The YOUNGSTOWN UNIVERSITY BULLETIN

1960-1961

Catalog Number

HOW TO USE THIS BULLETIN

This bulletin is a handbook of information about Youngstown University, its objectives, its regulations, its opportunities. Freshmen use it as a textbook for the Orientation course. In it are sections on the College of Arts and Sciences, the School of Business Administration (including the Secretarial School), the School of Education, William Rayen School of Engineering, and Dana School of Music.

The student should make himself familiar with the sections on Admission, General Requirements for Graduation, General Regulations, Fees and Expenses, and the Courses of Instruction in the school in which he enrolls. He should understand the course numbering system used, and he should know the use of the various terms and abbreviations employed in describing the courses. The student who has a definite vocational goal should consult the curriculum outlined for his field.

Some students will be especially interested in certain sections, such as those on Scholarships, Placement Services, R. O. T. C., and Student Activities.

The student should retain this bulletin throughout his University career. It is a guide to graduation requirements which later changes normally will not supersede.

For page references, consult the Table of Contents on page 2 and the Index.

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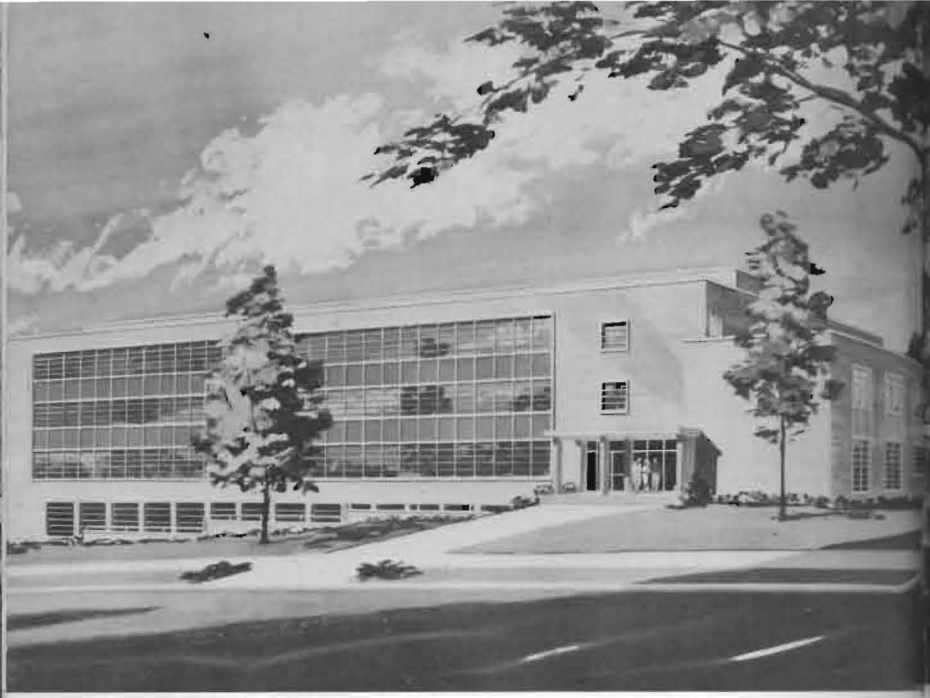
Youngstown, Ohio

