major groups of living organisms: prokaryotes, protists, fungi, plants and animals. Evolution and ecology are considered. Laboratory material is made available and discussed when appropriate. Prerequisite: Biology 100.

113. GENERAL BIOLOGY (4 + 1) 4 hours Biological principles and concepts of the reproduction, development, growth, anatomy and physiology of plants and animals. Laboratory material is made available and discussed when appropriate. Prerequisite: Biology 100.

195. ORIENTATION (1 + 0) 1 hour Presentations and discussions relating to adjustments and requirements of academic life within the University, college and the Department of Biological Sciences.

204. BOTANY AND MYCOLOGY (2 + 4) 4 hours Plant and fungal relationships including phylogeny and classification. The morphology, physiology, development and life cycles of selected taxa. Prerequisites: Biology 112 and 113.

205. ANGIOSPERM BOTANY (2 + 4) 4 hours Relationships within the flowering-plant division including phylogeny and classification. The morphology, physiology, development and life cycles of the flowering plants. Prerequisites: Biology 112 and 113.

213. NATURAL HISTORY (1 + 6) 3 hours Recognition and identification of local biotic communities and their inhabitants. Field study emphasized. Prerequisites: Biology 112 or permission of the instructor.

223. INVERTEBRATE ZOOLOGY (3 + 3) 4 hours Invertebrate relationships including morphology, physiology, life cycles and taxonomy. Prerequisite: Biology 112.

231. ANATOMY AND PHYSIOLOGY (4 + 2) 4 hours Basic principles of human structure and function, including relevant aspects of exercise physiology. Topics covered include cell physiology, metabolism, histology, skin, bone and neural anatomy and physiology. Laboratory primarily covers the anatomy of the cat. Course may be taken out of sequence. Prerequisite: Biology 113.

232. ANATOMY AND PHYSIOLOGY (4 + 2) 4 hours Continuation of 231. Topics covered include special senses, blood, immunology, renal system and digestive system, endocrinology and reproductive system. Laboratory presents relevant experiments on lecture topics. Prerequisites: Biology 113; 231 is not required, but recommended.

233. EXERCISE PHYSIOLOGY (4 + 2) 4 hours The physiological basis of physical education and athletics. Course primary emphasis is on exercise physiology. Topics covered include thermal regulation, muscle physiology, respiratory physiology, cardiovascular physiology and special topics of exercise physiology. Laboratory primarily covers techniques for evaluating physical conditioning as related to lecture topics. Prerequisites: Biology 231 or 232, both being highly recommended.

244. THE ENVIRONMENT OF MAN (2 + 0) 2 hours The interactions of man and his surroundings with emphasis on the problems arising from increasing human population, pollution and resource use.

251. PRINCIPLES OF VERTEBRATE ECOLOGY (3 + 0) 3 hours Consideration of vertebrate populations, evolution, geography and of vertebrate roles in ecosystems and biotic communities. Prerequisites: Biology 112 and 113. Offered alternate years: 1983-84.

252. PRINCIPLES OF VERTEBRATE ECOLOGY LABORATORY (0 + 3) 1 hour Field work on populations and habitat distribution of vertebrates. Collected data is analyzed. Prerequisite or corequisite: Biology 251.
290. SPECIAL TOPICS IN BIOLOGY  
1-3 hours  Grading system at the discretion of the instructor.

297. INTRODUCTION TO BIOLOGICAL INVESTIGATIONS  
1-3 hours  Minor investigations for qualified freshmen and sophomores. Graded S-U.

300. HUMAN ANATOMY AND HISTOLOGY (2 + 4)  
4 hours  A study of the organs and tissues that comprise the systems of the human body. Prerequisite: Biology 113.

301. DEVELOPMENTAL ANATOMY (2 + 4)  
4 hours  A study of the human embryonic and fetal development supplemented by laboratory studies of chick, pig and mouse embryonic development. Prerequisite: Biology 113.

321. IMMUNOLOGY (3 + 0)  
3 hours  Basic anatomical, physiological, and genetic principles of immunology with some reference to clinical application. Prerequisites: Biology 100, 113; one year of chemistry, with Biology 231 or 331 highly recommended.

331. PHYSIOLOGY (3 + 3)  
4 hours  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: Biology 113 and one year of chemistry. Corequisite: Chemistry 231.

332. PHYSIOLOGY (3 + 3)  
4 hours  Continuation of 331. Corequisite: Chemistry 232.

333. PHYSIOLOGY (3 + 3)  
4 hours  Continuation of 332. Corequisite: Chemistry 233.

343. MICROTECHNIQUE (2 + 3)  
3 hours  Principles and procedures used in the preparation of biological specimens for microscopic study. Open to students majoring in Biology.

351. CELL BIOLOGY (3 + 3)  
4 hours  Function and structure of cells. Bioenergetics, enzyme action, and subcellular entities (their structure, function, origin and development). Some consideration of interaction between cells. Prerequisites: Biology 112, 113; Chemistry 173. Offered alternate years: 1984-85.

355. INTRODUCTION TO MARINE BIOLOGY  
4 hours  The various marine environments and the organisms that inhabit them. A two-week field trip to a marine environment is required. May repeat for credit four times. Prerequisites: Biology 112 and permission of the instructor.

383. ANIMAL BEHAVIOR (ETHOLOGY) (2 + 2)  
3 hours  Basic principles of the behavior and ethology of invertebrates and vertebrates, stressing observational and descriptive techniques. Prerequisites: Biology 112, 113 and 223. Offered alternate years: 1984-85.

423. ECOLOGY (2 + 3)  
3 hours  Populations, communities and biomes. The composition, morphology, ecology, chorology or geography, chronology or history and taxonomy of populations, communities and biomes. Prerequisites: Biology 112, and 113.

424. VEGETATION OF THE GREAT SMOKY MOUNTAINS (1 + 2)  
1 hour  A three-day field study of the regional vegetation patterns in relation to altitude and topography. Prerequisites: Biology 100, 112, 113 and 213 or Biology 423. Corequisites: Either Biology 213 or 423. Biology 100, 112, and 113 must be offered as a prerequisite if Biology 213 is offered as a corequisite. A special travel fee is assessed. Permission of the instructor. Offered alternate years: 1983-84.

425. VEGETATION OF THE SOUTHERN LAKE MICHIGAN REGION (1 + 2)  
1 hour  A three-day field study of regional vegetation patterns in relation to glacial and coastal lacustrine landforms. Emphasis on concepts of regional succession. Prerequisites: Either Biology 100, 112, 113 and 213 or Biology 423. Corequisites: Either Biology 213 or 423. Biology 100, 112 and 113 must be offered as a prerequisite if Biology 213 is offered as a corequisite. A special travel fee is assessed. Permission of the instructor. Offered alternate years: 1984-85.

430. GENETICS (3 + 0)  
3 hours  The principles of genetics as exemplified by microorganisms, higher plants and animals. Mendelian, biochemical, developmental and prokaryotic genetics are considered. Prerequisites: Biology 113, one year of Chemistry, and Math 142.

431. GENETICS LABORATORY (0 + 3)  
1 hour  Experiments which demonstrate genetic phenomena. Drosophilia, bacteria, microscope slides and probability studies are employed. Corequisite: Biology 430

BIOLOGICAL SCIENCES 51
441. PHYSIOLOGY OF AGING (1 + 0) 1 hour. A seminar format with readings, lectures and discussions concerning known physiological process of aging in the systems of the human body. Prerequisites: Biology 231, 232 and 233 or Biology 331, 332 and 333 or with permission of the instructor.

451. ADVANCED TOPICS IN CELL BIOLOGY (3 + 0) 3 hours. 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. Prerequisites: Biology 351 or Biochemistry 342. Offered alternate years: 1984-85.

481. INTERNSHIP PROGRAM 15 hours Juniors and seniors, with faculty approval, have the opportunity of gaining practical experiences in various areas such as wildlife management, forestry, zookeeping, environmental monitoring, cardiopulmonary technology, pro-health programs and other hospital specializations. Prerequisite: A minimum of 2 years work in the fundamentals of Biology and related areas.

490. SPECIAL TOPICS IN BIOLOGY 1-4 hours. The biology staff is prepared to offer courses to students in the following disciplines: entomology, biogeography, herpetology, ichthyology, mammalogy, pathologic physiology, ornithology, North American mammals and plant taxonomy. Grading system at the discretion of the instructor.

495. SEMINAR IN BIOLOGY 1 hour

497. INDEPENDENT STUDY IN BIOLOGY 1-3 hours. Grading system at the discretion of the instructor.

Medical Technology Program

The following courses are offered at the St. Rita's Medical Center. Prerequisite for enrollment is admission to the Medical Technology Program by St. Rita's Medical Center. Students enroll for these courses at the offering institution.

460. ORIENTATION TO MEDICAL TECHNOLOGY 0 hours. An introduction to basic laboratory instruments, methods, procedures, terminology, ethics, and safety.

461. CLINICAL BACTERIOLOGY - LECTURE 4 hours. Study of micro-organisms found in human infection, principles of isolation and identification.

462. CLINICAL MYCOLOGY - LECTURE 2 hours. Study of fungi found in human infection, principles of isolation and identification.

463. CLINICAL PARASITOLOGY - LECTURE 2 hours. Study of parasites found in human infection, principles of isolation and identification.

464. CLINICAL MICROBIOLOGY LABORATORY 6 hours. Laboratory methods, procedures, and instrumentation to correlate with Bacteriology, Mycology, and Parasitology lectures.

465. IMMUNOHematology LECTURE 3 hours. Theory of human blood groups, compatibility testing, detection, and identification of antibodies.

466. IMMUNOHematology LABORATORY 3 hours. Laboratory methods and instrumentation to correlate with lectures.

467. CLINICAL IMMUNOLOGY LECTURE 2 hours. Theory of information and detection of antigens and antibodies in disease states, both in vivo and vitro.

468. CLINICAL IMMUNOLOGY LABORATORY 2 hours. Laboratory methods and instrumentation to correlate with lectures.

469. CLINICAL HEMATOLOGY/COAGULATION LECTURE 4 hours. Theory of hematopoesis, cell morphology, blood dyscrasias, coagulation mechanism and abnormalities. Correlation of findings with human physiology and disease.

470. CLINICAL HEMATOLOGY/COAGULATION LABORATORY 4 hours. Laboratory instrumentation and procedures to correlate with the lectures.

471. CLINICAL CHEMISTRY LECTURE 8 hours. 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 hours. Laboratory instrumentation and procedures to correlate with the lectures.

473. URINALYSIS LECTURE 1 hour. Physiology of urinary system, related diseases and correlation to disease states.

474. URINALYSIS LABORATORY 1 hour. Laboratory methods and instrumentation to correlate with lectures.
475. LABORATORY MANAGEMENT
Lecture P/F 0 hours. Theory and discussion of supervision and management.

CHEMISTRY
(Department 122)

Professors Haight, Hawbecker (Chairman), Kurtz, Wilhelm; Associate Professors Lamb, Sadurski; Assistant Professors J. Hruschka, Renkes; Visiting Assistant Professor Mols.

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 offers both the Bachelor of Science and Bachelor of Arts degrees.

Major in Chemistry Three major programs are available in the Department of Chemistry. They are the American Chemical Society certified program, the basic program, and the modified program.

The American Chemical Society Certified Major 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, 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; and advanced mathematics or physics courses approved by the department. The following cognate courses must also be added: Mathematics 163, 261, 262, and 272; and Physics 231-232-233 with related laboratories. A knowledge of computer programming is recommended.

The student who wishes to complete a certified Bachelor of Arts degree must complete the chemistry core, the "professional" component, and the cognate courses as listed above along with all general education courses and the six in-depth courses required by the College of Arts and Sciences. The student pursuing the Bachelor of Science program must complete general education requirements but is not required to complete the six in-depth courses. He must instead complete 18 hours of "scientific" course work.

This 18 hours of "scientific" course work must be taken in the Division of Mathematical and Natural Sciences in the College of Arts and Sciences, the College of Engineering, or the College of Pharmacy and Allied Health Sciences and should include the "professional" component listed above among the 18 hours. All of the "scientific" courses must be at the 300 or 400 level with the exception of mathematics 263 and non-cognate computer science courses. Interested students should especially note that additional courses in biochemistry are available in the College of Pharmacy and Allied Health Sciences.

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 the basic Bachelor of Science degree must complete the College requirements for general education, the chemistry core, the cognate courses and 18 hours of "scientific" course work as described above. A knowledge of computer programming is recommended. The requirements for the basic Bachelor of Arts degree are the same except that the six in-depth courses must be completed instead of the 18 hours of "scientific" course work.

The Modified Major A modified Bachelor of Arts degree 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. This program permits more course selection in areas that support the student's chemistry-related career goal. The student participates in designing his own program within the following framework: Chemistry 000, 181-182-183, 241-242-243, 494, plus three courses from among 304, 311, 324, 337, 351, and a minimum of 12 credit hours in courses of 300-400 level courses in the Division of Mathematical 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 324 and either 337 or 351. 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 100-112-113; 3. three mathematics courses beyond Mathematics 100.

**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, 324, 337, 351, 363, and Chemistry 311 or Biochemistry 341.

000. ORIENTATION (1 + 0) 1 hour 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 (2 + 2) 3 hours Orientation to and understanding of the fundamental nature of chemistry; models and measurements. Chemistry 171 recommended for science majors. Credit may be received for either Chemistry 100 or 171, but not for both.

114. CHEMISTRY OF LIFE (3 + 0) 3 hours An introduction to the chemical nature of the major groups of biological molecules and to their activities in living systems. Credit may be received for either Chemistry 114 or Biochemistry 341-342, but not for both. Prerequisite: Chemistry 100, 162 or 171.

115. ENVIRONMENTAL CHEMISTRY (3 + 0) 3 hours Chemical aspects of the natural and polluted environment. Particular emphasis is given to air and water pollution. Prerequisite: Chemistry 100 or 162 or 171.

162. CHEMISTRY-CONCEPTS AND APPLICATIONS I (4 + 3) 5 hours A survey of fundamental concepts of chemistry. Basic chemical theories are introduced and applied to practical situations. The laboratory is designed to reinforce the lecture program. Prerequisite: Mathematics 261 and Physics 231-2-3 with related laboratory, or the equivalent, or permission of the Chairman.

163. CHEMISTRY-CONCEPTS AND APPLICATIONS II (3 + 0) 3 hours Chemical properties of the elements and the application of those properties to such problems as synthesis, analysis, industrial processes and environmental quality. Prerequisite: Chemistry 162.

168. BASICS OF CHEMISTRY (3 + 0) 3 hours 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 Chemistry 171. Students who have had high school chemistry ordinarily begin with Chemistry 171. Chemistry 168 does not satisfy a general education requirement and it should not be used to satisfy specific departmental or program requirements.

169. BASICS OF CHEMISTRY LABORATORY (0 + 2) 1 hour Recommended as a complement to Chemistry 168. Emphasizes basic skills and techniques. Course marked S-U.

171. INTRODUCTORY CHEMISTRY I (4 + 3) 5 hours Fundamental principles of chemistry in terms of the atomic theory and its application to compound formation, bonding, structure, acid-base and oxidation-reduction reaction chemistry. The laboratory relates physical observations to the principles presented in lecture. Credit may be received for either Chemistry 100 or 171, but not for both. High school chemistry or the equivalent is required.

172. INTRODUCTORY CHEMISTRY II (4 + 3) 5 hours Physical principles of chemistry including electrochemistry, thermodynamics, kinetics, general equilibrium and the study of the states of matter. The laboratory introduces quantitative measurement to experiments designed to illustrate principles.
presented in lecture. Prerequisite: Chemistry 171.

173. INTRODUCTORY CHEMISTRY III (4 + 3) 5 hours Qualitative and quantitative aspects of chemical reactivity including ionic equilibrium, spectroscopy, descriptive inorganic reaction chemistry and nuclear chemistry. The laboratory illustrates qualitative and quantitative behavior and group trends of chemical species. Prerequisite: Chemistry 162 or 172.

181. INTRODUCTORY CHEMISTRY FOR MAJORS I (4 + 3) 5 hours The same lecture and laboratory as Chemistry 171.

182. INTRODUCTORY CHEMISTRY FOR MAJORS II (4 + 3) 5 hours The same lecture and laboratory as chemistry 172.

183. INTRODUCTORY CHEMISTRY FOR MAJORS III (4 + 3) 5 hours The same lecture and laboratory as chemistry 173.

231. ORGANIC CHEMISTRY I (3 + 3) 4 hours Applications of the concepts of bonding, structure, synthesis and mechanisms to the chemistry of organic compounds. Emphasis is on bonding, nomenclature, structural isomerism and the chemistry of alkanes, alkenes and alkyl halides, including addition polymerization. Laboratory emphasizes special techniques including chromatography and synthetic procedures pertaining to substitution and elimination reactions. Prerequisite: Chemistry 173 or 183.

232. ORGANIC CHEMISTRY II (3 + 3) 4 hours Stereochemistry, spectrometry, and the chemistry of alkenes, dienes, aromatic compounds and organometallic compounds. Laboratory features organic synthesis and structural determinations which illustrate the concepts from the lecture. Prerequisite: Chemistry 231 or 241.

233. ORGANIC CHEMISTRY III (3 + 3) 4 hours Functional behavior of organic oxygen and nitrogen compounds, lipids, carbohydrates, amino acids and proteins, including condensation polymerization. Laboratory features multistep synthesis and qualitative organic analysis. Prerequisite: Chemistry 232 or 242.

241. ORGANIC CHEMISTRY FOR MAJORS (3 + 3) 4 hours The same lecture and laboratory as Chemistry 231. Prerequisite: Chemistry 173 or 183.

242. ORGANIC CHEMISTRY FOR MAJORS (3 + 3) 4 hours The same lecture and laboratory as Chemistry 232. Prerequisite: Chemistry 231 or 241.

243. ORGANIC CHEMISTRY FOR MAJORS (3 + 6) 5 hours The same lecture as Chemistry 233 with separate laboratory emphasizing qualitative organic analysis and the use of modern instrumentation in separation and identification of organic compounds. Prerequisite: Chemistry 232 or 242.

290. SPECIAL TOPICS IN CHEMISTRY 1-3 hours

297. INDEPENDENT STUDY IN CHEMISTRY 1-3 hours Prerequisite: Approval of the department chairman.

304. ORGANIC SYNTHESIS (2 + 6) 4 hours An intermediate course in synthetic methods. Lecture emphasizes major carbon skeletal alteration techniques and modern methods of interconverting functional groups. Laboratory consists of planning and executing multistep syntheses of graded complexity. Use of synthetic literature is emphasized. Prerequisite: Chemistry 233 or 243.

311. CHEMISTRY OF BIOLOGICAL MOLECULES (4 + 0) 4 hours A study of the structures and properties of the major classes of biological molecules with emphasis on the physical properties of macromolecules. Topics include thermodynamics, enzyme kinetics and mechanism, isolation and characterization techniques, and an introduction to the design and regulation of metabolic pathways. Prerequisites: Chemistry 233 or 243 and Mathematics 262.

324. INTERMEDIATE INORGANIC CHEMISTRY (3 + 3) 4 hours Preparation, properties and reactions of main group and transition metal elements and their compounds. Laboratory involves the application of fundamental techniques to the synthesis of these compounds and the systematic study of their reactions and properties. Prerequisites: Chemistry 231 or 241 or approval of chairman.

337. ELEMENTS OF PHYSICAL CHEMISTRY (4 + 0) 4 hours A survey of fundamental principles of physical chemistry including classical thermodynamics, gaseous state, liquid state, macromolecules, quantum theory and spectroscopy. Applications to biological systems are emphasized. Prerequisite: Chemi-
341. PHYSICAL CHEMISTRY I (3 + 3) 4 hours Classical thermodynamics. Laboratory illustrates principles and exemplifies applications. A knowledge of computer programming is recommended. Prerequisite: Chemistry 233 or 243; Physics 231-2-3, with related laboratories; and Mathematics 262 and 272.

342. PHYSICAL CHEMISTRY II (3 + 3) 4 hours Quantum mechanics. Laboratory illustrates applications in spectroscopy. A knowledge of elementary differential equations is recommended. Prerequisite: Chemistry 341.

343. PHYSICAL CHEMISTRY III (3 + 3) 4 hours Statistical thermodynamics, elementary crystal structure and chemical kinetics. Laboratory illustrates principles and applications. Prerequisite: Chemistry 342.

351. INTERMEDIATE QUANTITATIVE ANALYSIS (2 + 6) 4 hours The practice and principles of modern "wet" chemical methods of analysis; an introduction to instrumental methods of analysis. A terminal course for the non-major and an intermediate course for the major. Prerequisite: Chemistry 173 or 183.

363. APPLICATIONS OF CHEMICAL INSTRUMENTATION (1 + 5) 3 hours An introduction to the principles and methods of instrumental measurements for the analysis of real samples. The integrated laboratory and lecture deal with the collection, preparation and analysis of environmental, geological, biological, and industrial samples. Automated sequencing and process analysis are also discussed. Prerequisites: Chemistry 163 or 233 or 243. Offered in alternate years.

451. ADVANCED INORGANIC CHEMISTRY (3 + 3) 4 hours The study of properties and reaction mechanisms of elements and their compounds in terms of modern theories and concepts. Laboratory involves the application of modern techniques and equipment to the systematic study of compound preparation and related properties. Prerequisites: Chemistry 324 and 343 or approval of chairman.

462. ADVANCED ANALYTICAL CHEMISTRY (3 + 3) 4 hours Theoretical-experimental study of modern methods of instrumental analysis. The physico-chemical principles as well as the design and use of chemical instrumentation. Laboratory stresses independent, investigative experimentation. Prerequisite: Chemistry 351 and 343, or approval of department chairman.

473. ADVANCED TOPICS IN PHYSICAL CHEMISTRY (3 + 0) 3 hours A theoretical study of selected topics in chemical physics. Use of current literature is emphasized. A knowledge of computer programming is recommended. Prerequisite: Chemistry 343.

474. THEORETICAL ORGANIC CHEMISTRY (3 + 0) 3 hours Application of molecular orbital theory and various thermodynamic relationships to the study of organic reaction mechanisms. Structure-reactivity relationships are emphasized. Prerequisite: Chemistry 304 and 343 or approval of department chairman.

481. SENIOR RESEARCH I 2 hours Prerequisite: Approval of the department chairman.

482. SENIOR RESEARCH II 2 hours Prerequisite: Approval of the department chairman.

483. SENIOR RESEARCH III 2 hours Prerequisite: Approval of department chairman.

490. SPECIAL TOPICS IN CHEMISTRY 1-3 hours

494. SEMINAR IN CHEMISTRY 1 hour Includes oral presentation of a seminar lesson plus a formal paper on a chemical topic related to a selected seminar theme. Required of all senior chemistry majors.

497. INDEPENDENT STUDY IN CHEMISTRY 1-3 hours Prerequisite: Approval of department chairman.

BIOCHEMISTRY 4 hours See course description for Biochemistry 341-342 under the Department of Pharmacology and Biomedical Sciences in the College of Pharmacy and Allied Health Sciences.
COMMUNICATION ARTS (Department 153)

Assistant Professors Bayliss (sabbatical leave), Johnson, Riess (Chairman), Roberts (Director of Communication Skills Center); Instructors Klein, Kruis; Visiting Instructors K. Shelton and M. Shelton.

The Department of Communication Arts is structured around a series of core courses which are fundamental to an understanding of how man communicates theoretically, practically, and aesthetically. The student majoring in the communication arts builds upon these core courses in pursuing a concentration particular to his professional and educational goals. Concentrations are offered in the following areas:

- Organizational Communication
- Public Relations
- Speech
- Theatre

A formal concentration need not be pursued. The student who wishes to pursue a general program within the communication arts major may do so in consultation with an advisor. The department is committed to both a strong liberal arts education and a flexible professional program adapted to individual needs and interests. Certain concentrations require cognate courses outside the department.

A major in communication arts is divided into four elements:

1. Communication Arts Core Requirements
2. Concentration Requirements
3. Concentration Electives (Departmental)
4. Concentration Cognates (Non-Departmental)

Communication Arts Core

Required of all majors (12 hours)
- Introduction to Public Relations (CA 130)
- Theatre History I (CA 291)
- Introduction to Broadcasting (CA 150)
- Public Speaking (CA 211)

Beyond the traditional classroom learning situation the department offers and encourages active involvement within the discipline through internships, and externships are actively encouraged through contract field experiences. Participation in Individual Events and Debate is open to all students. Individual Events encompasses all individual speaking opportunities such as persuasive, informative,
4. Organizational Communication Cognates
(15 hours)
Social Psychology (Psychology 301)

Choose one
Writing from Evidence (English 344)
Factual Writing (English 343)
Journalism Layout and Design (English 246)

Choose two
Principles of Management (BA 330)
Management of Organizational Behavior (BA 363)
Human Relations in Business (BA 365)
Business & Society (BA 410)
Business Communications (BA 391)

Choose one
Organizational Psychology (Psychology 316)
Organizational Behavior (Sociology 245)

Communication Arts with Public Relations Concentration (85-87 hours)

1. Communication Arts Core Requirements
(12 hours)

2. Concentration Requirements: Public Relations Core (11 hours)
Publicity Media & Campaigns (CA 330)
Public Relations Case Problems (CA 430)
Contract Field Experience (5 hours minimum) (CA 335)

3. Public Relations Concentration Electives (Departmental) (18 hours)

Choose three
Organizational Communications (CA 421)
Group Communications (CA 321)
Parliamentary Procedure (CA 240)
Interpersonal Communications (CA 225)

Choose two
Argumentation (CA 121)
Business & ProfessionalSpeaking (CA 315)
Persuasive Speaking (CA 311)

Choose one
Communications Theory (CA 230)
Radio Theory and Operations (CA 251)
Acting (CA 260)

4. Public Relations Cognates (36 hours)

English: choose four
Newswriting I (English 241)
Magazine Writing (English 243)
Journalism Layout & Design (English 246)
Factual Writing (English 343)
Writing from Evidence (English 344)
History of Literary Criticism (English 381)

Social Sciences: choose three
Principles of Behavioral Analysis (Psychology 212)
Social Psychology (Psychology 301)
Organizational Psychology (Psychology 316)
Cultural Anthropology (Psychology 250)

Business Administration: choose four
Business Law I (BA 322)
Marketing (BA 351)
Salesmanship (BA 371)
Advertising (BA 372)
Human Relations in Business (BA 365)
Business and Society (BA 410)

Graphic Skills:
Design I (Art 161)
Graphic Design (Art 222)
Graphic Arts (Industrial Tech 311)
Photography (Industrial Tech 330)

Statistics/Computer Science: choose two
Probability and Statistics (Math 142)
Programming in BASIC (CS 111)
Introduction to FORTRAN (CS 131)
Probability and Statistics (Math 143)

College General Education requirements may be used to satisfy some cognate courses.

Communication Arts with Speech Concentration (45 hours)

1. Communication Arts Core Requirements
(12 hours)

2. Concentration Requirements: Speech
(12 hours)
Persuasive Speaking (CA 311)
Business and Professional Speaking (CA 315)
Group Communication (CA 321)
Communication Theory (CA 230)

3. Speech Concentration Electives (Departmental) (21 hours)

Choose three
Argumentation (CA 121)
Interpersonal Communication (CA 225)
Interviewing (CA 221)
Oral Interpretation (CA 160)
Organizational Communication (CA 421)
Choose three
Individual Events Activity (3 hours minimum) (CA 201)
Debate (3 hours minimum) (CA 201)
Voice and Diction (CA 340)
Parliamentary Procedure (CA 240)
Independent Study (3 hours minimum) (CA 499)

Choose one
Readers Theatre (CA 361)
Radio Theory and Operations (CA 251)
Acting (CA 260)
Theatre Criticism (CA 492)

4. Speech Cognates
Although none are required, the student should select electives in close consultation with an advisor.

Communication Arts with Theatre Concentration (45 hours)

1. Communication Arts Core Requirements (12 hours)
2. Concentration Requirements: Theatre (12 hours)
   Acting (CA 260)
   Creative Drama (CA 351)
   Production Analysis (CA 385)
   Theatre Technology (CA 275)
3. Theatre Concentration Electives (Departmental) (21 hours)

Choose three
Oral Interpretation (CA 160)
Text Study (CA 460)
Makeup (CA 278)
Theatre History II (CA 292)
Theatre Criticism (CA 492)
Arts Management (CA 480)
Children's Theatre (CA 352)
Readers Theatre (CA 361)
Cinema (CA 390)

Choose two
Directing (CA 386)
Scene Design (CA 375)
Lighting Design (CA 376)
Costume Design (CA 377)
Stage Management (CA 285)
Children's Theatre Tour (CA 353)

Choose two
Performance Practicum (CA 261)
Production Practicum (CA 276)
Directing Practicum (CA 387)
Design Practicum (CA 378)

4. Theatre Cognates
Although none are required, the student should select electives in close consultation with an advisor.

Minors A minor in communication arts is satisfied by completing both the Communication Arts Core Requirements (I) and Concentration Requirements (II) and additional hours to be selected from Concentration Electives and Cognates (as approved by the department) to constitute a minimum of 30 course hours. Any concentration may be selected.

Certification in speech and communications (a combination of speech, theatre, English, journalism, and reading) is available through the Department of Communication Arts.

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 chairman for information and/or advising.

In-Depth for Non-Majors Non-majors may satisfy In-Depth requirements in the department via any two 3-hour course or the equivalent of six hours (e.g., a combination of 1-2- or 3-hour courses).

If the general education course taken is Speech Communication 100, the In-Depth hours must be selected from the following offerings: CA 121, CA 130, CA 150, CA 201, CA 202, CA 211, CA 221, CA 225, CA 230, CA 240, CA 251, CA 252, CA 311, CA 315, CA 321, CA 330, CA 340, CA 421, CA 430.

If the General Education Course taken in Theatre 105, the In-Depth hours must be selected from the following offerings: CA 160, CA 260, CA 261, CA 275, CA 276, CA 278, CA 285, CA 291, CA 292, CA 351, CA 352, CA 353, CA 361, CA 375, CA 376, CA 377, CA 378, CA 385, CA 386, CA 387, CA 390, CA 460, CA 480, CA 490.

Non-majors may use only three hours of practicum or activities courses to satisfy In-Depth requirements.

Speech Communication (CA 100) and Introduction to Theatre (CA 105) are required for departmental majors and minors, but do not count toward the major and minor requirements, nor does any grade below “C” that is received in a departmental course.
Introduction to Theatre (CA 105) are required for departmental majors and minors, but do not count toward the major and minor requirements, nor does any grade below "C" that is received in a departmental course.

000. ORIENTATION 1 hour  Familiarization with the departmental requirements for majors, planning a program of courses, university catalog and library. Required of departmental majors. Graded S or U.

100. SPEECH COMMUNICATION 3 hours  Group lecture which discusses the basic concepts and practices of interpersonal, public, group communication. Preparation, composition, presentation of speeches. Basic knowledge of the process of communication in society. Students enrolled in Speech Communication 100 must also register for a section of Speech Communication Recitation 101. Laboratory experiences in Communication Skills Center are available to the student.

105. THEATRE 3 hours  General survey of the theatrical art form utilizing the screening of popular films. Emphasis includes acting, directing, and design.

121. ARGUMENTATION 3 hours  (Formerly 110). Basic argumentative speaking and debate; proposition analysis; use of evidence, elementary logic, and case construction. Emphasis on simulated activities, such as in-class debates.

130. INTRODUCTION TO PUBLIC RELATIONS 3 hours  Primarily a theory course describing the role, function, and responsibilities of the Public Relations practitioner within organizations.

150. INTRODUCTION TO BROADCASTING 3 hours  (Formerly 120). A brief historical survey of the evolution of broadcasting, along with examination of contemporary practices in announcing, programming, scheduling, traffic, etc. Laboratory hours arranged.

160. ORAL INTERPRETATION 3 hours  (Formerly 262). Analysis and oral interpretation of the logical, emotional and aesthetic experience in poetry, prose, and dramatic dialogue, with emphasis on individual preparation and performance.

201. SPEECH TEAM: INDIVIDUAL EVENTS 1-3 hours  (Formerly 270). Extracurricular individual events activities including participation in speech tournaments. Students can become involved 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 6 hours. S-U grading.

202. DEBATE PRACTICUM 1-3 hours  (Formerly 271). Extra-curricular debate activities. May be repeated for graduation credit by non-majors up to a maximum of 6 hours. S-U grading.

211. PUBLIC SPEAKING 3 hours  (Formerly 272). Extensive application of basic principles of oral communication in the composition and delivery of original speeches. Prerequisite: Speech Communication 100.

221. INTERVIEWING 3 hours  (Formerly 235). Examination of the basic principles and techniques of interviewing and their applications to informational, employment, and persuasive/counseling situations. In-class and out-of-class experiences in actual interviewing provide emphasis.

225. INTERPERSONAL COMMUNICATION 3 hours  (Formerly 210). Analysis of dimensions and relationships in interpersonal communication, especially needs, perceptions, orientations, contexts, and barriers. Course is oriented toward exercises, demonstrations, and applications, to student's own experience with basis upon transactional analysis.

230. COMMUNICATION THEORY 3 hours  The course is designed to provide a framework of foundational knowledge about the theories, nature, and dynamics of human communication/intention. Prerequisite: Communication Arts 100.

240. PARLIAMENTARY PROCEDURE 3 hours  (Formerly 360). Methodology of conducting formal meetings by parliamentary rules.

251. RADIO THEORY AND OPERATION 3 hours  (Formerly 125). To acquaint participants with operational procedures of commercial radio stations. Participation in radio performance, production, and writing techniques. Practice in performance skills offered via required labs and provided through production facilities at WONU Radio.
252. BROADCASTING ACTIVITIES
1-3 hours (Formerly 220). Broadcasting practicum involving, but not limited to, announcing, traffic, management, scheduling, programming, writing, etc. May be repeated for graduation credit by non-majors up to a maximum of six hours. Prerequisite: permission of department. S/U marking.

260. ACTING 3 hours (Formerly 282 and 283). A studio class designed to introduce and develop fundamental acting skills through readings, discussions, exercises, monologues, and scenes. Students are coached both privately and during the class by the instructor. Course may be repeated for a maximum of six hours by non-majors for graduation credit and for a maximum of nine hours by majors for graduation credit.

261. PERFORMANCE PRACTICUM
1-3 hours (Formerly 250). Open only to those students who have auditioned for and have been awarded roles in major University Theatre or Studio Theatre productions, credit depending on role. May be repeated by non-majors for graduation credit up to a maximum of 6 hours. Prerequisite: Permission of director. S/U grading.

275. THEATRE TECHNOLOGY 3 hours
Introduction to theoretical and practical work in the fundamentals of technical theatre production. Content includes scenic construction, property construction, theatrical sound, basic drafting, basic design theory. Required lab work.

276. PRODUCTION PRACTICUM
1-3 hours (Formerly 280). Participation in technical/productional aspects of University and/or Studio Theatre productions. A maximum of six hours may be taken by non-majors for graduation credit.

278. MAKEUP 3 hours (Formerly 331).
Methodology and practice in the creation and application of stage makeup. Students may comprise makeup crews for University Theatre and Studio Theatre productions.

285. STAGE MANAGEMENT 3 hours A study of the principles and practices of stage management and logistical organization of the commercial and noncommercial theatre. Content includes scheduling, pre-production planning, auditions, rehearsals, performance procedures, budgeting, and company organization and structure.

291. THEATRE HISTORY I 3 hours (Formerly 241). History of the theatre from ancient ritual to 1800.

292. THEATRE HISTORY II 3 hours (Formerly 242). History of the theatre from 1800 to the present.

311. PERSUASIVE SPEAKING 3 hours (Formerly 373). Understanding and applying techniques of persuasion through audience analysis, preparation and delivery of speeches, and utilization of persuasive theories in both practice and composition.

315. BUSINESS AND PROFESSIONAL SPEAKING 3 hours 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: Communication Arts 100.

321. GROUP COMMUNICATION 3 hours (Formerly 371). The process of group discussion and problem-solving techniques; opportunities to participate in and lead discussion. Prerequisite: Speech Communication 100.

330. PUBLICITY, MEDIA, AND CAMPAIGNS 3 hours Primarily a theory 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: Communication Arts 130.

335. CONTRACT FIELD EXPERIENCE 1-15 hours (Formerly 410). Primarily a skills course designed to blend classroom theory with practical experience via internships or externships with organizations. 1-5 hours following consultation with, and approval of, instructor. Variable credit course; maximum of 15 hours counting toward graduation for the major, and a maximum of 5 for the minor.

340. VOICE AND DICTION 3 hours (Formerly 254). 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.

350. SPEECH THEATRE METHODS 3 hours (Formerly 370). Investigation, survey, readings, methods, and application of teaching techniques in speech, communication,
broadcasting, and theatre. Required of all majors seeking teacher certification. Includes approximately 30 hours of field experience. Prerequisite: Acceptance into teacher education program or permission of the instructor.

351. CREATIVE DRAMA 3 hours Methodology and practice of incorporating drama into educational, community, religious, recreational activities for children and youth of all ages.

352. CHILDREN’S THEATRE 3 hours Study of script analysis, directing, acting, and designing as it relates to children’s developmental stages. Rehearsal and/or construction of ONU Theatre for Youth spring tour. May be repeated for a total of 6 credit hours. Prerequisite: Permission of director.