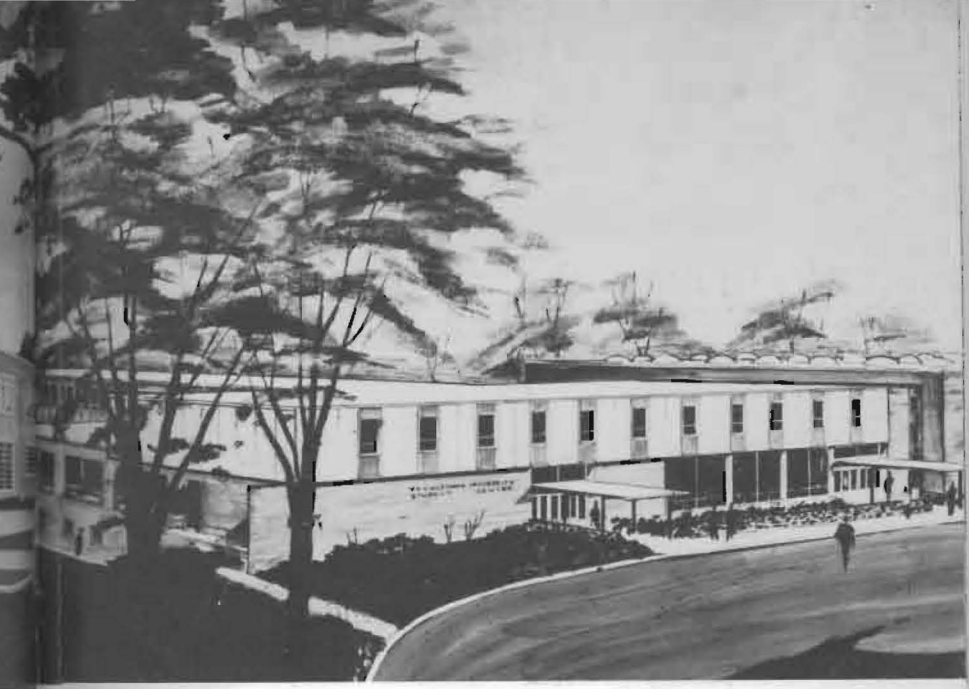
Main Building

The Library and John Tod Hall



The New Science Building

William Rayen School of Engineering

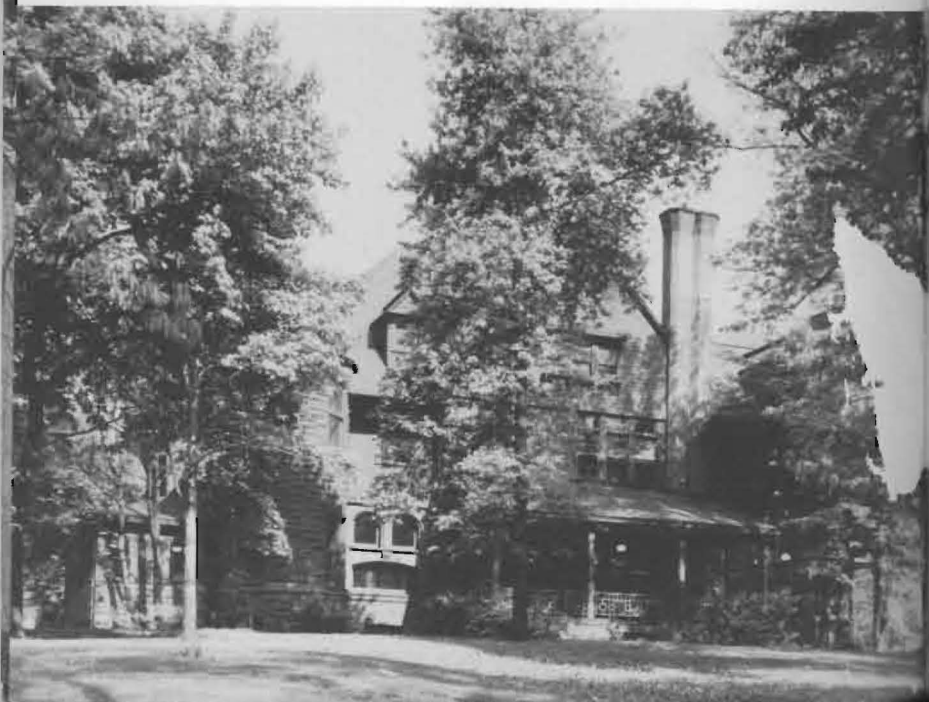


Proposed Student Union

The President's Home

Part of North Campus, showing Pollock House

Secretarial School

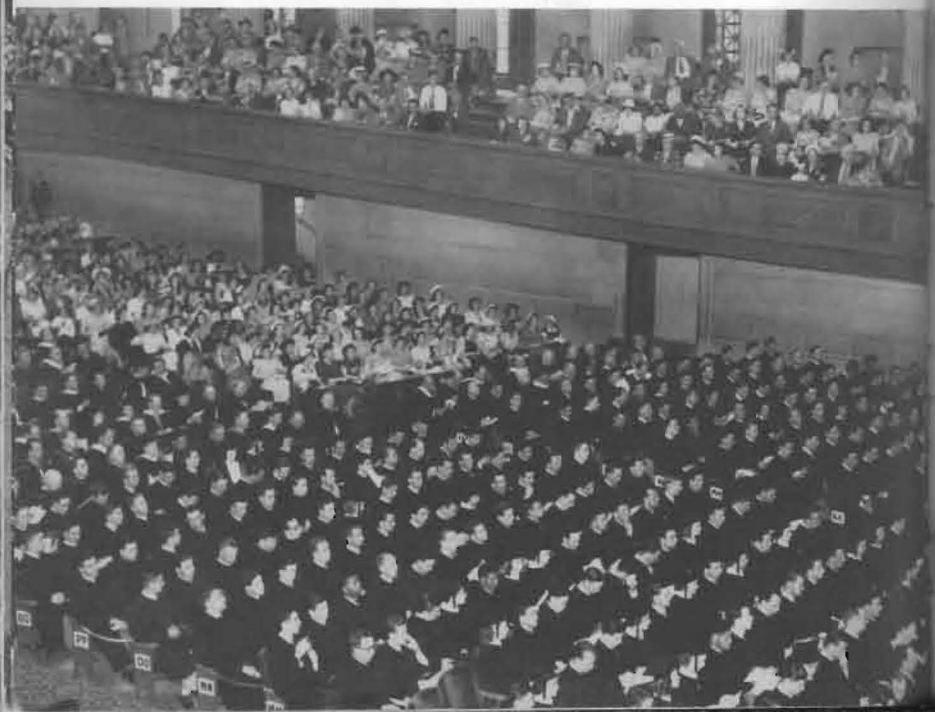


Dana School of Music

Ford Hall

Baccalaureate Scene

Commencement in Stambaugh Auditorium



The YOUNGSTOWN UNIVERSITY BULLETIN

Catalog Number

1960 - 1961

Fifty-Third Year

Effective September 1, 1960

Youngstown, Ohio

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THE UNIVERSITY CALENDAR, 1960-1961

1960

Advance Registration for New Freshmen

July 13, Wednesday, 3:00 p.m. Transfer, former, and summer school students
July 13, Wednesday, 6:00 p.m. . . . . New freshmen (except in School of Engineering)
August 3, Wednesday, 6:00 p.m. New freshmen in School of Engineering
August 17, Wednesday, 6:00 p.m. . . . . New freshmen, all schools

First Semester

September 6, 7, 8, 9, Tuesday, Wednesday, Thursday, Friday Registration
September 10, Saturday Freshman Day
September 12, Monday, 8:00 a.m. Semester and classes begin
September 29, Thursday Homecoming
November 23, Wednesday, 10:00 p.m. Thanksgiving vacation begins
November 28, Monday, 8:00 a.m. Thanksgiving vacation ends
December 17, Saturday, 12:00 noon Christmas vacation begins

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January 3, Tuesday, 8:00 a.m. Christmas vacation ends
January 16, Monday, 8:00 a.m. Final examinations begin
January 21, Saturday, 12:00 noon Final examinations end
January 28, Saturday, 12:00 noon Semester ends

Second Semester

January 26, 27, 28, Thursday, Friday, Saturday Registration
January 30, Monday, 8:00 a.m. Semester and classes begin
March 29, Wednesday, 10:00 p.m. Easter vacation begins
April 3, Monday, 8:00 a.m. Easter vacation ends
May 15, Monday, 8:00 a.m. Senior examinations begin
May 20, Saturday, 12:00 noon Senior examinations end
May 22, Monday, 8:00 a.m. Final examinations begin
May 27, Saturday, 12:00 noon Final examinations end
May 28, Sunday Baccalaureate Service
June 1, Thursday Commencement
June 1, Thursday Semester ends

Summer Session

June 9, 10, Friday, Saturday Registration
June 12, Monday, 8:00 a.m. First term of summer session begins
July 4, Tuesday Independence Day (no classes)
July 14, Friday, 10:00 p.m. First term of summer session ends
July 17, Monday, 8:00 a.m. Second term of summer session begins
August 18, Friday, 10:00 p.m. Second term of summer session ends

The Youngstown U rsity is accredited by the North Central Association of Colleges and Secondary Schools, by the Department of Education of the State of Ohio as a teacher training institution, and is on the approved list of the American Medical Association. William Rayen School of Engineering has the approval of the Engineers' Council for Professional Development for its day and evening curriculums in civil, electrical, and mechanical engineering; and Dana School of Music of Youngstown University is a member of the National Association of Schools of Music.

The University is a member of the American Council on Education, the Association of American Colleges, and the Association of Urban Universities.

Youngstown University grants the degrees of Bachelor of Arts, Bachelor of Engineering, Bachelor of Music, Bachelor of Science, Bachelor of Science in Business Administration, and Bachelor of Science in Education.

General Information

OBJECTIVES

The Youngstown University presents an educational opportunity for the residents of the Mahoning and Shenango valleys, a highly industrialized region of more than half a million people in Eastern Ohio and Western Pennsylvania. It attempts to meet the educational needs of this heterogeneous community without regard to race or creed and to offer its students something for their personal development, for the fulfillment of their obligations of citizenship, and for their practical work in life. To achieve these ends, the University seeks to provide a broad liberal and cultural education characterized by habits of free inquiry and exact observation, a love of truth, a taste for good reading, a familiarity with the general content of the various fields of knowledge, rigorous discipline in some chosen field, and the ability to express thought clearly and forcefully. This program helps the student to develop a sound philosophy of life, standards of rational conduct and discipline derived from an intelligent understanding of himself, stability and integrity of character arising from sound ethical principles, and a sustained religious faith irrespective of his church affiliation.

HISTORICAL SKETCH

The Youngstown University had its beginning in 1908 with the establishment of the School of Law of the Youngstown Association School, sponsored by the Young Men's Christian Association. In 1920 the State of Ohio empowered the school to grant the degree of Bachelor of Laws; in the same year the school offered a four-year course in business administration. In 1921 the school changed its name to The Youngstown Institute of Technology, and in 1927 the College of Liberal Arts, offering daytime classes for the first time, was started. In 1928 the Institute changed its name to Youngstown College and in 1930 the college conferred the degree of Bachelor of Arts for the first time.

Dana's Musical Institute, founded in nearby Warren in 1869, became Dana School of Music of the college in 1941. In 1946 the engineering department, organized several years before, became William Rayen School of Engineering and two years later the business administration department became the School of Business Administration. In 1960, the department of education became the School of Education.

In 1944 the trustees of the Young Men's Christian Association transferred control of the institution to the members of the Corporation of Youngstown College, and in 1955 the corporation was re-chartered as The Youngstown University.

During its earlier years the institution had a number of homes. Starting in the old Central Y. M. C. A. building, it occupied various sites on Wick Avenue until the completion of the present Main Building in 1931. Additional buildings have been constructed and nearby properties converted to University use, so that today the campus extends through much of an area four blocks long and three blocks wide. In 1952 and 1953 the Library and the adjoining John Tod Hall were built. A new Science Building was completed in 1959, and ground is to be broken for a Student Union building in 1960.

THE GENERAL PROGRAM OF THE UNIVERSITY

Youngstown University is a coeducational, non-sectarian, and non-profit organization; it is open to anyone of good character with the proper academic qualifications. Efforts are made to give all necessary guidance and assistance to war veterans.

The University has five main units that offer courses of study leading to degrees:

The College of Arts and Sciences
The School of Business Administration
The School of Education
William Rayen School of Engineering
Dana School of Music

Courses in most subjects are offered in both day and evening classes, with no difference in credit toward degrees, and at all hours from 8 a. m. to 10 p. m. Monday through Friday and from 8 a. m. to noon on Saturday. The main academic year is from September to June, in two seventeen-week semesters. The summer session extends from June to August, in two five-week terms. Courses are so arranged that a student may begin his studies in September, February, or June.

The College of Arts and Sciences

The College of Arts and Sciences aims to provide a liberal education and to prepare students for graduate and professional study. In co-operation with the School of Education it also prepares teachers for secondary schools and some of its other curriculums qualify the student to enter certain technical or professional fields upon graduation. It also provides the non-professional elements in the curriculums of the School of Business

Administration, Education, Engineering, and Music, including the science courses in the engineering curriculum.

Study done primarily in the College of Arts and Sciences leads to one of three degrees: Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Education. The major subject may be art, biology, chemistry, classical studies, dramatics, earth science, economics, education (teacher training), English, food and nutrition (dietetics), French, German, health education and physical education (or either separately), history, home economics, Italian, Latin, mathematics, metallurgy, music, philosophy, physics, political science, psychology, religion, sociology, Spanish, or speech, or a combination of sciences, social studies, or the humanities. Courses are also offered in astronomy, the Bible, communication (written and oral expression), general science, geography, geology, Greek, Hebrew, humanities, journalism, library service, military science, nursing, Portuguese, and Russian.

The School of Business Administration

The School of Business Administration offers courses leading to the degree of Bachelor of Science in Business Administration, with the major in either public or private accounting, advertising, commercial art, general business, management, retail or industrial merchandising, public relations, traffic and transportation management, or secretarial studies. A two year curriculum leading to the title of Associate in Business Administration, with a major in most of these subjects, is also offered.