353. CHILDREN’S THEATRE TOUR 3 hours Actual tour and performance of O.N.U. Theatre for YOUngh. Possible field experience credit for Education majors. May be repeated for a total of 6 hours. Prerequisite: Permission of the director.

361. READERS THEATRE 3 hours (Formerly 365). Individual and group performance in the dramatic interpretation of the novel, short story, drama, and poetic forms; lab rehearsals for University performance.

375. SCENE DESIGN 3 hours (Formerly 441). Methodology and practice in the art of scenography; application via University Theatre, Children’s Theatre, and/or Studio Theatre productions.

376. LIGHTING DESIGN 3 hours (Formerly 442). Methodology and practice in the arts of lighting design; application via University Theatre, Children’s Theatre, and/or Studio Theatre productions.

377. COSTUME DESIGN 3 hours (Formerly 443). Methodology and practice in costume design and construction; application via University Theatre, Children’s Theatre, and/or Studio Theatre productions. Required lab work.

378. DESIGN PRACTICUM 3 hours The actual design, supervision, and execution of either lights, set, 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 6 hours by non-majors for graduation credit, and for a maximum of 9 hours by majors for graduation credit. Prerequisites: Communication Arts 375, 376, or 377 and/or permission of the department.

385. PRODUCTION ANALYSIS 3 hours The course explores the techniques for the interpretation of dramatic literature for staging by the producer, director, and designers. Content includes the basic concepts of interpretation, theme, style, play analysis, and staging.

386. DIRECTING 3 hours Methods, theories, exercises, and practices in directorial concepts; production of scenes in Studio Theatre. Prerequisite: permission of the instructor.

387. DIRECTING PRACTICUM 3 hours 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 6 hours by non-majors for graduation credit, and for a maximum of 9 hours by majors for graduation credit. Prerequisite: Communication Arts 386 and/or permission of the instructor.

390. CINEMA 3 hours An examination of the development of the contemporary cinema. Attention is focused on influential directors and producers, major critics, and the business of marketing and selling a file. Prerequisite: Communication Arts 105.

421. ORGANIZATIONAL COMMUNICATION 5 hours (Formerly 380). Functions, forms and patterns of communication in organizations. Effects of organizational structures and dynamics on communication. Methods of evaluating communication policies and practices as an aid to organizational management. A survey course designed to introduce students to the nature of organizational communication, its problems and techniques for improvement. Emphasis on internal communication audit. Lab hours arranged.

430. PUBLIC RELATIONS CASE PROBLEMS 3 hours Primarily a skills course in planning and preparing communication materials; applying public relations techniques/case studies to examine public relations problems in industry, business, education, government, social welfare, and trade associations. Prerequisite: Communication Arts 130.
460. TEXT STUDY  3 hours  The course explores the techniques for studying dramatic literature by the actor to make the work accessible for performance. Content includes dramatic structure, given circumstances, previous action, dialogue characteristics, beats and units, characterization, meaning, and mood. Prerequisite: CA260 or permission of instructor.

480. ARTS MANAGEMENT  3 hours  The course explores the management of commercial and non-commercial arts organizations. Content includes philosophy, finances, operations, and promotion.

490. SPECIAL TOPICS IN COMMUNICATION ARTS  1-3 hours

492. THEATRE CRITICISM  3 hours  A survey of the changing role of theatre criticism from the classic Greek to contemporary periods. Prerequisites: CA291 or CA292.

499. INDEPENDENT STUDY IN COMMUNICATION ARTS  1-3 hours  (Formerly 497). Prerequisite: permission of department.

EDUCATION  
(Department 141)

Professors Miller, Traxler (Chairman); Associate Professors Crider, Haynes, Perry; Assistant Professor Heath; Instructor Hosek; Professor Rubeck (part-time); Lecturers Bannister, Ruck.

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.

A provisional certificate valid for four years is issued by the State of Ohio to students who earn the baccalaureate degree, including at least 58 credit hours in professional education for elementary education certification, 45 credit hours in professional education for secondary education certification, or 49 credit hours in professional education for all grades (K-12) certification; and are recommended by the University as having desirable personal qualities.

Students in the program of Teacher Education (elementary, secondary, all-grades) 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 experiences is available in the department of education and from the professional education advisors.)

Admission to the Program of Teacher Education  All students seeking certification to teach are required to make formal application for admission to the program of Teacher Education when they meet the following requirements:
1. Successfully completed 90 quarter hours.
2. A minimum overall accumulative grade point average of 2.00.
3. A minimum combined accumulative grade point average of 2.25 in the major field and professional education courses with no grade less than "C".
4. Completed the following courses with no grade less than "C": Elementary: Education 100, 150 or 151, 223, 281; English 108, 109; Speech 100; Psychology 100.
All Grades (K-12): Education 100, 111, 150 or 151, 223, 224; English 108, 109; Speech 100; Psychology 100.
Secondary: Education 100, 111, 150 or 151, 224; English 108, 109; Speech 100; Psychology 100.

5. Favorable recommendations from the following: departmental faculty advisor, major department chairperson, course instructor of Child or Adolescent Psychology (both if seeking All-Grades certification, K-12), faculty member from the major department or Education Department, any other faculty member, Residence Life, and Health Center.

Decisions on applications for admission to the program of Teacher Education are made by the Arts and Sciences Committee on Teacher Education.

Areas of Certification  The following programs leading to a four-year provisional certificate are available.

ELEMENTARY EDUCATION  Requirements for certification in the various elementary education areas may be obtained from the Office of the Director of Teacher Education.

Professional education requirements are:
Education 100 Education 3 hours
Education 150 urban school five-day experience 1 hour
Education 151 suburban or rural school five-day experience 1 hour
Education 223 child psychology 4 hours
Education 250 instructional media 3 hours
Education 260 or Sociology 105 or 203 3 hours
Education 281 teaching in the elementary school 4 hours
Education 308 teaching mathematics 4 hours
Education 309 teaching science 4 hours
Education 310 children's literature 4 hours
Education 311 teaching social studies 4 hours
Education 312 teaching reading I 4 hours
Education 314 teaching reading II 4 hours
Education 470.02 student teaching 15 hours TOTAL 58 hours

Dual—Elementary with LD/BD (Learning and/or Behavior Disabilities) (pending State Department of Education approval)
Education 210 introduction to special education 3 hours
Education 315 education of children with learning disabilities 4 hours
Education 360 evaluation and measurement of learner progress 3 hours
Education 365 classroom management of the exceptional learner 4 hours
Education 420 methods of teaching learning disabled children and youth 3 hours
Education 421 assessment and evaluation of exceptional learners 3 hours
Education 422 student teaching in learning disabilities 9 hours

Dual—Elementary with Special Education
EMR (Educable Mentally Retarded)
MSPR (Moderately, Severely, Profoundly Retarded)
LD/BD (Learning and/or Behavior Disabilities)
See the Director of Teacher Education for information on these cooperative programs currently offered with Bowling Green State University.

Elementary Education with Kindergarten-Primary certification. Completion of elementary education program plus Education 329, 330, 331 9 hours.

Elementary Education with validations in:
Art, visual for elementary grades
Data Processing
Driver Education
French for elementary grades
Music for elementary grades
Physical Education for elementary grades
Reading (pending State Department of Education approval)
Spanish for elementary grades
See the Director of Teacher Education for specific program.

Dual—Elementary Education with Teaching Field in Secondary Education. See Director of Teacher Education for specific program.

SECONDARY EDUCATION
Requirements for certification in the various secondary teaching fields may be obtained from the Office of the Director of Teacher Education.
Professional education requirements are:
Psychology 100 psychology 4 hours
Education 100 education 3 hours
Education 111 secondary/all grades field experience 1 hour
Education 150 urban school five-day experience 1 hour
Education 151 suburban or rural school five-day experience 1 hour
Education 224 adolescent psychology 4 hours
Education 250 instructional media in education (3 hours) or Education 251 instructional media lab (1 hour) 1-3 hours
Education 342 reading in the content area 4 hours
Education 370 social issues in the secondary schools 4 hours
Education 380 secondary curriculum 4 hours
Methods course(s) in certification area from the following: 3-4 hours
Education 450 (4 hours)
Art 456 (3 hours)
Health 350 (3 hours)
Industrial Technology 423 (3 hours)
Music 462 (3 hours)
Physical Education 351 (3 hours)
Speech 370 (3 hours)
Education 480.02—student teaching 15 hours TOTAL 45-48 hours
Secondary Certification programs are offered in the following areas:
Art, Visual
Biological Science
Bookkeeping-Basic Business
Chemistry
Data Processing (Validation)
Driver Education (Validation)
Economics
English
General Science
Health
History
Industrial Arts
Languages: French, Spanish
Mathematics
Music
Physical Education
Physics
Political Science
Reading (pending State Department of Education approval)
Sales-Communication
Social Psychology
Social Studies Comprehensive
Sociology
Speech

Dual—Secondary with LD/BD (Learning and/or Behavior Disabilities) (pending State Department of Education approval)
Education 210 introduction to special education 3 hours
Education 315 education of children with learning disabilities 4 hours
Education 360 evaluation and measurement of learner progress 3 hours
Education 365 classroom management of the exceptional learner 4 hours
Education 420 methods of teaching learning disabled children and youth 3 hours
Education 421 assessment and evaluation of exceptional learners 3 hours
Education 422 student teaching in learning disabilities 9 hours

The following courses are strongly recommended:
Education 223 child psychology 4 hours
Education 308 teaching mathematics in the elementary school 4 hours
Education 312 teaching reading 1 4 hours
Education 314 teaching reading 2 4 hours

Dual—Secondary with Special Education
EMR (Educable Mentally Retarded)
MSPR (Moderately, Severely, Profoundly Retarded)
LD/BD (Learning and/or Behavior Disabilities)
See the Director of Teacher Education for information on these cooperative programs currently offered with Bowling Green State University.

ALL GRADES (K-12) CERTIFICATION
Requirements for certification in the various all grades (K-12) areas may be obtained from the Office of the Director of Teacher Education.

Professional education requirements are:
Education 100 education 3 hours
Psychology 100 psychology 4 hours
Education 111 secondary/all grades field experience 1 hour
Education 150 urban school five-day experience 1 hour
Education 151 suburban or rural school five-day experience 1 hour
Education 223 child psychology 4 hours
Education 224 adolescent psychology 4 hours
Education 250 instructional media in education (3 hours) or Education 251—instructional media lab (1 hour) 1-3 hours
Education 342 reading in the content area 4 hours
Education 370 social issues in the secondary schools 4 hours
Education 380 secondary curriculum 4 hours

Methods course(s) in certification area from the following (3-6 hours):
Education 450 (4 hours)
Art 457 (3 hours)
Health 350 (3 hours)
Industrial Technology 423 (3 hours)
Music 461 and 462 (3 hours each)
Physical Education 351 (3 hours)
Education 470.01-480.01—student teaching 15 hours

TOTAL 49-54 hours
All Grades (K-12) Certification programs are offered in the following areas:
Art, Visual
French
Health
Industrial Arts
Music
Physical Education
Spanish

All Grades (K-12) Certification with validation in:
Data Processing
Driver Education
Reading (pending State Department of Education approval)

Dual—All Grades (K-12) with LD/BD
(Learning and/or Behavior Disabilities)
(pending State Department of Education approval)

- Data processing 3 hours
- Education 315 education of children with learning disabilities 4 hours
- Education 360 evaluation and measurement of learner progress 3 hours
- Education 365 classroom management of the exceptional learner 4 hours
- Education 420 methods of teaching learning disabled children and youth 3 hours
- Education 421 assessment and evaluation of exceptional learners 3 hours
- Education 422 student teaching in learning disabilities 9 hours

The following courses are strongly recommended:

- Education 308 teaching mathematics in the elementary school 4 hours
- Education 312 teaching reading 1 4 hours
- Education 314 teaching reading 2 4 hours

Dual—All Grades (K-12) with Special Education

EMR (Educable Mentally Retarded)
MSPR (Moderately, Severely, Profoundly Retarded)
LD/BD (Learning and/or Behavior Disabilities)

See the Director of Teacher Education for information on these cooperative programs currently offered with Bowling Green State University.

COLLEGE STUDENT PERSONNEL

The purpose of this program is to prepare the student to enter the field of college student personnel in universities, colleges, community colleges and junior colleges, and any other type of post-secondary educational institution. This program also prepares the student to enter graduate school for additional preparation before entering the field on a full-time basis. The College Student Personnel field covers many facets of the academic support and student personnel services including positions such as dean of men or dean of women; director of the student union; various positions in career counseling, placement, and admissions; also positions for personnel working in areas such as financial aid, housing, fraternities and sororities, student-operated businesses, and student government.

A professional in college student personnel must be strong in the areas of interpersonal/intrapersonal relationships and group dynamics; hence most of the professional preparation is in the fields of psychology, sociology, and education. Since such a large proportion of the professional course work is in the field of psychology, the student may also obtain a major in psychology with additional courses for the double major of college student personnel and psychology.

A major in college student personnel consists of the following requirements:

- Computer Science 111, 131 or Biology 113, 231
- Education 224, 425, 426, 460, 463, 487 (9-15 hours of internships/practicia)

- Mathematics 142
- Psychology 100, 111, 201, 212, 215, 301, 311, 411, 420, 424
- Sociology 105, 240, 243, 246
- Speech 371

To complete the major in psychology, the student also needs:
- Psychology 210, 211 and five hours of psychology electives.

100. EDUCATION 3 hours Areas of competence essential for participation as a citizen in decision making for education: the changing role of the school, the learner and the learning process, school finance, values that give direction to education, current issues in education.

111. SECONDARY/ALL GRADES FIELD EXPERIENCE 1 hour Observation and participation with students and teachers in schools. Seminars and conferences with University supervisor. Includes approximately 35
hours of field experience. Students seeking teacher certification in secondary education or all grades (Art, Music, Health, Physical Education, Industrial Technology) should complete the course during their freshman year.

150. URBAN SCHOOL FIVE-DAY EXPERIENCE 1 hour Observation and participation with students and teachers in an urban school for five consecutive school days - a minimum of 35 hours. School must be multi-racial/multicultural. 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.

151. SUBURBAN OR RURAL SCHOOL FIVE-DAY EXPERIENCE 1 hour Observation and participation with students and teachers in a suburban or rural school for five consecutive school days - a minimum of 35 hours. School must be in a suburban or rural 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.

195. ORIENTATION 1 hour 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 hour Assignment as a regular assistant in the Child Development Center. Registration with permission of the department chairman.

210. INTRODUCTION TO SPECIAL EDUCATION 3 hours Formerly 410. A course for education and non-education majors intended 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.

223. CHILD PSYCHOLOGY 4 hours Characteristics of the child at different levels of maturity: physical, mental and emotional growth; growth and organization of meanings; control of social and ethical behavior; development of personality. Includes approximately 30 hours field experience in the Child Development Center. Prerequisites: Students seeking certification, Psychology 100 and Education 100 with grades of "C" or better. Other students, Psychology 100.

224. ADOLESCENT PSYCHOLOGY 4 hours The adolescent's physical, social, emotional, and intellectual development in accordance with genetic constitution and environmental forces from birth. Includes approximately 30 hours of field experience. Prerequisite: students seeking certification, Psychology 100 and Education 100 with grades of "C" or better; other students, Psychology 100.

250. INSTRUCTIONAL MEDIA IN EDUCATION 3 hours Preparation, evaluation and selection of instructional material; effective utilization to facilitate learning. Includes lab for development of competence in operating audio-visual equipment and preparing instructional materials.

251. INSTRUCTIONAL MEDIA LABORATORY 1 hour Development of competence in operating audio-visual equipment and preparing instructional materials.

260. SCHOOL AND SOCIETY 3 hours Schools in relation to their supporting society; democracy in its relation to schools; the responsibility of educators to the community and to the school; the nature, type and limitations of both the official and unofficial controls of schools. Not open to students seeking secondary (7-12) or all grades (K-12) certification.

281. TEACHING IN THE ELEMENTARY SCHOOL 4 hours Concentration on the elementary school curriculum in relation to the initial development of teaching qualities across a broad spectrum rather than specific subject matter methods. Attention will be placed on commitment, sensitivity, resourcefulness, and organizational abilities; developing a personal philosophy toward teaching; and demonstrating competency in the basic teaching skills. Included is an understanding of Public Law 94-142 and its effect on classroom teachers who are assigned mainstreamed children. A minimum of 5 hours of supervised field experience in a school setting involving handicapped children is required. Prerequisites: Psychology 100 and Education 100 with a grade of "C" or better.
308. TEACHING MATHEMATICS IN THE
ELEMENTARY SCHOOL 4 hours Content, strategies, materials, and evaluation that
reflect the current emphasis in mathematics. Includes approximately 30 hours of field
experience. Prerequisites: 9 hours of college mathematics, admission to teacher
education.

309. TEACHING SCIENCE IN THE
ELEMENTARY SCHOOL 4 hours The role of
science in childhood education, the prepara-
tion of materials, and organization of learning
activities for problem solving. Includes approxi-
ately 30 hours of field experience. Prerequi-
sites: 10 hours of college science, admissi-
on to teacher education.

310. CHILDREN'S LITERATURE 4 hours
Knowledge and appreciation of children's
books and teaching of creative writing skills.
Emphasis will be placed on the study of all
areas of literature for children including real-
ism, fantasy, folk literature, poetry, biography,
and informational books. Includes approxi-
mately 30 hours of field experience. Prerequi-
sites: English 200 and 351, admission to
teacher education.

311. TEACHING SOCIAL STUDIES IN
THE ELEMENTARY SCHOOL 4 hours
Objectives, trends, issues and evaluation of
the teaching of social studies, relative to the
concepts and principles underlying the disci-
plines of the social sciences. Includes
approximately 30 hours of field experience.
Prerequisites: 15 hours of college social
sciences, admission to teacher education.

312. TEACHING READING I 4 hours
Introduction to reading. Emphasis will be
placed on phonics, word attack skills, and
communication skills including listening,
speaking, spelling, grammar and usage.
Includes approximately 30 hours field expe-
rience. Prerequisite: admission to teacher
education.

314. TEACHING READING II 4 hours
Principles and methods of teaching reading,
including comprehension skills, diagnostic
skills, and preparation and evaluation of read-
ing materials. Includes approximately 30
hours of field experience. Prerequisites: Edu-
cation 312; admission to teacher education.

315. EDUCATION OF CHILDREN WITH
LEARNING DISABILITIES (LD) 4 hours
(Formerly 410) The study of the meaning and
concepts associated with the field of learning
disabilities and the history, definitions, theor-
ies, issues, instructional strategies, delivery
systems, and trends in the field. Includes
approximately 30 hours of field experience.
Prerequisites: Education 210 and admission
to teacher education.

329. PRINCIPLES OF KINDERGARTEN
EDUCATION 2 hours History, philosophy
and current development of kindergarten
education as a part of early childhood educa-
tion. Introduction to field of early childhood
education. Prerequisite: Education 223.

330. METHODS AND MATERIALS IN
KINDERGARTEN 3 hours Curriculum
planning and organization, teaching pro-
cesses, development of materials. Observa-
tion and field experiences. Prerequisite: Edu-
cation 329.

331. PRACTICUM IN KINDERGARTEN
EDUCATION 4 hours Approximately 100
hours of field experience in a kindergarten
classroom, plus seminars. Prerequisite: Edu-
cation 330.

340. DIAGNOSIS AND CORRECTION
OF READING DIFFICULTIES 3 hours A
study of reading difficulties and related causal
factors. Investigation and utilization of diag-
nostic procedures and techniques, including
experience in administration and interpreta-
tion. Appropriate teaching procedures for
remedial reading will be studied. Prerequi-
sites: Education 312, 314, and admission to
teacher education.

341. ADVANCED READING METHODS &
MATERIALS-CLINICAL PRACTICE IN
REMEDIAL READING 3 hours 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. Thirty hours
of field experience will be provided under the
direction of a reading specialist in the
schools. Prerequisites: Education 312, 314,
340, admission to teacher education.

342. READING IN THE CONTENT AREA:
SECONDARY EDUCATION 4 hours
Strategies for teaching developmental read-
ing skills in a variety of curricular areas.
Emphasis on the following aspects of reading:
study skills, individualization, diagnosis,
vocabulary, comprehension and evaluation.
Includes approximately 25-35 hours of field

68 EDUCATION
experience. Prerequisite: admission to teacher education.

350. DEPARTMENTAL FIELD EXPERIENCE 1 hour 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 completed in other professional education courses. Graded S-U. May be repeated once for a total of two hours credit.

360. EVALUATION AND MEASUREMENT OF LEARNER PROGRESS 3 hours (Formerly 460) Evaluation and measurement as they apply to instruction. Attention is given to instructor-made tests, standardized tests and basic statistics.

365. CLASSROOM MANAGEMENT - THE EXCEPTIONAL LEARNER 4 hours (Formerly 415) 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 experiences. Includes approximately 30 hours of field experience. Prerequisites: Education 210 and admission to teacher education.

370. SOCIAL ISSUES AND THE SECONDARY SCHOOL 4 hours A sociologically oriented course analyzing the institution of education, focusing on the interrelation of schools to other institutions in society. Special emphasis on responsibilities and characteristics of teachers, students, and school administrators. Includes approximately 25-35 hours of field experience in an urban secondary school. Prerequisite: admission to teacher education.

380. THE SECONDARY SCHOOL CURRICULUM 4 hours Secondary school curriculum standards, practices, instructional materials, curriculum development, functions, changes and trends. Includes approximately 25-35 hours of field experience. Prerequisite: admission to teacher education.

401. HISTORY AND PHILOSOPHY OF EDUCATION 3 hours Modern educational practice; historical changes in instructional processes and ideas; educational beliefs and points of view; the purpose of education in the United States democracy.

402. SCHOOL ADMINISTRATION AND ORGANIZATION 3 hours The United States public school system, its organization and administrative units, and other agencies through which it is managed. The teacher's role in the organization of a school system.

417. SPECIAL EDUCATION PROGRAM - BOWLING GREEN STATE UNIVERSITY 18 hours Courses provided by arrangement with Bowling Green State University, Fall Quarter.

418. SPECIAL EDUCATION PROGRAM - BOWLING GREEN STATE UNIVERSITY 18 hours Courses provided by arrangement with Bowling Green State University, Winter Quarter.

419. SPECIAL EDUCATION PROGRAM - BOWLING GREEN STATE UNIVERSITY 18 hours Courses provided by arrangement with Bowling Green State University, Spring Quarter.

420. METHODS OF TEACHING THE LEARNING DISABLED 3 hours Techniques and methods of educational intervention for children with learning disorders are related to diagnosis, material development, individual program development, and evaluation of pupil change in terms of academic skill development. Prerequisites: Admission to teacher education, Education 210, 315.

421. ASSESSMENT AND EVALUATION OF EXCEPTIONAL LEARNERS 3 hours Analysis, administration, and interpretation of criterion and norm referenced instruments used to appraise the perceptual, cognitive, and academic abilities and capabilities of the exceptional child. Prerequisites: Education 210, 315, 360. Admission to teacher education. Corequisite: Education 422.

422. STUDENT TEACHING - LEARNING DISABILITIES 9 hours Approximately 200 hours of classroom experiences in public school learning disabilities programs. Weekly seminars will also be held. Prerequisites: Education 210, 315, 360, 360. Corequisites: Education 420, 421.
425. ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION
3 hours A survey of post-secondary institutions of education in the United States. Covers universities, colleges, community colleges, junior colleges, technical institutes and other forms of higher education. Deals with all aspects of operation including academic, financial, student personnel and institutional governance. Prerequisite: Approval of instructor.

426. ORGANIZATION AND ADMINISTRATION OF COLLEGE STUDENT PERSONNEL 
3 hours Involves the study of many diverse areas involved in college student personnel including orientation, student government, residence halls, counseling and career counseling, placement, admissions, financial aid and student unions. Prerequisite: approval of the instructor.

433. PHYSICAL GEOGRAPHY 
3 hours A study and unification of the body of knowledge encompassing the earth sciences which give general insight into the nature of man's physical environment.

450. TEACHING METHODS IN THE SECONDARY SCHOOL 
4 hours Methods, devices and techniques which are most effective in directing learning in the various subject areas at the high school level. Includes approximately 30 hours of field experience. Prerequisite: admission to teacher education.

463. EDUCATIONAL PSYCHOLOGY 
3 hours The learner, the learning process, and conditions that promote learning. Application of psychological principles to teaching in the classroom. Prerequisite: Psychology 100.

465. COMPARATIVE EDUCATION 
3 hours The development of education systems in representative countries of the world. A comparison of purposes, programs and structures of education. The interaction of different cultures with their educational systems. Prerequisite: Education 100.

470. STUDENT TEACHING IN THE ELEMENTARY SCHOOL 
7-15 hours Planning and teaching under supervision in the elementary grades; weekly seminar on campus. Prerequisites: An overall accumulative point average of at least 2.00; an accumulative point average of at least 2.25 in the designated elementary education major courses (with no grade less than "C"); a minimum of 300 hours of supervised clinical and field experiences; recommendation of the professional adviser of the student, and approval by the Director of Teacher Education. Students seeking all grades (K-12) or special education certification enroll for 7 hours. Students seeking elementary (K-8 or 1-8) certification enroll for 15 hours.

472. STUDENT TEACHING- SPECIAL EDUCATION 
8 hours Teaching under supervision in special education classrooms, elementary grades, with weekly seminars. Prerequisites: An accumulative point average of at least 2.00; an accumulative point average of at least 2.25 in the elementary education major and special education courses (with no grade less than "C"); a minimum of 300 hours of supervised clinical and field experiences; completion of Education 223, 210, 315, Psychlogy 218, courses in special education at Bowling Green State University; recommendation of the professional adviser of the student; and approval of the Director of Teacher Education.

480. STUDENT TEACHING-JUNIOR AND SENIOR HIGH SCHOOL 
8-15 hours 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. Prerequisites: An overall accumulative point average of at least 2.00; an accumulative point average of at least 2.25 in the major of the student and in the professional education courses (with no grade less than "C"); a minimum of 300 hours of supervised clinical and field experiences; recommendations of the major adviser and of the professional education adviser of the student; and approval by the Director of Teacher Education. Students seeking all grades (K-12) or special education certification enroll for 8 hours. Students seeking secondary (7-12) certification enroll for 15 hours.

482. STUDENT TEACHING-SPECIAL EDUCATION, SECONDARY,BGSU 
8 hours Teaching under supervision in special education classrooms, secondary grades, with weekly seminars. Prerequisites: An accumulative point average of at least 2.00; an accumulative point average of at least 2.25 in the major courses, the profes-
sional education courses, and the special education courses (with no grade less than "C"); a minimum of 300 hours of supervised clinical and field experiences; completion of education 223 (if all grades), 224,210,315, psychology 218, courses in special education at Bowling Green State University; recommendation of the major adviser and of the professional education adviser of the student; and approval by the Director of Teacher Education.

487. INTERNSHIPS/PRACTICA IN COLLEGE STUDENT PERSONNEL 1-6 hours
Field experience in the various areas of college student personnel. Prerequisite: approval of the instructor. May be repeated for a maximum of 15 hours.

490. SPECIAL TOPICS IN EDUCATION 1-3 hours

497. INDEPENDENT STUDY IN EDUCATION 1-3 hours In areas of student interest with permission of department chairman.

ENGLISH (Department 112)

Professors Beck (Chairman), Banks, C. Dornbusch, Oliver, Price, R. Robinson; Associate Professors Magee, E. Miller; Lecturer M. DeVore

Objectives The courses in English are designed to help students demonstrate an awareness of style together with an ability to express themselves maturely, clearly, concisely; understand generally the symbolic process of language and particularly the structure and usage of the English language; read critically as a means of gathering, understanding, evaluating, and enjoying recorded human experience; comprehend the growth and continuity of Western ideas and become acquainted with the humanizing qualities of the Western World through the study of literature; analyze a piece of literature by applying some of the techniques of the specialist; understand and respect the techniques of research and the accomplishments of scholarship in the discipline of English; recognize the relationship of language and literature to other areas of knowledge; and develop the ability to apply language skill in other academic disciplines as well as later careers.

Advanced courses increasing the breadth and depth of the objectives listed above are offered as humanities electives and as part of the curriculum for majors.

Two majors—English and writing (as a second major only)—are offered. The major in English provides for a concentration in writing. Two minors—literature and writing—are also offered. The programs are designed to help students apply a sound background in reading and writing to the requirements of journalism, communications, law, teaching, and other careers.

Teacher certification can be earned in English, journalism, and communications (a combination of English, speech and theatre, journalism, and reading).

For a 45-hour major in English, the following courses are required: 201, 202, 203 (or suitable substitutes); 211, 212 (or suitable substitutes); 311 or 312; 351-352; 410; 489, 494 or 495; and five free electives in English (journalism activities may not be counted).

Also required are either 1) intermediate foreign language at the college level or 2) three courses in philosophy excluding Philosophy 100. The student is, however, strongly urged to take both the intermediate language and the three courses in philosophy.

For a 45-hour major in English with a concentration in writing, the following credit-hour and course distribution is required: 6 hours—The English Language (351-352); 15 hours—journalism and advanced writing with 489 The Senior Essay required; 3 hours—Journalism Activities—Newspaper (250); 21 hours—literature electives (distributed by period and type).

For a 45-hour major in writing, the following credit-hour and course distribution is required: 3 hours—Writing Orientation (198), 1 hour per quarter; 9 hours—Writing 1, 2, 3 (107-108-109); 3-6 hours—Journalism Activities with at least 3 hours in Newspaper (250); 12-18 hours—journalism and advanced writing (chosen from 241, 243, 341, 342, 343, 344, 356 and special-topics courses in writing); and 12-15 hours—Directed Study in Writing (498).

For a 30-hour minor in literature, the following courses are required: 201, 202, 203, 211, 212; 311 or 312; 351-352; advanced writing—6 hours (excluding Journalism Activities). Two approved literature courses (excluding Special Topics) may be substi-
tuted for one of the three English literature survey courses and for one of the two American literature survey courses.

For a 30-hour minor in writing, the following credit-hour and course distribution is required: 6 hours—The English Language (351-352); 12 hours—advanced writing, including up to 3 hours of Journalism Activities—Newspaper (250); and 12 hours—literature electives (distributed by period and type).

All majors are required to earn credit (1 hour) in the Proseminar in English (195), which counts as the Arts and Sciences College orientation.

English 107, 108, 109 do not count toward any major or minor in the Department of English, nor does any course with a grade below "C".

The three freshman English courses 107-108-109 are sequential and accumulative and must be taken one at a time in numerical order.

107. WRITING 1 3 hours  Beginning writing in exposition and argumentation, with readings in poetry; documentation introduced. English 107 is a prerequisite for all 200 level literature courses.

108. WRITING 2 3 hours  Intermediate writing in exposition and argumentation, with readings in drama; documentation continued. Prerequisite: English 107.

109. WRITING 3 3 hours  More advanced writing in exposition and argumentation, with readings in fiction; library research and documented paper. Prerequisite: English 108.

English 107, 108, and 109 are prerequisites for all 300 and 400 level English courses.

151. ENGLISH AS A SECOND LANGUAGE 3 hours  Communication skills for non-native speakers of English—speaking, reading, writing in a cultural context. Placement into and out of the three courses by examination.

152. ENGLISH AS A SECOND LANGUAGE 3 hours  Continuation of 151.

153. ENGLISH AS A SECOND LANGUAGE 3 hours  Continuation of 152.

180. INTRODUCTION TO WRITING 1 hour  The purpose of the course is to give the student's writing as much personal atten-

195. PROSEMINAR IN ENGLISH 1 hour  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. Counts as Arts and Sciences orientation requirement.

200. PROBLEMS IN CRITICISM 3 hours  Definitions of arts, literature, and genres; the language of critical statements; concepts of taste; literature in critical perspectives.

201. ENGLISH LITERATURE TO 1660 3 hours  A survey of Anglo-Saxon, Medieval, and Renaissance literature.


203. ENGLISH LITERATURE AFTER 1830 3 hours  A survey of Victorian and Modern literature.

207. MODERN POETRY 3 hours  (Formerly 325). A survey of modern English and American poets with emphasis on one or two major figures such as Yeats and Frost.

208. MODERN WORLD DRAMA 3 hours  (Formerly 333). The study of modern drama, concentrating on major works and playwrights, including influences, movements, and types.

209. MODERN FICTION 3 hours  The study of selected works of modern fiction including influences, movements, and types. Prerequisite: 112-107.

211. AMERICAN LITERATURE TO 1865 3 hours  A survey of Colonial and Romantic literature.

212. AMERICAN LITERATURE AFTER 1865 3 hours  A survey of Modern literature.

221. WORLD LITERATURE 1 3 hours  Major literary masterpieces of the ancient and medieval periods.

222. WORLD LITERATURE 2 3 hours  Major literary masterpieces from the Renaissance to the mid-nineteenth century.

223. WORLD LITERATURE 3 3 hours  Major literary masterpieces from the mid-nineteenth century to the present.
241. NEWSWRITING 1 3 hours The fundamentals of gathering information and writing for a newspaper.

242. NEWSWRITING 2 3 hours Further work in newswriting, with an emphasis on special forms, such as feature writing. Pre-requisite: English 241.

243. MAGAZINE WRITING 3 hours The discipline and technique of writing articles for magazines.

244. PRESS/FREEDOM-LAW 3 hours A survey of press freedom and law in the United States, including recent developments within the collegiate press.

246. JOURNALISM LAYOUT AND DESIGN 3 hours The theory and technique of layout and design of newspapers and magazines.

250. JOURNALISM ACTIVITIES-NEWSPAPER 1 hour

251. JOURNALISM ACTIVITIES-MAGAZINE 1 hour

252. JOURNALISM ACTIVITIES-YEARBOOK 1 hour

253. JOURNALISM ACTIVITIES—INTERNSHIP 1 hour Supervised work on and contributions to the publications. The student may enroll for only one activities course per quarter. Six hours in one area or a combination of six hours from the four areas (250,251,252,253) may be counted toward graduation, but only the required three credit hours of Journalism Activities—Newspaper (250) may be counted toward a major in English with a concentration in writing or toward a minor in writing. Journalism activities do NOT count toward a major in English or toward a minor in literature. No prerequisites.

290. SPECIAL TOPICS IN ENGLISH 1-3 hours

291. SPECIAL TOPICS IN WORLD LITERATURE 1-3 hours

292. SPECIAL TOPICS IN ENGLISH LITERATURE 1-3 hours

293. SPECIAL TOPICS IN AMERICAN LITERATURE 1-3 hours

297. INDEPENDENT STUDY IN ENGLISH 1-3 hours

310. ENGLISH LITERATURE BEFORE 1500 3 hours Continuity in Anglo-Saxon attitudes and types from Beowulf to Chaucer. Epic, lyric, elegy, narrative with emphasis on medieval romance and drama, all in translation.

311. SHAKESPEARE I 3 hours Representative plays and poems.

312. SHAKESPEARE II 3 hours Continuation of 311.

321. MILTON 3 hours Milton's major lyric poems, "Paradise Lost" and "Samson Agonistes."

322. RESTORATION AND THE EIGHTEENTH CENTURY 3 hours A concentrated study of two or three major writers, movements, or genres in the Neo-Classic period.

323. ENGLISH ROMANTICISM 3 hours A concentrated study of two or three major writers.

324. VICTORIAN PERIOD 3 hours A concentrated study of two or three major writers, movements, or genres.

326. TWENTIETH-CENTURY BRITISH LITERATURE 3 hours A concentrated study of two or three major writers, movements, or genres.

334. MAJOR AMERICAN WRITERS OF THE NINETEENTH CENTURY 3 hours Concentrated studies of selected nineteenth-century writers.

335. MAJOR AMERICAN WRITERS OF THE TWENTIETH CENTURY 3 hours Concentrated studies of selected twentieth-century writers.

341. POETRY WRITING 3 hours The discipline and technique of writing poetry. Pre-requisite: a literature course above the freshman level. Graded S-U. May be continued as 498 (independent study in writing).

342. FICTION WRITING 3 hours The discipline and technique of writing fiction. Pre-requisite: a literature course above the freshman level. Graded S-U. May be continued as 498 (independent study in writing).

343. FACTUAL WRITING 3 hours The theory, method, and practice of writing non-fictional prose, with particular emphasis on the development of effective style. Prerequi-
site: a literature course above the freshman level. Graded S-U. May be continued as 498 (independent study in writing).

344. WRITING FROM EVIDENCE 3 hours Use of primary sources—diaries, letters, stories, reports as bases for thinking and writing: analysis, interpretation, synthesis, evaluation.

346. PRELAW WRITING 3 hours Clear analysis and direct communication of facts and ideas according to the mode of legal writing. Graded S-U.

351. THE ENGLISH LANGUAGE 3 hours The historical development of the English language and an introduction to modern linguistics.

352. THE ENGLISH LANGUAGE 3 hours Continuation of 351.

364. THE ENGLISH NOVEL 3 hours Representative novels from the eighteenth century to the present.

365. THE AMERICAN NOVEL 3 hours Representative novels from the nineteenth century to the present.

381. HISTORY OF LITERARY CRITICISM 3 hours Movements and major writers of literary criticism.

410. CHAUCER 3 hours 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.

489. THE SENIOR ESSAY 3 hours Required of all English majors during the senior year. The student will enroll in the quarter during which he expects to complete the essay.

490. SPECIAL TOPICS IN ENGLISH 1-3 hours

494. SEMINAR IN ENGLISH LITERATURE 3-6 hours

495. SEMINAR IN AMERICAN LITERATURE 3-6 hours

497. INDEPENDENT STUDY IN LITERATURE 1-3 hours

498. INDEPENDENT STUDY IN WRITING 1-3 hours Graded S-U.

499. INDEPENDENT STUDY IN JOURNALISM 1-3 hours

FOREIGN LANGUAGES (Department 113)

Professor Lippert; Associate Professors Davey (Chairman), Day, Khoury; Instructor Weber; Lecturer Burrell.

The foreign language program is designed to train students to speak, understand, read, and write a foreign language; to insure 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. See the departmental brochure for descriptions of career opportunities.

The University Audio Center provides the student with opportunities for language practice and extends his/her contact with the living language. Recorded materials used in the center are prepared as an adjunct to class work and are coordinated with class instruction. Additional materials are also available which give the student ample opportunity for aural comprehension, auditory-visual drill, speaking, and self-correction.

Requirements for a major in French or Spanish: 45 hours are required above the 100-level courses, to include 327, 328, 329 (French) or 353, 354, 355 (Spanish). Students develop individual programs of study with advisers. Ordinarily courses are taken in sequence through the conversation and composition courses (300-level). Unless otherwise indicated, courses at the 300- and 400-level assume completion of conversation and composition courses.

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: 30 hours are required above the 100-level courses. Individual programs are devised for students, but emphasis is on language and civilization.

Individualized study in certain less frequently taught languages is provided under
the auspices of the Audio Center. Students pursue taped courses in those languages elected, with the aid of native tutors. Selected qualified persons participate in evaluation and grading of languages pursued by this method.

**000. ORIENTATION** 1 hour Familiarization with the department, requirements for majors, planning program of courses, university catalog, library, career and employment opportunities, foreign study opportunities, certification requirements; required of majors in the department.

**403. SPECIAL TOPICS IN LITERATURE IN TRANSLATION** 3 hours 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 or in-depth requirements in Foreign Language. Fulfills in-depth requirements in literature.

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**French**

**100. ELEMENTARY FRENCH** 4 hours To develop the ability to understand, speak, read and write French; functional grammar, early and fluent speaking; elementary reading based on French life, customs, and manners. Four class periods and two hours of scheduled laboratory practice per week.

**101. ELEMENTARY FRENCH** 4 hours Continuation of 100.


**214. INTERMEDIATE FRENCH 1** 4 hours The completion of basic French grammar begun in Elementary French 1 and 2. Conversational practice and composition based on reading passages, films in the "Toute la Bande" series and popular music. Four class periods and two hours of scheduled laboratory practice per week. Prerequisite: 101 or proficiency established by placement examination.

**215. INTERMEDIATE FRENCH 2** 4 hours Continuation of 214.

**217. FRENCH PHONETICS** 3 hours A basic introduction to linguistic terminology and a comparative analysis of the French and English sound systems, with emphasis on improving students' pronunciation in French. Open to all students. Prerequisites: 113-101 or permission of the department.

**219. INTRODUCTION TO FRENCH LITERATURE** 3 hours An intermediate-level course intended as an introduction to serious reading in French. Class discussion, in French, based on selections of short literary masterpieces (classic and modern).

**290. SPECIAL TOPICS IN FRENCH** 1-3 hours

**297. INDEPENDENT STUDY IN FRENCH** 1-3 hours Students may request a one-credit-hour grammar review course under this heading. Individualized instruction with work in the language lab.

**311. FRENCH CONVERSATION AND COMPOSITION** 3 hours To develop oral and written command of the language. A study of grammatical and phonetic problems aimed at perfecting clarity and accuracy of expression. Audio-visual materials, current periodicals and realia are used. Occasional laboratory practice. Prerequisite: 215 or permission of the department.

**312. ADVANCED FRENCH LANGUAGE STUDY** 3 hours An intensive study of grammar and syntax with emphasis on constructions of high-frequency usage. Written compositions and oral practice. Prerequisite: 11 or permission of the department.

**313. INTRODUCTION TO LITERARY ANALYSIS** 3 hours Critical principles in the assessment of prose fiction, poetry and drama. Written compositions based on selected readings in francophone literature. Prerequisite: 312 or permission of the department.

**314. THE FRENCH TEXT: THE SHORT STORY** 3 hours Reading of short fiction by classic and contemporary authors. Selections progress according to difficulty.

**315. THE FRENCH TEXT: THE NOVEL** 3 hours Reading of contemporary and classical novels, primarily for fluency of comprehension. Study of the genre's development in French literature.
316. THE FRENCH TEXT: THE ESSAY AND NON-LITERARY TEXTS 3 hours Study of selected essays from the work of Montaigne, Pascal, Rousseau, Camus, Sartre and others. Survey of the French press. Reading in Le Monde, l’Express, other periodicals and non-literary works.

319. FRENCH POETRY AND SONG 2 hours Rules of French versification. Study of selected works of major poets from the Middle Ages to the twentieth century. Modern interpretations of poetry into song by Brassens, Ferrat, Moustaki and others.

327. CIVILISATION FRANCAISE: LA VIE CONTEMPORAINE 3 hours Introduction to contemporary French culture, an interdisciplinary approach. Includes such topics as class, the family, leisure activities, attitudes, communication, role of the arts, political parties, education.

328. CIVILISATION FRANCAISE: L’HISTOIRE DE LA FRANCE 3 hours A survey of the history, geography, political institutions of France.

329. CIVILISATION FRANCAISE: LES CULTURES FRANCOPHONES 3 hours A survey of francophone cultures in the world. Emphasis on Africa and French-speaking Canada.

415. ADVANCED FRENCH GRAMMAR 3 hours Intense study of French grammar. Comparative French and English grammar, with frequent translation exercises.

416. THE FRENCH THEATRE 3 hours Historic study of the genre through selection of plays of the 17th, 18th, 19th, and 20th centuries. Course includes listening to productions, or when possible, viewing productions or films.

418. FRANCOPHONE LITERATURE OF THE TWENTIETH CENTURY 3 hours Study of contemporary writers representing literary movements and tendencies in the French-speaking world.

490. SPECIAL TOPICS IN FRENCH 1-3 hours

497. INDEPENDENT STUDY IN FRENCH 1-3 hours

German

102. ELEMENTARY GERMAN 1 4 hours To develop the ability to understand, speak, read, and write German; functional grammar; early and fluent speaking; elementary reading based on German life, customs, and manners. Four class periods and two hours of scheduled laboratory practice per week.

103. ELEMENTARY GERMAN 2 4 hours Continuation of 102.

220. BUSINESS GERMAN 3 hours A survey of German business practice including office procedure and advertisements. Students develop writing and conversational skills related to business. Some translation. Prerequisite: Elementary German 2.

224. INTERMEDIATE GERMAN 1 4 hours Review of the fundamentals of grammar, pronunciation, vocabulary, and idioms; conversational practice and composition; readings and discussion about German life and culture; occasional viewing of slides, films, and newsreels. Four class periods and two hours of scheduled laboratory practice per week. Prerequisite: 103 or proficiency established by placement examination.

225. INTERMEDIATE GERMAN 2 4 hours Continuation of 224.

261. INTRODUCTION TO GERMAN LITERATURE 3 hours Reading and discussion of well-known poetry, plays, and short prose selections, from classic to contemporary. Presentations, in German, to focus on genre, the work as representative of literary movements, and the reflection of society and social change in literature. Prerequisite: 113-225 or permission of the department.

291. SPECIAL TOPICS IN GERMAN 1-3 hours

298. INDEPENDENT STUDY IN GERMAN 1-3 hours

321. GERMAN CONVERSATION AND COMPOSITION 3 hours To develop a useful command of the German language and an appreciation of German civilization. Material and topics chosen to encourage and facilitate speaking and writing ability. Occasional laboratory practice. An advanced study of grammatical and phonetic problems aimed at perfecting clarity and accuracy of expres-
sion. Prerequisite: 113-225 or proficiency established by placement examination.

**322. GERMAN CONVERSATION AND COMPOSITION 3 hours** Continuation of 321.

**323. GERMAN CONVERSATION AND COMPOSITION 3 hours** Continuation of 322.

**337. THE GERMAN-SPEAKING WORLD 3 hours** A survey of history, culture, social and political institutions in the German-speaking countries. Outside reading and written reports on assigned topics. Lectures in German. Prerequisite: 113-225 or permission of the department.

**338. CONTEMPORARY WEST GERMANY 3 hours** A close examination of the Federal Republic from its beginning in 1949 to the present. Topics include social services, communications, political parties, foreign workers, current issues, the educational system, employment, family life, language and leisure. Presentations, discussions and readings in German. Prerequisite: 113-225 or permission of the department.

**339. EAST GERMANY-AUSTRIA-SWITZERLAND 3 hours** A study of contemporary social, cultural, and political elements in the three countries. This survey will examine the political and social structures, educational system, working world, language differences, and leisure activities of each country. Presentations, discussions, and readings in German. Prerequisite: 113-225 or permission of the department.

**491. SPECIAL TOPICS IN GERMAN 1-3 hours**

**498. INDEPENDENT STUDY IN GERMAN 1-3 hours**

**Spanish**

**104. ELEMENTARY SPANISH 1 4 hours** To develop the ability to understand, speak, read and write Spanish; functional grammar; early speaking; elementary reading based on Hispanic life, customs, and manners, using materials dealing with Spain, Mexico, and South America. Four class periods and two scheduled laboratory practices per week.

**105. ELEMENTARY SPANISH 4 hours** Continuation of 104.

**240. BUSINESS SPANISH 3 hours** A survey of Spanish business practice including office procedure and advertisements. Students develop writing and conversational skills related to business. Some translation. Prerequisite: 245.

**244. INTERMEDIATE SPANISH 1 3 hours** A review of grammar and pronunciation; conversational practice and occasional lectures in Spanish on Hispanic life, history, art and civilization, illustrated with slides, photographs, reproductions, and realia. Four class periods and two hours of scheduled laboratory practice per week. Prerequisite: 113-105 or proficiency established by placement examination.

**245. INTERMEDIATE SPANISH 2 4 hours** Continuation of 244.

**248. SPANISH PHONETICS 3 hours** A basic introduction to linguistic terminology and a comparative analysis of the Spanish and English sound systems, with emphasis on improving students' pronunciation in Spanish. Open to all students. Prerequisite: 113-105.

**292. SPECIAL TOPICS IN SPANISH 1-3 hours**

**299. INDEPENDENT STUDY IN SPANISH 1-3 hours**

**341. SPANISH CONVERSATION AND COMPOSITION 3 hours** To develop a useful command of the language; current periodicals and realia; audio visual materials. A study of grammatical and phonetic problems aimed at perfecting clarity and accuracy of expression. Occasional laboratory practice. Prerequisite: 245 or permission of the department.

**342. ADVANCED SPANISH LANGUAGE STUDY 3 hours** An intensive study of grammar and syntax with emphasis on constructions of high-frequency usage. Written compositions and oral practice. Prerequisite: 341 or permission of the department.

**343. INTRODUCTION TO LITERARY ANALYSIS 3 hours** Critical principles in the assessment of prose, fiction, poetry, and drama. Written compositions based on selected readings in Hispanic literature. Prerequisite: 113-342 or permission of the department.
349. SPANISH-LANGUAGE THEATER PRODUCTION 1-3 hours Up to three hours of credit, depending on role. May be repeated for graduation credit up to a maximum of six hours. Permission of instructor required. (Formerly 249).

351. HISPANIC CULTURAL PERSPECTIVES 3 hours A study of how Spaniards and Spanish Americans view the world, in contrast to typical American perspectives. Emphasis on the various social concepts, attitudes, orientations, and life styles which make up different and sometimes unique points of view. Counts for the Spanish major or minor, but is not a substitute for General Education or in-depth courses. Permission of department required.

353. CIVILIZACION HISPANICA I 3 hours Integrates the geographical, political, economic, social, and cultural forces which have molded Spain from prehistoric times to the nineteenth century. Outside reading and written reports on assigned topics. Required for all Spanish majors. Prerequisite: 113-342 or permission of department.

354. CIVILIZACION HISPANICA II 3 hours A general survey of the geography, history, and cultural forces of Latin America up to the nineteenth century, with special attention to the pre-Colombian indigenous culture of Mexico, Central and South America. Reference to architecture, sculpture, ceramics and other art forms. Outside reading and written reports on assigned topics. Required for all Spanish majors. Prerequisite: 113-342 or permission of department.

355. CIVILIZACION HISPANICA III 3 hours A general survey of contemporary Spain and Latin America. Political, economic, social and cultural evolution. Artistic and literary creation. Modern Spanish thought. Outside reading and written reports on assigned topics. Required for all Spanish majors. Prerequisite: 113-342 or permission of department.

448. HISTORY OF SPANISH ART 3 hours Students follow the development in Spanish art from primitive times to the present day: Visigoth, Romanesque, Gothic, and Moslem art; art in Spain under the Catholic Kings; Renaissance architecture, 16th century painting and sculpture; El Greco, Baroque art, Impressionism, Picasso, contemporary painting, architecture and sculpture.

449. CONTEMPORARY SPANISH AMERICAN NOVEL 3 hours Study and analysis of selected twentieth-century Spanish American novels.

451. SPANISH LITERATURE TO 1681 3 hours A study of the chief authors of Spain from the beginnings up to and including the Golden Age.

452. EIGHTEENTH-AND NINETEENTH-CENTURY SPANISH LITERATURE 3 hours Neoclassicism, romanticism, realism, generation of 1898 to the present.

453. TWENTIETH-CENTURY SPANISH LITERATURE 3 hours Main currents of Spanish literature from the generation of 1898 to the present.

456. NINETEENTH-CENTURY SPANISH AMERICAN LITERATURE 3 hours Romanticism (including Gaucho Literature), Realism, Modernism.

457. TWENTIETH-CENTURY SPANISH AMERICAN LITERATURE 3 hours The main currents from the Post-Modernist period to the present.

492. SPECIAL TOPICS IN SPANISH 1-3 hours

496. SEMINAR IN SPANISH 1-3 hours

499. INDEPENDENT STUDY IN SPANISH 1-3 hours

Individualized Study Courses

111. ELEMENTARY ITALIAN 1 4 hours Self-instruction, including use of tapes and native language tutors; designed to develop fluency in spoken Italian. Prerequisite: Permission of the department. Offered alternate years.

112. ELEMENTARY ITALIAN 2 4 hours Continuation of 111.

113. ELEMENTARY ARABIC 1 4 hours Self-instruction, including use of tapes and native language tutors; designed to develop fluency in spoken Arabic. Prerequisite: Permission of department. Offered alternate years.

114. ELEMENTARY ARABIC 2 4 hours Continuation of 113.
HEALTH AND PHYSICAL EDUCATION
(Department 143)

Professors Ludwig (Acting Chairperson); Associate Professors Campoli, Daugherty, Hood, Lauth, Roberson, Strayer, Wallace; Assistant Professors Clarke, Mansfield, R. West; Instructors Bicking, Wiles.

The purposes of this department include: 1) to improve the quality of living by providing opportunities for students to acquire scientific knowledge, skills, favorable attitudes, as well as desirable habits of personal and community health, physical activities and safety, 2) to prepare teachers of health education, physical education, drivers education, and coaches of sports activities for the elementary and secondary schools, 3) to prepare students to do graduate work in health education, physical education, safety education, recreation, coaching, athletic training and athletic/sports management as well as other fields, 4) to prepare students for leadership roles in health, physical education, recreation, athletic training, drivers education, coaching, athletic/sport management, 5) to provide opportunities for individuals to participate in a variety of recreational, intramural and intercollegiate activities, 6) to prepare water safety instructors, 7) to prepare athletic trainers through the apprenticeship program of the National Athletic Trainers Association (NATA) or through the institutional program, 8) to prepare officials for sports activities, 9) to provide instruction to the general student body and other members of the university community for the development of skills, knowledge and appreciation of and positive attitudes, practices and habits towards lifetime, leisure physical activities.

Special requirements for majors/minors within the department To satisfy the requirements for a teaching field in health and physical education, all students are required to complete the following for final approval by the department.
1. Participation during the junior year in one of the three courses 304-305-306 covering practical techniques of teaching and assisting in health and physical education.
2. Completion of field experiences required by the Education Department.
3. Participation in the intramural program at the University. At least one quarter must be devoted to supervising, officiating, organizing and administering these programs.
4. Affiliation in some capacity with one of the intercollegiate sports under the guidance of the varsity head coach.
5. Active participation within the physical education majors' student organizations during the student's pursuit of the curricular offerings.
6. Successful completion of one quarter of aquatics prior to graduation.

Required physical education service courses Physical education services classes meet two hours per week for one quarter hour credit. The physical education courses are given out-of-doors, in McIntosh Center and in the gymnasium. Service classes are graded on the S/U basis and designed to fit the needs, abilities and interests of the individual student.

In the College of Arts and Sciences two of the three required hours must be taken in the gymnasium. However, the other one hour may be taken in the gymnasium or in McIntosh Center. The required physical education service courses are not sequential and should be completed prior to senior status. None of the service courses may be repeated.

The following service courses are offered. All carry one quarter hour credit, and a maximum of six hours may be counted toward graduation in the College of Arts and Sciences. Students may not receive credit toward graduation for more than one quarter-hour of physical education service credit during their collegiate career for any single varsity sport.

Additional laboratory fees are charged for bowling, billiards, archery, racquetball, golf and tennis.

001. VARSITY FOOTBALL PARTICIPATION 1 hour
002. VARSITY CROSS COUNTRY PARTICIPATION 1 hour
003. VARSITY SOCCER PARTICIPATION 1 hour
004. VARSITY VOLLEYBALL PARTICIPATION 1 hour
005. VARSITY BASKETBALL PARTICIPATION (MEN) 1 hour
006. VARSITY BASKETBALL PARTICIPATION (WOMEN) 1 hour
010. VARSITY TRACK PARTICIPATION (WOMEN) 1 hour
011. Varsity Wrestling Participation (Men) 1 hour
012. Varsity Track Participation (Men) 1 hour
013. Varsity Tennis Participation (Men) 1 hour
014. Varsity Tennis Participation (Women) 1 hour
015. Varsity Golf 1 hour
016. Varsity Softball Participation 1 hour
017. Varsity Baseball Participation 1 hour
018. Varsity Swim Participation 1 hour

021. Weight Training and Physical Conditioning 1 hour
Provide knowledge and skills in various types of weight training and conditioning activities. To provide a knowledge of the Nautilus and Universal equipment. To promote better fitness through weight training activity and exercise.

022. Tumbling and Apparatus 1 hour
To acquaint students with the principles of apparatus work. To help improve posture and body mechanics. To develop body coordination, strength and flexibility and to create interest in a growing sport for possible future development by the individual.

023. Recreational Games 1 hour
To provide the student with background to enjoy the popular social games of backgammon, bridge, ultimate frisbee and backgammon chess. To provide the student with the opportunity to use the swimming pool for two sessions of water polo.

024. Beginners Golf 1 hour
Only for novice and non-golfers. To learn about the past history of golf, proper etiquette and safety involved, basic fundamentals involved in stance, approach, short, middle and long irons, woods, etc. Also scoring and creating an interest for carry over value.

025. Soccer and Softball 1 hour
To provide the student with basic skills in both soccer and softball. To provide a basic understanding and appreciation for the games themselves. To promote some degree of physical activity which should help an individual be more fit.

026. Tumbling and Trampoline 1 hour
To develop knowledge of the history, rules, safety and terminology for the use of the trampoline. To develop skills in performing a seat drop, front drop, knee drop, one-half and full twists as well as a combination of all listed. To develop body coordination and strength, plus flexibility.

028. Flashball and Speedball 1 hour
To develop the skills and understanding of the game of Flashball and how it relates to regular football. To participate in the sport with the aim of furthering the intramural program. To improve conditioning and coordination of the participant and to provide carry over value in later life.

029. Racquetball 1 hour
To learn the basic skills and rules of racquetball so that one can become fit and a competent participant. To promote fitness in later life. To provide enough information that the student will become a better spectator in regard to the history and rules of the sport.

030. Beginners Swimming 1 hour
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 Lifesaving and Water Safety Instructors certificate. Intermediate and advanced swimmers should not register for this course.

032. Physical Education Basketball 1 hour
Elementary fundamentals in such skills as shooting (lay-ups, free throw, jump shot); dribbling (speed and control); passing and receiving (two hand chest pass, wrap around, overhead pass, bounce pass); basics of defense (stance, help-side technique, etc.); half and full court games (2 on 2, 3 on 3, 4 on 4, 5 on 5). This course is not recommended for students who have played basketball on the high school level (competitive play).

033. Intermediate Swimming 1 hour
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.
034. PHYSICAL EDUCATION
BEGINNERS BOWLING 1 hour To offer each student an opportunity to understand the fundamentals of bowling. To teach scoring, rules of etiquette and common courtesies. To develop coordination and provide an appreciation of the sport as a carry over in their personal lives.

035. ADVANCE SWIMMERS 1 hour To provide the individual with additional strokes and miscellaneous water skills that will make the individual an all-round swimmer.

040. POCKET BILLARDS 1 hour To learn the etiquette of the game, to be able to care for the equipment, most basic terminology, fundamentals, rules of some games and to create an interest so that carry over values will be obtained.

050. SOCIAL DANCE 1 hour The student is introduced to the traditional dance (i.e., waltz, foxtrot, 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.

060. ARCHERY 1 hour 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.

072. GYMNASTICS, RHYTHM AND FREE EXERCISE 1 hour This course includes participation in gymnastic like and/or rhythmic activities. It is not an apparatus course but rather pertains to free exercise and rhythmic gymnastics skills (use of balls, hoops, wands, ropes, etc.).

078. BADMINTON 1 hour To develop basic knowledge of history, rules, scoring, strategies in playing both doubles and singles badminton matches.

079. GYMNASTICS APPARATUS-FREE EXERCISE 1 hour To develop a knowledge and appreciation of the many values of gymnastics. To be able to analyze both abilities and limitations in the use of the body. To be able to identify/define strength, endurance, agility and flexibility as necessary elements of gymnastics and to be able to enumerate means of developing each. To be able to apply standards of safety and spotting to the activities to performance. To be able to identify and define elements of routines on each specific apparatus. To be able to combine and execute those skills necessary in a performance on each individual apparatus.

080. BEGINNING TENNIS 1 hour Recommended for non-tennis players. To develop basic knowledge of history, rules, serving, strategies in playing both doubles and singles match. To develop basic skills in executing the ground strokes, the service, the volley, lob, and smash shots with minimum success. To provide a basic understanding and appreciation of the game of tennis.

083. SQUARE AND FOLK DANCE 1 hour 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.

085. INTERMEDIATE TENNIS 1 hour To develop and improve on skills already acquired. To develop a competitive knowledge of strategies for playing both singles and doubles tennis matches. To improve on skills in executing the ground strokes, serve, volley, lob and smash shots. This course is not for beginners.

086. VOLLEYBALL 1 hour To recognize and appreciate the values of volleyball as a highly skilled, competitive game as well as a recreational activity. To perform basic skills and combination of skills pertinent to volleyball so that the student is able to demonstrate success and satisfaction both in drills and game like situations. To demonstrate an understanding of official rules, related to volleyball, by application in a game situation and in written test performance.

Intramural Sports. An intramural program offers activity for each university student. The following sports are offered FOR MEN: touch football, basketball, softball, billiards, ping pong, bowling, swimming, handball, racquetball, volleyball, tennis, wrestling, track, golf, one-on-one basketball, and horseshoes; FOR WOMEN: touch football, softball, volleyball, basketball, badminton, swimming, racquetball, three-on-three basketball, three-on-three volleyball, table tennis, archery, track and field; COED: water polo, volleyball, basketball and softball.
Athletic Training Certification Program (Sports Medicine major or Athletic Training minor) The athletic trainer is an important part of a complete athletic program. He/she is the individual charged with preventing athletic injury whenever possible, administering first aid if an injury should occur, and supervising the rehabilitation program designed in cooperation with the team physician. Students wishing to pursue the sports medicine major may choose to pursue a college major in another academic discipline. Candidates may qualify to be examined for National Athletic Training Association (NATA) certification through the apprenticeship program (program A) or with a minor in athletic training the institutional certification program (program B).

In the apprenticeship program (sports medicine major) students are expected to take part in 1800 hours of practical work experience throughout the four years of study. These opportunities enable the prospective athletic trainer to perform many of the duties of an athletic trainer while under the direct supervision of the Ohio Northern University.

Upon successful completion of the athletic training curriculum and upon the recommendation of the program director, the student will be able to sit for the National Athletics Trainers' Association Certification Examination by virtue of the apprenticeship program at Ohio Northern University.

The University also provides an alternative program involving only 800 hours of practical work experiences at the University for future athletic trainers (minors). Individuals successfully completing this option will receive an institutional certificate as an athletic trainer and must obtain an additional 1000 hours of practical work experience while serving as an athletic trainer (under a NATA trainer) prior to sitting for the NATA examination.

Required courses for Sports Medicine Major (45 hours):

Required courses for Athletic Training Minor (36 hours): Biology 231, 232, 233, HPE 111, 112, 223, 343, 371, 372, 375 (plus 1800 or 800 apprentice hours). (The 800 hours require 1000 more hours prior to sitting for the NATA examination.)

Additional information may be obtained by contacting the Chairperson of the Health and Physical Education Department in King-Horn Convocation and Physical Education Center.

Athletic Coaching Certification Program Ohio Northern University offers, through the Ad-Hoc Committee of the Ohio Association of Physical Education Directors, a voluntary endorsement certificate for athletic coaching in the secondary schools of the State of Ohio. This athletic coaching certificate is awarded by Ohio Northern University as evidence of the successful completion of a course of study leading to competency in coaching interscholastic sports for male and female students. Required courses of study leading to the coaching certificate from this University include:

112 First Aid and Safety Education 3 hours
303 Organization and Administration of Health, Physical Education, Recreation and Athletics 3 hours
324 Psychology of Coaching 2 hours
334, 335, or 336 Advanced Coaching; Internship/Externship 1 hour/3 maximum
343 Basic Athletic Training 3 hours
375 Advanced Athletic Training 4 hours
Plus—two theory of coaching courses 4 hours (308, 310, 319, 320, 321, 322, 323, 327)
TOTAL 20-22 hours
(22 maximum)

 Majors in Health and/or Physical Education and/or Sports Medicine
The department offers a major in the following programs:
Health and Physical Education K-12
Physical Education K-12
Health Education K-12
Physical Education 7-12
Sports Medicine

The areas indicated are the only areas that the department recognizes as a major. The other areas of certification require a college major in another academic discipline.

Additionally, the students are able to obtain a certification or a minor (not a major) in the following:
Health Education 7-12
Elementary Physical Education K-6
Physical Education 7-12
Athletic Training (program A), apprenticeship program of the National Athletic Trainers
Finally, the department provides courses of study leading to validation or certification in Drivers Education.

For specific information concerning these areas of certification, please contact the Health and Physical Education Department chairman.

**Required courses for Dual Major in Health and Physical Education K-12 (87-90 hours):** Biology 231, 232, 233; Sociology 105; HPE 000, 111, 112, 119, 132, 133, 147, 151, 211, 212, 213, 223, 233, 271, 303, 304, 305, 6 hours of coaching (308, 310, 319, 320, 321, 322, 323, 327) 343, 350, 351, 360, 402, one quarter of aquatics, 4 hours of electives in physical education, and 6 hours of electives in health.

**Required courses for Physical Education Major K-12 (69-71 hours):** Biology 231, 232, 233; HPE 112, 119, 132, 133, 147, 151, 211, 212, 213, 223, 233, 271, 303, 304, 305, 6 hours of coaching, 351, 360, 402, one quarter of aquatics, 5 hours of physical education electives.

**Required courses for Health Education Major K-12 (46 hours):** Biology 231, 232, 233; Sociology 105; HPE 111, 112, 119, 303, 343, 350, 12 hours of electives.

**Required courses for Physical Education Major 7-12 (45-47 hours):** Biology 231, 233; HPE 112, 132, 147, 151, 211, 212, 213, 223, 303, 304, 351, 402, one quarter of aquatics, 6 hours of physical education electives.

**Required courses for Health Education Minor 7-12 (32 hours):** Biology 231, 233; HPE 111, 112, 119, 350, 351, 343, 6 hours of electives.

**Required courses for Physical Education Minor K-6 (36 hours):** (For elementary education majors only) Biology 231, 232; HPE 112, 133, 147, 212, 223, 233, 271, 360, 402, 3 hours of physical education electives.

**Required courses for Physical Education Minor 7-12 (36-39 hours):** Biology 231, 233; PE 112, 132, 147, 151, 211, 212, 213, 223, 303, 304, one quarter of aquatics, 3 hours of physical education electives.

**Required courses for Drivers Education Certification:** HPE 219, 433, 434.

All required courses must be completed with a grade of "C" or better.

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**000. ORIENTATION, HEALTH & PHYSICAL EDUCATION** 1 hour Introduction to the profession of Health, Physical Education, Recreation, Dance & Athletics.

**110. INTRODUCTION TO HEALTH AND FITNESS (WELLNESS)** 3 hours A beginning course designed for the individual who wishes to gain knowledge, skill and experience in managing one's lifestyle in a positive manner. The primary purpose of this course is to acquaint students with the 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. This course is 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. CURRENT PERSONAL HEALTH PROBLEMS** 3 hours The identification and study of timely health issues from a personal viewpoint.

**112. FIRST AID AND PERSONAL SAFETY** 3 hours Lectures, discussion and practice in the giving of first aid in emergencies. The American Red Cross Certificate ained by students who pass an examination.

**113. MULTI-MEDIA FIRST AID AND CPR** 3 hours Multi-media approach to the teaching of basic first aid. American Red Cross multi-media certification in first aid. American Red Cross certification in CPR. Culminating learning experiences involve activities leading to the awarding of the American Red Cross First Aid Instructors Certificate (Multi-Media) and the American Red Cross CPR Instructors Certificate. Credit may be received for either 143-112 or 143-113, but not for both.

**114. ADVANCED LIFESAVING** 2 hours 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 Lifesaving certificate/emblem may be obtained by passing an examination. Prerequisite: instructor approval.
115. WATER SAFETY INSTRUCTION
3 hours 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 lifesaving.

119. SCHOOL AND COMMUNITY HEALTH
3 hours 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. The study of health matters with focus on health problems amenable to community action.

132. GYMNASTICS METHODS
2 hours The fundamental skills, methods and techniques in teaching the following activities: trampoline, tumbling, parallel bars, uneven bars, rings, horse, free exercise, balance beam, vaulting, and horizontal bar.

133. GENERAL METHODS
2 hours The fundamental skills, methods and techniques in teaching the following activities: track and field, basketball, softball, recreational games.

147. BASIC MOVEMENT
2 hours 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. FOUNDATIONS OF HEALTH, PHYSICAL EDUCATION, RECREATION AND ATHLETICS
3 hours The student is introduced to five foundation areas—the historical, philosophical, psychological, physiological, and sociological—of physical education, health education, recreation, safety and athletics. A sixth unit treats the scope, justification and needs of the profession and professional opportunities.

210. ADVANCED FIRST AID-EMERGENCY CARE
3 hours This course is offered to the student who wishes to increase knowledge, skill and experience in the application of first aid and emergency care. Students enrolling in this course must hold a current and valid American Red Cross first aid card. 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. Up to 3 six-hour lab days will be scheduled.

211. TEAM SPORTS
2 hours The fundamental skills, methods and techniques in teaching the following activities: speedball, soccer, various versions of touch football, field, hockey and volleyball.

212. DANCE
3 hours Required of all physical education majors. The fundamental skills and methods of teaching various areas of the dance.

213. INDIVIDUAL AND DUAL ACTIVITIES
2 hours The fundamental skills, methods and techniques in teaching the following activities: tennis, badminton, archery, golf, weight lifting, and bowling.

219. PSYCHOLOGICAL FACTORS IN DRIVING
3 hours A study of behavior with emphasis on attitudes, motivation, and adjustment and their relationship to unsafe driving. Investigation of principles and methods appropriate in indentifying, understanding, and modifying unsatisfactory driving behavior. Prerequisite: Psychology 100. Course marked S/U.

223. KINESIOLOGY
3 hours 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: Physiology 231 and 232.

233. PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL
3 hours 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.

271. MOTOR LEARNING
3 hours The study of rather permanent change in performance brought about through practice and excludes changes due to maturation, drugs or nutrients.
303. ORGANIZATION AND ADMINISTRATION OF HEALTH, PHYSICAL EDUCATION, RECREATION AND ATHLETICS 3 hours Examination of the philosophy, principles, problems, policies, and procedures essential in the organization and administration of meaningful programs in health education, physical education, recreation and athletics. Prerequisite: One year of physical education for majors and junior status.

304. PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION 1 hour Two hours required of all physical education majors in their junior year.

305. PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION 1 hour Continuation of 143-304.

306. PRACTICAL TECHNIQUES OF TEACHING AND ASSISTING IN HEALTH AND PHYSICAL EDUCATION 1 hour Continuation of 143-305.

308. TECHNIQUES-COACHING VOLLEYBALL 2 hours 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.

310. TECHNIQUES - COACHING SOFTBALL 2 hours 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.

315. OFFICIATING-VOLLEYBALL 1 hour Knowledge and techniques of officiating volleyball. National Federation rules. Laboratory experiences during intramural volleyball. Offered odd numbered years only.

317. THEORY OF TRACK AND FIELD OFFICIATING 1 hour Knowledge and techniques of officiating track and field. National Federation rules. Laboratory experiences during intramural track and field. Offered even numbered years only.

319. THEORY AND METHOD OF COACHING TRACK 2 hours Methods and forms for all of the events in track and field. Lectures, reports, demonstrations and practice.

320. THEORY OF COACHING AND OFFICIATING WRESTLING 1 hour Equipment, fundamentals of the art and skill of wrestling. Prerequisite for students seeking state certification in physical education: junior status. Offered even numbered years only.

321. THEORY OF FOOTBALL COACHING 2 hours 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 BASEBALL 2 hours 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 hours Individual position and team play in men's baseball. Lectures, reports, demonstration, and practice.

324. PSYCHOLOGY OF COACHING 2 hours The cultural, emotional, psychological and sociological aspects of coaching. Player-coach relationship, understanding the athlete, improving coaching effectiveness.

326. CO-CURRICULAR ACTIVITIES 1 hour Theory and practice of the organization and administration of co-curricular activities commonly associated with the girls physical education program. Offered odd numbered years only.

327. THEORY OF COACHING SOCCER 2 hours Equipment, fundamentals of the game: kicking, passing, playing the ball, strategy and generalship. Offered on demand.

334. ADVANCED COACHING INTERNSHIP/EXTERNSHIP 1-3 hours Coaching under supervision in all sports in season. Hours arranged. Six hours maximum toward graduation. Prerequisite: permission of chairperson.
335. ADVANCED COACHING INTERNSHIP/EXTERNSHIP 1-3 hours Prerequisite: permission of department chairperson.

336. ADVANCED COACHING INTERNSHIP/EXTERNSHIP 1-3 hours Prerequisite: permission of department chairperson.

341. FOOTBALL OFFICIATING 2 hours Study of the football rules and mechanics from the standpoint of the player, coach and official. Offered odd numbered years only.

342. BASKETBALL OFFICIATING 2 hours The study of basketball rules and mechanics from the standpoint of player, coach and official.

343. BASIC ATHLETIC TRAINING 3 hours To meet the need of the high school coach; training procedures and conditioning of athletic teams for all sports; treatment of athletic injuries. Laboratory designed to familiarize student with taping techniques. Lab fee.

350. HEALTH METHODS AND EVALUATION 3 hours For the special teacher and supervisor of health; health problems arising in a school system; methods and materials for teaching health and conducting evaluation. Prerequisites: two quarters of health, one of which must be 143-111 and junior standing. Includes approximately 30 hours of field experience, unless completed in Health & PE 351.

351. METHODS IN HEALTH AND PHYSICAL EDUCATION. 3 hours Methods, devices and techniques which are most effective in the teaching of the discipline in the public schools. Lab experiences in area schools. Prerequisite: one year of physical education for majors and junior status. Includes approximately 30 hours of field experience, unless completed in Health & PE 350.

360. TESTS AND MEASUREMENT OF HEALTH, PHYSICAL EDUCATION, RECREATION AND ATHLETICS 3 hours 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. MEDICAL ASPECTS OF ATHLETIC TRAINING 4 hours These sequential courses provide an indepth study of proper procedures for returning the injured athlete to competition after injury. An advanced discussion of underlying principles related to proper on-the-field examination of the injured athlete, follow up care, and proper rehabilitation after acute, chronic and surgical injuries. Also provides discussion of principles and techniques of therapeutic modalities. Prerequisites: Biology 231, 232, and 233; Health & PE 112 and 343.

372. EVALUATION AND TREATMENT OF ATHLETIC INJURIES 4 hours Continuation of 371.

375. ADVANCED ATHLETIC TRAINING 4 hours In depth learning process involving the techniques of athletic strapping and bandaging, selection of proper training room equipment, special protective padding of injuries, and other facets of training room facilities. Prerequisites: Health & PE 343.