The *Secretarial School* also offers a two-year curriculum leading to the title of Associate in Business Administration, and provides the courses for the first two years of study toward the degree of Bachelor of Science in Business Administration with a major in secretarial studies.

The School of Education

The School of Education offers courses leading either to the Bachelor of Arts degree with the major in education or to the Bachelor of Science in Education degree. It also co-operates with the College of Arts and Sciences in providing the professional courses for the degree of Bachelor of Arts with the major in the teaching field, with the School of Business Administration in the preparation of teachers of commercial subjects, and with Dana School of Music for the Bachelor of Music degree with the major in public school music. The departments of the school are general education, elementary education, and secondary education.

William Rayen School of Engineering

William Rayen School of Engineering offers complete courses in six main branches of its field, all leading to the degree

of Bachelor of Engineering: chemical, civil, electrical, industrial, mechanical, and metallurgical engineering.

Dana School of Music

Dana School of Music offers complete courses preparing for public school music teaching, private teaching, and concert work. Private instruction is available in voice and in all standard instruments. Professional courses lead to the degree of Bachelor of Music, with the major in voice, an instrument, theory, composition, sacred music, or music education; the non-professional student may elect to study for the degree of Bachelor of Arts, with the major in the history and literature of music.

A *Technical Institute*, offering courses not designed to lead to a degree, has been in operation with the co-operation of industrial firms of the Mahoning and Shenango valleys. The program has been conducted on a restricted and experimental basis, but present plans are for its expansion into a two-year curriculum leading to a certificate or title.

BUILDINGS AND OTHER FACILITIES

(A map of the campus is printed on the inside of the back cover of this catalog.)

The central group of buildings lies north and west of the junction of Wick and Lincoln Avenues and houses most of the College of Arts and Sciences, the School of Education, and the School of Business Administration. The principal buildings of Dana School of Music are on Wick Avenue a block north of the main campus, and the William Rayen School of Engineering building is on Wick Avenue about a block to the south. On Wick Avenue, opposite Dana School of Music, are Pollock House and Ford Hall, used in part by the College of Arts and Sciences.

The Central Campus

The most prominent of the central group is the *Main Building*, a limestone structure of conventional Tudor style on the northwest corner of Wick and Lincoln Avenues. Built in 1931, it was enlarged in 1949 by the addition of the C. J. Strouss Memorial Auditorium. Besides the University administrative offices and the auditorium, it contains classrooms, departmental offices of the College of Arts and Sciences and of the School of Education, and the Bookstore.

The buildings close to the Main Building supplement the classroom, laboratory and office space of the three schools in the central area and augment the facilities of the music school. Immediately north of the Main Building is the *Secretarial School* building; to the west is the *Women's Physical Education Build-*

ing; southwest of the latter is the *School of Business Administration* building facing Bryson Street; and north of that is *West Hall*. Between West Hall and the Secretarial School building stands *Central Hall*, a large frame structure, on the first floor of which is a cafeteria; on the second are music and other facilities, including an auditorium.

C. J. Strouss Memorial Auditorium

C. J. Strouss Memorial Auditorium was built in honor of C. J. Strouss, late president of the Strouss-Hirshberg Company and long a devoted friend and trustee of Youngstown University. The hall is an enlargement of a much smaller unit originally contained in the Main Building, of which the newer structure forms a wing. The auditorium seats 800 people, 150 of them in a balcony, and with its large stage provides ample facilities for concerts, operas, plays, lectures, and assemblies. Requests for the use of the auditorium may be made to the Coordination and Calendar committee in Main 210.

The Library Building

This building, of pink brick with stone trim, lies along Bryson Street near Spring Street, but has its main entrance at its southeast corner, facing the central campus. For it and the adjoining John Tod Hall, over a million dollars was given by Mahoning Valley firms and individuals, the Association of the Friends of Youngstown University Library, and students and faculty.

In addition to furnishing centralized and completely modern library facilities, with space for over 250,000 volumes, seats for 600 readers, and microfilm and microcard reading facilities, the building contains faculty offices, conference rooms, and a small auditorium designed and equipped for the use of motion picture films, slides, and records. Also provided are individual study carrels, sound-proofed typing booths, a women's lounge, and the Frank Purnell Room, a general smoking and browsing room. Eight portable typewriters, the gift of the 1954 graduating class, and four Marchant calculators are available to anyone using the library. The library possesses a collection of long-playing records, from which students and faculty may select music, plays, or poetry they wish to hear.

John Tod Hall

John Tod Hall, a wing at the north end of the library building, contains nine classrooms and the men's athletic offices. It is named for the late John Tod, a friend of the University and a leading Youngstown philanthropist.

The Science Building

A new building, housing the science departments and laboratories of the College of Arts and Sciences and the chemical engineering laboratories of William Rayen School of Engineering, lies to the south of the Library on Bryson Street, with its main entrance facing the campus. It is a four-story pink brick building of functional architecture. It was built at a cost of $1,400,000 provided by Mahoning Valley industries and individuals and was furnished with completely new laboratory equipment valued at $250,000. It contains two atomic laboratories and a reactor room which is to contain equipment supplied by the Atomic Energy Commission.

The Student Union

Construction of a Student Union Building is scheduled to begin in 1960. It is to be of pink brick with stone trim, in keeping with the Library and Science Buildings. It is planned to include a game room, snack bar, swiming pool, and student and faculty dining rooms and lounges. The cost is estimated to be between $1,500,000 and $1,750,000. Of this amount, $300,000 has been given by the William H. and Mattie M. Kilcawley Foundation, and the remainder has been supplied principally from a fund furnished by present and former students.