402. ADAPTIVE AND CORRECTIVE PHYSICAL EDUCATION 3 hours For the teachers who are concerned with the physical education of the handicapped; to develop an understanding of the various handicapping conditions and to explore methods of adapting physical activities to meet the needs of the atypical student in the physical education class. Prerequisite: Health & PE 223.

433. DRIVER EDUCATION 3 hours 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 hours 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.

490. SPECIAL TOPICS IN HEALTH AND PHYSICAL EDUCATION 1-3 hours

494. HEALTH SEMINAR 3 hours An indepth analysis of current health problems, issues and trends as they apply to the teacher of health education. Offered even numbered years only.

497. INDEPENDENT STUDY IN HEALTH AND PHYSICAL EDUCATION 1-3 hours
HISTORY, POLITICAL SCIENCE, AND PUBLIC ADMINISTRATION (Department 132)

Professors Saffell (Chairman), Davis, Hammond, Ludanyi, Peltier; Associate Professors Gilbreth, Sefton; Assistant Professor Wilson.

The Wilfred E. Binkley Chair of History and Political Science, inaugurated in 1971, has been made possible by a grant from the Carthage Foundation of Pittsburgh. The 1984-85 recipient of this professorship is Mary K. Hammond, professor of history and political science.

The Kernan Robson Chair in Political Science, inaugurated in 1972, has been made possible by a trust established by the late Kernan Robson. The 1984-85 recipient of this professorship is David Saffell, professor of political science.

The department offers separate majors and minors in history, political science, and public administration. To pursue a dual major in history and political science, students must complete all the requirements for each separate major. Department majors are required to complete two research papers—one in their junior year and one in their senior year.

A major in history and political science prepares students generally for careers in teaching, law, journalism, government service, or business. Public administration is designed especially for students seeking a career in government service or in law. There are special departmental advisers for prelaw, public administration, and teacher certification.

The department offers majors a freshman advising program; a career development program; a History-Political Science-Public Administration Club; and Phi Alpha Theta, the national history honorary. In addition, public service internships are available at all levels of government, including the Ohio Legislature. Students annually participate in the Model United Nations in New York City. The department also offers students the opportunity to participate in the Washington Semester Program sponsored by American University.

History
Specific requirements for the history major:
1. Orientation 000
2. History 100
3. Political Science 201-202-203
4. History 211-212-213
5. History 215-216
6. One contemporary affairs course (221-222-223-224-225-226)
7. 27 hours history electives, distributed as follows:
   World History—6 hours (excluding contemporary affairs courses)
   American History—6 hours
   Electives—15 hours (excluding contemporary affairs courses)

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning a program of courses, the University catalog and library. Required of departmental majors. Also listed as Political Science 000.

100. UNDERSTANDING HISTORY 3 hours Concepts and trends in world history. A conceptual and thematic approach to the meaning and content of history.

200. RESEARCH METHODS 1 hour Instruction in research methods appropriate for History, Political Science, and Public Administration majors. Students will become familiar with relevant library and other resource materials and they will learn ways of organizing and writing research papers.

211. HISTORY OF THE UNITED STATES TO 1800 3 hours A survey of American colonial and United States history from 1492 to 1800. Emphasis is placed on the formation of American political, economic, and social attitudes and their application in the early Republic.

212. HISTORY OF THE UNITED STATES 1800 TO 1898 3 hours A survey of nineteenth century United States history. Emphasis is placed on the age of the common man, the struggle between North and South, and the rise of big business.

213. HISTORY OF THE UNITED STATES 1898 TO THE PRESENT TIME 3 hours A survey of the United States history in the twentieth century. Major topics include the
role of the U.S. in the world and of the U.S. government at home.

215. CRISES IN WESTERN CIVILIZATION I 3 hours A broad historical study, focusing on the major crises in the development of Western civilization from ancient times to the seventeenth century, designed to introduce the beginning student to the ideas, attitudes, and institutions basic to civilization as it developed in the West. Open to freshmen.

216. CRISES IN WESTERN CIVILIZATION II 3 hours A broad historical study, focusing on the major crises in the development of Western civilization from the seventeenth century to the present, designed to introduce the beginning student to the ideas, attitudes, and institutions basic to civilization as it developed in the West. Open to freshmen.

221. CONTEMPORARY EUROPE 3 hours An explanation of the political, socioeconomic and intellectual development of Europe since the conclusion of the second World War. Also listed as Political Science 221. Open to freshmen.

222. CONTEMPORARY ASIA 3 hours An examination of the political, socioeconomic and intellectual development of Asia since the conclusion of the second World War. Also listed as Political Science 222. Open to freshmen.

223. CONTEMPORARY AFRICA 3 hours An examination of the political, socioeconomic and intellectual development of Africa since the conclusion of the second World War. Also listed as Political Science 223. Open to freshmen.

224. CONTEMPORARY MIDDLE EAST 3 hours An examination of the political, socioeconomic and intellectual development of the Middle East since the conclusion of the second World War. Also listed as Political Science 224. Open to freshmen.

225. CONTEMPORARY LATIN AMERICA 3 hours An examination of the political, socioeconomic and intellectual development of Latin America since the conclusion of the second World War. Also listed as Political Science 225. Open to freshmen.

226. HUMAN GEOGRAPHY 3 hours An analysis of the elements of human geography, including cultures, cultural regions, race, language and religion, human population, population movement, urbanization, and political organization. Also listed as Political Science 226 Open to freshmen.

290. SPECIAL TOPICS IN HISTORY 1-3 hours

303. HISTORY OF OHIO 3 hours The political and cultural evolution of the state from prehistoric times to the present. Attention also will be given to Ohio as a part of the Old Northwest and the Middle West.

310. AMERICAN URBAN HISTORY 3 hours A study of the influence of the American city on American culture, and of the impact of American traditions on urban development, from colonial times to the present.

321. ENGLISH HISTORY 3 hours The English people in their political, social, and institutional development from the beginning of recorded history to the conclusion of the Wars of the Roses.

322. ENGLISH HISTORY 3 hours An examination of the Tudor-Stuart period with special emphasis on the Henrician Reformation, the emergence of England as a world power, and the seventeenth century conflict between the Crown and Parliament.

323. ENGLISH HISTORY 3 hours An examination of England and the political, social, and institutional development of the English people from the end of the Stuart period to the present including the growth of the British Empire.

324. RUSSIAN HISTORY I 3 hours 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 early Romanovs.

325. RUSSIAN HISTORY II 3 hours A survey of Imperial Russia and the Soviet Union. Emphasis will be placed on the political, economic, social and intellectual climate from Peter the Great to Nicholas II and the intellectual climate leading to the Revolution of 1917.

326. MEDIEVAL EUROPE 3 hours Europe from the decline of the Roman Empire to the beginning of the Renaissance. Special attention is given to those institutions most instru-
mental in shaping modern European development.

327. THE FRENCH REVOLUTIONARY ERA 3 hours A survey of France during the "old regime," social classes, the establishment of constitutional monarchy, the Republic and Robespierre, the crowds in the French Revolution, and Napoleon Bonaparte as protector of the reforms of the Revolution.

328. RENAISSANCE AND REFORMATION 3 hours The political evolution of the Italian communes; the cultural development of the period; the Church and European society during the late Middle Ages and the expansion of Protestantism in Europe.

329. AGE OF EUROPEAN ABSOLUTISM 3 hours A survey of European civilization during the Early Modern Period (1500-1789) with an emphasis on the development of the national state system, the concepts of divine right monarchy and absolutism, and the eighteenth century Enlightenment. Alternate years.

348. AMERICAN CONSTITUTION, 1789-1876 3 hours A study of the social and political forces that shaped constitutional political theory and of the interaction of law and politics through the Reconstruction era. Also listed as Political Science 348.

349. AMERICAN CONSTITUTION, 1876-1980 3 hours The adaptation of the original Constitution to twentieth century problems of economic regulation, civil rights, industrial liberation, the welfare state and the American Empire. Also listed as Political Science 349.

353. AMERICAN COLONIAL AND REVOLUTIONARY HISTORY 3 hours An intensive analysis of colonial American history, with particular emphasis on Massachusetts, Virginia, and Pennsylvania and a survey of those conditions which led to the Revolutionary War.

354. CIVIL WAR AND RECONSTRUCTION 3 hours An intensive analysis of the Civil War era in American history. Special emphasis will be placed on slavery and other causal factors which precipitated the war between the states.

360. HISTORY OF AMERICAN BUSINESS AND LABOR 3 hours An historical study exploring the interaction of economic and political forces as a factor helping to explain the position occupied by business enterprises and labor organizations in American political life. Also listed as Political Science 360.

361. RECENT AMERICAN HISTORY I 3 hours An intensive analysis of American history from the beginning of World War I until the conclusion of World War II. Also listed as Political Science 361.

362. RECENT AMERICAN HISTORY II 3 hours An examination of the major social, economic, and political issues in American history since World War II. Also listed as Political Science 361.

365. AFRO-AMERICAN HISTORY 3 hours The essential facts, trends, and interpretations in the history of the black American from his African beginnings to the present time.

377. HISTORY OF MODERN EUROPE I 3 hours A survey focusing on Western Europe from 1815 to 1870. Emphasizes the search for stability in an age of revolution, industrialization, and unification.

378. HISTORY OF MODERN EUROPE II 3 hours A survey of Western Europe from 1870 to the present, considers changes brought on by the "Second Industrial Revolution," imperialism, the rise of "totalitarianism," World Wars, Civil War, and the post war period.

381. U.S. FRONTIER 3 hours An examination of territorial expansion from colonial times to the end of the nineteenth century, emphasizing Indian relations, land policy, transportation and trade, and the influence of the West on American ideals and institutions. The course includes a brief consideration of comparative frontiers.

387. AMERICAN POLITICAL THOUGHT 3 hours An examination of American political theory commencing with the colonial period and proceeding to modern political thinkers. Also listed as Political Science 387.

404. AMERICAN CULTURAL HISTORY 3 hours The evolution of American culture from the colonial era to the present day in philosophy, theology, belles-lettres, political and economic theory, social theory, historical literature, art, music, and drama.

414. THE ANCIENT WORLD 3 hours A survey of the political, social, and economic
development of Near Eastern, Greek, and Roman civilizations during the ancient period.

451. HISTORY OF LAW 3 hours A survey of the evolving principles of law as an instrument of social control, with an examination of legal norms as developed in Greek and Roman systems, canon law, law merchant and law maritime, civil law, common law and equity, and the Asiatic system. Also listed as Political Science 451.

452. AMERICAN FOREIGN RELATIONS 3 hours A conceptual review of the inception, development and contemporary interpretation of the major foreign policies of the United States. Also listed as Political Science 452.

455. WESTERN POLITICAL THOUGHT 3 hours An examination of Western political thought commencing with the ancient period (Plato, Aristotle, Cicero) and proceeding to Machiavelli. Also listed as Political Science 455.

456. WESTERN POLITICAL THOUGHT 3 hours An examination of Western political theory commencing with the contract theorists (Rousseau, Locke, Hobbes) and proceeding to the age of the French Revolution (Burke). Also listed as Political Science 456.

457. WESTERN POLITICAL THOUGHT 3 hours An examination of Western political theory commencing with the early nineteenth century (Hegel) and proceeding to the twentieth century (Lenin, Nietzsche). Also listed as Political Science 457.

471. HISTORY OF THE OTTOMAN EMPIRE 3 hours 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.

481. PUBLIC SERVICE INTERNSHIP PROGRAM 6-15 hours 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. Also listed as Political Science 481.

490. SPECIAL TOPICS IN HISTORY 1-3 hours

494. SEMINAR IN HISTORY 1-3 hours

497. INDEPENDENT STUDY IN HISTORY 1-3 hours Approval of department chairman required prior to registration.

Political Science
1. Orientation 000
2. Political Science 105
3. Political Science 201-202-203
4. History 211-212-213
5. One contemporary affairs course (221-222-223-224-225-226)
6. Western Political Thought 455
7. Political Thought 456 or 457 or 387
8. 27 hours political science electives, distributed as follows:
   - World Politics—6 hours (excluding contemporary affairs courses)
   - U.S. Government—6 hours
   - Electives—15 hours (excluding contemporary affairs courses)

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, University catalog and library. Required of departmental majors. Also listed as History 000.

105. MODERN POLITICAL CONFLICTS AND ISSUES 3 hours Fundamental political processes and principles, placed in the context of contemporary domestic and world problems.

200. RESEARCH METHODS 1 hour Instruction in research methods appropriate for History, Political Science, and Public Administration majors. Students will become familiar with relevant library and other resource materials and they will learn ways of organizing and writing research papers.

201. AMERICAN NATIONAL GOVERNMENT 3 hours An examination of the Constitution, federalism, interest groups, public opinion, political parties, and elections. Open to freshmen.
202. AMERICAN NATIONAL GOVERNMENT 3 hours An examination of the structure and operation of Congress, the presidency, the federal bureaucracy, and the federal court system. Open to freshmen.

203. STATE AND LOCAL GOVERNMENT 3 hours An examination of the structures and functions of state and local governments in the United States. Open to freshmen.

221. CONTEMPORARY EUROPE 3 hours An examination of the political, socioeconomic and intellectual development of Europe since the conclusion of the second World War. Also listed as History 221. Open to freshmen.

222. CONTEMPORARY ASIA 3 hours An examination of the political, socioeconomic and intellectual development of Asia since the conclusion of the second World War. Also listed as History 222. Open to freshmen.

223. CONTEMPORARY AFRICA 3 hours An examination of the political, socioeconomic and intellectual development of Africa since the conclusion of the second World War. Also listed as History 223. Open to freshmen.

224. CONTEMPORARY MIDDLE EAST 3 hours An examination of the political, socioeconomic and intellectual development of the Middle East since the conclusion of the second World War. Also listed as History 224. Open to freshmen.

225. CONTEMPORARY LATIN AMERICA 3 hours An examination of the political, socioeconomic and intellectual development of Latin America since the conclusion of the second World War. Also listed as History 225. Open to freshmen.

226. HUMAN GEOGRAPHY 3 hours An analysis of the elements of human geography, including cultures, cultural regions, race, language and religion, human population, movement, urbanization, and political organization. Also listed as History 226. Open to freshmen. (Formerly Political Science 400.)

291. SPECIAL TOPICS IN POLITICAL SCIENCE 1-3 hours

312. URBAN POLITICS AND ADMINISTRATION 3 hours An examination of urban governments, the problems they face, and the growing importance of professional urban administrators. Analysis of current federal policy as it affects urban America.

334. DEMOCRATIC POLITICAL SYSTEMS 3 hours 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.

335. COMMUNIST POLITICAL SYSTEMS 3 hours A comparison of the politics of contemporary communist systems, stressing the operations of the single-party control system, the role of governmental agencies and ideological orientations.

336. DEVELOPING POLITICAL SYSTEMS 3 hours 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.

347. AMERICAN POLITICAL PARTIES AND ELECTIONS 3 hours An examination of the leadership, organization, activities, and role of political parties in the American political process and an analysis of the conduct of congressional and presidential elections.

348. AMERICAN CONSTITUTION, 1789-1876 3 hours A study of the social and political forces that shaped constitutional political theory and of the interaction of law and politics through the Reconstruction era. Also listed as History 348.

349. AMERICAN CONSTITUTION, 1876-1980 3 hours The adaptation of the original Constitution to twentieth century problems of economic regulation, civil rights, industrial liberation, the welfare state and the American Empire. Also listed as History 349.

360. HISTORY OF AMERICAN BUSINESS AND LABOR 3 hours An historical study exploring the interaction of economic and political forces as a factor helping to explain the position occupied by business enterprises and labor organizations in American political life. Also listed as History 360.

361. RECENT AMERICAN HISTORY I 3 hours An intensive analysis of American history from the beginning of World War I until
the conclusion of World War II. Also listed as History 361.

362. RECENT AMERICAN HISTORY II
3 hours An examination of the major social, economic, and political issues in American history since World War II. Also listed as History 362.

363. PUBLIC ADMINISTRATION AND POLITICS 3 hours Bureaucrats as actors in the American political system. Their sources of power and their relationships to elected public officials. The problems of controlling bureaucracies.

364. PUBLIC MANAGEMENT AND ORGANIZATIONAL THEORY 3 hours The challenge of managing public bureaucracies effectively. The essentials of modern organization theory as a guide to meeting that challenge. The basics of personnel and budgetary administration.

366. PUBLIC OPINION AND INTEREST GROUPS 3 hours An examination of the characteristics of public opinion and interest groups, the relationship between them, and the role they play in American politics and policy making.

371. INTERNATIONAL RELATIONS
3 hours An examination of the forces which determine the policies of the nation states and their organizations in the international setting.

372. INTERGOVERNMENTAL RELATIONS 3 hours The evolving political relationship among federal, state, and local governments in the United States. The impact of intergovernmental relations on public policy. The federal grant-in-aid system and its impact on intergovernmental relations.

373. PUBLIC PERSONNEL ADMINISTRATION 3 hours The problems and practice of personnel administration in the public sector. The historical evolution of public personnel administration. The current and future role of public employee unions.

387. AMERICAN POLITICAL THOUGHT
3 hours An examination of American political theory commencing with the colonial period and proceeding to modern political thinkers. Also listed as History 387.

421. GOVERNMENT OF THE SOVIET UNION
3 hours An examination of the demographic, historical and ideological basis of Soviet rule, stressing the impact of culture and structure on governmental and social institutions as well as domestic and foreign policy making.

422. FOREIGN POLICY OF THE SOVIET UNION
3 hours An examination of the forces that have shaped Russian and Soviet foreign policy to the present, considering the impact of Marxism-Leninism, internal conditions and foreign interference and the pattern of expansion and power consolidation.

424. THE AMERICAN PRESIDENCY
3 hours A study of the historical development and contemporary operation of the presidency. Topics discussed include presidential selection, congressional-presidential relations, management of the federal bureaucracy, executive decision-making, and presidential personality.

425. THE AMERICAN CONGRESS
3 hours An examination of the structure and operation of Congress; committees, rules and procedures, party organization, and executive oversight; contributions from the President, interest groups, public opinion, and the courts.

426. THE AMERICAN LEGAL SYSTEM
3 hours A political analysis of how justice is administered in American courts. The roles of lawyers, judges and juries are examined. The organization of American courts, both federal and state, is studied with attention directed to trials, appellate proceedings, and constraints on the courts.

427. THE SUPREME COURT AND CIVIL LIBERTIES
3 hours An examination of constitutional rights, due process and equal protection of the law in the United States. Particular emphasis on recent Supreme Court decisions regarding the rights of black Americans, freedom of expression and the rights of criminal defendants.

436. AMERICAN PUBLIC POLICY
3 hours An introduction to the basic dynamics and problems of the American policy-making process, as well as some of the more widely used analytical approaches to public policy, especially in such fields as environmental policy, and public welfare.

437. POLICY ANALYSIS-PROGRAM EVALUATION
3 hours A survey of the techniques utilized by public agencies and scholars to evaluate public problems and policy options (policy analysis), and then to evaluate the impact of the options adopted
for solving such problems (program evaluation). Prerequisites: 123-142 and 143.

441. INTERNATIONAL LAW AND ORGANIZATIONS 3 hours An examination of the structure, operation and legal setting of international organizations, with particular emphasis on the United Nations as well as regional institutions such as the European Common Market.

443. ADMINISTRATIVE LAW 3 hours An examination of the internal bureaucratic judicial process, its relationship to the broader legal system and the changing attitudes of the Supreme Court toward administration rule making.

451. HISTORY OF LAW 3 hours A survey of the evolving principles of law as an instrument of social control, with an examination of legal norms as developed in Greek and Roman systems, canon law, law merchant and law maritime, civil law, common law and equity, and the Asiatic system. Also listed as History 451.

452. AMERICAN FOREIGN RELATIONS 3 hours A conceptual review of the inception, development and contemporary interpretation of the major foreign policies of the United States. Also listed as History 452.

455. WESTERN POLITICAL THOUGHT 3 hours An examination of Western political theory commencing with the ancient period (Plato, Aristotle, Cicero) and proceeding to Machiavelli. Also listed as History 455.

456. WESTERN POLITICAL THOUGHT 3 hours An examination of Western Political theory commencing with the contract theorists (Rousseau, Locke, Hobbes) and proceeding to the age of the French Revolution (Burke). Also listed as History 456.

457. WESTERN POLITICAL THOUGHT 3 hours An examination of Western political theory commencing with the early nineteenth century (Hegel) and proceeding to the twentieth century (Lenin, Nietzsche). Also listed as History 457.

475. UNITED NATIONS TODAY 3 hours 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. Committee are prerequisites for registering for this course. May be repeated three times for credit.

481. PUBLIC SERVICE INTERNSHIP PROGRAM 6-15 hours 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 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 6 hours will count toward major requirements. Also listed as History 481.

491. SPECIAL TOPICS IN POLITICAL SCIENCE 1-3 hours

495. SEMINAR IN POLITICAL SCIENCE 1-3 hours

498. INDEPENDENT STUDY IN POLITICAL SCIENCE 1-3 hours Approval of department chairman required prior to registration.

Public Administration

Specific requirements for the public administration major:

1. Political Science 105
2. Political Science 200
3. Political Science 201-202-203
4. Political Science 312
5. Political Science 363 and 364
6. Political Science 373 or 443
7. Political Science 436
8. Political Science 437
9. Math 130
10. Math 142-143
11. Economics 202-203
12. Economics 423
13. Electives (6 hours)
Minor
Minor in History
History 100 3 hours
American History 211, 212, 213 9 hours
Crises in Western Civilization 215, 216 6 hours
Contemporary Affairs 221, 222, 223, 224, 225, 226 3 hours
World History 6 hours
U.S. History 6 hours
TOTAL 33 hours

Minor in Political Science
Political Science 105 3 hours
American National Government 201, 202, 203 9 hours
Contemporary Affairs 221, 222, 223, 224, 225, 226 3 hours
Political Thought (455, 456, 457 or 387) 3 hours
American Politics 6 hours
World Politics 6 hours
Electives 3 hours
TOTAL 33 hours

Minor in Public Administration
Political Science 201-202-203
Political Science 363 and 364
Political Science 372 or 312 or 373
Political Science 436
Political Science 437 or 443
Economics 202-203, 423
Math 142-143

Departmental Advising In addition to regular academic advisers, the department also provides more specialized prelaw, teacher education, and public administration advisement. Normally, majors interested in prelaw studies will be assigned to the departmental prelaw adviser, who not only assists the student in making a judicious selection of courses, but also maintains a law school catalog library and acts as the department's central information officer in matters related to prelaw education. Similarly, majors interested in a teaching career will be assigned to the departmental teacher education adviser, who provides academic advice and guidance, and also supervises the departmental aspects of the student teaching program. Public administration majors are assigned to an adviser who supervises internships and maintains materials on public employment.

Prelaw Program In addition to its emphasis upon prelaw advisement, the department also cooperates with the College of Law at Ohio Northern University relative to the formal guaranteed admission prelaw program.

Basically, this program guarantees admission to the Pettit College of Law for those students who maintain at least a 3.30 grade point average during their undergraduate years at Ohio Northern and complete a prelaw core of courses.

Specific curricular requirements are available from the departmental prelaw adviser or from the department chairman.

Teacher Certification with Major in History or Political Science

History
Orientation 000 1 hour
History 100 3 hours
American National Government 201, 202, 203 9 hours
American History 211, 212, 213 9 hours
Crises in Western Civilization 215, 216 6 hours
Contemporary Affairs 221, 222, 223, 224, 225, 226 3 hours
World History 6 hours
U.S. History 6 hours
Electives 15 hours
TOTAL 58 hours

Political Science
Orientation 000 1 hour
Political Science 105 3 hours
American History 211, 212, 213 9 hours
American National Government 201, 202, 203 9 hours
Contemporary Affairs 221, 222, 223, 224, 225, 226 3 hours
Theory 455 and 378, 456 or 457 6 hours
American Politics 6 hours
World Politics 6 hours
Electives 15 hours
TOTAL 58 hours

* Must include courses in non-Western history or political science.

Comprehensive Social Studies Certification Ohio Northern University does not offer a major in comprehensive social studies. Students may, however, obtain such certification through the efficient utilization of free electives by taking the appropriate additional courses which will then qualify the student for teaching certification in comprehen-
sive social studies by the State Department of Education of Ohio.

The following electives taken in addition to the history or political science major qualify the student for certification in comprehensive social studies.

Economics 100
Economics 202
Economics 203
Geography 226
Sociology 105
Sociology 240 or 245
Sociology 250

Social Studies Electives: 12 hours (The 12 hours of electives must all be taken in the same field, excluding the major—Political Science or History or Economics or Sociology.)

TOTAL: 91 quarter hours.

In addition to the requirements for the major or social studies comprehensive and the general education requirements the student must complete the following courses in the Department of Education: Education 224, 250 or 251, 342, 370, 380, 450, 480-481.

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INDUSTRIAL TECHNOLOGY
(Department 142)

Professor Kain (Chairman); Associate Professor Perusek; Assistant Professor Devier.

The courses comprising the curriculum in industrial technology are designed to provide broad, foundational experiences in the practical arts and applied sciences. Carefully structured classroom and laboratory activities feature numerous operations and processes that promote realistic involvement in designing, constructing, manufacturing, energy conversion, graphic communications, and craft-related recreational pursuits. All laboratory integrated courses utilize a variety of materials and resources.

Course work and associated laboratory assignments place emphasis on researching, designing, experimenting and fabricating. Design complexities and problem situations offer challenges, with solutions and outcomes derived from application of scientific theory and industry practice.

The department program offers a comprehensive professional-technical education for those whose goals would lead to managerial positions in industry, such as: managers, supervisors, engineering technologists, and directors of training. The broad selection of courses in technical areas exceeds state standards for teacher certification.

Two degree programs are available to industrial technology majors. The Bachelor of Arts degree is recommended for those desiring certification for teaching industrial arts. The Bachelor of Science degree is appropriate for the industrial technology major selecting a career option to supplement the basic technology curriculum. This degree, however, may be chosen by those seeking teacher certification, also.

**Teacher Certification with a Bachelor of Arts Degree in Industrial Technology, Industrial Arts Teaching, Secondary (78 hour major)**

Orientation 000
Technical Drawing 121, 122, 123
Wood Technologies 213, 331
Metal Technologies 313, 321, 332, 343
Ceramics 255 (Art)
Graphic Communications 322
Electricity-Electronics 402
Plastics Technology 450
Automotives, Energy and Power 451
Manufacturing, Materials and Processes 460
Professional Courses in Industrial Arts 110, 210, 412, 423, 494

Department Electives: (6 hours required) 120, 241, 311, 323, 330, 353, 497

**Teacher Certification with Bachelor of Science in Industrial Technology Industrial Arts Teaching, Secondary (88 hour major)**

Orientation 000
Creative Crafts 120
Technical Drawing 121, 122, 123
Wood Technologies 213, 241, 331, 353
Ceramics 255 (Art)
Graphic Communications 311, 322, 330
Lapidary 323
Metals Technologies 313, 321, 332, 343
Electricity-Electronics 402
Plastics Technology 450
Automotives, Energy and Power 451
Manufacturing, Materials and Processes 460
Independent Study 497
Professional Courses in Industrial Arts 110, 210, 412, 423, 494

The curriculum of study for the teaching major requires either 78 or 88 quarter hours of credit (depending on the degree program selected) in courses described later in this
department's listing. Four years of study in these courses, the required courses in Arts and Sciences, and the courses required for teacher certification, qualifies the major for the four-year provisional special teaching certificate.

**Industrial Technology Major with a Bachelor of Science Degree** (88 hour major, option not included)

- Orientation 000
- Creative Crafts 120
- Technical Drawing 121, 122, 123
- Ceramics 255 (Art)
- Wood Technologies 213, 241, 331, 353
- Lapidary 323
- Graphic Communications 311, 322, 330
- Metals Technologies 313, 321, 332, 343
- Electricity and Electronics 402
- Plastics Technology 450
- Automotives, Energy and Power 451
- Manufacturing, Materials and Processes 461
- Independent Study 497
- Internship in Industrial Technology 484

**Options** Those majoring in industrial technology who choose the Bachelor of Science degree have options available in several curricular areas outside the major department. A special schedule of courses may be selected to meet individual interests or career goals. At least one option, or minor, is required for this non-teaching degree. These each include 30 or more hours in a structured sequence of courses as indicated in the listing for the Bachelor of Science degree immediately above. Enrollment in these selected option courses offers experiences in studying curricula associated with two other colleges on campus, particularly the College of Business Administration and the College of Engineering. A detailed curriculum outline and separate sheets of options available can be obtained from the department chairman.

**Minors** Two minors are available in industrial technology: one of 50 credit hours for teacher certification, the other a 38 credit hour non-teaching selection of courses. A course schedule sheet for each of these minors is available from the department chairman.

**Industrial Arts Education Teaching Minor**

- Orientation, Industrial Arts 110
- Creative Crafts 120
- Technical Drawing 121
- Wood Technology 213
- Ceramics 255
- Elementary School Industrial Arts 210
- Metalwork Technology 321
- Printing 322
- Photography 330
- Metal Machining 332
- Welding 343
- Electricity-Electronics 402
- Industrial Arts Methods 423
- Electives (6 credit hours selected from the following courses: 122, 123, 311, 313, 331, 353, 412, 450, 451, 460, 497)

Prospective teachers seeking to qualify for minimum certification requirements in industrial arts are required to complete courses specified by state standards. Those who complete the minor program as outlined above qualify for a teaching minor. Fulfillment of these requirements, those in a major field of study, and those in teacher education (professional) qualifies the candidate for the four-year provisional certificate.

**Industrial Technology Minor (Non-teaching)**

- Technical Drawing 121
- Photography 330
- Furniture Construction 331
- Welding 343
- Electricity-Electronics 402
- Industrial Plastics 451
- Manufacturing, Materials and Processes 460
- Electives (12 credit hours selected from the following courses: 120, 122, 123, 241, 311, 313, 353, 451, 497)

The department has developed an extensive program of field work involving visits to manufacturing centers, museums, and schools. Students are required to participate in these excursions and are encouraged to participate in a variety of organized professional activities.

A major project exhibition is required of each student concentrating in industrial technology.

000. ORIENTATION 1 hour 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 department majors.

110. INDUSTRIAL ARTS ORIENTATION 3 hours An introduction to industrial arts; philosophical origins and contemporary practices. The fundamentals, processes, operations, and special equipment for each of the several instructional areas of industrial arts. Public school visitations are required.

120. CREATIVE CRAFTS 3 hours Laboratory experiences in working with craft materials; craft design, wood carving, art metals, wood, plastic, leather and others. (Formerly 200).

121. TECHNICAL DRAWING I 3 hours Use of instruments, applied geometry, lettering, orthographic projection, and pictorial drawing. (Formerly 111).

122. TECHNICAL DRAWING II 3 hours Continuation of 121. Drawing developments, intersections, and working drawings. Projects in the main fields of engineering are used. Architectural drawing project. (Formerly 142.112). Prerequisite: Industrial Technology 121.

123. APPLIED DESIGN 3 hours Emphasis on an awareness of design as it is applied to fabrication and construction, using typical industrial materials. Selected exercises in the development of design as applied to a particular function and material. Study and practice in relating good design to furniture, architecture, interiors, graphics, crafts, and to its application in the manufacture of industrial products; design model construction. (Formerly 113).

210. ELEMENTARY SCHOOL INDUSTRIAL ARTS 3 hours Introduction to 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. A presentation of the rationale, materials, creative and manipulative activities. Typical problems and the planning and organizing of the learning environment.

213. WOOD TECHNOLOGY 3 hours The nature of wood, and its present day applications; forestry, lumbering, grading, preserving, and utilization of wood products and by-products; identification of common commercial lumber; strength analysis, control of shrinkage, methods of preservation and beautification; wood fabrication and joining techniques. The study of mass production as applied to wood fabrication and joining techniques.

241. FINISHING METHODS AND MATERIALS 3 hours Finishing materials, their composition, qualities, and characteristics; protective agents and preservatives; mixing and matching colors; interior floor and wall treatments and finishes; the application of various finishes to wood and metal.

311. GRAPHIC ARTS 3 hours The production processes of duplicating graphic and written communications; screen process printing, diazo, block printing, letterpress and offset printing. Photographic processes.

313. METAL CASTING 3 hours Foundry pattern design and construction; the study of molding materials and equipment; operations and procedures in the construction of sand molds; core construction; melting, pouring and casting of non-ferrous metals. Properties of metals and their alloys. Prerequisite: Industrial Technology 213.

321. METALWORK TECHNOLOGY 3 hours Fundamentals of general metalwork; layout and pattern drafting, bending, forming, seaming, soldering, resistance and oxyacetylene welding and machining; wrought iron work; construction of fixtures, tools, ornaments and furniture.


323. LAPIRARY AND JEWELRY 3 hours The fundamentals of the art of lapidary, working with natural and synthetic stones including the sawing, shaping, polishing and mounting of jewelry stones.

330. PHOTOGRAPHY 3 hours Techniques of photographic composition, camera types, uses and accessories, photographic optics, and laboratory methods and materials; dark room developing and printing; color photography.

331. FURNITURE DESIGN AND CONSTRUCTION 3 hours Advanced cabinetry procedures; techniques in joinery and decorative treatments such as carving, turning, veneering, inlaying, fluting and associated styling elements. One major project is
required. Prerequisites: Industrial Technology 110, 213.

332. METAL MACHINING AND MANUFACTURING 5 hours Production practice and metalwork technology. The engine lathe, shaper, milling machine, grinder, and power hacksaw; machining of bar stock and castings. Prerequisite: Industrial Technology 321.

343. WELDING THEORY AND PRACTICE 3 hours Welding theory, and weld types; welding metallurgy, electrical resistance and arc welding, oxyacetylene welding, brazing, and burning; welded metal fabrications.

353. WOOD CONSTRUCTION TECHNOLOGY 3 hours The utilization of efficient construction practices in the building of modern wood structures; use of carpentry tools and power equipment. Prerequisite: Industrial Technology 121.

402. FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS 5 hours The principles of electricity and their application to laboratory experiments and to the operation of a variety of electrical devices; introduction to electronics; vacuum tubes, transistors, rectifiers, power supplies, amplifiers, oscillators, transmitters, and receivers.

412. LABORATORY PLANNING AND EQUIPMENT 3 hours Principles of laboratory planning. Architectural features, laboratory designs. Selection, arrangement, and maintenance of equipment in the modern industrial arts laboratory. Prerequisite: Open to students having 30 hours or more of Industrial Technology courses.

423. INDUSTRIAL ARTS ORGANIZATION AND METHODS 3 hours A professional course in the methods of teaching industrial arts; objectives, preparing lesson plans, organizing courses, laboratory procedures, instructional materials, and administrative practices. Includes approximately 30 hours of field experience. Prerequisite: Open to students having 30 or more hours of Industrial Technology courses.

450. INDUSTRIAL PLASTICS 3 hours A general overview of the plastics and synthetic industries. The course examines the processes; the associated application of procedures, materials, equipment and current practices of the industry. Laboratory experiments and production projects are required.


460. MANUFACTURING, MATERIALS AND PROCESSES 5 hours A study of the basic concepts of materials science. Electrical, electronic, chemical and mechanical properties of materials, metals, organic materials. The manufacturing processes involved in industrial production; classroom discussions, technical motion pictures, and field trips to refineries, mines, quarries, mills kilns, foundries, factories and other manufacturing firms.

480. STUDENT TEACHING IN INDUSTRIAL ARTS EDUCATION 15 hours See Education 480.

484. INTERNSHIP IN INDUSTRIAL TECHNOLOGY 1-8 hours

490. SPECIAL TOPICS IN INDUSTRIAL TECHNOLOGY 1-3 hours

494. SEMINAR IN INDUSTRIAL TECHNOLOGY 1-3 hours

497. INDEPENDENT STUDY IN INDUSTRIAL TECHNOLOGY 1-3 hours

MATHMATICS AND COMPUTER SCIENCES (Department 123)

Professors Berton, Lhamon; Associate Professors R. Evans, Hovis, John Riley, Spielman (Chairman); Assistant Professors Childress, O'Dell, Putt, Retterer, Shult; Lecturers Fish, C. Lobenhofe, J. Ludanyi, Joyce Riley, N. Theye.

The department offers courses in mathematics, statistics, and computer science to complement almost all disciplines in the University. Students should check the department curriculum in which they are considering a major to determine the best choice of courses in mathematics and computer science.
In general, the sequence 100-172-173 is designed for prospective elementary school teachers. 142-143 is designed for social science and business students. 154-155-156 is designed for life science students, and the sequence 163-261-262-263-264 is designed for students in engineering, physical science, mathematics, and computer science. Mathematics 272 should be of interest to students in many areas. Mathematics 161-162 are courses designed for students desiring pre-calculus preparation. Students who want an introduction to computer programming should consider Introduction to Information Processing (CS 130) which is of general interest, FORTRAN (CS 131) which is primarily used in scientific applications, and COBOL (CS 231) which is used in business applications.

The department offers a program leading to a Bachelor of Arts degree and a Bachelor of Science degree in both mathematics and computer science. Candidates for the B.S. degree must replace the six in-depth courses required for the B.A. degree with an additional 18 hours in the Division of Mathematics and Natural Sciences and/or the College of Engineering. These 18 hours must be beyond what is specified below for a major in mathematics or computer science. In addition, the department offers minors in both mathematics and computer science. All courses in the department which are to be counted toward a major or a minor 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, Mathematics 294, and at least 25 credit hours in mathematics courses at the 300/400 level. These selections must include 311, 361, and 452. Philosophy 334, Symbolic Logic, is a required cognate course. For a minor in mathematics, the student must complete 163-261-262 and 272 and at least 14 additional hours in mathematics numbered 263 or higher.

Students planning to pursue a graduate degree in mathematics should also take 312, 313, 324, 363, and 453. Students interested in a career in the actuarial sciences should take, in addition to the calculus sequence, 130, 131, 332, 381, 382, 461, and 462, as well as 131, 132, 133, 202, 203 and 462 from the College of Business Administration.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning programs of study, university catalog and library. Required of departmental majors.

100. MATHEMATICS 3 hours An examination of basic mathematical concepts and their applications. Any course offered in the department can be used to meet the general education mathematics requirement. Not open to students who have received a C or higher in mathematics courses numbered 142 or higher.

142. PROBABILITY AND STATISTICS 1 3 hours Descriptive statistics, probability, binomial distribution, normal distribution, confidence intervals, hypothesis testing. Prerequisite: Mathematics 161 or its equivalent in high school work.

143. PROBABILITY AND STATISTICS 2 3 hours Regression and correlation, probability, Bayes Theorem, Chi-Square test for independence, analysis of variance. Prerequisite: Mathematics 142.

154. CALCULUS AND PROBABILITY 1 4 hours Differential and integral calculus involving algebraic, logarithmic and exponential functions and its application including a basic study of probability theory. Prerequisite: Mathematics 161 or its equivalent in high school work.

155. CALCULUS AND PROBABILITY 2 4 hours Continuation of 154.

156. INTRODUCTORY DATA ANALYSIS 4 hours Basic statistical techniques with emphasis on the applications to biological sciences. Prerequisite: Mathematics 154-155 or equivalent.

161. ELEMENTARY FUNCTIONS 1 4 hours The real number system, functions, theory of polynomial equations, systems of equations, and inequalities. Not open for credit to students who have completed a calculus course.

162. ELEMENTARY FUNCTIONS 2 3 hours Trigonometric functions, trigonometric identities and formulas, solutions of triangles, and complex numbers. Not open for credit to students who have completed Mathematics 261. Prerequisite: Mathematics 161 or its equivalent in high school work.
163. CALCULUS 1 5 hours The limit of a function, continuity, the slope of a curve, rate of change of a function, the derivative of a function, extrema, curve plotting, the mean value theorem, applications of the derivative, and the Fundamental Theorem of Calculus. Prerequisite: Mathematics 162 or its equivalent in high school work.

172. FUNDAMENTAL MATHEMATICS 1 3 hours Theory of arithmetic, systems of numeration, relations, algorithms, whole numbers, integers, rational numbers, real numbers, patterns of proof. Open for credit only to elementary education majors. Prerequisite: Mathematics 100.

173. FUNDAMENTAL MATHEMATICS 2 3 hours Geometric figures, transformations on the plane, congruences of geometric figures, symmetry, similarity. Open for credit only to elementary education majors. Prerequisite: Mathematics 100.

245. HISTORY OF MATHEMATICS 3 hours An introduction to the history and origin of mathematics, restricted principally to mathematics through elementary calculus, a chronicle of some mathematicians and their contributions to mathematical thought. To be offered alternate years, 1984-85.

261. CALCULUS 2 4 hours The algebra of vectors, integration techniques, applications of the integral, the exponential function, and inverse functions. Prerequisite: Mathematics 163.

262. CALCULUS 3 4 hours Sequences and series, Taylor series, polar coordinates, parametric equations, conic sections, planes and lines in space. Prerequisite: Mathematics 261.

263. CALCULUS 4 4 hours Vector-valued functions, multivariate functions, spherical and cylindrical coordinates, differential calculus of multivariate functions, integral calculus of multivariate functions. Prerequisite: Mathematics 262.

264. CALCULUS 5 3 hours Offered only Fall 1984-85. Vector calculus, line integrals, Green's Theorem, Stokes' Theorem. Prerequisite: Mathematics 263.

272. INTRODUCTION TO LINEAR ALGEBRA 3 hours Vector space methods. Vector spaces over R, principally R^n. Linear transformations, their matrices, eigenvalues and eigenvectors. Applications. Prerequisites: Mathematics 262 or consent of the instructor.

290. SPECIAL TOPICS IN MATHEMATICS 1-3 hours

294. FOUNDATIONS OF MATHEMATICS 4 hours An introduction to sets, logic, and mathematical proof. The application of these concepts to elementary calculus. Prerequisite: Mathematics 261.

311. ABSTRACT ALGEBRA 1 3 hours A study of algebraic structures. Groups, rings, fields. To be offered alternate years, 1984-85. Prerequisite: Mathematics 263. Mathematics 294 is highly recommended.

312. ABSTRACT ALGEBRA 2 3 hours Continuation of 311.

313. ADVANCED LINEAR ALGEBRA 3 hours Finite and infinite dimensional vector spaces over a field, linear transformations, inner product spaces, and canonical forms. To be offered alternate years 1984-85. Prerequisites: Mathematics 272 and 311.

324. TOPOLOGY 3 hours General point set topology and metric spaces. To be offered alternate years, 1983-84. Prerequisite: Mathematics 263. Mathematics 294 is highly recommended.

332. OPERATIONS RESEARCH 3 hours Linear programming model, simplex method and algorithms, primal and dual problem, sensitivity analysis, transportation transshipment, assignment, shortest route, minimal spanning tree, maximal flow, PERT. Applications illustrating optimal decision making in deterministic systems. Prerequisite: Computer Science 130 or its equivalent.

336. DISCRETE MATHEMATICS 4 hours Introduction to combinatorics, graph theory, network flows, enumeration techniques, sorting and searching. Prerequisite: Computer Science 132 and Mathematics 261 or 155. Offered alternate years 1983-84.

361. DIFFERENTIAL EQUATIONS 5 hours First order differential equations with applications, second order linear differential equations with applications. Laplace transforms, systems of first order equations. Prerequisites: Mathematics 262 and 272.

362. PARTIAL DIFFERENTIAL EQUATIONS 4 hours Fourier series, heat and wave equations, boundary conditions of clas-
sical types, Sturm-Liouville problem, series solution of ordinary differential equations. To be offered alternate years, 1984-85. Prerequisite: Mathematics 361.

363. COMPLEX VARIABLES 4 hours Complex algebra, complex calculus, analytic functions, infinite series over the complex plane, theory of residues, conformal mapping. To be offered alternate years, 1984-85. Prerequisite: Mathematics 263.

381. STATISTICS 1 4 hours Probability models, random variables, sampling estimation, testing hypothesis, non-parametric procedures, regression, and correlation. To be offered alternate years, 1984-85. Prerequisite: Mathematics 262.

382. STATISTICS 2 3 hours Continuation of 381.

390. SPECIAL TOPICS IN MATHEMATICS 1-3 hours

421. FOUNDATIONS OF GEOMETRY 1 3 hours Incidence, ordering, separation and congruence, as they are involved in non-Euclidean, incidence, affine and Euclidean geometries. To be offered alternate years, 1983-84. Prerequisite: Mathematics 263.

422. FOUNDATIONS OF GEOMETRY 2 3 hours Continuation of 421.

423. PROJECTIVE GEOMETRY 3 hours Projectivities, perspectivities, perspective triangles, quadrangular sets, harmonic sets, duality, fundamental theorem and Pappus' Theorem, polars, the conic, finite projective plane parallelism, coordinates. To be offered alternate years, 1983-84. Prerequisite: Mathematics 263.

440. ADVANCED ENGINEERING MATHEMATICS 3 hours Vector analysis, Fourier series, functions from Rm to Rn, Taylor series of multivariable functions, and special functions. Applications. Prerequisite: Mathematics 361.

452. REAL ANALYSIS 1 3 hours Basic set theory. The algebraic (vector space) and topological (norm) properties of real Cartesian spaces. Sequences. Offered alternate years 1983-84. Prerequisite: Mathematics 263. Mathematics 294 is highly recommended.

453. REAL ANALYSIS 2 3 hours Continuous functions in real Cartesian spaces. Theory of functions of one variable (differentiation, integration). Offered alternate years 1983-84.

461. NUMERICAL ANALYSIS 1 3 hours Solutions of equations in one variable, interpolation and polynomial approximation, direct methods for solving linear systems. Prerequisite: Mathematics 263 and Computer Science 131. Offered alternate years 1984-85.

462. NUMERICAL ANALYSIS 2 3 hours Numerical differentiation and integration, initial value problems for ordinary differential equations. Iterative techniques in matrix algebra. Prerequisite: Mathematics 461 and 361. Offered alternate years 1984-85.

490. SPECIAL TOPICS IN MATHEMATICS 1-3 hours

494. SEMINAR IN MATHEMATICS 1-3 hours

497. INDEPENDENT STUDY IN MATHEMATICS 1-3 hours

Computer Science

For the computer science major, the student must complete 130, 131 (or 231), 132, 234, 236, 238, 330, 334, 338, and 461 (or 331). In addition, the student must complete a senior project (430) for 4 hours credit and 6 hours of electives in computer science at the 300/400 level. Introduction to Computer Graphics (204-443) may be counted as an elective.

The following mathematics courses are also required of the computer science major: 163, 261, 262, 272, 336, and either 142-143, 156, or 361-382. Philosophy 334, Symbolic Logic, is also a required cognate course.

For a minor in computer science, the student must complete 131, 132, 234, 236, 238, and at least 10 additional hours in computer science with at least 6 hours at the 300-400 level.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning programs of study, university catalog and library. Required of departmental majors. Also listed as Mathematics 000.

130. INTRODUCTION TO INFORMATION PROCESSING 4 hours 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 programming in BASIC.

131. INTRODUCTION TO FORTRAN
4 hours An introduction to problem solving and algorithm development. Design, code (FORTRAN), debug, and document programs using techniques of good programming style.

132. INTERMEDIATE PROGRAMMING
4 hours Continued development of structured programming techniques, and introduction to basic aspects of string processing, internal search/sort methods, and simple data structures. A second high level programming language is introduced. Prerequisite: Computer Science 131 or 231.

231. INTRODUCTION TO COBOL
4 hours An introduction to programming in COBOL with business application.

234. ASSEMBLY LANGUAGE PROGRAMMING
4 hours An introduction to computer structure and machine language, assembly language programming, macro-program segmentation and linkage. Prerequisite: Computer Science 132.

236. INTRODUCTION TO COMPUTER ORGANIZATION
4 hours Basic logic design, introduction to computer architecture. Prerequisite: Computer Science 132.

238. INTRODUCTION TO FILE PROCESSING
4 hours An introduction to the file processing environment, sequential access and direct access file manipulation techniques. Prerequisite: Computer Science 132.

330. ORGANIZATION OF PROGRAMMING LANGUAGES
4 hours Programming language constructs emphasizing the run-time behavior of programs. Prerequisite: Computer Science 234 and 238.

331. ADVANCED COBOL
4 hours Through the use of the COBOL programming language students are exposed to file organizations, they are introduced to advanced file processing techniques, and they are introduced to the fundamentals of database management. To be offered in alternate years 1984-85. Prerequisite: Computer Science 231.

332. OPERATIONS RESEARCH
3 hours Linear programming model, simplex method and algorithms, primal and dual problem, sensitivity analysis, transportation, transshipment, assignment, shortest route, minimal spanning tree, maximal flow, PERT. Applications illustrating optimal decision making in deterministic systems. Also listed as Mathematics 332. Prerequisite: Computer Science 130 or its equivalent.

334. OPERATING SYSTEMS AND COMPUTER ARCHITECTURE 1
4 hours Operating system principles. Organization and architecture of computer systems at the register-transfer and programming levels of system development. Prerequisite: Computer Science 234 and 236.

335. OPERATING SYSTEMS AND COMPUTER ARCHITECTURE 2
4 hours Continuation of 334.

338. DATA STRUCTURES AND ALGORITHM ANALYSIS
4 hours Basic techniques for the design and analysis of efficient algorithms for sorting, merging, searching and memory management. Prerequisite: Computer Science 238.

430. SENIOR PROJECT IN COMPUTER SCIENCE
4 hours 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.

461. NUMERICAL ANALYSIS 1
3 hours Solutions of equations in one variable, interpolation and polynomial approximation, direct methods for solving linear systems. Prerequisite: Mathematics 263 and Computer Science 131. To be offered alternate years 1984-85.

462. NUMERICAL ANALYSIS 2
3 hours Numerical differentiation and integration, initial value problems for ordinary differential equations. Iterative techniques in matrix algebra. Prerequisite: Computer Science 461 and Mathematics 361. To be offered alternate years 1984-85.

470. COMPUTER SCIENCE INTERNSHIP
3-12 hours 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
1-4 hours
MUSIC
(Department 152)

Professor Sonntag; Associate Professor E. Williams (Chairman); Assistant Professors Fahrner, Kratzer (leave); Instructors Gray, Svendsen; Visiting Instructor D. Lenksen; Lecturers Bidding, H. Davis, Hill, Laukhuf, H. Murphy, R. Williams.

The Department of Music offers a full course of music and music education studies for the aspiring music educator 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 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 gain the knowledge and proficiency in breadth and depth which will help him achieve future success in his 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 and performance, 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 All majors include a basic musicianship core of courses 101, 121, 122, 123, 131, 132, 133, 221, 222, 223, 231, 232, 233, 241, 242, 311, 312, 313, 321, 322, 323, and 341. Vocal majors also take dictation 261, 262, 263. The College of Arts and Sciences in-depth course requirements are not required for the Bachelor of Music degrees. 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 classroom instruments; senior recital; music education courses 043, 336, 338, 339, 361, 461, and 462 (instrumental majors also take 463); and professional education courses 111, 223, 224, 250 or 251, 342, 370, 380, student teaching (one quarter), and field experience.

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.

Bachelor of Arts The major in music requires a minimum of 51 hours which must include music courses 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 6 quarters in a major performing group; and a senior project (with or without credit).

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; 6 quarters of private applied instruction in one area and 6 quarters in a major performing group.

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.

Teacher certification in music, vocal and instrumental, K-12, is acquired through the Bachelor of Music major in music education. However, students on other programs may elect to fulfill requirements for music K-12, 7-12, or K-6 in addition to their regular curricula. Contact the department chair for specific requirements.

Double majors in music and another field, prelaw programs with music majors, interdisciplinary programs, or double degree programs can be arranged. Contact the department chair for details.

Applied Music Each music major generally takes two credit hours of individual instruction in his 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 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.

010. VOICE CLASS 1 hour
015. VOICE-INDIVIDUAL 1-3 hours
020. PIANO CLASS 1 hour
021. PIANO CLASS - MAJORS 1 hour
025. PIANO-INDIVIDUAL 1-3 hours
026. HARPSCICHORD-INDIVIDUAL 1-3 hours
030. ORGAN CLASS 1 hour
035. ORGAN-INDIVIDUAL 1-3 hours
040. STRINGS CLASS 1 hour
041. VIOLIN-VIOLA CLASS 1 hour
042. CELLO-BASS CLASS 1 hour
043. GUITAR/CLASSROOM INSTRUMENTS CLASS 1 hour
045. VIOLIN-INDIVIDUAL 1-3 hours
046. VIOLDA-INDIVIDUAL 1-3 hours
047. CELLO-INDIVIDUAL 1-3 hours
048. DOUBLE BASS-INDIVIDUAL 1-3 hours
049. GUITAR-INDIVIDUAL 1-3 hours
050. WOODWIND CLASS 1 hour
055. FLUTE-INDIVIDUAL 1-3 hours
056. OBOE-INDIVIDUAL 1-3 hours
057. CLARINET-INDIVIDUAL 1-3 hours
058. BASSOON-INDIVIDUAL 1-3 hours
059. SAXOPHONE-INDIVIDUAL 1-3 hours
060. BRASS CLASS 1 hour
065. TRUMPET-INDIVIDUAL 1-3 hours
066. FRENCH HORN-INDIVIDUAL 1-3 hours
067. TROMBONE-INDIVIDUAL 1-3 hours
068. EUPHONIUM-INDIVIDUAL 1-3 hours
069. TUBA-INDIVIDUAL 1-3 hours
070. PERCUSSION CLASS 1 hour
075. PERCUSSION-INDIVIDUAL 1-3 hours

Note 1. All class instruction carries one hour credit per quarter. The amount of instruction depends upon the size of the class, but is not less than one-half nor more than two class hours per week.

2. Individual instruction is offered for varying hours of credit. The section number will determine the number of hours credit. Usually, two hours for majors and one hour for minors are taken. Generally, one half hour of individual instruction is given for each hour of credit taken.

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. In-depth requirements in fine arts may be satisfied by two to four years of membership in a major performing group.

080. CHORUS 1 hour 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 hour 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. VOCAL ENSEMBLE 1 hour Selected ensembles of vocalists for the study and performance of characteristic literature. Membership by audition.

083. UNIVERSITY SINGERS 1 hour 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 and programs on and off campus and on tour. Membership by audition.

084. CONCERT BAND 1 hour A concert ensemble open to all qualified students who play band instruments. A wide variety of band literature is studied and performed in regular campus concerts.

086. PEP BAND 1 hour A band specially organized to provide music for athletic events.

087. SYMPHONIC BAND 1 hour A select, 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 hour Selected ensembles for the study and performance of
jazz and popular music. Performances on and off campus are scheduled throughout the year, including the annual jazz festival. Membership priority is given to members of symphonic and concert bands.

090. MARCHING BAND 1 hour A musical organization devoted to the preparation and performance of football games 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 hour Selected ensembles of woodwind instrumentalists for the study and performance of characteristic literature.

094. BRASS ENSEMBLE 1 hour Selected ensembles of brass instrumentalists for the study and performance of characteristic literature.

095. PERCUSSION ENSEMBLE 1 hour Selected ensembles of percussion players for the study and performance of characteristic literature.

096. ORCHESTRA 1 hour 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 hour Ensembles of string instrumentalists for the study and performance of characteristic literature.

Music Courses

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning programs of courses, university catalog and library. Required of departmental majors.

001. CONCERT AND RECITAL OBSERVATION 0 hours A selected number of concerts and recitals to be attended each quarter. Required of all full-time music majors. Graded S-U.

100. MUSIC 3 hours A basic course in the nature, forms, styles, and media of music of all types and periods. Emphasis upon listening and understanding. Laboratory listening and concert attendance, knowledge of fundamentals, recognition of composers and representative literature expected.

101. MUSIC 3 hours The basic music course for music majors only.

110. FUNDAMENTALS OF MUSIC FOR THE NON-MUSIC MAJOR 3 hours 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.

112. MUSIC FOR THE CLASSROOM TEACHER 3 hours Music activities, materials, literature, unit planning, teaching methods and skills for the classroom teacher, grades K-6. Prerequisite: Music 110. Includes approximately 5 hours of field experience.

121. THEORY OF MUSIC 3 hours 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 3 hours Continuation of 121.

123. THEORY OF MUSIC 3 hours Continuation of 122.

131. EAR TRAINING 1 hour 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 1 hour Continuation of 131.

133. EAR TRAINING 1 hour Continuation of 132.

210. JAZZ HISTORY AND LITERATURE 3 hours 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.

221. ADVANCED THEORY OF MUSIC 4 hours Continuation of Music 123. Study of 18th, 19th and 20th century compositional techniques. Development of analytical skills. Creative projects in composition. Courses must be taken in sequence. Prerequisite: Music 123.
222. ADVANCED THEORY OF MUSIC
4 hours Continuation of 221.

223. ADVANCED THEORY OF MUSIC
4 hours Continuation of 222.

231. ADVANCED EAR TRAINING 1 hour
Continuation of Ear Training 131-132 -133.
Designed to supplement and to be taken in conjunction with second year of music theory. Prerequisite: Ear Training 133 or proficiency.

232. ADVANCED EAR TRAINING 1 hour
Continuation of 231.

233. ADVANCED EAR TRAINING 1 hour
Continuation of 232.

241. BASIC CONDUCTING I 1 hour
General conducting techniques and principles of score study. Laboratory experiences. Continuation courses must be taken in sequence. Prerequisite: Music 121. (Formerly Music 421).

242. BASIC CONDUCTING II 1 hour
Continuation of 241.

245. HISTORY OF SACRED MUSIC
3 hours A history of the sacred music of the Judeo-Christian tradition, both for congregation and for trained voices, with special emphasis on developments in this century.

261. LATIN AND ITALIAN DICTION FOR SINGERS 1 hour 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 hour Continuation of 261 in French.

263. GERMAN DICTION FOR SINGERS 1 hour Continuation of 261-262 in German.

310. AMERICAN MUSIC 3 hours 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 hours Polyphonic music in various styles with particular emphasis on that of the eighteenth century. Creative projects in contrapuntal writing. Prerequisite: Music 223.

312. FORM AND ANALYSIS 2 hours The evolution of musical forms and styles from the Baroque to the present. Theoretical and stylistic analysis of representative music. Prerequisite: Music 223.

313. ORCHESTRATION 2 hours 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: Music 223.

321. MUSIC HISTORY AND LITERATURE 3 hours The historical development of music literature. Study of representative literature and composers: Ancient, Medieval and Renaissance periods. Prerequisite: Music 100.

322. MUSIC HISTORY AND LITERATURE 3 hours Study of the Baroque and Classical periods. Prerequisite: Music 100.

323. MUSIC HISTORY AND LITERATURE 3 hours Study of the Romantic and Twentieth Century periods. Prerequisite: Music 100.

334. WOODWIND METHODS 2 hours Study, elementary performance skills, pedagogy, and materials of the woodwind instruments. For future school music teachers.

336. BRASS METHODS 2 hours Study, elementary performance skills, pedagogy, and materials of the brass instruments. For future school music teachers.

338. PERCUSSION METHODS 2 hours Study, elementary performance skills, pedagogy, and materials of the percussion instruments. For future school music teachers.

339. STRING METHODS 2 hours Study, elementary performance skills, pedagogy, and materials of the orchestral stringed instruments. For future school music teachers.

341. ADVANCED CONDUCTING 2 hours Conducting and rehearsal techniques related to instrumental and choral ensemble music. Score study and practical application through laboratory experiences. Prerequisites: Music 123 and 242. (Formerly 152-422 and 423).

345. CHOIR MANAGEMENT AND TRAINING 3 hours The training and management of church choirs including youth choirs, handbell choirs, and administration of the total church music program.
PHILOSOPHY AND RELIGION

(Department 115)

Professors Hinderliter (Chairman); Associate Professors Barrick, Beanblossom, M. Lenssen.

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.

Philosophy Major The major in philosophy requires a minimum of 45 quarter hours, including the following courses: 234, two of the following (100, 237, 238), two courses in the history of philosophy (331, 343, 347, 348, 349, 350), and either 494 or 497. For Philosophy 100 to count as a part of the major, it must be taken before Philosophy 237 or Philosophy 238. A maximum of three courses in religion may be applied to the philosophy major. A senior comprehensive exam is not required.

Religion Major The major in religion requires a minimum of 45 quarter hours beyond religion 105 and must include either seminar 495 or independent study 498. A maximum of three courses in philosophy may be applied towards the religion major. A senior comprehensive exam is not required.

Philosophy and Religion Major The major in philosophy and religion requires a minimum of 45 quarter hours beyond philosophy 100 and religion 105, with the selection of courses subject to approval by the department. A senior comprehensive exam is not required.

It is recommended that majors in the department who plan to attend theological seminary or graduate school take two years of foreign language.

Minor Programs Minors are offered in both philosophy and religion. A minimum of 30
hours is required with the selection of courses subject to approval by the department. Contact the department chairman for further information about these programs.

Prelaw Program The department cooperates with the Pettit College of Law in the guaranteed admission prelaw program. Information about the curricular requirements of the program can be secured from the department chairman.

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.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, University catalog and library. Also listed as Religion 000. Required of departmental majors.

Philosophy 234, 237 or 238 can be taken in place of Philosophy 100 to fulfill the general education requirement in Philosophy.

100. PHILOSOPHY 3 hours 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.

210. DEATH AND DYING 3 hours An exploration of the experience and meaning of death. Emphasis on choices and decisions related to dying that involve medical treatment, aging, grief, institutional care, and social policy.

234. LOGIC 3 hours The study of logical fallacies and the principles of correct reasoning. The application of formal logical analysis to arguments encountered in ordinary language.

237. KNOWLEDGE AND TRUTH 3 hours An examination of the scope and justification of knowledge with reference to problems such as skepticism, sense perception, reason, belief, and truth. Prerequisite: Philosophy 100 or sophomore standing.

238. ETHICS 3 hours An examination of selected ethical theories and their rational justification. The use of ethical theories for resolving ethical issues in personal and social decision-making. Prerequisite: Philosophy 100 or sophomore standing.

Most of the following courses are offered in alternate years or on demand. Prerequisites for all 300 and 400 level courses: one course in philosophy or consent of the instructor.

290. SPECIAL TOPICS IN PHILOSOPHY 1-3 hours

294. SEMINAR IN PHILOSOPHY 1-3 hours

320. SOCIAL JUSTICE 3 hours Theories of justice in contemporary society including conceptions of the law, human rights, equality, liberty, and responsibility. (Formerly 438)

325. PHILOSOPHY OF RELIGION 3 hours 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. (Formerly 452) Also listed as Religion 325.

331. PLATO AND ARISTOTLE 3 hours A study of the Greek philosophers, Plato and Aristotle, against the background of the Pre-Socratics and Socrates.

334. SYMBOLIC LOGIC 3 hours The evaluation of deductive arguments by means of the formal procedures of modern symbolic logic. Prerequisite: 115-234 Logic.

338. BIOETHICS 3 hours Ethical issues involving personal and social values in matters of life and death, such as experimentation with human subjects, genetic control, abortion, and patients' rights to receive and refuse treatment.
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.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, University catalog and library. Also listed as Religion 347.

105. RELIGION 3 hours An exploration of the religious dimension of man's search for personal identity, meaningful existence, and ultimate reality, through the examination of various aspects and expressions of the religious life of mankind.

106. INTRODUCTION TO THE BIBLE 3 hours An introduction to the Old and New Testaments, with special emphasis on the origin, history, and message of the biblical writings, and the central personalities, events, and ideas which form the basis of the Judeo-Christian tradition.

107. RELIGIONS EAST AND WEST 3 hours 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 3 hours A study of the major teachings, practices and institutional forms of Christianity in their historical and contemporary settings. Most of the following courses are offered in alternate years or on demand.

341. AESTHETICS 3 hours An examination of classical and contemporary theories of art and aesthetic experience. Consideration of the nature of various arts and issues such as meaning, truth, and value in art.

343. AMERICAN PHILOSOPHY 3 hours (Formerly 444, 445). Main currents in American philosophy, including representative thinkers in such traditions as Puritanism, Transcendentalism, Pragmatism, and Realism. Prerequisite: one course in the history of philosophy or consent of instructor.

345. EXISTENTIALISM 3 hours The historical roots of existentialism in Kierkegaard and Nietzsche, and the thought of representative writers such as Heidegger, Sartre, Marcel, Camus, Dostoyevsky, and Kafka.

347. MEDIEVAL THOUGHT 3 hours The development of theological and philosophical thought from 500 A.D. to 1350 A.D. Also listed as Religion 347.

348. RENAISSANCE TO RATIONALISM 3 hours The history of philosophy from the Renaissance through the thought of Bacon, Hobbes, and the Continental Rationalists. Prerequisite: one course in the history of philosophy or consent of instructor.

349. EMPIRICISM AND ENLIGHTENMENT 3 hours Seventeenth and eighteenth-century philosophies from Locke to Kant which influenced subsequent Western life and thought. Prerequisite: one course in the history of philosophy or consent of instructor.

350. NINETEENTH CENTURY PHILOSOPHY 3 hours The history of philosophy from Kant to Nietzsche, including the thought of Hegel, the spirit of Romanticism, and the scientific approaches of such thinkers as Mill, Darwin, and Marx. Prerequisite: one course in the history of philosophy or consent of instructor.

490. SPECIAL TOPICS IN PHILOSOPHY 1-3 hours

494. SEMINAR IN PHILOSOPHY 1-3 hours

497. INDEPENDENT STUDY IN PHILOSOPHY 1-3 hours Departmental permission required.
254. THE OLD TESTAMENT AND ANCIENT ISRAEL  3 hours A critical examination of the Old Testament in the context of the history, life, and culture of ancient Israel. Prerequisite: Religion 106 or consent of the instructor.

256. THE NEW TESTAMENT AND THE BEGINNINGS OF CHRISTIANITY  3 hours A critical examination of the New Testament and of the early Christian movement. Prerequisite: Religion 106 or consent of the instructor.

261. ARCHAEOLOGY AND THE BIBLE  3 hours The methods and conclusions of archaeological studies in the Middle East as related to the Bible.

262. CHRISTIANITY AND CULTURE  3 hours An examination of various interpretations of the relationship of Christianity to particular cultural phenomena, including literature, science, philosophy, psychology and the economic and political orders.

263. CHRISTIAN ETHICS  3 hours The relation of biblical and theological thought to the development of ethical principles. Application to personal and social moral issues, such as marriage, family, race, politico-economic life, international affairs.

291. SPECIAL TOPICS IN RELIGION  1-3 hours

295. SEMINAR IN RELIGION  1-3 hours

325. PHILOSOPHY OF RELIGION  3 hours (Formerly 452). 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 Philosophy 325.

346. EARLY CHRISTIAN THOUGHT  3 hours Christianity from the post-New Testament period to the Council of Chalcedon in 451 A.D.

347. MEDIEVAL THOUGHT  3 hours The development of theological and philosophical thought from 500 A.D. to 1350 A.D. Also listed as Philosophy 347.

353. REFORMATION AND MODERN CHRISTIANITY  3 hours The Protestant-Catholic conflict and the impact of modern secular thought on Christianity from the Reformation through the nineteenth century.

361. CONTEMPORARY CHRISTIAN THOUGHT  3 hours Basic issues, major theological positions, and representative theologians of twentieth century Christian thought.

365. JESUS  3 hours (Formerly 461). A study of the life and teachings of Jesus in the context of first century Palestinian Judaism and in the subsequent development of Christian faith and scholarly speculation. Prerequisites: Religion 106 or 256, or consent of the instructor.

483. LIFE AND TEACHINGS OF ST. PAUL  3 hours The insights of the most influential thinker and apostle in the early church.

491. SPECIAL TOPICS IN RELIGION  1-3 hours

495. SEMINAR IN RELIGION  1-3 hours

498. INDEPENDENT STUDY IN RELIGION  1-3 hours Departmental permission required.

PHYSICS
(Department 124)

Professor Gangemi (Chairman) Weimer; Associate Professors 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 its 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.

The physics major must complete a minimum of 47 hours in the major field. The required courses are the following: Physics 231, 232, 233, 234, 235, 236, 303, (310, 320, 330, 340), 351, 352, 353, 361, 363, 411, 412, 463. Six of the 47 hours are taken from the advanced laboratory group: Physics 310, 320, 330, 340. At the discretion of the department, the courses Physics 413, 432 and/or 433 may also be required of the student. This
determination will be made by the department chairman in consultation with the physics department staff and to a large extent will be determined by the career goals of the student.

A senior comprehensive examination is not required for the physics major.

The Physics Department also offers a minor in physics. The student desiring to complete the requirements for the physics minor must complete the following courses: Physics 231, 232, 233, 234, 235, 236, 351, 352, 411, 412, and 6 additional hours from among Physics 303, 353, 310, 320, 330, and 340. In some instances, substitutions for the above courses may be made with the approval of the department chairman.

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 students whose goal is to teach physics in the high schools and will include 45 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 chairman 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 Department of Education and satisfy all requirements as determined by the State of Ohio and the Department of Education of Ohio Northern University. A detailed description of these requirements can be obtained from the Chairman of the Department of Education.

105. PHYSICS FOR THE LIFE SCIENCES
3 hours Basic laws and principles of physics with some emphasis on the life sciences. May be substituted for Physics 100. Credit may be received for Physics 100 or Physics 105 but not for both. Offered only when sufficient registration warrants.

190. SEMINAR 1 hour Reading, discussion and reports on problems of historical and current interest in physics. Offered only when sufficient interest warrants.

Physics 211, 212, and 213 are non-calculus, general physics courses intended primarily for pre-pharmacy and secondary education students. Prerequisites: Mathematics 161, 162 or equivalent.

211. GENERAL PHYSICS: MECHANICS OF SOLIDS AND FLUIDS 3 hours Basic principles of Newtonian mechanics of solids and liquids. The laboratory corresponding to this course is Physics 234. Offered every year in the fall quarter.

212. GENERAL PHYSICS: SOUND, HEAT, AND LIGHT 3 hours Basic principles of sound propagation, heat and heat transfer, and light propagation. The laboratory corresponding to this course is Physics 235. Offered every year in the winter quarter.

213. GENERAL PHYSICS: ELECTRICITY AND MAGNETISM 3 hours Basic principles of electricity and magnetic phenomena. The laboratory corresponding to this course is Physics 236. Offered every year in the spring quarter.

Physics 231, 232, and 233 are the calculus general physics courses designed for physics and engineering students. Physics 231 should precede 232 and 233. Prerequisite: Mathematics 261 which may be taken concurrently or its equivalent.

231. PHYSICS: MECHANICS OF SOLIDS AND FLUIDS 4 hours Basic principles of Newtonian mechanics of solids and fluids employing the differential and integral calculus. The laboratory corresponding to this course is Physics 234. Offered every year in the fall and winter quarters.

232. PHYSICS: HEAT, SOUND, AND LIGHT 4 hours Basic principles of sound propagation, heat transfer and light propagation. Differential and integral calculus are used. The laboratory corresponding to this
course is Physics 235. Offered every year in the fall and winter quarters.

233. ELECTRICITY AND MAGNETISM
4 hours Basic principles of electrical and magnetic phenomena. Differential and integral calculus are used. The laboratory corresponding to this course is Physics 236. Offered every year in the spring quarter.

234. PHYSICS LABORATORY: MECHANICS
1 hour Experiments in basic Newtonian mechanics. Physics 231 should be taken concurrently, or instructor's permission must be obtained. Offered every year in the fall and winter quarters.

235. PHYSICS LABORATORY: HEAT, SOUND, AND LIGHT
1 hour Experiments in heat, sound and light. Physics 232 should be taken concurrently, or instructor's permission must be obtained. Offered every year in the fall and winter quarters.

236. PHYSICS LABORATORY: ELECTRICITY AND MAGNETISM
1 hour Experiments with basic electrical and magnetic phenomena. Physics 233 should be taken concurrently or instructor's permission must be obtained. Offered every year in the spring quarter.

241. BASIC ELECTRONICS FOR MEDICAL TECHNICAL STUDENTS
2 hours Basic physics of medical laboratory instruments, including principles of operation and techniques of use. Offered every year in the spring quarter.

250. ASTRONOMY I
3 hours The evolution of man's understanding of the structure and extent of the solar system. A review of current knowledge of the solar system, and an introduction to stellar systems. Offered every year in the fall quarter.

251. ASTRONOMY II
3 hours The structure and evolution of stars and stellar systems. Cosmology. Prerequisite: Physics 250. Offered every year in the Winter Term.

303. MODERN PHYSICS
3 hours The concepts of relativity, quantum and wave mechanics, atomic structure and absorption and emission processes. Prerequisites: Mathematics 264 and Physics 233. Offered every year in the winter quarter.

310. THEORY AND ADVANCED LABORATORY: MECHANICS
1-3 hours Prerequisite: one year of physics. Part of the physics major program and offered when needed.

320. THEORY AND ADVANCED LABORATORY: LIGHT, HEAT, SOUND
1-3 hours Prerequisite: one year of physics. Part of the physics major program and offered when needed.

330. THEORY AND ADVANCED LABORATORY: ELECTRICITY, MAGNETISM, ELECTRONICS
1-3 hours Prerequisite: one year of physics. Part of the physics major program and offered when needed.

340. THEORY AND ADVANCED LAB: NUCLEAR PHYSICS AND SOLID STATE
1-3 hours Prerequisite: one year of physics. Part of the physics major program and offered when needed.

351. ANALYTICAL MECHANICS I
3 hours Vector analysis, kinematics, conservative forces, planetary motion, pendulum, free and forced oscillations, coupled systems and normal coordinates, angular momentum, rigid bodies. Prerequisites: Mathematics 361 and Physics 233. Part of the physics major program and offered when needed.

352. ANALYTICAL MECHANICS II
3 hours LaGrange equations, canonical formulation, principle of least action, normal coordinates, rigid bodies, special relativity, mathematical methods. Prerequisites: Mathematics 362 and Physics 351. Part of the physics major program and offered when needed.

353. NUCLEAR PHYSICS
3 hours Nuclear radiation detection instruments, nuclear constituents and structure, nuclear models, nuclear reactions, fundamentals of nuclear reactor theory and design, shielding and safety principles in nuclear physics. Prerequisites: Physics 231, 232, 233. Offered every year in the spring quarter.

361. ELECTRONICS
3 hours Theory of solid state devices, rectifier circuits, transistor amplifiers, oscillators and modulators, instrumentation applications. Prerequisites: Physics 213 or 233. Offered every year in the fall quarter.