Ford Hall

Ford Hall, at 547 Wick Avenue, was given to the University in 1951 by Judge and Mrs. John W. Ford and Judge Ford's sister, Mrs. Benjamin Agler. It had been the Ford family home. Its grounds, together with those of Pollock House and Dana School of Music, form the University's spacious north campus. Until the summer of 1962 Ford Hall is reserved for the use of engineeering students from India, participants in the INSTEP education program sponsored by the Ford Foundation, the International Co-operation Administration, and the Youngstown Sheet and Tube Company.

Pollock House

Pollock House, at 603 Wick Avenue, across from Dana School of Music, provides a pleasant and commodious setting for dinners, teas, and other social gatherings. It was given to the University in 1950 by its former owners, Mr. and Mrs. William B. Pollock II. Its two upper floors are used for class rooms and the offices of the military science department, but the spacious parlors, dining room, and kitchen are available for responsible campus groups for specific events, by making reservations through the Co-ordination and Calendar committee in Main 210.

Clingan-Waddell Hall

The acquisition, renovation, equipment, and maintenance of this building, formerly the Y. M. C. A. Youth Center, was made possible in 1953 through the generosity of Mrs. Jacob D. Waddell and Mr. John R. T. Clingan of Niles, Ohio. Situated on Rayen Avenue just east of Wick Avenue, it houses the mathematics and home economics departments of the College of Arts and Sciences. The basement is used by the Department of Metallurgical Engineering of William Rayen School of Engineering.

Rayen Building

Rayen Building, on the west side of Wick Avenue south of Rayen Avenue, is the former home of the Rayen School, the first secondary school in Youngstown, founded and long maintained with private funds but eventually incorporated into the city's school system. After Rayen School had moved to larger quarters, the building was made available to Youngstown University and now houses William Rayen School of Engineering.

Libraries

The holdings of the University library total about 95,000 volumes, and are increased by about 4,000 each year. The periodical list includes over 500 titles.

The Dana School of Music library contains a working collection of scores and recordings, together with record-playing equipment; but the major music holdings, including such sets as the complete works of Bach, Beethoven, Brahms, and Mozart, are in the University library's main collection.

The Association of the Friends of Youngstown University Library, organized in 1938 by the Youngstown Branch of the American Association of University Women, has contributed through its annual drives about $200,000 for books and equipment and for the present building.

Loan Privileges. Students may take books out for at least two weeks at a time. Faculty members may retain them for a semester, subject to recall if needed. Library privileges are extended to alumni, and to members of the Association of the Friends of Youngstown University Library, upon application.

The main branch of the Public Library of Youngstown and Mahoning County, with 320,000 books and 508 periodicals and newspapers, is on Wick Avenue at Rayen Avenue, close to all parts of the University campus.

Laboratories

Biology, chemistry, and physics laboratories are in the Science Building. The engineering laboratories in Rayen Building and Clingan-Waddell Hall are described in the William Rayen School of Engineering section.

The *biology* laboratories are equipped for individual performance of standard exercises in all basic courses and in the more advanced phases of embryology, histology, and anatomy. For the study of local flora and fauna, Mill Creek Park provides an excellent natural area of over three square miles and also a museum.

The *chemistry* laboratories have individual equipment for all standard experiments in general, biological and physical chemistry, qualitative and quantitative analysis, organic preparations, and organic analysis. Special equipment affords means for extensive work in instrument analysis.

The *general physics* laboratories on the ground floor of the Science building are fully equipped for college-grade experiments. The equipment in these laboratories consists of a few pieces of many different types of apparatus rather than of many pieces of a few different tvpes. Such a distribution of equipment makes possible a desirable year to year flexibility in the experimental program for the freshmen and sophomore students in the general physics classes. The experimental work in the general physics laboratories is designed to reinforce the class-room emphasis on the concepts, the ideas, and the laws of physics.

The *advanced physics* laboratories, adjacent to the general physics laboratories, are reserved for the more difficult experimental work which is required of the junior and senior physics majors. The experimental work in these laboratories is designed to emphasize experimental techniques and precision of measurement of physical quantities.

Physical Education Facilities

The Women's Physical Education Building provides offices, classrooms, a gymnasium, and showers for women's health and physical education activities. There is a playing field behind Ford Hall and a tennis court near the same building. The University also uses the facilities of the Y. M. C. A., about four blocks away; the Y. W. C. A. swimming pool, one block away; Harrison Field, east of Wick Avenue; and the well-equipped Volney Rogers sports field in Mill Creek Park. Varsity teams use Rayen Stadium and South Field House by arrangement with the Youngstown Board of Education; they use the Stambaugh field, the gift of Mr. Arnold Stambaugh, for practice; and they also make use of municipal tennis courts and the Mahoning Country Club golf links.

R. O. T. C. Facilities

Equipment for instruction in military science and tactics is the most modern available to colleges and universities and includes small arms, communications material, crew-served

weapons, and associated training material. Additional items are procured as they become available from Army stocks. Drill periods are conducted at at Harrison Field, just east of the main campus. Range facilities for firing the caliber .22 rifle are also available.

Parking Areas

Parking facilities for students include a large lot on the east side of Wick Avenue between Lincoln Avenue and Spring Street; a small area between the Library and the First Christian Church, by arrangement with the church; a lot on Spring Street east of Wick Avenue, behind Ford Hall; and another at the southeast corner of Bryson and Spring Streets. Faculty members use two lots in the central area and one north of the Library. A lot at Rayen Building serves both faculty and students. Students are not permitted to drive into the main campus.

Neighboring Facilities

A number of community facilities have been made available for University use. Mill Creek Park is exceptionally favorable for biological study; through the social agencies of the city, sociology students may do practical social work; and Youngstown radio and television stations grant the University the use of their time and equipment. Several rooms in the Youngstown Board of Education Building are used for classrooms by William Rayen School of Engineering. Continuous or occasional use is also made of various other facilities of such agencies as the City of Youngstown, the Youngstown Board of Education, the Mahoning Chapter of the American Red Cross, the Mahoning County Tuberculosis and Health Association, the Board of Park Commissioners of the Youngstown Township Park District, the Girard Board of Education, the Public Library of Youngstown and Mahoning County, the Butler Institute of American Art, Stambaugh Auditorium, St. John's Protestant Episcopal Church, St. Joseph Roman Catholic Church, and First Presbyterian Church. Reciprocal agreements for the use of certain equipment are in effect with the Public Library and the Mahoning Law Library Association.