363. GEOMETRICAL OPTICS
2 hours The laws of geometrical optics, image formation by mirrors and lenses, optical aberrations and optical instruments. Prerequisite: Physics
232. Part of the physics major program and offered when needed.

411. ELECTRICITY AND MAGNETISM I
3 hours 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. Prerequisites: Mathematics 264 and Physics 233. Part of the physics major program and offered when needed.

412. ELECTRICITY AND MAGNETISM II
3 hours Advanced electric and magnetic fields; electric and magnetic properties of solids, electromagnetic radiation. Prerequisites: Mathematics 362 and Physics 411. Part of the physics major program and offered when needed.

413. SOLID STATE
3 hours A lecture and problems course in the structure of solids and their phenomena. Quantum and statistical mechanics concepts are introduced to develop theories of internal stress and strain in crystals, conductivity of electricity in metals, semiconductors and superconductors, magnetism, the thermal properties of solids and imperfections in solids. Prerequisite: Physics 303. Part of the physics major program and offered when needed.

432. STATISTICAL PHYSICS

433. THEORETICAL PHYSICS
4 hours 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.

463. PHYSICAL OPTICS
3 hours The law of physical optics, interference, diffraction and polarization and instrumentation. Prerequisite: Physics 363. Part of the physics major program and offered when needed.

490. SPECIAL TOPICS IN PHYSICS
1-3 hours Part of the physics major program and offered when needed.

494. SEMINAR IN PHYSICS
1-3 hours Part of the physics major program and offered when needed.

497. INDEPENDENT STUDY
1-3 hours Part of the physics major program and offered when needed.

PSYCHOLOGY, SOCIOLOGY, AND SOCIAL WORK
(Department 133)
Professors Cohoe, Wildman (Chairman); Associate Professors Brubaker, Compton, P. Hruschka, Kahal; Assistant Professors Ebbe, Heath; Instructor Negrey (on leave 1983-84); Lecturer Stevens; Adjunct Faculty Arnold, Davis, Smith, Wilson.

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, Sociology, Social Work, or Gerontology
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.

To qualify for guaranteed admission students must complete the program with at least a 3.30 GPA. The program requires 36 credit hours of specially selected electives. Specific curricular requirements are available from the department chairman.

Secondary Certification
Secondary teacher certification programs are offered in social psychology, sociology, and comprehensive social studies. Information on these programs is available from the department chairman or the Office of the Director of Teacher Education.

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
60’s—gerontology
70’s, 80’s—social work
90’s—special topics, independent study

Examples:
141—1st year, sociology
335—3rd year, psychology
270—2nd year, social work

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:
1. Psychology 100
2. Psychology 111
3. Psychology 210
4. Psychology 211
5. Biology 100
6. Math 142

For the major
1. Psychology 000
2. The Psychology Core
3. 32 hours of Psychology Electives
4. Math 100 & 130 or Biology 113 & 231

For the minor
1. The Psychology Core
2. 17 hours of Psychology Electives

000. ORIENTATION  1 hour  Familiarization with the departmental requirements for majors, planning programs of courses, University catalog and library; career options. Also listed as Sociology 000 and Social Work 000.

100. PSYCHOLOGY  4 hours  General research and concepts in human behavior. Lectures, demonstrations, and observations.

111. INTRODUCTORY PSYCHOLOGY LABORATORY  1 hour  Experiments which demonstrate basic psychological principles and acquaint the student with laboratory procedures and report writing. Usually to be taken concurrently with Psychology 100, but can be taken later. Required for Psychology majors, optional for other students enrolled in Psychology 100.

190. SPECIAL TOPICS IN PSYCHOLOGY  1-3 hours

200. PRACTICUM IN CHILD DEVELOPMENT  1 hour  Work with children in the department's Child Development Center under supervision of an instructor and nursery school teacher. Practical experience in behavior management. Prerequisite: Approval of department chairman.

210. EXPERIMENTAL PSYCHOLOGY I  4 hours  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: Psychology 100 and 111, Mathematics 142.

211. EXPERIMENTAL PSYCHOLOGY II  4 hours  Continuation of 210.

212. PRINCIPLES OF BEHAVIOR MANAGEMENT  3 hours  The theory and supporting research which underlie behavior modification. Taught through lecture and laboratory demonstrations. Prerequisite: Psychology 100.

215. DEVELOPMENTAL PSYCHOLOGY  3 hours  Basic theories in human development from conception through old age; contemporary research at each age level. Prerequisite: Psychology 100.

218. PSYCHOLOGY OF THE EXCEPTIONAL CHILD  3 hours  The study of the atypical child. Prerequisite: Psychology 100.

226. HUMAN SEXUAL BEHAVIOR  3 hours  The course will draw heavily on the 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 the human sexual behavior. Prerequisite: Psychology 100.

290. SPECIAL TOPICS IN PSYCHOLOGY  3 hours
300. PRACTICUM IN TEACHING IN THE BEHAVIORAL SCIENCES 2 hours Specialy planned teaching experiences in courses in the department and preparation of demonstrations. May be repeated to 6 hours but does not apply to major requirements. Also listed as Sociology 300 and Social Work 300. Prerequisites: Psychology 212 and approval of the chairman.

301. SOCIAL PSYCHOLOGY 4 hours 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. Also listed as Sociology 301. Prerequisite: Psychology 100.

303. ADVANCED SOCIAL PSYCHOLOGY 3 hours Advanced study of competing perspectives in social psychology. Special emphasis on symbolic interactionist perspectives and "sociological" social psychology. Topics include interpersonal interaction, small group behavior, socialization, sex roles and the "self" in society. Also listed as Sociology 303. Prerequisite: Psychology 301 (Sociology 301).

304. PRACTICUM IN RESEARCH IN THE BEHAVIORAL SCIENCES 1-3 hours Assist and participate in ongoing research by faculty members within the department. May by repeated up to 6 hours but repeated hours do not apply to major or graduation requirements. Also listed as Sociology 304 & Social Work 304. Prerequisites: Psychology 111 or 202 and approval of the chairman.

305. ADULT DEVELOPMENT AND AGING 3 hours A study of the basic psychological processes in adult development and aging with an emphasis on a dynamic view of human development throughout the life span. Heavily oriented towards research methods and experimental findings. Prerequisite: Psychology 215.

310. THEORIES OF LEARNING 3 hours Major theories of learning, their origins and relevance in the light of current research and findings. Prerequisite: Psychology 212.

311. PSYCHOLOGY OF PERSONALITY 4 hours The major theories of personality from Freud to contemporary theoretical approaches. Prerequisite: Psychology 100.

312. PSYCHOLOGICAL ASSESSMENT 4 hours 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: Psychology 100.

314. CLASSICAL & INSTRUMENTAL CONDITIONING 3 hours A quasi-historical account of the major issues involved in classical and instrumental conditioning. The course emphasizes major empirical findings and the major theoretical issues that have resulted. Current work in learning and memory is covered on both the animal and human level. Course to be taught in alternate years with Psychology 310. Prerequisite: Psychology 212.

316. ORGANIZATIONAL PSYCHOLOGY 3 hours A study of the interplay between people and organizations emphasizing basic psychological processes such as motivation, perception, and learning. Other areas of study include organizational climate, leadership, conflict resolution, decision making, and communication. Prerequisite: Psychology 100.

335. PSYSILOGICAL PSYCHOLOGY 3 hours Psychology as a biological science. Physiological events underlying behavior, including sensory, neutral, and glandular involvement in such topics as motivation, emotion, and learning. Prerequisite: Psychology 100 and Biology 231 or 331.

336. SENSATION AND PERCEPTION 3 hours A study of sensory systems. Demonstration and evaluation of selected experiments in visual, auditory, gustatory, olfactory, and cutaneous perception. Prerequisites: Psychology 100 and Biology 231 or 331.

337. COMPARATIVE PSYCHOLOGY 3 hours Survey of behavior of different phyletic levels from lower forms to man with special emphasis on primate behavior. Prerequisites: Psychology 100 and Biology 100.

338. BRAIN AND BEHAVIOR 3 hours A survey of the brain systems involved in anxiety, arousal, depression, schizophrenia, etc. Consideration will also be given to the behavioral and neurophysiological effects of various psychoactive drugs. Prerequisite: Psychology 335 and Biology 231 or 331.
411. COUNSELING PSYCHOLOGY 3 hours Basic methods of counseling plus a study of seven models for counseling intervention. Prerequisites: Psychology 311 or 420.


421. ABNORMAL PSYCHOLOGY II 3 hours A review of the causes, diagnosis and treatment of schizophrenic disorders, paranoid disorders, disorders of impulse control, psychosexual disorders, personality disorders, organic mental disorders, and a survey of multiaxial diagnostic procedures and therapeutic techniques used in clinical psychology. Prerequisite: Psychology 100.

424. PRACTICUM IN COUNSELING PSYCHOLOGY 3 hours Work with patients in a clinical setting under supervision; practical experience in interviewing and administering routine psychological tests. May be repeated once. Prerequisite: approval of instructor.

426. PRACTICUM IN PSYCHOLOGY 6-15 hours A field experience in the area of psychology. Open to seniors. Prerequisite: approval of chairman.

434. HISTORY AND SYSTEMS OF PSYCHOLOGY 3 hours An overview of the major lines of thinking which have influenced the field of psychology beginning with the ancient Greek philosopher-scientist up to the twentieth century. Emphasis is given to theories of Empiricism, Associationism, and Scientific Materialism as well as twentieth century schools of psychological thought.

490. SPECIAL TOPICS IN PSYCHOLOGY 1-3 hours

494. SEMINAR IN PSYCHOLOGY 3 hours Open to seniors.

497. INDEPENDENT STUDY IN PSYCHOLOGY 1-3 hours Prerequisite: approval of chairman.

Sociology
A major in sociology consists of the following requirements:
1. Sociology 000
2. Sociology 105
3. Sociology 251
4. Sociology 252
5. Sociology 446
6. Math 142
7. 30 hours of sociology electives

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 15 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 five hours of transferable credit from the University of Central Florida, the home institution of the coordinators of the program. Further information and applications can be secured from the ONU sociology faculty.

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, University catalog and library. Also listed as Psychology 000 and Social Work 000.

105. SOCIOLOGY 3 hours 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.

141. SOCIAL PROBLEMS 3 hours An analysis of cultural values and institutional arrangements as the origins of social problems. Inflation, unemployment, poverty, racism, and sexism are some of the topics covered. Prerequisite: Sociology 105.

191. SPECIAL TOPICS IN SOCIOLOGY 1-3 hours

203. MINORITY RELATIONS 3 hours A study of the dynamics of minority-majority relations within American society, and of the characteristics, conditions, and problems of several minority groups, as defined by race, ethnicity, or sex. A significant component is individually tailored by the student to his professional goals. Also listed as Social Work 203. Prerequisite: Sociology 105.

240. MARRIAGE AND THE FAMILY 3 hours An institutional perspective on the family, patterns of courting, marital parental behavior, trends in the contemporary American family. Prerequisite: Sociology 105.

241. SEX ROLE SOCIALIZATION 3 hours Attention is focused on the roles of men and women in the society with particular emphasis on the social forces that shape boys and girls into adult men and women. Other major issues are also addressed. Prerequisite: Sociology 105.

243. SOCIAL DEVIANC  3 hours Sociological perspectives on the processes of individual and group deviance, a discussion of selected major forms of deviance, their causes, processes, and consequences. Prerequisite: Sociology 105.

245. ORGANIZATIONAL BEHAVIOR 3 hours Theories, methods, and data in the sociological analysis of complex organizations (corporations, social agencies, hospitals, armies, labor unions, schools, governments, prisons, philanthropies, political parties.) Prerequisite: Sociology 105.

246. WORK AND OCCUPATIONS 3 hours Size and distribution of the labor force; social life in the various particular occupations and types of occupations; occupational careers, including education and training for work, relationships between occupations and the rest of the social structure. Prerequisite: Sociology 105.

247. SOCIAL INEQUALITY 3 hours 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: Sociology 105.

250. CULTURAL ANTHROPOLOGY 3 hours An introduction to the major concepts and principles of cultural anthropology. Cultural anthropology emphasizes the understanding of the total configuration and interrelationships of culture traits, complexes, and social relationships in a particular geographic environment and historical context. Prerequisite: Sociology 105.

251. QUANTITATIVE METHODS IN BEHAVIORAL RESEARCH 4 hours 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: Mathematics 142. Offered alternate years, will be offered next in 1984-85. (Formerly 201.)

252. QUALITATIVE METHODS IN BEHAVIORAL RESEARCH 4 hours 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: Sociology 105. Offered alternate years, will be offered in 1985-86.

291. SPECIAL TOPICS IN SOCIOLOGY 1-3 hours

300. PRACTICUM IN TEACHING IN THE BEHAVIORAL SCIENCES 2 hours Specialized teaching experiences in courses in the department, including tutoring, curriculum development and preparation of demonstrations. Prerequisite: Psychology 212 and approval of the chairman. May be repeated to 6 hours. The course does not apply to major requirements. Also listed as Psychology 300 and Social Work 300.

301. SOCIAL PSYCHOLOGY 4 hours 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. Also listed as Psychology 301. Prerequisite: Sociology 105.

302. GERONTOLOGY 3 hours A study of the psychological, physiological and social aspects of the lives of our elderly citizens, with a special emphasis upon the environmental problems which confront them. Prerequisites: Psychology 100 or Sociology 105. Also listed as Social Work 302.

303. ADVANCED SOCIAL PSYCHOLOGY 3 hours Advanced study of competing perspectives in social psychology. Special emphasis on symbolic interactionist perspectives and "sociological" social psychology. Topics include interpersonal interaction, small group behavior, socialization, sex roles and the "self" in society. Also listed as Psychology 303. Prerequisite: Sociology 301 (Psychology 301).

304. PRACTICUM IN RESEARCH IN THE BEHAVIORAL SCIENCES 1-3 hours Assist and participate in ongoing research by faculty members within the department. Prerequisite: Sociology 202 and approval of the chairman. May be repeated up to 6 hours but repeated hours do not apply to major or graduation requirements. Also listed as Psychology 304 and Social Work 304.

340. URBAN SOCIOLOGY 3 hours Sociological perspectives on the organization, processes, problems, and other distinctive aspects of urban life. Topics include "urban decay," the "suburbia" phenomenon, and the impact of the urban environment on the individual. Prerequisite: Sociology 105.

345. COLLECTIVE BEHAVIOR 3 hours Sociological analysis of fads and fashions, the formation of public opinion; the nature of crowds (and how and why they may become riots), and the development of social movements (Black power, women's lib, etc.) Prerequisite: Sociology 105.

347. CRIME AND DELINQUENCY 3 hours Sociological analysis of major forms of crime and juvenile delinquency, theories, research methods, data and implications for control. Prerequisite: Sociology 105.

348. MEDICAL SOCIOLOGY 3 hours Social interaction between patient and physicians, nurses, pharmacists, and other health-care personnel; social interaction among those personnel; social definition of illness; societal response to illness; social epidemiology; education and training of medical personnel. Prerequisite: Sociology 105.

352. SOCIAL DEVIANCII: SEMINAR 3 hours Advanced study, including considerable independent study, of topics covered in Social Deviance I. Special emphasis on competing theories of deviance and on very recent research. Prerequisite: Prerequisite: Sociology 243.

391. SPECIAL TOPICS IN SOCIOLOGY 1-3 hours

446. SOCIAL THOUGHT 4 hours 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, 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: Sociology 105.

448. POPULATION 3 hours Size, composition, distribution and growth of human populations; theories of population growth and migrations; collection and use of U.S. Census and other censuses; population explosions, birth control and abortion. Prerequisite: Sociology 105.

491. SPECIAL TOPICS IN SOCIOLOGY 1-3 hours

498. INDEPENDENT STUDY IN SOCIOLOGY 1-3 hours Prerequisite: approval of chairman.

Social Work
A major in social work consists of the following requirements:
1. 000 Orientation
2. 203 Minority Relations
3. 280 Introduction to Social Welfare
4. 281 Introduction to Social Work
5. 285 Human Behavior and the Social Environment
6. 366 Social Work Intervention I
7. 367 Social Work Intervention II
8. 368 Social Work Intervention III
9. 369 Services Planning
10. 470 Social Work Pro-seminar I
11. 471 Social Work and the Law
12. 474 Social Work Research
13. 480 Social Welfare Policy
14. 484 Social Work Pro-seminar II
15. 485 Field Experience
16. 486 Field Experience Seminar
17. 6 hours of social work electives
18. Math 142
19. Biology 113
20. Programming in BASIC 111
21. Political Science 202 and 203
22. Psychology 100 and 215
23. Sociology 105

000. ORIENTATION 1 hour Familiarization with the department, requirements for majors, planning program of courses, University catalog and library. Also listed as Psychology 000 and Sociology 000.

170. CAREERS IN SOCIAL WORK 1 hour An overview of the numerous settings of social work practice including services to children, medical social services, public welfare, mental health, and aging. Also describes social service administration, social policy development, and research.

192. SPECIAL TOPICS IN SOCIAL WORK 1-3 hours

203. MINORITY RELATIONS 3 hours A study of the dynamics of minority-majority relations within American society, and of the characteristics, conditions, and problems of several minority groups, as defined by race, ethnicity, or sex. A significant component is individually tailored by the student to his professional goals. Also listed as Sociology 203.

280. INTRODUCTION TO SOCIAL WELFARE 3 hours (Formerly 271). A survey of the historical development of social welfare in the United States; its roots in the English poor laws; emphasis on the description of current program and policy.

281. INTRODUCTION TO SOCIAL WORK 3 hours (Formerly 270). An introduction to the profession of social work, the scope of services and methods, and issues in the development of the profession.

285. HUMAN BEHAVIOR-SOCIAL ENVIRONMENT 3 hours (Formerly 272). This course draws upon selected general education knowledge of the social sciences related to human functioning within the social environment, to offer the student an integrated knowledge base for social work prac-

tice. The focus will be upon developmental, interactional, and adaptational processes within a systems framework. Prerequisite: Social Work 280 or 281.

292. SPECIAL TOPICS IN SOCIAL WORK 1-3 hours

300. PRACTICUM IN TEACHING IN THE BEHAVIORAL SCIENCES 2 hours Specialized practical teaching experiences in courses in the department, including tutoring, curriculum development and preparation of demonstrations. May be repeated to 6 hours but does not apply to logical and sociological aspects of the lives of our elderly citizens, with a special emphasis upon the environmental problems which confront them. Prerequisites: Psychology 100 or Sociology 105. Also listed as Sociology 302.

304. PRACTICUM IN RESEARCH IN THE BEHAVIORAL SCIENCES 1-3 hours Assist and participate in ongoing research by faculty members within the department. Prerequisite: Permission of instructor and approval of the chairman. May be repeated up to 6 hours but repeated hours do not apply to major or graduation requirements. Also listed as Psychology 304 and Sociology 304.

366. SOCIAL WORK INTERVENTION I 3 hours (Formerly 371). Basic processes used in social work practice with special focus on developing skills in micro-intervention through simulations and actual home visits. Prerequisite: Social Work 285.

367. SOCIAL WORK INTERVENTION II 3 hours (Formerly 372). This course introduces the student to the use of small group techniques as an aid to improving the social functioning of individuals and groups. The focus of the course is on the coping capacities of the group to meet the material, affiliative, and growth needs of its members. Another focus is on the coping capacities of the group to improve relationships between people outside the group, to manage the environment, and to make positive environmental change. Prerequisite: Social Work 366.

368. SOCIAL WORK INTERVENTION III 3 hours Further development of social work methodology. Focus on developing skills in macro-intervention through a supervised group project to assess design, and build a

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social program in a nearby community. Prerequisite: Social Work 367.

369. SOCIAL WELFARE ADMINISTRATION: SERVICES PLANNING 3 hours (Formerly 373). Within a systems perspective, skill development in the use of techniques of describing, reporting, and measuring client and target population characteristics, services, resources; use of information in decision making to allocate scarce resources among competing demands in an uncertain environment. Prerequisite: Social Work 368.

375. CHILD WELFARE 3 hours A look at the needs of children and at services offering them protection, placement, and care. Also includes study of the history and policies of child welfare programs. Prerequisite: Social Work 281.

385. SERVICES TO FAMILIES 3 hours A study of problems in family development and functioning from a family systems perspective, with focus upon the service programs and preventive approaches to helping families. Prerequisite: Social Work 281.

392. SPECIAL TOPICS IN SOCIAL WORK 1-3 hours.

401 AGING AND MENTAL HEALTH 3 hours An introduction to the mental and behavioral disorders of the elderly; the policies and programs which address those disorders; and a focus on research related techniques of management and treatment of the elderly with disorders. Prerequisites: Gerontology 202, 302; Social Work 280; Psychology 305. Also listed as Gerontology 401.

470. SOCIAL WORK PROSEMINAR I 1 hour An introduction to field experience; an investigation of the range of services provided by the public and private agencies which are available for field placement; and an emphasis on induction into the work setting. Prerequisite: a social work major with senior standing.

471. INTRODUCTION TO LAW FOR SOCIAL WORKERS 3 hours A summary of legal processes and statutes relevant to social welfare and social work practice issues. Prerequisite: Social Work 368.

474. SOCIAL WORK RESEARCH 4 hours An introduction to the basic research techniques of problem formulation, design, data analysis, and interpretation as they apply to social work practice. The computer is utilized as a fundamental research tool. The critiquing and utilization of research knowledge in practice and the evaluation of one's own practice are emphasized. Prerequisite: Social Work 369.

475. SOCIAL SERVICES IN MENTAL HEALTH 3 hours A study of the history, policy, and organization of the mental health services in the United States. Special emphasis is given to multiple interpretations of mentally disordered behavior and maintenance of the chronically disabled in the community. Prerequisite: Social Work 281.

480. SOCIAL WELFARE POLICY 3 hours An analytical and case study approach to the examination of national social welfare policy and program within the context of basic political and governmental processes. A special focus is given to the analysis of income maintenance policy and program. Prerequisites: Political Science 105, 203; Social Work 368.

484. SOCIAL WORK PROSEMINAR II 3 hours Continuation of 470. Student develops learning strategies and evidences for each competency in cooperation with the field instructor, under faculty supervision.

485. FIELD EXPERIENCE IN SOCIAL WORK 15 hours (Formerly 472). Placement in a social agency five days each week (36 hours) throughout the quarter to provide experience in social work practice under qualified agency instruction-supervision, including responsibility for direct social work services to clients. Emphasis is on application of theory and knowledge in developing professional practice skills in the helping process with individuals, families, and client and community groups. Campus seminars are held concurrently to assist the student to integrate field work with classroom learning. To be taken concurrently with Social Work 486.

486. SEMINAR IN SOCIAL WORK 2 hours (Formerly 496). Discussion and analysis of the field setting, practice and organization. Includes monitoring and evaluation of the student competencies. To be taken concurrently with Social Work 485.

492. SPECIAL TOPICS IN SOCIAL WORK 1-3 hours
Gerontology
A major in gerontology consists of the following requirements:
1. Gerontology 000
2. Gerontology 202
3. Gerontology 302
4. Gerontology 305
5. Gerontology 369
6. Gerontology 401
7. Gerontology 493
8. Gerontology 499
9. Psychology 100
10. Psychology 215
11. Sociology 105
12. Sociology 348
13. Social Work 280
14. Social Work 369
15. Biology—Physiology of Aging
16. Philosophy—Death and Dying or Bioethics

A minor in gerontology consists of the following requirements:
1. Psychology 100
2. Sociology 105
3. Developmental Psychology 215
4. Introduction to Social Welfare 280
5. Gerontology 302
6. Adult Development in Aging 305
7. Aging and Mental Health 401
8. Agency Experience and Observation 489
9. Independent Study—Working with Aged

000. ORIENTATION 1 hour Familiarization with the departmental requirements for majors, planning programs or courses, University catalog and library, career options. Also listed as Psychology 000, Sociology 000 and Social Work 000.

202. QUALITATIVE METHODS IN BEHAVIORAL RESEARCH 4 hours 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 and non-experimental research. Also listed as Sociology 202. Prerequisite: Sociology 105.

302. GERONTOLOGY 3 hours A study of the psychological, physiological and sociological aspects of the lives of our elderly citizens, with a special emphasis upon the environmental problems which confront them. Also listed as Sociology 302 and Social Work 302. Prerequisite: Psychology 100 or Sociology 105.

305. ADULT DEVELOPMENT AND AGING 3 hours A study of the basic psychological processes in adult development and aging with the emphasis on a dynamic view of human development throughout the life span. Heavily oriented towards research methods and experimental findings. Also listed as Psychology 305. Prerequisite: Psychology 215.

393. SPECIAL TOPICS IN GERONTOLOGY 1-3 hours

401. AGING AND MENTAL HEALTH 3 hours An introduction to the mental and behavioral disorders of the elderly, the policies and programs which address those disorders and a focus on research related to techniques of management and treatment of the elderly with disorders. Also listed as Social Work 401. Prerequisites: Gerontology 202, 302; Social Work 280; Psychology 305.

493. SPECIAL TOPICS IN GERONTOLOGY 1-3 hours

499. AGENCY OBSERVATION AND EXPERIENCE 6 hours A field experience in the area of Gerontology. Prerequisite: approval of chairman.
THE COLLEGE OF
Business Administration

Clyde A. Painter, Dean

Professors Conklin, Painter, Young; Associate Professors Goldberg, Schempf, Walden; Assistant Professors Ewing, Linch, Logsdon, Meininger, Moore, Savino; Instructors Templeton; Lecturers Butterman, S. Edwards, Kroll, L. Lile, Stout.

On February 4, 1978, the Ohio Northern University Board of Trustees authorized a College of Business Administration and requested the President of the University to implement steps and procedures in establishing this new academic unit.

The College of Business Administration has as its nucleus the former Department of Business and Economics, which had existed for many decades as a segment of the College of Arts and Sciences. The new College of Business Administration became fully operational on September 1, 1978, and has been authorized to award the degree of Bachelor of Science in Business Administration.

The George Willard Patton Chair of Economics, endowed by the Richard King Mellon Charitable Trust of Pittsburgh has been established beginning with the academic year 1973-74. The current year's recipient of this endowed professorship is Charles F. Conklin, professor of economics.

Objectives The College of Business Administration through its several major areas of study seeks to develop a basic understanding of the theories and principles of business administration and economics as they apply to our modern economic system and the organization and management of contemporary business enterprises. Students are afforded the opportunity to major in the five disciplines as authorized by the faculty, which are: accounting, economics, finance, management, and marketing.

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. Twelve of these units are prescribed as follows: Four units of English; two 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. It is preferred that such students had previously been enrolled in degree programs comparable to the majors offered in the college. Applications for transfer will be considered only if the student has a prior grade point average of 2.00 on a four point scale, and that the student is eligible to return to his/her former institution.

The Bachelor of Science in Business Administration Degree Programs

General and Advanced Course Structure The first two years of study in the College of Business Administration are usually devoted to the student's general education with an introduction to several of the business disciplines. Most of the student's exposure in his/her major area of study is planned to take
place at the more advanced level along with selected upper division electives. A minimum of 182 quarter hours of appropriate academic credits must be presented to qualify for the awarding of the degree of Bachelor of Science in Business Administration.

**Common Core**
The following courses are required of all business majors: Orientation 000; Accounting 131, 132, 133; Economics 100, 202, 203; Business Law 322; Managerial Finance 362; Mathematics 111 or 130; and Mathematics 142-143.

**Major Requirements**

**Accounting Major**
Core plus: Accounting 301, 302, 303, 311, 312, 313, plus 12 quarter hours of approved upper division accounting electives; Management 330, Marketing 351; cognates and 9 quarter hours of College of Business Administration electives. Specified General Education courses plus 15 quarter hours of Arts and Sciences electives. Approved general electives of 48 quarter hours.

**Economics Major**
Core plus: Economics 352, 383, 384 and 18 quarter hours of approved cognates and 9 quarter hours of College of Business Administration electives. Specified General Education courses plus 18 quarter hours of Arts and Sciences electives. Approved general electives of 45-48 quarter hours.

**Finance Major**
Core plus: Accounting 311, Economics 352, Business Law 323, 324, Finance 354, 374, 461, 463; Finance 421, 422 (or 9 quarter hours of College of Business Administration CBA electives); Management 330; Marketing 351; cognates and 9 quarter hours of College of Business Administration electives. Specified General Education courses plus 9 quarter hours of Arts and Sciences electives. Approved general electives of 42 quarter hours.

**Management Major**
Core plus: Management 330, 363, 385, 485 (or 495), Business Law 325, Economics 352, Marketing 351 and 12 quarter hours of management electives; cognates and 9 quarter hours of College of Business Administration electives. Specified General Education courses plus 15 quarter hours of Arts and Sciences electives. Approved general electives of 48-51 quarter hours.

**Marketing Major**
Core plus: Marketing 351, 371, 372, 373, 375, 434, 451 and 6 quarter hours of marketing electives; Economics 352; Management 330; cognates, and 9 quarter hours of College of Business Administration electives. Specified General Education courses plus 15 quarter hours of Arts and Sciences electives. Approved general electives of 45-48 quarter hours.

**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 pre-college or preparatory courses, normally taken in high school. (see Admission Standards).
2. The specific courses and other general core courses in the College of Business Administration and the College of Arts and Sciences.
3. The major coursework, the Arts and Sciences support courses, and the proper elective distributions as required for the specific major(s).
4. Satisfactory completion and presentation of a minimum of 182 quarter hours of appropriate course work for the specific major(s) sought.
5. A grade point average of 2.00 is required for graduation. A letter grade of "C" or better is required in all common core courses taught within the College of Business Administration, as well as all other courses in the students’ major(s).
6. Recommendations by the faculty and the dean of the College of Business Administration that the degree of Bachelor of Science in Business Administration be conferred by the University.

**General Regulations of the College of Business Administration**

1. A student may not register for more than 19 hours of academic coursework 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 normally scheduled in the fall term.
3. A student indicates his/her major choice by completing a declaration of major form available in the Office of the Dean. Faculty advisers assist the student in the planning of his/her major.
4. No course, taken in the College of Business Administration, for which the student receives a letter grade of "D" or less is acceptable toward the requirements of the major(s).
5. Generally, 100, 200, 300, and 400 level courses are to be taken by freshmen, sophomores, juniors and seniors respectively.
6. 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).
7. With the written permission of the instructor and the dean, course prerequisites may be waived.
8. 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.
9. The freshmen English courses—English 107, 108, 109—are sequential and accumulative and must be taken one at a time in order.

**S/U Grade Option** Sophomores, juniors, seniors, and postgraduate students in the College of Business Administration are given the opportunity to register for one course per term 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 with all freshmen and sophomore requirements satisfactorily completed; for senior standing, 135 quarter hours of completed course work.

**Academic Probation** A grade point average of 2.00 is required for graduation. If a student's accumulative grade point average falls below 2.00, he/she is placed on academic probation and the student's participation in extracurricular activities is reviewed by the Vice President of Student Affairs and by the dean of the student's college.

Any student on probation whose work for the following quarter continues below 2.00 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 from the University.

**Prelaw Program** The College of Business Administration cooperates with the Ohio Northern University College of Law in a unique prelaw program. Students in the prelaw program select a major and complete the necessary requirements as do other business students. However, elective courses of approximately 36 credit hours are carefully prescribed by categories. Examples of these categories are: a broad historical area, American government courses, analysis of evidence, writing ability, language, and logical reasoning. Study in these areas assist the student in obtaining exposure to a broad liberal arts background recommended by many law schools. To assist students in the planning of this course work there is a special prelaw adviser in the College of Business Administration.

Students who complete the prelaw four year program with a minimum of a 3.30 GPA are admitted automatically to the Ohio Northern College of Law. However, the law school admission test (LSAT) is required. For students with GPAs under 3.30, admission to law school will depend largely upon their LSAT score.

The prelaw program is open to all academic majors in the College of Business Administration. This option is also available to sophomore and junior transfer students from accredited four-year colleges and for students who hold an associate degree from an accredited junior college. Transfer students who successfully complete the prelaw program, have had at least 90 quarter hours at ONU and graduate with a 3.40 accumulative grade point average will also automatically be admitted to the ONU College of Law. Again the LSAT is required. The dean and the
faculty of the College of Business Administration believe that the prelaw program offers an excellent opportunity for superior students preparing for a career in the legal profession. Additional information is available through the office of the dean, the student's academic adviser and/or the prelaw adviser in the college.

Small Business Institute and Internship Programs The College of Business Administration offers a limited number of enrollment spaces for upper class students in both the Small Business Institute and Internship Programs. These options are intended to expose selected students to contract case studies and approved academic internships for a maximum of 15 quarter hours of academic credits. Details of both programs are available through the office of the dean.

General Courses

000. ORIENTATION/CAREER DEVELOPMENT AND SEARCH 1 hour Familiarization with the college, requirements of the majors, planning sequences of courses, university catalogue and library, career investigation and guidance. Fall quarter.

200. PERSONAL FINANCIAL MANAGEMENT 3 hours A systematic, goal-oriented framework for personal money management. Attention is given to the respective roles of budgeting, banking relationships, insurance programs, and investments in developing and maintaining the comprehensive financial plan. The application of sound decision models and accurate record keeping within the family unit is emphasized. Not open to finance majors or students with credit in 500-461 or 500-463.

322. BUSINESS LAW I 3 hours Introduction to the legal system, including criminal law, torts (civil liability), and contract law.

323. BUSINESS LAW II 3 hours Negotiable instruments, and business associations, (the legal rights, responsibilities of agents, partnerships, and corporations). Prerequisite: 500-322.

324. BUSINESS LAW III 3 hours Sales, creditors rights, secured transactions, consumer law, environmental law, government regulation and property rights. Prerequisite: 500-322.

344. STATISTICAL TECHNIQUES IN ECONOMICS 3 hours Develops analytical tools in probability, and probability distributions, estimation and hypothesis testing, bayesian analysis, game theory and sampling techniques, with appropriate examples. Prerequisite: 123-142 and 143. Offered alternate even-numbered years.

391. BUSINESS COMMUNICATIONS 3 hours The techniques of writing business letters and reports; efficient and accurate communication of economic and business facts, presentation of conclusions for management decision-making and further study of English for self-improvement. Prerequisite: 112-107, 108 and 109.

475. SMALL BUSINESS INSTITUTE 3 hours 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 or U. May be repeated up to 9 hours. Restricted enrollment. Offered fall and spring quarters. Prerequisite: Permission of director.

Accounting


132. PRINCIPLES OF ACCOUNTING 2 3 hours Accounting reports for internal users of financial information. Methods of analysis underlying the provision of accounting information. Basic theory of the reporting model. Continuation of accounting 131. Prerequisites: 500-131, for CAB majors a grade of C or better in 500-131.

133. PRINCIPLES OF ACCOUNTING 3 3 hours Uses of accounting data to support management decision-making and in the control of business operations. Determination of costs and cost behavior. Specialized application areas of accounting. Continuation of 500-132. Prerequisite: 500-132; for CBA majors a grade of C or better in 500-132.

292. SPECIAL TOPICS IN ACCOUNTING 1-3 hours
301. INTERMEDIATE ACCOUNTING 3 hours Financial accounting functions and basic theory. Preparation of financial statements and actuarial methods. Current assets and current liabilities. Prerequisite: 500-133.

302. INTERMEDIATE ACCOUNTING 3 hours Plant assets, long-term liabilities, stockholder's equity, dilutive securities and investments. Prerequisite: 500-301.


311. COST ACCOUNTING 3 hours Emphasis on accounting for manufacturing. Controls for material, labor, and overhead cost accounting. Job order and process costing systems. Prerequisite: 500-133.

312. COST ACCOUNTING 3 hours Flexible budgets and cost behavior pattern analysis. Standard costs and variance analysis. Direct costing and responsibility accounting for management reporting. Prerequisite: 500-311.

313. COST ACCOUNTING 3 hours Accounting for internal management. Quantitative techniques including simulation based upon computerized data. Prerequisite: 500-312.

381. INCOME TAX I 3 hours The federal income tax structure as related to individuals. Problems involving tax laws and regulations pertaining to the preparation of individual income tax returns. Prerequisite: 500-133.

382. INCOME TAX II 3 hours The income tax consequences of various property transactions including Section Number 1321 and recapture provisions, income taxation of estates and trusts, Federal estate and gift taxes. Prerequisite: 500-381.

403. AUDITING I 3 hours Auditing concepts and standards; procedure for independent verification of data and the review of operations; working papers; professional ethics and legal liability of auditors. Prerequisite: 500-303.

404. AUDITING II 3 hours Statistical sampling; methods for evidence gathering and evaluation; audits of electronic systems; internal and external audit reports; current developments affecting auditing practice. Prerequisite: 500-403.

427. INTERNSHIP 1-15 hours Field experience in accounting. Consult adviser.

477. CPA PROBLEMS I 3 hours A comprehensive review of the application of accounting principles, using specific problems from former CPA examinations, and the development of approaches to problem solving. Topics covered include working capital, inventory, plant assets, deferred taxes, stockholder's equity, present value, and inflation accounting. Course graded S or U. Prerequisite: Accounting 303. Formerly 500-472.

478. CPA PROBLEMS II 3 hours Topics covered include partnerships, investments, consolidations, cost accounting, quantitative methods and non-profit accounting. Prerequisites: 500-303 and 313. Formerly 500-473.