Youngstown University is grateful to these and other agencies for their generosity and helpfulness in meeting a community need. The spirit of co-operation thus manifested is a healthful one and engenders a favorable atmosphere in which to work and to carry forward the program of the University.

SERVICES AND OPPORTUNITIES

The Bookstore

The Youngstown University Bookstore, on the first floor of the Main Building, is the agency through which most textbooks and other required supplies are sold. Other stores in the Youngstown area do not stock most University textbooks and they are not authorized to issue books or materials on Veterans Administration book orders except for certain items. On the other hand, the Bookstore does not attempt to compete with other stores in the area and carries few items beyond those prescribed for courses. It does, however, stock in limited quantities a wide selection of standard works in inexpensive editions, because of their value as collateral reading. The Bookstore will order any book on specific request and a suitable down payment.

Cultural Opportunities

Youngstown University students have unusual opportunities for hearing a wide range of the best in music. Besides programs by the faculty, students, and organizations of Dana School of Music, there are concerts by the Youngstown Philharmonic Orchestra, concerts sponsored by the Monday Musical Club, and recitals under the auspices of the American Guild of Organists. These activities bring to Youngstown some of the world's greatest musical artists.

In the field of drama, students may enjoy not only University plays but also the productions of the Playhouse, an excellent amateur organization, in whose plays members of the University community sometimes participate.

The Youngstown chapter of Composers, Authors, and Artists of America is open to all music, art, drama, and literature students who can qualify as creative writers or patrons. Creative talent also finds opportunity on the air, with University programs broadcast from two television and three radio stations in the city. Three radio stations in nearby communities also invite students to participate in their programs.

Student art work is exhibited throughout the year in the University library, with exhibits changing bimonthly, thus enabling all interested students to participate.

Immediately adjacent to the University is the Butler Institute of American Art, a building of great architectural beauty, which contains valuable permanent collections of paintings and other art treasures and has frequent temporary exhibits of high importance.

Another civic building not far from the campus is Stambaugh Auditorium, which houses one of the great organs of the country and provides ample facilities for lectures, dances, musical programs, and other functions, including the University com-

mencement exercises. The main hall, noted for its acoustic excellence, seats 2,600 people. Many visiting artists have expressed their appreciation of this beautiful auditorium.

Religious Opportunities

The Young Men's Christian Association, the Young Women's Christian Association, and many churches are within easy walking distance of the University. Two chaplains have full-time offices on the campus, one supported by the Roman Catholic Diocese of Youngstown, the other by the Council of Churches of Youngstown and Vicinity. There are active student religious organizations, whose activities include student-led services, regular radio broadcasts, and participation in the annual Religious Emphasis Week.

Chapel and Assembly

Chapel services are held at St. Joseph Church for Roman Catholic students and at St. John's Protestant Episcopal Church for Protestant students. Both churches are close to the campus.

University assemblies take place in the C. J. Strouss Memorial Auditorium.

Social Opportunities

Youngstown University students are offered frequent social opportunities. Through the dances and receptions sponsored by Student Council, fraternities, and other campus groups, and through the other activities of these organizations and of the various special-interest clubs, opportunity is afforded to meet faculty members and fellow-students and to develop pleasant associations and friendships. Pollock House and the Frank Purnell Room of the library afford attractive settings for social hours, and the cafeteria in Central Hall and the Snack Bar in West Hall provide a casual atmosphere for relaxation. In addition, activities at the Y. M. C. A., the Y. W. C. A., and at various churches are open to all who are interested, and women students living at Buechner Hall may participate in activities there.

Counseling and Guidance

Students who have personal problems or feel the need of advice or counsel may avail themselves freely of the time and services of the Dean of Women, the Dean of Men, the Protestant and Roman Catholic chaplains, the Veterans' Education Officer, or of the psychometrist. These counselors assist students who desire help in preparing for the future, in studying effectively, or in creating satisfying lives. Aids used for guidance include vocational and interest tests administered by the University Testing Office.

Guidance and Testing Program

The University maintains a guidance and testing program, in charge of a trained psychometrist. It includes the general intelligence examinations administered to entering students who request them and tests in personality, mechanical comprehension, and special aptitudes which may be taken at any time by appointment.

Other tests may be taken, such as the Graduate Record Examinations for those interested in graduate work and the Chartered Life Underwriters examinations taken by students of certain courses in business organization. The fees for the latter tests are not paid to or through the University business office; the student interested may inquire at the office of the Dean of the University for details. The Testing Office is in Room 211, Main Building.

Health Service

To promote and maintain good health, the University requires that each applicant entering as a full-time student provide the University with the results of a physical examination recorded on the *Youngstown University Physical Examination Form*, which will be given to the student when he applies for admission to the University. The applicant must take the form to a physician of his choice, be examined at his own expense, and return the form, completed by the physician, to the registrar. No student who is required to take the examination will be fully admitted until the registrar has received the completed form.

Every student receives at least two semester hours of instruction in health education, as part of the general University requirement in health education and physical education.

The *Health Center* is on the second floor of Central Hall. A registered nurse is on duty from 8 a. m. to 8 p. m. Monday through Friday and at other times by special arrangement; she can always be located through the University switchboard operator. The University provides emergency care; continued treatment, if necessary, is paid for by the student.

Group insurance to cover hospital and/or surgical care is available to all students at the time of registration, at a semi-annual fee payable in advance. The plans are voluntary, community-sponsored, and non-profit, with no occupational restrictions. Membership may be retained after leaving the University. Students interested may inquire at the Registrar's Office.

The University is a member of the Ohio Student Health Association and the American Student Health Association.

Physical Education Program

A program of physical education is offered to meet the needs, interests, and abilities of students. The program includes the required physical activity courses, intramural and recreational sports, and intercollegiate athletics.

The intramural and recreational program offers archery, badminton, basketball, bowling, fencing, field hockey, golf, handball, softball, tennis, table tennis, and volley ball. Other activities may be added as facilities become available and as required to meet student interests. Students are encouraged to choose activities from which they are likely to derive healthful pleasure in later life.

Intercollegiate Athletics

Men's intercollegiate athletics are conducted at Youngstown University to enlist the interest of the entire student body in healthful amateur sport. Participation is open to any male member of the student body who qualifies under the regulations of the Athletic Policy of Youngstown University. Intercollegiate competition is provided in football, basketball, tennis, track and field, and golf.

The University is a member of the National Collegiate Athletic Association (N. C. A. A.).

Rifle Team

The Youngstown University Rifle Team, coached by the R. O. T. C. detachment, is a member of the Lake Erie Intercollegiate Rifle Conference and the National Rifle Association.

Placement Service

With the co-operation of the Ohio State Employment Service, the University maintains a full-time Placement Office, the services of which are free to undergraduates, graduating students, and alumni for either permanent employment, including teaching positions, or part-time work. It is located on the campus at 39 West Spring Street.

Music students and alumni of Dana School of Music should also note the placement information in the School of Music section.

Self-Help

The central location of the University makes it possible for many students to earn part or all of their expenses by working in nearby stores and industrial plants. The Placement Office assists students seeking such employment.

However, if the student plans to do such work while enrolled in classes, and especially if it is full-time work, he

is advised to carry only a part-time college program, since the University accepts no substitute for satisfactory academic achievement. He should keep in mind that for each semester hour of credit, at least three hours of academic endeavor are expected weekly (see General Regulations), so that a 16-hour class schedule should take at least 48 hours a week for study and class meetings.

Office of the Dean of Women

The Dean of Women is responsible for the welfare of the women students of the University. Her office is Room 210 of the Main Building.

A major duty of the Dean of Women is to assist the University staff and student officers of all student groups in problems of administration and program, especially the social program. She supervises the social sororities, as well. Scheduling of all student events by the Co-ordination and Calendar Committee is centered in this office.

Office of the Dean of Men

The Dean of Men has joint responsibility with the Dean of Women for the over-all student personnel program with special responsibility for men students. He supervises the fraternities and assists the Registrar in the selection of students.

The office of the Dean of Men is in Room 110 of the Main Building.

Student Housing

The University has no dormitories, but anyone wishing off-campus housing should apply to the office of the Dean of Women, where a registry of all current vacancies is maintained.

Women students who wish housing may obtain dormitory accommodations in Beuchner Hall or in the Young Women's Christian Association. Beuchner Hall, a privately operated residence hall for women, is located at 620 Bryson Street, and the Y. W. C. A. is at 25 West Rayen Avenue. Application may be made to the Resident Manager at either address.

The cafeteria in Central Hall serves meals at reasonable rates from 7:30 a. m. to 7 p. m. daily except Saturdays and from 7:00 a. m. to 3 p. m. daily except Saturdays and Sundays. The Snack Bar in West Hall serves light lunches from 7:00 a. m. to 3:00 p. m. daily except Saturdays and Sundays.

Lockers

The University provides lockers for full-time students, without charge beyond a small sum to cover clerical costs. For this handling charge and the necessary deposit, see Fees and Expenses. Two students are assigned to each locker. At the

end of each term, or earlier if the student withdraws from the University, all personal effects must be removed from every locker. The University assumes no responsibility for personal property left in a locker at any time.

Alumni

An up-to-date record of the more than 6,600 graduates is maintained by the Alumni Secretary. As far as possible, the graduate's record shows his place of employment and the type of work he is doing, in addition to other information.

Women holding degrees from the University are eligible for membership in the American Association of University Women.

The Alumni Association

The Youngstown University Alumni Association is the official organization of the institution's alumni. Membership in it is extended to all graduates of Youngstown University and its predecessors and to all former students who were in attendance for two school years.

For the Alumni Association of Dana School of Music, see the Dana School of Music section.

STUDENT ACTIVITIES

The University encourages student participation in extracurricular activities. However, since the student's scholastic standing is always of first importance, participation in extracurricular activities is limited to students whose grade averages are as high as their class rankings require, as stated under General Regulations. A student on probation may not take part in such activities. Also, participation may be forbidden to any student as a disciplinary measure.

All student organizations, whether social, professional, or general, are required to have at least one faculty adviser, appointed by and responsible to the President of the University.

Honor Point System

Achievement in extracurricular activities together with scholarship is recognized through the Honor Point System. Each year the three to five graduates having the most points receive YU pins (see Awards and Prizes).

In evaluating academic achievement for this purpose, each credit hour with an A grade is worth 1 point and each hour of B is worth ½ point. For extracurricular activities the point schedule is available at the office of the Dean of the University in Main 110. Extracurricular points are counted only up to the number matched by earned academic points, and academic

points only up to the number matched by earned extracurricular points.

Student Council

The student body of Youngstown University is represented in all affairs pertaining to it by Student Council, which operates under constitutional powers granted by the college administration. The council is composed of representatives from six undergraduate units (the College of Arts and Sciences, the Schools of Business Administration, Education, Engineering, and Music, and the Secretarial School) in proportion to the enrollment in each. All meetings of the council are open to all students, and any matter may be brought before a meeting by requesting beforehand that it be included in the agenda for the meeting.

Student Council exercises concurrently with the Executive Committee of the University Faculty the power to charter all student organizations, to conduct student elections, to hear appeals from groups or individuals, to establish necessary disciplinary regulations, to appoint student members of joint faculty-student committees, and to supervise programs financed from its operating budget.