479. CPA PROBLEMS III 3 hours Similar to Accounting 477 and 478. Topics covered include auditing (professional responsibilities, internal control, evidence, reports, statistical sampling and EDP); income taxes (individual, transactions in property, and corporate); and current accounting literature. Prerequisites: 500-303, 381 and 403.

492. SPECIAL TOPICS IN ACCOUNTING 1-3 hours

496. SEMINAR IN ACCOUNTING 1-3 hours

499. INDEPENDENT STUDY IN ACCOUNTING 1-3 hours An exploration in depth of subject of special interest to both the student and the faculty member. Class hours by arrangement. 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.

Economics

100. ECONOMICS 3 hours The origins, characteristics, and functions of our economic organization, current institutional arrangements, the use of appropriate tools of economic analysis; revelant economic and social goals.

202. PRINCIPLES OF MICROECONOMICS 3 hours 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. Prerequisite for CBA majors a grade of C or better in 500-100.

203. PRINCIPLES OF MACROECONOMICS 3 hours 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: for CBA majors a grade of C or better in 500-100.

273. ENERGY ECONOMICS 3 hours An analysis of the major issues of the energy problem: recent experiences, current problems, and future prospects for each energy source; demand restraints, energy conservation, tradeoffs between energy supply and environmental protection; energy research, and the development of major policy issues; points of view of producers, consumers, and government are presented. Prerequisite: 500-100.

290. SPECIAL TOPICS IN ECONOMICS 1-3 hours

341. LABOR ECONOMICS 3 hours 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. Prerequisites: 500-202 and 203.

348. URBAN ECONOMICS 3 hours Topics covered will include 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. Prerequisites: 500-202 and 203. Offered alternate even-numbered years.

352. MONEY AND BANKING 3 hours Theories of money and credit; commercial banking practices; reserve banking; monetary and banking laws; money market; money and credit in the world economy. Prerequisites: 500-202 and 203.

383. INTERMEDIATE MICROECONOMIC THEORY 3 hours Special problems of pricing, production, and distribution under perfect competition, oligopoly, duopoly, and monopoly in the American economy. Prerequisites: 500-202 and 203.

384. INTERMEDIATE MACROECONOMIC THEORY 3 hours 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. Prerequisites: 500-202, 203.

385. INTERNATIONAL ECONOMICS 3 hours 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. Prerequisites: 500-202 and 203. Offered alternate odd-numbered years.

411. COMPARATIVE ECONOMIC SYSTEMS 3 hours A comparative study of capitalism, socialism, and communism with emphasis on the economics of pricing, production, and distribution under these systems. A specific and empirical examination of these systems in actual use, as in the United States, Russia, Great Britain, and China. Prerequisites: 500-202 and 203. Offered alternate even-numbered years.

423. ECONOMICS OF THE PUBLIC SECTOR 3 hours Topics include the federal budget; public good analysis, public debt issues; evaluation of tax sources for the federal, state, and local government levels; and inter-governmental fiscal relationships. Prerequisites: 500-202 and 203. Offered spring quarter.

426. INTERNSHIP 1-15 hours Field experience in economics. Consult adviser.

442. ECONOMIC HISTORY OF THE UNITED STATES 3 hours 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. Prerequisites: 500-202 and 203. Offered alternate even-numbered years.

443. HISTORY OF ECONOMIC THOUGHT 3 hours The development of economic thought from Greek and Hebrew writers to modern economists; Adam Smith, Malthus, Ricardo, Marx, Marshall, Keynes.
and modern economists. Prerequisites: 500-202 and 203.

490. SPECIAL TOPICS IN ECONOMICS
1-3 hours

494. SEMINAR IN ECONOMICS
1-3 hours

497. INDEPENDENT STUDY IN ECONOMICS 1-3 hours An exploration indepth of a subject of special interest to both the student and faculty member. Class hours by arrangement. Permission must be obtained in writing from the faculty mentor, and the dean of the college prior to registration. Prerequisites: Junior standing and approval of the instructor. Restricted enrollment.

Finance

354. FINANCIAL INSTITUTIONS 3 hours Managerial policies and decision making concepts of commercial banks, savings and loan associations, mutual savings banks, and other financial institutions. Prerequisites: 500-133, 100, and 203.

362. MANAGERIAL FINANCE 3 hours Handling and flow of funds; problems of fixed and working capital, income level, dividend policy and the use of borrowing. Case analysis is used. Prerequisite: 500-100 and 133.

374. CAPITAL INVESTMENTS AND FINANCIAL DECISIONS 3 hours The student is provided with an opportunity to undertake an in-depth examination of specialized decisions facing the financial manager. The concept of capital budgeting is extended to include leasing and applications of the Capital Asset Pricing Model. Dividend policy is examined in the context of perfect and imperfect financial markets. Prerequisite: 500-362.

421. INTERNSHIP IN FINANCE 6 hours Field experience in finance. Prerequisites: Finance major and senior standing. Six hours of CBA electives may be taken in place of this course.

422. INTERNSHIP IN FINANCE 6 hours Field experience in finance. Prerequisites: Finance major and senior standing. Six hours of CBA electives may be taken in place of this course.

461. INVESTMENTS 3 hours Problems of investment policy; types of investment risks, the analysis of investment requirements, and types of investment policies. Problems of both individual and institutional investors are analyzed. Prerequisite: 500-362.

463. RISK MANAGEMENT 3 hours The scope and purpose of risk management in business; identification and measurement of exposure to loss; analysis of insurance contracts and operations; an explanation of the problems of personal risk management; public policy issues such as governmental regulation of insurers and social insurance. Prerequisites: 500-362 and junior standing.

494. SPECIAL TOPICS IN FINANCE
1-3 hours Prerequisites: Variable. Consult adviser.

500. INDEPENDENT STUDY IN FINANCE 1-3 hours An exploration indepth of subject of special interest to both the student and the faculty member. Class hours by arrangement. Prerequisites: junior standing and approval of the faculty member. Restricted enrollment. Permission to enroll must be obtained in writing from the faculty mentor and the dean of the college prior to registration.

Management

291. SPECIAL TOPICS IN MANAGEMENT 1-3 hours

325. MANAGEMENT/LABOR-LAW 3 hours The relationship of management and labor under existing laws including such areas as labor organizational drives, union representation elections, strikes, boycotts, picketing, collective bargaining, arbitration, and fair labor standards. Prerequisite: 500-322.

330. PRINCIPLES OF MANAGEMENT 3 hours The organization of firms. Modern management methods, decision making processes, procedures, physical equipment and standards. Organization and managerial relationships of major industrial functions.

335. MANAGEMENT ORGANIZATIONAL BEHAVIOR 3 hours A study of the human factors in organizations. Emphasis placed on the contributions of the behavioral sciences to the inner workings of business firms. Topics covered are historical foundations, motivation, job satisfaction, bureaucratic structures, leadership and its development, group dynam-
ics, social issues, communication, and international organizational behavior. Prerequisite: 500-330.

363. PERSONNEL MANAGEMENT 3 hours The study of the personnel field in the modern organization in dealing with the areas of recruitment, training, employee relations, compensation, health and safety and separation. In addition, the impact of government regulations and the demands of society will also be analyzed. Prerequisite: 500-330.

364. PRODUCTION AND OPERATIONS MANAGEMENT 3 hours An introduction to the major issues and analytical problem solving techniques existing in the field of production and operations management. Prerequisites: 500-362 and 330; 123-143 or 155; and junior standing.

365. HUMAN RELATIONS IN BUSINESS 3 hours A study of the importance of human relationships in business and the primary role of attitudes in determining the success or failure of an enterprise. Emphasis is given to case studies, supplemented with textual materials and visual presentations depicting contemporary work situations faced by workers and managers. Prerequisite: 500-330.

410. BUSINESS AND SOCIETY 3 hours Analysis of the complex and dynamic interrelationships between business and society through a study of the social, cultural, legal, ethical, economic and technological issues, philosophies and points of view which influence business. Topics discussed will include corporate responsibility, individual rights and multi-national business. Prerequisites: 500-330, 363.

425. INTERNSHIP 1-15 hours Field experience in management. Consult adviser.

474. SMALL BUSINESS MANAGEMENT 3 hours A survey of 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: 500-322, 330, 351, and 362; and 123-143 or 155.

485. BUSINESS POLICIES AND CENTRAL MANAGEMENT 3 hours Senior seminar designed to provide the student with a greater awareness of the business enterprise as a whole and of the total circumstances faced by management at all levels in a variety of types of firms. Presented on a case study basis and designed for the application of advanced analytical problems solving techniques. Prerequisites: 500-322, 202, 203, 330, 351, and 362.

491. SPECIAL TOPICS IN MANAGEMENT 1-3 hours

495. SEMINAR IN MANAGEMENT 3 hours

498. INDEPENDENT STUDY IN MANAGEMENT 1-3 hours An exploration in depth of a subject of special interest to both the student and the faculty member. Hours by arrangement. 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.

Marketing

351. MARKETING 3 hours Management-oriented; concepts, processes, and problems of marketing; channels of distribution, marketing research, brands and price policies.

371. SALESMANSHIP 3 hours The principles, techniques and problems of salesmanship, sales management, recruiting, controlling and evaluating a sales force; marketing research techniques, pricing and contemporary channels of distribution. Prerequisite: 500-351.

372. ADVERTISING 3 hours Advertising as an integral part of the marketing process; selling appeals and types of advertising; consideration of copy and media; problems of publishing and broadcast advertising. Prerequisite: 500-351.

373. LOGISTICS 3 hours Water, railway, highway, pipeline and air transportation and their development in the U.S.; rates and their effect on location and development of industry; government regulations; and labor relations. Prerequisites: 500-330 and 351.

375. RETAIL MERCHANDISING 3 hours The principles of the specialized area of merchandising as compared to the general study of marketing. Store location, layout, pricing for profit, markups, markdowns, inventory control methods and the duties of a buyer will be investigated in detail. Prerequisite: 500-351.
376. INDUSTRIAL MARKETING 3 hours
A study of 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. Topics discussed will include characteristics of manufacturer's goods, channels of distribution, pricing, vendor and value analysis, industrial buying, industrial advertising and meeting product specifications. Prerequisite: 500-351.

420. INTERNSHIP 1-15 hours Field experience in marketing. Consult adviser.

434. MARKETING RESEARCH 3 hours
Research design, data collection methods, sampling techniques, tabulation and analysis of information concerning problems in marketing. Prerequisite: 500-351.

451. ADVANCED MARKETING 3 hours
Marketing decision making, interacting with the various functions of marketing to better develop marketing strategies by defining target markets and constructing marketing mixes. Prerequisites: 500-351, 375, 434, 330, and 362; senior standing.

452. SEMINAR IN MARKETING 3 hours
Readings in marketing pertaining to case histories and current situations. Prerequisite: 500-351.

493. SPECIAL TOPICS IN MARKETING
1-3 hours

498. INDEPENDENT STUDY IN MARKETING 1-3 hours
An exploration in depth of a subject of special interest to both the student and the faculty member. Hours by arrangement. 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.
Academic Accreditation and Association
The Accreditation Board for Engineering and Technology (ABET), previously known as the Engineers' Council for Professional Development, the only official accrediting agency for engineering curricula, has accredited all of the curricula in the College including the departments of 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.

Objectives
The College attempts to teach its students to think in a logical sequence given certain facts. The College follows the objectives of the University in developing the student as a whole individual who will be successful and creative in their profession as well as in their personal life. In the College students attain the highest undergraduate proficiency in subject matter basic to all engineering and in the essentials of their chosen branch of the engineering profession.

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 3,700 engineers have graduated from the Thomas Jefferson Smull College of Engineering in its 102-year history. These departments continue to meet the highest standards of engineering excellence.

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 and be of good moral character. 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 ½ unit 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 mathematics 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.

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.
Academic Loads
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 18 hours whichever is largest. The dean, upon recommendation of the student's adviser, may permit a student to enroll for extra hours. The normal requirement is an accumulative average of at least 3.00/4.00. Each engineering student is responsible for fulfilling the requirements for the current year's catalog as they apply to that year of the program.

Academic Status
A student is in good academic standing when the accumulative grade point average is at least 2.00 or when it has been granted by the petition process.

A student is placed on academic probation the first time the accumulative grade point average falls below 2.00. Normally one quarter is given to raise the accumulative average to an acceptable level. Students may be on probation two successive quarters if conditions and evidence indicate that the student is improving academically.

Students who consistently attain a low accumulative average (below 2.00) or extremely low scholarship in a given quarter are subject to suspension, which implies the possibility of readmission at a later date, usually after three quarters.

Students having academic difficulty are required to meet frequently with their adviser. A student on probation is not eligible to participate in extracurricular activities. The dean makes some exceptions based upon the recommendation of the student's adviser and the director of the activity. The dean treats each student on probation individually. It is the obligation of the student on probation to initiate the petition process for regaining eligibility to participate in extracurricular activities.

Classification
The traditional designations of freshman, sophomore, junior, and senior are used by the College. The engineering curricula are vertical insofar as most courses are taken in sequence. The level at which a student is studying is far more consequential than the hours accumulated or the years spent in school. Each student is required to complete designated courses before advancing to the next student classification. In general, the classification doesn't change during the year once it has been determined at the start of the year.

Graduation and Degrees
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 200 academic hours. In addition a student also needs a scholarship rating of at least two quality points for each credit hour scheduled with an accumulative grade point average of 2.00 in all engineering courses. Only one degree at a time, with the exception of the Arts-Engineering program, may be earned.

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. The options are shown on the academic transcript but not on the diploma.

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 freshman and senior years. Students may also write the Secretary of the Board of Registration for Professional Engineers, 65 South Front Street, Room 302, Columbus, OH 43215.

Engineering Graduates and Law School
Graduating seniors of the Thomas Jefferson Smull College of Engineering with at least a 3.30/4.00 accumulative average who wish to enter the Pettit College of Law at Ohio Northern University are admitted automatically. However, the Law School Admission Test (LSAT) is required.

The Robert W. Biggs Engineering Building
The College occupied its present facility in 1971. Located in this $1.8 million structure are 91 rooms including classrooms, laborato-
ries, computer center, and faculty offices. The addition of the Robert W. Biggs Engineering Building to the campus completed the science complex on what has come to be known as the West Campus.

Pre-Engineering Curricula
Since the first two years of any particular curriculum in engineering at many universities are practically the same, the College offers pre-engineering in most fields. The pre-engineering curricula are flexible enough to conform to the catalog requirements of the university the student has chosen to attend after completing the pre-engineering program. All pre-engineering students are enrolled in the College of Engineering and have an adviser on the engineering faculty.

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. A student who desires to work in a foreign country or for an American company in a foreign country may major in the appropriate foreign language. The superior student enrolled in the arts-engineering program will come to understand more fully the role of the humanities and civilization in a scientific and engineering world; and his service to mankind will increase. He will also help create a broader image of the engineer in our age.

Basic 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 funda-

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### Fourth Year
Arts-Sciences major
plus junior courses in appropriate engineering department

|       | 3 | 3 | 3 |

### Fifth Year
Arts-Sciences major
plus senior courses in appropriate engineering department

|       | 3 | 3 | 3 |

mentally 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. The basic courses are taught by the engineering faculty and are required of all engineering students.

**Engineering Options**

**Management, Computer Science and Public Administration** Besides the regular degree programs in civil, electrical, and mechanical engineering, interdisciplinary programs have been developed in Management, Computer Science, and Public Administration. These option programs work equally well with any one of the three degree programs. This is accomplished by proper planning and judicious use of the social science electives, the free electives, the science electives, and the technical electives. Further, it is accomplished without a sacrifice in the engineering content of the three degree programs. It is essential for the student on an option to follow the program as designated in order to avoid conflicts.

Any student may select one of the interdisciplinary programs as an adjunct to the engineering degree program with the approval of the appropriate chairman and the dean. In order for a student to continue on an option, the accumulative average must be at least 2.50. A minimum of 209 to 216 hours, including approximately 33 hours in the option, is required for graduation. The diploma does not indicate the option but the official transcript does carry the appropriate option designation. Since the loads are a little heavier than normal quarter loads the student needs to institute the plan at the start of the freshman year at Ohio Northern University.

Courses in the **Management Option** include Accounting, Psychology, Economics, Principles of Management, Business Law, Marketing, Managerial Finance, and a Business Elective, totaling at least 33 hours.


The option in **Public Administration** includes 33 hours in Economics, Accounting, Urban Economics, National Government, State and Local Government, Public Administration, Public Management, and Urban Politics.

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### BASIC ENGINEERING (Department 201)

100. PRE-ENGINEERING MATHEMATICS REFRESHER 0 hours A review of those portions of high school mathematics necessary to start college mathematics. Topics included are algebra, geometry, trigonometry, and analytical geometry. Students who do not place sufficiently high in mathematics placement tests during the summer

### ALL ENGINEERING—CLASS OF 1988

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*Graphical Analysis 2 (201113) may be substituted for creative design.

### ALL ENGINEERING—CLASS OF 1987

**Sophomore 1984-85**

- Calculus 4, Linear Algebra, Differential Equations *(123263, 272, 361)*
- Physics 2, Chemistry, Science Elective* *(124232, 122162, …)*
- Social Science Elective
- Engineering Mechanics 1, 2, 3 *(201311-2-3)*
- P&A Circuits 1, 2, 3 *(201321-2-3)*
- Circuits Lab 1, 2 *(201332-3)*

**Totals**: 18

*Examples of acceptable science electives: Chemistry 163, Biology 100-12-13, Nuclear Physics 353, Modern Physics 303, Operations Research 332

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Orientation are required to take this course to prepare to start calculus. Offered the two weeks prior to the opening of fall quarter.

#### 112. GRAPHICAL ANALYSIS 1 (1 + 3)

- **2 hours**: An introduction to graphical communications, analysis, and design including: the development of the ability to convey ideas by the use of engineering sketches; the construction of professional drawings; and graphical representation of data.

#### 113. GRAPHICAL ANALYSIS 2 (1 + 3)

- **2 hours**: Advanced study in mechanical drawing techniques, and an introduction to computer graphics. Prerequisite: 201-112; concurrent 201-122.

#### 114. CREATIVE DESIGN (0 + 4)

- **2 hours**: Participation in student-generated group design projects emphasizing engineering methodology, design, analysis, and communicative skills. Prerequisite: 201-112.

#### 120. SEMINAR FOR ENGINEERING STUDENTS (1 + 0)

- **1 hour**: Schedules, irregularities in schedules, graduation requirements, class preparations, problem solutions, taking of tests, background of various branches of engineering, technical and professional organizations and professionalism are covered. Designed to help the student to make the transition to college, as well as properly orient the student in the profession.

#### 122. ENGINEERING PROBLEMS (4 + 0)

- **4 hours**: Introduction to the computer. Engineering problem solving with the computer using FORTRAN. The approach centers around fundamental problems of general engineering interest.

#### 291. INDEPENDENT STUDY AND PROJECTS 3 hours

- Independent planning of an engineering or engineering-related project or independent study at the freshman level on topics of particular interest to the student and approved by the faculty. Prerequisite: Permission of instructor.

#### 292. INDEPENDENT STUDY AND PROJECTS 3 hours

- Continuation of 291.

#### 293. INDEPENDENT STUDY AND PROJECTS 3 hours

- Continuation of 292.

#### 311. ENGINEERING MECHANICS 1 (3 + 0)

- **3 hours**: Fundamental principles of statics with vector methods. Emphasis on free body diagrams and equations of equilibrium. Topics include: resultants of force systems, centroids and centers of gravity, equilibrium, friction and moment of inertia. Use of S.I. Prerequisites: 123-261; 124-231.

#### 312. ENGINEERING MECHANICS 2 (3 + 0)

- **3 hours**: 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.
313. **ENGINEERING MECHANICS III (3 + 3)** 3 hours  Elastic analysis through concepts of stress and strain, tension, torsion, compression and flexure. Development and application of Mohr's circle construction; analytical methods of determining shear stresses in beams subjected to torsional and flexural loadings, shear and moment diagrams. Use of S.I. Prerequisite: 201-311.

321. **PASSIVE AND ACTIVE CIRCUITS 1 (3 + 0)** 3 hours  Introductory concepts in circuit analysis. Solution of resistive circuits using Ohm's and Kirchhoff's Laws, mesh and nodal analysis, and network theorems. Prerequisites: 123-261; 124-233 or permission of instructor.

322. **PASSIVE AND ACTIVE CIRCUITS 2 (3 + 0)** 3 hours  Analysis of circuits in the sinusoidal steady-state. Phasor solution, effective values of current and voltage, and instantaneous and average power. Prerequisite: 201-321.

323. **PASSIVE AND ACTIVE CIRCUITS 3 (3 + 0)** 3 hours  Magnetically coupled circuits, polyphase circuits and Fourier analysis. Prerequisite: 201-322.

332. **CIRCUITS LABORATORY 1 (0 + 2)** 2 hours  A laboratory study of electric circuits. Prerequisite: Concurrent 201-322.

333. **CIRCUITS LABORATORY 2 (0 + 1)** 1 hour  Continuation of 332. Prerequisite: Concurrent 201-323.

391. **INDEPENDENT STUDY AND/OR PROJECTS (3 + 0)** 3 hours  Independent planning of an engineering or engineering-related project or independent study at the sophomore level on topics of particular interest to the student and approved by the faculty. Prerequisite: Permission of Instructor.

392. **INDEPENDENT STUDY AND/OR PROJECTS (3 + 0)** 3 hours  Continuation of 391.

393. **INDEPENDENT STUDY AND/OR PROJECTS (3 + 0)** 3 hours  Continuation of 392.

401. **APPLIED RANDOM PROCESSES (3 + 0)** 3 hours  Probability and its application to engineering problems. Random processes in engineering, distributions, and regression analysis. Prerequisite: 123-262.

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**CIVIL ENGINEERING (Department 202)**

Professors Milks (Chairman), Minich, Shah; Associate Professor Smalley (leave); Lecturers Hoover, Hull.

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; and 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.

The courses which are shown with an asterisk (*) may have technical electives as substitutes. These electives include environmental science, independent study, or any engineering or science course which is the opinion of the civil engineering faculty does not duplicate the content of a course already taken in the program. The technical electives allow the student to have some flexibility to design a program to meet particular needs. Independent study is for students who have special interests which are not met by available courses. For those desiring to take independent study, a proposed contract must be submitted at the time of advance registration for the following quarter.

301. **SURVEYING (2 + 6)** 4 hours  Use of level, transit and tape, differential and profile leveling, traversing theory and practice, horizontal and vertical curves, and mapping. Prerequisite: Permission of Instructor.

401. **MECHANICS OF MATERIALS (3 + 0)** 3 hours  Deflection, combined loadings, repeated loading, dynamic loading, connections, formulation of statically indeterminate problems. Prerequisite: 201-312-313; 123-361.
### CIVIL ENGINEERING—CLASS OF 1986

**Junior 1984-85**

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<td>Computer-Aided Design, Structural Analysis, 1, 2 (202411-2-3)</td>
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<tr>
<td>Humanities or Social Science Elective, Fluid Mechanics, Hydraulics (..., 202422-3)</td>
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<tr>
<td>Surveying, Transportation, Urban Planning (202301, 435-6)</td>
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<tr>
<td>Philosophy, Applied Random Processes, Material Science (..., 201401, 202456)</td>
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### CIVIL ENGINEERING—CLASS OF 1985

**Senior 1984-85**

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<td>Steel Design 1, 2, Structural Systems Design* (202547-8, 523)</td>
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<tr>
<td>Soils, 1, 2, Construction Systems (202531-2, 533)*</td>
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<tr>
<td>Reinforced Concrete 1, 2 (202526-6)</td>
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<td>CE Seminar*, Finite Elements* (202551, 555)</td>
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<td>Religion, Technical Elective*, elective</td>
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**411. COMPUTER AIDED DESIGN 1**

4 hours

Principles of numerical analysis used in solving structural problems, numerical methods, linear programming, optimization and applications. Prerequisites: 201-122, 123-361, and concurrent 202-401.

**412. STRUCTURAL ANALYSIS 1**

4 hours

Fundamentals of statically determinate structures; deflections, displacements, use of models to illustrate structural behavior, principle of superposition and study of elastic curve, computer methods. Prerequisite: 202-411.

**413. STRUCTURAL ANALYSIS 2**

4 hours

Fundamentals of statically indeterminate structures; classical and approximate methods of solution, computer aspects. Prerequisite: 202-412.

**422. FLUID MECHANICS**

3 hours

Engineering properties of fluids, fluid statics, fluid dynamics, fluid resistance, boundary layer theory, steady flow in pipes. Prerequisite: 201-312.

**423. HYDRAULICS**

4 hours

Hydraulic analysis of piping systems, steady flow in open channels, non-uniform flow in open channels, elements of hydrology, introduction to chemical quality of surface and subsurface waters, and design of water distribution systems. Field trip when appropriate. Prerequisite: 202-422.

**435. TRANSPORTATION**

3 hours

Principles of transportation systems; economics, finance, and planning; and design, construction and maintenance. Field trips when appropriate. Prerequisite: Permission of Instructor.

**436. URBAN PLANNING**

3 hours

Principles of city and regional planning; land use, zoning, housing codes, subdivision regulations, metropolitan problems, and urban development. Field trips when appropriate. Prerequisite: Permission of instructor.

**442. LAW AND MANAGEMENT**

3 hours

Present and emerging legal issues concerning various aspects of the Civil Engineering profession. The organization, management and control of a business enterprise. Organization and management systems. Prerequisite: Junior standing.

**453. GEOLOGY**

4 hours

Principles of physical geology. Physical and chemical properties of minerals and rocks, geologic processes, earth materials, processes of ero-
sion and deposition, terrain investigation, geological mapping, ground water hydrology. Field trips when appropriate. Prerequisite: Permission of instructor.

456. MATERIAL SCIENCE (3 + 0) 3 hours
A study of the fundamental physical and chemical properties of engineering materials and how they relate to mechanical behavior. Determination of physical properties in laboratory environment. Prerequisite: 201-313.

473. ENVIRONMENTAL SCIENCE (3 + 0) 3 hours
Environmental pollution: effects on society. Causes, controls and standards of water, air and land pollution. Possible solutions using interdisciplinary approach. Field trip when appropriate. Prerequisite: Permission of instructor.

491. INDEPENDENT STUDY 3 hours
The independent planning of an engineering design project by individual study of a topic of particular interest to the student. Prerequisite: Junior standing and departmental contract in advance.

492. INDEPENDENT STUDY 3 hours
Continuation of 491.

493. INDEPENDENT STUDY 3 hours
Continuation of 492.

514. ENVIRONMENTAL ENGINEERING 1 (2 + 2) 3 hours
Development of sources of water supply; determination of quantity of storm water; design of physical processes in water and waste water treatment systems. Field trips when appropriate. Prerequisite: 202-423.

516. ENVIRONMENTAL ENGINEERING 2 (3 + 2) 4 hours
Physical, chemical and biological processes in water and waste water treatment systems. Design of a treatment system. Land and air pollution; control and standards; interpretation of reports; inspection of local plants. Solid waste management. Field trips when appropriate. Prerequisite: 202-514.

523. STRUCTURAL SYSTEMS DESIGN (2 + 3) 3 hours
Design of structural systems emphasizing optimization, creativity, and decision making. Field trips when appropriate. Prerequisites: 202-525, 202-547.

525. REINFORCED CONCRETE 1 (3 + 2) 4 hours
Strength design of structural elements, flexural reinforcement development, diagonal tension, axially and eccentrically loaded columns, torsion, walls, footings; application of codes and specifications to design. Field trips when appropriate. Prerequisite: 202-413.

526. REINFORCED CONCRETE 2 (2 + 2) 3 hours
Continuity, slabs, deflections, and economic considerations. Field trips when appropriate. Prerequisite: 202-525.

531. SOILS 1 (3 + 2) 4 hours
An introduction to soils engineering, physical properties of soils as affecting engineering design and construction, soil sampling, mechanics of soil masses, consolidation, settlement, and laboratory soil tests. Field trips when appropriate. Prerequisites: 202-423 and 202-453.

532. SOILS 2 (4 + 2) 5 hours
Analysis of stress conditions imposed on the supporting soils by foundations. Design of foundations, retaining structures and slopes. Field trips when appropriate. Prerequisite: 202-531.

533. CONSTRUCTION SYSTEMS (2 + 3) 3 hours
Specifications, economical construction methods, determination of critical path, fundamentals of PERT, engineering economics as applied to various engineering projects. Field trips when appropriate. Prerequisite: Permission of Instructor.

547. STEEL DESIGN 1 (3+2) 4 hours
The design of beams, columns, built-up members, and connections as applied to structural steel. Use of influence lines and various other techniques for determining maximum loadings. Field trips when appropriate. Prerequisite: 202-413.

548. STEEL DESIGN 2 (3 + 0) 3 hours
Theory of plastic design, load and resistance factor design, design of connections, plate girders, composite design, and fatigue. Mathematical simulation and optimization. Prerequisite: 202-547.

551. CIVIL ENGINEERING SEMINAR (3 + 0) 3 hours
Current topics of interest generally not covered in prescribed curriculum. Active participation in class discussions required. Participation in ASCE Student Chapter is required. Field trips when appropriate. Prerequisite: Permission of instructor.

555. FINITE ELEMENT ANALYSIS (3 + 0) 3 hours
Study of finite element technique and selected topics in advanced structural mechanics. Prerequisite: Permission of instructor.
591. INDEPENDENT STUDY 3 hours
The independent planning of an engineering design project or the individual study of a topic of particular interest to the student. Prerequisites: Senior standing and departmental contract in advance.

592. INDEPENDENT STUDY 3 hours
Continuation of 591.

593. INDEPENDENT STUDY 3 hours
Continuation of 592.

ELECTRICAL ENGINEERING (Department 203)
Professors Johansen (Chairman), Klingenberg, Staht, Assistant Professor 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, in the non-industrial as well as the industrial world, 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. They become involved in a great diversity of problems, some quite remote from the physics of electricity and many of great social importance.

The electrical engineering curriculum coordinates scientific background with theoretical working knowledge. This curriculum is designed to provide an excellent background for students who intend to pursue employment in the above mentioned areas immediately upon graduation or who intend to pursue specialized work in graduate school.

Classroom activities are supplemented by work in well-equipped laboratories. Problem solving is emphasized and particular attention is placed upon the use of the analog and digital computers which are readily available in the engineering building.

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<td>Energy Conversion 1 (203433)</td>
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<td>Applied Random Processes, Linear Systems 1, 2</td>
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<td>Solid State Electronics, Analog Computer Techniques 203455, 463</td>
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401. ENGINEERING ANALYSIS (4 + 0)  
         hours Selected analytical methods with engineering applications. Emphasis is on methods using complex variables and vector calculus. Prerequisite: 123-361.4

404. ELECTRIC MACHINERY (3 + 0)  
         3 hours A course for the non-electrical engineering student in the theory and application of electric machinery. Prerequisites: 201-323 and 201-333.

412. FIELDS AND WAVES 1 (4 + 0)  
         4 hours Electrical phenomena from the viewpoint of electromagnetic field theory proceeding through Maxwell's equations and leading to applications in circuit theory, rotating machinery and transmission lines. Prerequisite: 203-401.

413. FIELDS AND WAVES 2 (3 + 0)  
         3 hours Continuation of 412. Prerequisite: 203-412.

424. ELECTRONICS 1 (4 + 0)  
         4 hours Operating principles of electronic devices (diodes, BJTs and FETs), models representing these devices and their use in simple circuitry. Prerequisite: 201-323.

425. ELECTRONICS 2 (4 + 0)  
         4 hours Large and small signal amplifiers, frequency response of amplifiers and oscillators. Prerequisite: 203-424.

426. ELECTRONICS 3 (3 + 0)  
         3 hours Introduction to the features of the design and performance of digital IC's and their use in implementing logic designs. Prerequisite: 203-425.

433. ENERGY CONVERSION 1 (3 + 0)  
         3 hours The underlying principles of energy conversion. Prerequisite: 203-412; concurrent 203-413.

442. LINEAR SYSTEMS 1 (3 + 0)  
         3 hours Application of Laplace Transform methods to transient phenomena in linear systems. Prerequisites: 201-323, 203-401.

443. LINEAR SYSTEMS 2 (3 + 0)  
         3 hours A continuation of 442. State variable techniques and digital computer solution of linear transient problems. Prerequisite: 203-442.

455. SOLID STATE ELECTRONICS (3 + 0)  
         3 hours (Formerly 421) The basic principles of the internal operations of electronic devices are studied. Prerequisite: 201-323.

463. ANALOG COMPUTER TECHNIQUES (1 + 3)  
         2 hours Instruction in the use and practicability of analog computer methods in engineering problem solutions. Prerequisite: Concurrent 203-443.

471. ELECTRICAL LABORATORY 1 (0 + 3)  
         1 hour Instrumentation and measurement circuits and techniques. Prerequisite: 201-323.

481. ELECTRICAL LABORATORY 2 (0 + 3)  
         1 hour (Formerly 452) Study of active devices and their associated circuits. Prerequisite: Concurrent 203-424.

482. ELECTRICAL LABORATORY 3 (0 + 3)  
         1 hour Continuation of 481. Prerequisite: Concurrent 203-425.

483. ELECTRICAL LABORATORY 4 (0 + 3)  
         1 hour Laboratory study of digital I.C.'s. Prerequisite: Concurrent 203-425.

502. ENGINEERING METHODS 1 (3 + 0)  
         3 hours The basic fundamentals of engineering economics with application to electrical systems. Prerequisite: EE senior status.

503. ENGINEERING METHODS 2 (3 + 0)  
         3 hours The professional method of dealing with engineering problems, the processes the engineer uses in practice. Prerequisite: 203-502.

511. MICROWAVES (3 + 0)  
         3 hours A study of the principles of energy transmission using transmission lines, wave guides, and antennas. Prerequisite: 203-413.

513. CIRCUIT SYNTHESIS (3 + 0)  
         3 hours Introduction to the principles of modern circuit synthesis. Prerequisite: 203-443.

524. ELECTRONICS 4 (2 + 3)  
         3 hours Continuation of 426 with emphasis on microcomputer interfacing. Prerequisite: 203-426.

525. ELECTRONICS 5 (2 + 3)  
         3 hours Continuation of 524 with emphasis on microprocessor implementation of logic design. Prerequisite: 203-524.

531. ENERGY CONVERSION 2 (3 + 0)  
         3 hours Continuation of 433 with emphasis on direct current and alternating current machinery. Prerequisite: 203-433.

532. ENERGY CONVERSION 3 (3 + 0)  
         3 hours An introduction to power systems analysis with load flow, faults and stability topics. Prerequisite: 203-531.
541. CONTROL SYSTEMS 1 (3 + 0)
3 hours  An introduction to the basic theory of feedback control devices. Transfer function formulation, frequency response, root locus, and stability. Introduction to the use of the digital computer as an analysis tool. Prerequisite: 203-443.

542. CONTROL SYSTEMS 2 (3 + 0)
3 hours  Analysis and design of linear control systems with emphasis on compensation. Prerequisite: 203-541.

543. CONTROL SYSTEMS 3 (3 + 0)
3 hours  Discrete systems and the z-transform method. State-space analysis of control systems. Prerequisite: 203-541.

553. LINEAR INTEGRATED CIRCUITS
(3 + 0)  3 hours  Internal circuit design of linear integrated circuits and their applications. Prerequisite: 203-426.

561. ELECTRICAL LABORATORY 5
(0 + 3)  1 hour  Laboratory study of feedback control systems. Prerequisite: Concurrent 203-541.

571. ELECTRICAL LABORATORY 6
(0 + 3)  1 hour  (Formerly 552) Laboratory study of transmission line and microwave circuits. Prerequisite: Concurrent 203-511.

572. ELECTRICAL LABORATORY 7
(0 + 3)  1 hour  (Formerly 562) Study of the generalized machine and other DC, synchronous, and induction machines. Prerequisite: 203-531.

582. COMMUNICATION THEORY (3 + 0)
3 hours  (Formerly 572) An introduction to the principles of communication theory. Prerequisite: 203-443.

590. PROJECTS  3 hours  Independent planning and conduct of an engineering design, or development project in electrical engineering. Prerequisite: Permission of instructor.

591. INDEPENDENT STUDY  3 hours  Individual study of a topic of particular interest to the student in electrical engineering. Prerequisite: Permission of instructor.

592. SPECIAL TOPICS  3 hours  A study of selected topics of current interest in electrical engineering. Prerequisite: Permission of instructor.

MECHANICAL ENGINEERING
(Department 204)

Professor Burton (Chairman); Associate Professors Maier, Rider, Smith, Whisler.

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 has the opportunity to use extensively the engineering analysis and design laboratories as well as the Computer Center and the Computer Graphics Laboratory. 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.

401. MECHANICS OF MATERIALS
(3 + 3)  4 hours  Beam deflection-determinate and indeterminate. Combined static loading, reversed loading, column stability, and dynamic loading. Use of S.I. The measurement of material properties and the use of stress analysis techniques. Prerequisite: 201-313.

402. ENGINEERING MATERIALS (3 + 0)
3 hours  Introduction to the microscopic structure of engineering materials and its relation to their mechanical properties. Evaluation of these properties for material selection in design applications. Metallurgical aspects of metals including equilibrium diagrams and heat treating. Production and classification of ferrous, non-ferrous and non-metallic materials. Prerequisite: 122-162.

403. MANUFACTURING PROCESSES
(3 + 2)  4 hours  Introduction to contemporary material processing including molding, machining, hot and cold working. A detailed study of these processing methods using basic machining tools and operations, casting and molding equipment, and metal forming. Laboratory work includes evaluating basic.
### Mechanical Engineering—Class of 1986

**Junior 1984-85**

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<tr>
<td>Applied Random Processes, Thermodynamics 1, 2 (201401, 204415-6)</td>
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<td>Computer Graphics, Engineering Analysis, Fluid Mechanics 1 (204444, 204435, 26)</td>
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<tr>
<td>Analytical Methods, Engineering Materials, Manufacturing Processes (204424, 02-3)</td>
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<td>Philosophy, Religion (.........)</td>
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<td><strong>TOTALS</strong></td>
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### Mechanical Engineering—Class of 1985

**Senior 1984-85**

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<tr>
<th>Course Description</th>
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<td>Mechanical Design 1, 2, 3 (204511-2-3)</td>
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<td>Heat Transfer 1, 2, Energy Systems (204521-2-6)</td>
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<td>Fluid Mechanics 2, Technical Elective* (204534, ...)</td>
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<td>Vibration Analysis, Control System (204541-2)</td>
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<td>Science Elective** (.......)**</td>
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<td>Electives (.........)</td>
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<td><strong>TOTALS</strong></td>
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**Acceptable science electives: Nuclear Physics 124353, Modern Physics 124303, Electronics 124361, Operation Research 123332, Geology 202453.

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**405. Theory of Machines 1 (3 + 3)**

4 hours Analysis and synthesis of mechanisms for motion, velocity, and acceleration properties. Linkages, cams, gears, and gear trains are treated. Analytical, graphical, and computer solutions are covered. Laboratory assignments deal with analysis and synthesis. Prerequisite: 201-312.

**406. Theory of Machines 2 (3 + 2)**

4 hours Continuation of 405. Static and dynamic force analysis in plane and space mechanisms are treated. Introduction to robotics. Laboratory assignments deal with computer solutions, experiments of unbalance, and robotics. Prerequisite: 204-405.

**415. Thermodynamics 1 (4 + 0)**


**416. Thermodynamics 2 (4 + 2)**

5 hours Relations among thermodynamic properties, mixtures, chemical reactions and equilibrium. Topics in gas dynamics and turbomachines. Laboratory experience with fluid property variations, refrigeration and heat engine systems, fans and compressors. Prerequisite: 204-415.

**424. Analytical Methods (3 + 3)**

4 hours A treatment of numerical methods applicable to problems arising in engineering practice; exact and approximate solutions are investigated; finite methods are used for linear and nonlinear equation solution; ordinary and partial differential equations are treated. Prerequisites: 123-361, 201-122.

**426. Fluid Mechanics 1 (3 + 0)**

3 hours An introduction to the mechanics of fluids; the state of stress in a static fluid; similarity and dimensional analysis; the dynamics...
of inviscid ideal fluids, Euler's equation, Navier-Stokes equations, Bernoulli's equation, and momentum equation. Prerequisite: 201-312.

435. ENGINEERING ANALYSIS (3 + 0)  
3 hours  The professional method as it applies to the analysis of engineering problems. Emphasis is placed on learning to deal with new situations in terms of fundamental principles. Prerequisite: 123-361.

443. NON-ME COMPUTER GRAPHICS (3 + 0)  
3 hours  Practical studies involving the applications of computer graphics. Emphasis on "software" required for computer graphics with some considerations of "hardware." Programming problems oriented toward non-engineering applications. Prerequisite: 123-131 or 201-122.

444. COMPUTER GRAPHICS (2 + 3)  
3 hours  Practical studies involving the application of computer graphics in industry. Studies of hardware configurations and supportive software packages. Prerequisite: ME junior status.

511. MECHANICAL DESIGN 1 (1 + 3)  
4 hours  Fatigue analysis, fracture mechanics, and statistical considerations in design. Analysis and synthesis of various machine parts. Introductory design problem given. Initiation of comprehensive design project. Use of S.I. Prerequisites: 204-403, 406.

512. MECHANICAL DESIGN 2 (3 + 3)  
4 hours  Analysis and synthesis of various machine parts. Design problem given. Continuation of comprehensive design project. Use of S.I. Prerequisite: 204-511.

513. MECHANICAL DESIGN 3 (1 + 6)  
3 hours  Completion of the comprehensive design project of 204-511,512. Product liability, legal problems, and ethics studied. Introduction to designing with plastics and optimization. Prerequisite: 204-512.

521. HEAT TRANSFER 1 (3 + 0)  
3 hours  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. Prerequisite: 124-232.

522. HEAT TRANSFER 2 (3 + 2)  
4 hours  Fundamentals of convection; dimensional analysis; free and forced convection; boiling, two-phase heat transfer and heat pipes.

Applications to design. Laboratory reinforced study of conduction, convection, radiation and design. Prerequisite: 204-521.

526. ENERGY SYSTEMS (3 + 2)  
4 hours  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 conceptual system design and studies of operating systems. Prerequisite: 204-522.

534. FLUID MECHANICS 2 (3 + 2)  
4 hours  Elements of potential flow and boundary layer theory. Applications to piping systems, aerodynamics, flow measurement and turbomachinery. Concurrent laboratory experience with flow patterns, pressure and velocity profiles, pumps, fans, and turbines. Prerequisite: 204-426.

541. VIBRATION ANALYSIS (3 + 0)  
3 hours  Fundamentals of linear and nonlinear vibration of single degree of freedom, multi-degree of freedom, and continuous systems. Prerequisite: 204-406.

542. CONTROL SYSTEMS (4 + 2)  
5 hours  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 analog simulations, digital logic design, and performance studies of real systems. Prerequisite: 204-424.

556. PRODUCTION ENGINEERING (3 + 0)  
3 hours  An introduction to scientific organizing, standardizing, and operating principles in production engineering. Capabilities of manufacturing processes. Fundamentals of time and motion study, engineering economy, statistical quality control, location and material flow for a manufacturing enterprise. Prerequisite: 204-403.

590. MECHANICAL ENGINEERING PROJECT  
5 hours  Practical studies of investigations involving the application of original thought, the determination of new information and/or new application of known information or equipment. Prerequisite: ME senior status.
THE RUDOLPH H. RAABE COLLEGE OF
Pharmacy and
Allied Health Sciences

LeRoy D. Beltz, Dean

The Raabe College of Pharmacy and Allied Health Sciences at Ohio Northern University endeavors today, as in the past, to meet the high standards of education demanded by the health professions. Currently the college occupies a modern building designed and equipped to provide the facilities required for programs in the health, life and physical sciences.

Throughout its 100-year history, the Ohio Northern University College of Pharmacy and Allied Health Sciences has played an important role in pharmaceutical education and the education of allied health professionals. Its position in pharmaceutical education in Ohio is particularly significant. Over 3,000 pharmacists have been graduated by this institution and its graduates are particularly active in local, state, and national health-related organizations.

The Raabe College of Pharmacy and Allied Health Sciences is an integral part of Ohio Northern University. It is recognized and approved by the Board of Pharmacy of the State of Ohio. It is a member of the American Association of Colleges of Pharmacy and is accredited by the American Council on Pharmaceutical Education.

Aims and Objectives
In addition to the general objectives set forth by the University, the College of Pharmacy and Allied Health Sciences includes the following among its aims and purposes:

• Preparing students to meet satisfactorily the professional and cultural standards expected of health care professionals and to carry their share of the responsibility for improvement of the quality of the health, welfare and educational services to their communities.

• Counseling students in the development of self-reliance, character and ethical concepts to the end that will render safe and efficient health care services.

• Acquainting students with the value of membership in local, state and national health associations and in civic, social and religious bodies of the communities in which they live.

To accomplish these scholastic, professional, and social goals, faculty counselors are available to advise students concerning their plans of study and every encouragement is offered to maintain high standards of scholarship. Participation in a reasonable number of campus activities is encouraged in the belief that such activities, properly adjusted to the student's opportunity and ability to carry them, will broaden his outlook, enrich his college experience, and add much to his preparation for life.

Bachelor of Science Degree in Pharmacy
The Bachelor of Science Degree in Pharmacy is a five year curriculum that provides a foundation in the basic sciences of pharmacy as well as a comprehensive understanding of the health care system. The curricular design includes a broad range of courses in the social sciences, physical sciences, and the humanities. Additionally there is experiential work in clinical medical settings as well as a structured externship in acute care institutions, community pharmacies and other health care settings.

For the purposes 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).

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.

**High School Graduates** It is recommended that high school graduates should have completed the college preparatory course including four years of English, three years of mathematics (algebra I and II and plane geometry) and three years of science (including biology and chemistry). Priority will 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 a transcript of his record at that institution and a copy of its current catalog. Approval for admission and advanced placement will be determined by the faculty of the College upon review of the student's previous record. Full credit will be given for all work satisfactorily completed in other recognized institutions of higher learning provided such work is parallel to the requirements for graduation from this institution. Credit will not be allowed for a course in which the lowest passing grade was received (i.e., grade below C).

To enter the regular course of study, the candidate must prepare a schedule of studies with the aid of an adviser and approval of the Dean, and pay tuition and fees as stated elsewhere in this catalog. Students entitled to advanced standing may enter at the time approved by the Dean.

**Classification of Students**

Students enrolled in the Pharmacy program are classified as P-1 students until they have earned a minimum of forty-five quarter hours credit, at which point they are advanced to P-2 standing. In order to gain admission to the Upper Division and P-3 status, a student must have completed a minimum of 90 quarter hours of academic work and all of the Lower Division courses that are prerequisite to the regular third year schedule. P-4 or P-5 standing is gained when a majority of the required course work in the previous year has been completed and a minimum of 135 and 180 quarter hours of academic credit respectively, has been earned. Additionally, students whose accumulative average in their required scientific and professional courses is below 2.00 are not eligible for advancement to the P-3, P-4 or P-5 class. All required courses in the Lower Division must be completed before the student is permitted to enter the second year of the Upper Division.

**Dual-Degree Program**

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 the College of Pharmacy and Allied Health Sciences. The student following this option pursues both degrees simultaneously under the supervision of an adviser from the College of Pharmacy and Allied Health Sciences and an adviser selected from the department of the chosen major in that College. Tuition is charged at the College of Pharmacy and Allied Health Sciences 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 the degree.

Information relative to the procedure for declaring a dual degree program is available in the office of the Dean of the College of Pharmacy and Allied Health Sciences.

**Standards of Scholarship**

A student who fails to maintain the prescribed standards of scholarship will be subject to one of the following actions, namely: 1) being placed on probation, 2) being suspended from the College, or 3) being dismissed from the College.

If a student's accumulative quality point average falls below 2.00, the student will be placed on probation. If a student on probation does not restore his quality point average during the following or any subsequent quarter, he will be subject to further academic action. A detailed procedural guide for academic action is available for the student's perusal.

Any student with an unusually low quality point average for any quarter may be placed on probation. Actions to suspend or dismiss a student from the College shall be initiated by the Academic Actions Committee when just
cause for such action is evident. If action is taken to suspend a student, the suspension may be for a definite period of time after which the student will be eligible to resume his studies. It may be for an indefinite period of time in which case the student's request for readmission is considered on a low priority basis. When readmission is granted the faculty may establish certain conditions of academic performance in order for the student to remain enrolled in the College of Pharmacy and Allied Health Sciences.

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

Requirements for Graduation
Each candidate for a degree:
1. Must be of good moral character.
2. Must have completed the required curriculum of 258 hours.
3. Must have earned an accumulative grade point average of 2.00 in all course work and have maintained an accumulative grade point average of 2.00 in all required professional and scientific courses.
4. Must satisfy a minimum residency requirement as established by the Dean of the College.
5. Must be recommended for the degree by a majority vote of the faculty of the University.
6. Must meet such other qualifications as the faculty may determine.

Library
The facilities of the main library of the University are at the disposal of the pharmacy students. Many of the current books and classics contributing to an appreciation of the arts and sciences are to be found there along with books, periodicals, and journals pertaining to pharmacy, medicine, and related professions. Additional printed and visual materials are available in the drug information center of the College of Pharmacy and Allied Health Sciences.

Community Health Services
The College of Pharmacy offers a continuum of health-care services to the community at large. Included in these services are continuing education programs for pharmacists, nurses and other health care professionals; community health education programs, especially in the area of drug abuse; medical care research services; and health planning resources. Further information can be obtained by contacting the Dean of the College.

Special Notice
Because of rapid developments in the medical and allied health professions, the curriculum of the College is constantly being reviewed by the faculty. The College reserves the right, without advance notice, to change the content, duration and sequence of any course included in the curriculum leading to the degree. A separate catalog or bulletin covering course content and other pertinent matters is issued periodically. Please address requests for copies to the Dean of Pharmacy and Allied Health Sciences, Ohio Northern University, Ada, OH 45810.

Program of Study Leading to the Degree of Bachelor of Science in Pharmacy

Curriculum
First Year
Introductory Chemistry 171, 172, 173
15 hours
Biology 100 4 hours
General Biology 112, 113 8 hours
Calculus & Probability 154, 155 8 hours
Introduction to Data Analysis 156 4 hours
English 107, 108, 109 9 hours
Pharmacy Orientation 101 1 hour
The Profession of Pharmacy 102, 103 2 hours
TOTAL 51 hours

Second Year
Organic Chemistry 231, 232, 233 12 hours
Physiology 331, 332, 333 12 hours
Speech communication 100 3 hours
Introduction to pharmacy practice 212 3 hours
General Education* 21 hours
TOTAL 51

Third Year
Pharmaceutics 321, 322, 323 12 hours
Biochemistry 341, 342 8 hours
Biopharmaceutics and Introductory Pharmacokinetics 343 3 hours
Medicinal Chemistry 371 5 hours
Immunology and Biologicals 372 2 hours
Microbiology 361 4 hours

PHARMACY AND ALLIED HEALTH SCIENCES 147
Principles of Disease 373 3 hours
General Education 12 hours
Elective 2 hours
TOTAL 51 hours

Fourth Year
Pharmacy Practice 461, 462 6 hours
Pharmacy Practice Laboratory 463 1 hour
Sterile Products 464 2 hours
Prescription Products in Practice 465 1 hours
Introductory and Autonomic Pharmacology 491 4 hours
Pathology and Pharmacology of the Central Nervous System 492 4 hours
Pathology and Pharmacology of the Cardiovascular and Endocrine System 493 5 hours
Laboratory in Biomedical Sciences 494, 495, 496 3 hours
Chemotherapy of Infectious Disease 421 4 hours
Electives 24 hours
TOTAL 54 hours

Fifth Year
Toxicology 521 3 hours
Pharmaceutical Law 551 4 hours
Pharmaceutical Marketing 552 3 hours
Pharmaceutical Management 553 4 hours
Health Care Systems (554) 4 hours
Clinical Pharmacy 560 3 hours
Therapeutics 562 4 hours
Introduction to Drug Information 563 2 hours
Structured Internship 580 15 hours
Electives 9 hours
TOTAL 51 hours

*General education courses are selected from among the following:

Humanities 3 hours selected from Philosophy 100, Logic 234, Knowledge and Truth 237, Ethics 238 or Bioethics 338. 3 hours selected from Introduction to Religion 105, Introduction to the Bible 106, Religion East and West 107, or Introduction to Christianity 108.

Social Science 6 hours selected from Psychology 100, Sociology 105, or any course in Department 133 at the 200 level or above. 6 hours selected from Political Science 201, 202, 203; or recent American History 360, 362.

Fine Arts 3 hours of non-performance fine arts selected from Art 100, Music 100, Theatre 105 or any 200-level non-performance course in Department 151, 152, or 153.

Business Administration 6 hours selected from Accounting 131, 132, 133; Economics 100, 202, 203; or Business Law 322, 323, 324.

In-depth General Education 6 hours selected from any English course at the 200 level or above (excluding performance courses), any philosophy and religion course at the 200 level or above (in addition to the course used to satisfy the humanities requirement), any foreign language, any sociology, psychology or social welfare course at the 200 level or above (in addition to the courses used to satisfy the social science requirement), any course in business administration at the 300 level or above, or any course in political science and history at the 300 level or above.

For descriptions of the lower division courses and general education courses turn to the listing of the courses offered in the College of Arts and Sciences and the College of Business Administration.

DEPARTMENT OF PHARMACY AND HEALTH CARE ADMINISTRATION
(Department 311)

Professors Beltz, Stanisloki (Chairman) (sabbatical, spring quarter), Previte, Stuart, Theodore, Vottero (sabbatical spring quarter); Associate Professors Henderson, Reiselman, Shoemaker; Assistant Professors Buyukayalci, Lucas (part-time), Stanovich; Clinical Instructors J. Turner, M.A. Turner; Visiting Clinical Instructor Matouk.

First number in parentheses is lecture hours per week, second number is laboratory hours per week.

101. PHARMACY ORIENTATION (1 + 0)
1 hour A general orientation to the University.

102. THE PROFESSION OF PHARMACY I (1 + 0) 1 hour The profession of pharmacy; its development, its educational requirements, the role of the pharmacist and the challenges.

103. THE PROFESSION OF PHARMACY II (1 + 0) 1 hour Continuation of 102.

212. INTRODUCTION TO PHARMACY PRACTICE 3 hours. An introduction to the
practice of pharmacy which includes practical principles of law as they pertain to pharmacy intern; Third Party Payment practices; and patient profiles. A major emphasis is placed on mathematics as applied to pharmacy practice including the prescription, Latin symbols, metrology, reducing and enlarging formulae, dilution and concentration, isotonic solutions and electrolyte solutions.

**321. PHARMACEUTICS I (3 + 3)** 4 hours
A study of solid dosage forms, including their preparation, characteristics, and the physical and chemical phenomena affecting the availability of the active ingredient from these dosage forms. In the laboratory, solid dosage forms are prepared, both according to the laboratory text, and extemporaneously. Prerequisite: 122-233. Corequisite: 311-212.

**322. PHARMACEUTICS II (3 + 3)** 4 hours
A study of the various types of solution dosage forms and related physical and chemical phenomena. These include solubility characteristics, pH considerations and their effect on solubility, stability, and compatibility. These principles are applied in the laboratory, in the preparation of homogeneous dosage forms. Prerequisites: 311-212, 321.

**323. PHARMACEUTICS III (3 + 3)** 4 hours
A study of heterogeneous dosage forms including suspensions, ointments, emulsions and suppositories. In the laboratory, the theoretical aspects of dispersion, interfacial phenomena, and rheology are applied in the preparation of these dosage forms. Prerequisite: 311-322.

**343. BIOPHARMACEUTICS AND INTRODUCTORY PHARMACOKINETICS (3 + 0)** 3 hours
The characteristics, time course, factors influencing and the mathematical models of drug absorption, distribution, metabolism, and excretion. Prerequisite: P-3 standing. Corequisites: 121-333, 311-323.

**421. INTRODUCTION TO HOSPITAL PHARMACY (3 + 0)** 3 hours
An introductory presentation of 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. Prerequisite: P-3 standing or permission of instructor.

**422. PHARMACY SERVICE TO NURSING HOMES (1 + 0)** 1 hour
The pharmacist’s 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 hours
The educational, organizational and professional growth and development of pharmacy in the United States. Prerequisite: P-4 standing.

**441. INTRODUCTION TO RADIOACTIVE PHARMACEUTICALS (3 + 0)** 3 hours
A survey course in the types of radiation, methods of detection and measurement and the application of radioisotopes to modern health care. Prerequisite: Permission of instructor.

**461. PHARMACY PRACTICE I (3 + 0)**
3 hours
A study of the contemporary filling of physician orders. Topics include patient counseling, drug interactions, patient profile systems, and dispensing systems. Prerequisites: 311-323, 343.

**462. PHARMACY PRACTICE II (3 + 0)**
3 hours
A study of the appropriate use of nonprescription drugs, products and devices. Prerequisites: 312-361, 373, and 492. Corequisite: 312-493.

**463. PHARMACY PRACTICE LABORATORY (0 + 3)** 1 hour
A laboratory course; practical experience in the compounding and dispensing of prescription orders. The emphasis is on accuracy and providing adequate patient counseling information. Prerequisite: 311-461.

**464. STERILE PRODUCTS (2 + 0)**
2 hours
The basic principles, equipment and techniques involved in the preparation, manipulation, and administration of parenteral products and other sterile dosage forms. Prerequisite: 311-323.

**465. PRESCRIPTION PRODUCTS IN PRACTICE (1 + 0)** 1 hour
A survey of the pertinent information concerning the most common prescription drugs. Prerequisites: 311-323, 343 and 312-492. Corequisite: 312-493.
471. SEMINAR IN IV THERAPY (2 + 0)
2 hours The seminar discusses in detail various aspects of IV therapy. Topics may include complications of specific types of IV therapy and fluid therapy. Prerequisite: 311-464 or permission of the instructor.

472. SEMINAR IN CANCER (2 + 0)
2 hours Cancer etiology and epidemiology. Students learn by researching an area of their interest and presenting it to the class. Concepts discussed include “survival,” physical and mental consequences of therapy, death and dying, and the care of the terminally ill. Prerequisite: P-4 standing or permission of instructor.

473. THIRD PARTY REIMBURSEMENT SYSTEMS (3 + 0)
3 hours The history and development of Third Party Programs including types of benefits, forms used, methods of payment, limitations, proposed methods of solving problems and surveillance and utilization review. Prerequisite: P-4 standing.

474. DOSAGE FORM DESIGN (2 + 0)
2 hours The design and formulation of various dosage forms, with particular emphasis on the effect that the various formulation factors have on the bioavailability of active ingredients. The dosage form is discussed and viewed as a drug delivery system. Prerequisite: 311-323.

475. PARENTERAL PRODUCTS SEMINAR (2 + 0)
2 hours Various aspects of parenteral medication. This includes, but is not limited to, their characteristics, formulation, preparation, administration and biopharmaceutical behavior. Prerequisite: 311-323 or permission of instructor.

476. INFECTIOUS DISEASES (3 + 0)
3 hours The pathophysiology and treatment of various infectious diseases. The problem solving approach is used in which the student is asked to present therapy for a described disease. Prerequisites: 312-373, 421.

477. OUTPATIENT CLINICAL PHARMACY 1 hour Methods of providing clinical services in the outpatient environment. Students learn by researching a topic of their interest and presenting it to the class. Prerequisite: Consent of Instructor.

478. OUTPATIENT PHARMACY SERVICE (0 + 3)
1 hour Laboratory course that serves the needs of the Health Center through the operation of the Model 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 and P-4 standing. Corequisite: 311-461.

510. COSMETIC SCIENCE (3 + 0)
3 hours An overview of various types of cosmetics; how they are prepared and the rationale for their formulation. Prerequisite: Permission of instructor.

515. COSMETIC TECHNOLOGY (0 + 3)
1 hour An optional laboratory for Cosmetic Science 510. A literature search on cosmetic formulation is required. The laboratory session will consist of compounding the cosmetic preparation that the student had previously investigated. Prerequisite: Permission of instructor.

530. MANUFACTURING PHARMACY (1 + 6)
3 hours The formulation and fabrication by mechanized methods of a variety of pharmaceutical dosage forms. Prerequisite: consent of instructor. Graded S-U.

551. PHARMACEUTICAL LAW (4 + 0)
4 hours A study of professional ethics and the philosophy, requirements, administration, and enforcement of local, state and federal laws related to the practice of the profession of pharmacy.

552. PHARMACEUTICAL MARKETING (3 + 0)
3 hours 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 healthcare industry are discussed, and resulting policies and procedures are appraised.

553. PHARMACEUTICAL MANAGEMENT (4 + 0)
4 hours Organization policies, planning and controlling, the relation of pharmaceutical services, professional practice and pharmacy operation to general business activity, patients and human service professions, and public health.

554. HEALTH CARE SYSTEMS (4 + 0)
4 hours A study of the development of the health care system and its present status. Contemporary issues in health care will be examined from a systems viewpoint. Prerequisite: P-5 standing.
CLINICAL PHARMACY I (3 + 6)
3 hours Introduction to clinical pharmacy. Experience in area hospitals. Opportunity to see the application of principles discussed in other courses. Relationships among drugs, diseases and patients. Transportation is arranged by the student. Offered every quarter. Must be taken with 311-562 and 563. Prerequisites: 311-462, 463, 464, and 465; 312-421, 492, 493; P-5 standing.

CLINICAL CLERKSHIP (0 + 9)
3 hours Experience in area hospitals, with a view to expanding the student's knowledge of health care delivery and drug disease relationships. An indepth experience in specific disease states. Prerequisites: 311-560 and permission of instructor.

THERAPEUTICS I (4 + 0) 4 hours This course is designed to introduce the student to the process of therapeutic decision making. The course is taught on a problem-oriented record model. A variety of disease states is covered. Must be taken with 311-560 and 563. Prerequisites: 311-462, 463, 464, and 465; 312-421, 492, 493; and P-5 standing.

INTRODUCTION TO DRUG INFORMATION (1 + 3) 2 hours An introduction to the field of drug information. Special emphasis is placed on retrieval and evaluation of drug literature, dissemination and communication of non-biased drug information and the organization and development of a drug information center. Must be taken with 311-562 and 560. Prerequisites: 311-462, 463, 464, and 465; 312-421, 492, 493; P-5 standing.

APPLIED PHARMACOKINETICS (3 + 0) 3 hours The application of pharmacokinetics to institutional and community practice. Especially emphasized are drug concentrations in body fluid, laboratory data, disease states and drug interactions as related to dose regimen for therapeutic management of individual patients. Prerequisites: 311-323, 343.

STRUCTURED EXTERNSHIP (0 + 15) 15 hours A program of structured experiences in various health care centers. Provides the student with experience in the actual application of material learned in didactic subjects. Prerequisites: P-5 standing; 311-462, 463, 464, 465; 312-421, 492, 493; and valid Ohio Intern License.

SPECIAL TOPICS IN PHARMACY AND HEALTH CARE ADMINISTRATION 1-3 hours Prerequisite: Permission of Instructor.

SEMINAR IN PHARMACY AND HEALTH CARE ADMINISTRATION 1-3 hours Prerequisite: Permission of Instructor.

INDEPENDENT STUDY IN PHARMACY AND HEALTH CARE ADMINISTRATION 1-3 hours Prerequisites: Permission of department chairman; accumulative grade point average of 2.50

DEPARTMENT OF PHARMACOLOGY AND BIOMEDICAL SCIENCES (Department 312)
Professors Awad, Bhattacharya, Faulkner, Gossel (Chairman), Mallin, Stewart (sabbatical spring quarter); Associate Professors Bricker, L. Smith.

SEMINAR IN PHARMACY COMMUNICATIONS (3 + 0) 3 hours Basic elements of communication between health care personnel. Didactic presentation and role-playing to gain experience in communication skills. Prerequisite: Permission of the instructor.

MEDICAL TERMINOLOGY (3 + 0) 3 hours An introductory course in medical terminology specifically, and scientific terminology in general. Emphasis on root words and affixes which have general and frequent occurrence in the communications of medicine, pharmacy, biology, chemistry, and related areas.

BIOCHEMISTRY I (4 + 0) 4 hours The study of living organisms with emphasis on the human system. Acid-base balance, buffers, biochemical energetics, the chemistry of amino acids, proteins, enzymes and carbohydrates, and the intermediary metabolism of carbohydrates. Prerequisite: 122-233.

BIOCHEMISTRY II (4 + 0) 4 hours A continuation of 312-341, including amino acid metabolism, the chemistry and metabolism of lipids, properties and biosynthesis of nucleic acids, protein biosynthesis, biochemi-
cal genetics and clinical biochemistry. The roles of vitamins in metabolism are emphasized throughout the biochemistry sequence. Prerequisite: 312-341

351. CLINICAL BIOCHEMISTRY (3 + 0) 3 hours An introduction to 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: 312-342 or permission of instructor.

352. NUTRITION (3 + 0) 3 hours An introduction to the principles of nutrition as they apply to the health practitioner. Nutritional needs, evaluation of nutritional status, deficiency diseases, nutrition in various physiological and pathological states, diet therapy in disease, food fads and nutritional misinformation. Prerequisite: 312-341 or consent of instructor.

353. INTRODUCTORY INSTRUMENTAL ANALYSIS (3 + 3) 4 hours Formerly 311-353. Instruments used in qualitative, quantitative, and control analysis.

361. MICROBIOLOGY (4 + 0) 4 hours An introductory course emphasizing 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. Prerequisite: one year of general biology or botany-zoology. Corequisite: 312-341.

362. MICROBIOLOGY (3 + 3) 4 hours An introduction to the fundamentals of general and medical microbiology for students of medical technology. Pre- or corequisite: one year of biological science.

371. MEDICINAL CHEMISTRY (5 + 0) 5 hours A systematic interfacing of basic biological information with basic chemical information. The effects of the chemical on the biological system, and means by which the biological system manipulates and changes the chemical. The relationship between the chemistry of drugs and their biological action. Emphasis is placed on recognition of pharmacophoric groups, structure activity relationships, chemical properties, and nomenclature of drugs. Prerequisite: 122-233. Corequisite: 312-341.

372. IMMUNOLOGY AND BIOLOGICALS (2 + 0) 2 hours An introduction to basic immunology including the types of immune responses, nature of antigens and antibodies, and antigen-antibody interactions as a basis for understanding the biological products currently recommended for use in the United States. Emphasis is placed on those biologicals used in the diagnosis, prevention and treatment of the most common infectious and immunologic diseases. Prerequisite: 312-342. Corequisite: 312-361.

373. PRINCIPLES OF DISEASE (3 + 0) 3 hours An introduction to the pathological principles involved in human disease. The nature, etiology, progression, and prognosis of specific diseases are studied from an organ or organ-system approach. Diseases involving the central nervous system, cardiovascular system and endocrine system are deferred to the pathology pharmacology sequence (312-492, 493). Prerequisites: 121-332; 312-341.

381. NATURAL PRODUCTS I (2 + 0) 2 hours An introductory course which deals with 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. Prerequisites: One year of biology and one year of organic chemistry.

382. NATURAL PRODUCTS II (2 + 0) 2 hours 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, enzymes and on the biotoxins elaborated from these animals. Prerequisite: 312-381.

421. CHEMOTHERAPY OF INFECTIOUS DISEASE (4 + 0) 4 hours A study of the antibiotics and synthetic chemicals used in the prophylaxis and treatment of infectious diseases. A drug oriented approach for selected diseases. Selective toxicity; dosage forms, choices in therapy; differential diagnosis; MIC; resistance; cephalosporins, tetracyclines, and other antibiotics; therapy of urinary tract infections and other common infections; therapy of acid-fast infections; parasitic disease treatment. Prerequisites: 121-333 and 312-361.
441. MEDICINAL PLANT PROPAGATION AND CULTIVATION (2 + 3)
3 hours  An introduction to the economic, geographical, 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, to write and to present reports. Prerequisite: Consent of instructor.

442. MEDICINAL PLANTS (3 + 0)  3 hours
A consideration of the economic, geographical, commercial and biological aspects of medicinal plants as a source of drugs, spices, herbal and folklore remedies. Common poisonous plants, drug abuse plants and potentially harmful toxic constituents of food-stuff plants are emphasized. Prerequisite: Consent of instructor.

462. VIROLOGY (2 + 0)  2 hours  A comprehensive coverage of the virus-host relationship from the viewpoint of molecular biology. Model systems will be discussed utilizing the bacteriophage. Prerequisites: 312-342,361, or consent of instructor.

491. INTRODUCTORY AND AUTONOMIC PHARMACOLOGY (4 + 0)
4 hours  The principles of pharmacology and a study of drugs which affect the autonomic nervous system; autacoids; antineoplastic agents; and several miscellaneous drug classes. The pharmacodynamic and pharmacokinetic properties of the drugs are related to therapeutic and toxicological aspects of drug therapy. Prerequisites: 121-333, 312-342, 311-343; P-4 standing. Corequisite: 312-373.

492. PATHOLOGY AND PHARMACOLOGY OF THE CENTRAL NERVOUS SYSTEM (4 + 0)  4 hours  A study of diseases of the central nervous system and the pharmacology of the drugs used to treat these disorders. The pharmacodynamic and pharmacokinetic properties of the drugs are related to the therapeutic and toxicological aspects of the treatment of the diseases. Prerequisites: 312-491, 312-373, and P-4 standing.

493. PATHOLOGY AND PHARMACOLOGY OF THE Cardiovascular AND ENDOCRINE SYSTEMS  5 hours  (5 + 0)
5 hours  A study of diseases of the cardiovascular, renal, and endocrine systems and the drugs used to treat these disorders. The pharmacodynamic and pharmacokinetic properties of these drugs are related to the therapeutic and toxicological aspects of the treatment of the diseases. Prerequisites: 312-373,491; P-4 standing.

494. LABORATORY IN THE BIOMEDICAL SCIENCES I (0 + 3)  1 hour  Demonstration and student-participation laboratories using chemical and biological methodology. Basic laboratory experiments in pharmacology, biochemistry, medicinal chemistry, clinical chemistry, toxicology, microbiology, and pharmacokinetics are included and an interdisciplinary approach is used in many of the experiments. Prerequisites: 312-342; P-4 standing. Corequisites: 312-361,373,491.

495. LABORATORY IN THE BIOMEDICAL SCIENCES II (0 + 3)  1 hour  Prerequisites: 312-491, 312-494, and P-4 standing. Corequisite: 312-492.

496. LABORATORY IN THE BIOMEDICAL SCIENCES III (0 + 3)  1 hour  Prerequisites: 312-491, 312-495, and P-4 standing. Corequisite: 312-493.

502. PRINCIPLES AND PRACTICE OF PUBLIC HEALTH (3 + 0)  3 hours  Individual and community aspects of public hygiene, including infections, epidemiology, prophylaxis, and discussion of the major illnesses (nutritional, mental, environmental and occupational). Prerequisite: 312-361.

511. VETERINARY PHARMACY (2 + 0)  2 hours  The various pathological conditions peculiar to animals, and the pharmaceuticals used in the treatment thereof. Prerequisite: Consent of instructor. (Formerly 311-511)

521. TOXICOLOGY (3 + 0)  3 hours  An introduction to the essential subject matter of clinical toxicology. Lectures, assigned readings in texts and current literature and selected audio visual materials. Classification and mechanisms of drug and chemical toxicity; environmental, industrial, and household poisoning; emergency management of poisoning. Major emphasis will be on areas of medical importance. Prerequisites: 312-
545. DRUGS OF ABUSE (2 + 0)  2 hours
Designed to assist the student in answering
questions routinely asked about drugs that
are abused. Emphasis is placed on recogni-
tion of the “street drugs,” dosage forms, uses,
and routes of administration; as well as
related pharmacological and toxicological
aspects of these drugs. Drug abuse aware-
ness, drug abuse education, and drug abuse
prevention. Prerequisite: 312-492 or permis-
sion of instructor.

565. RESEARCH IN PHARMACOLOGY
AND/OR TOXICOLOGY  2-4 hours
For students who intend to pursue graduate study
in pharmacology, toxicology or related biomi-
omedical areas. Participation in all aspects of
the design, implementation, model prepara-
tions, instrumentation, and reporting of specif-
c research problems. Superior and
advanced students are selected who intend
to repeat the course for 2 to 3 years or
pursue the same research problem(s) for
pharmacy intern credit. Prerequisite: Permission
of instructor.

571. SEMINAR IN PSYCHOPHARMA-
COLOGY (2 + 0)  2 hours
A seminar course involving student presenta-
tions of papers and discussions of topics of interest.
Current papers in mental illness, psychedelic
drug effects and pharmacological research
are discussed. Prerequisites: 312-492 and
P- 5 standing.

572. SEMINAR IN TOXICOLOGY (2 + 0)
2 hours
Student presentation of papers and
discussion of topics. Current events and rele-
vant topics in clinical, occupational, industrial,
and environmental toxicology are discussed.
Prerequisites: 312-492,493; P-5 standing.

573. SEMINAR IN PEDIATRIC PHAR-
MACOLOGY (2 + 0)  2 hours
Common pediatric medical disorders and their man-
agement with special reference to the pharma-
ocological basis of pediatric medicine. Pre-
requisite: 312-493.

574. SEMINAR IN GERIATRIC PHAR-
MACOLOGY (2 + 0)  2 hours
Major geriatric medical disorders and their manage-
ment with special reference to the pharmacological
basis of geriatric medicine. Prerequisite:
312-493.

575. SEMINAR IN PROBLEMS OF DRUG
ABUSE (2 + 0)  2 hours
Adverse effects of illicit drugs, particularly the long-term con-
sequences of drug abuse. The problems of
drug abuse from pharmacological and bio-
medical aspects are discussed. Prerequisite:
312-493.

590. SPECIAL TOPICS IN PHARMA-
COLOGY AND BIOMEDICAL SCIENCE
1-3 hours
Prerequisite: Permission of
instructor.

594. SEMINAR IN PHARMACOLOGY
AND BIOMEDICAL SCIENCE 1-3 hours
Prerequisite: Permission of instructor.

597. I/S IN PHARMACOLOGY AND
BIOMEDICAL SCIENCE  1-3 hours
Prerequisite: Permission of department
chairman; accumulative grade point average of 2.50.