The financial support for activities sponsored by Student Council is the Student Activity Fund, administered by the Faculty-Student Relations Committee, composed of three faculty members and three members of the council's finance committee. This faculty-student committee determines financial policies and approves the semester budgets, which are made up by the council treasurer and recommended to the committee by the council.

Of the Student Activity Fund, approximately 20% of the annual income is held as a standing reserve and an amount equal to 10% of the income of the preceding semester is set aside for minor varsity sports. Annual consignments are made to the cumulative reserves for the Student Union Fund and for band uniform replacement. The remainder is allocated through the operating budget.

Operating-budget allocations for student art shows, debate, dramatic productions, intramural sports, the *Jambar*, *Neon*, and *Horizon*, music organizations open to all students, and student radio programs, are administered by the groups to whom they are allotted. Student Council itself administers the appropriations for council expenses, the *Student Handbook*, student all-University social functions, special projects, and matters connected with membership in the National Student Association.

Publications

The *Student Handbook* is published each fall by Student Council to inform new students about University activities and traditions.

The *Neon*, the University yearbook, and the *Jambar*, a weekly newspaper, are both published by student staffs, whose principal members may be nominated by the outgoing editors but must be approved by Student Council. The *Neon* and *Jambar* are supported by the Student Activity Fund and by advertising.

Both projects give students experience in editorial work and news writing and in advertising, financing, and other phases of business management: the *Jambar* also conducts a weekly program of University news and interviews over Radio Station WBBW. Thus they serve as laboratories for journalism classes, with credit in limited amounts given for work on the publications. Student Council has authorized the establishment of two scholarships of $100 each, one for the editor-in-chief of the *Jambar* and one for that of the *Neon*, to be financed from the Student Activity Fund.

The *Jambar*, now a weekly newspaper, is a member of the Ohio College Newspaper Association, and at annual conventions of that group it has been awarded the Scripps-Howard trophy for the best bi-weekly college newspaper in Ohio in 1940, 1941, 1948, 1949 and 1953. It was voted second best in 1945, 1950 and 1957 and won first honorable mention in 1952 and 1955. It has also, in competition with all college newspapers in the state, received honors in news and editorial writing and advertising layout, including four such awards in 1952 and 1953. In 1958 and 1959 it was named the best college newspaper in the Penn-Ohio Press Association.

Horizon, subsidized by Student Council, is a semi-annual magazine published by students of the University for the encouragement of creative writing. Short stories, poetry, and essays written by students are printed therein.

Dramatics

The Drama Guild produces plays each year in co-operation with the Department of Speech and Dramatics, and for several years an all-University variety show has been staged.

Among plays produced in recent years are Wilde's *The Importance of Being Earnest*, Eliot's *Murder in the Cathedral*, Wilder's *The Skin of Our Teeth*, Wouk's *The Caine Mutiny Court Martial*, Barrie's *Dear Brutus*, *Dark of the Moon* by Richardson and Berney, and Critchton's *The Happiest Millionaire*.

The Drama Guild, as a service organization, maintains and constantly improves the theatrical facilities of the C. J. Strouss Auditorium, where flexible arrangements of equipment permit many unusual effects. Sound and light are controlled from the rear of the auditorium, so that operators can observe the effects. A private telephone system affords constant contact between control room, backstage area, dressing rooms, orchestra pit, and box office.

Important radio programs can be re-broadcast across the main campus and in the auditorium and the cafeteria. Tape recordings are made of plays, recitals, and other events and replayed for study and enjoyment.

Students operate all equipment, which to a great extent they have bought, built, gathered and arranged. They have rigged over two thousand feet of fly-line and built an admirable array of sets, and are now collecting period costumes, furniture, and other properties.

Students who participate in these activities are automatically permitted to join the Drama Guild, whose purpose is to perform services that promote dramatic activity throughout Youngstown.

Musical Organizations

Several campus musical organizations are open to all students of the University. For a list of these, see the Dana School of Music section.

Art Exhibits

At the invitation of the Butler Institute of American Art, the Art Club has for many years sponsored an annual exhibition of the work of Youngstown University art students. The work is displayed at the institute for about a month in the early spring, with awards from various sources, including a $50 purchase prize given annually by Student Council to the winner in any medium. Both students and alumni frequently exhibit work at the Institute's Autumn Annual and other showings. The Art Department and Art Club sponsor a national print show which is open to all students and faculty members of colleges and universities in the United States. The print show is biennial, with purchase prizes up to $300.

Radio and Television Programs

In addition to the *Jambar* program and those of the Religion in Life Fellowship and the Newman Club, students of the University from time to time conduct other programs of music, drama, news, and other entertainment on all Youngstown radio stations. Most programs are planned, written, pro-

duced, and announced entirely by students. Several series of television programs have been presented, with others planned for later dates.

Honorary and Professional Societies

A number of honorary and professional societies, national and local, are established at Youngstown University:

Alpha Mu is a local honorary advertising, merchandising, and public relations fraternity.

Alpha Psi Omega is a national honorary fraternity for students of dramatics.

Alpha Tau Gamma is a local honorary accounting fraternity.

The Youngstown University Chapter of the American Chemical Society, Student Affiliates, is composed of students interested in any phase of chemistry.

The Student Chapter of the American Institute of Electrical Engineers is a technical society affiliated with the national A. I. E. E.

The Youngstown University Chapter of the American Society for Mechanical Engineers has as its purpose the dissemination of knowledge of mechanical engineering and the furtherance of the professional development of the student members.

The Youngstown University Chapter of the American Society for Metals, Student Affiliates, is open to students interested in the manufacture and treatment of metals.

The Clarence P. Gould Society recognizes outstanding students in the liberal arts and sciences, and encourages superior students to distinguish themselves through high scholastic achievement while pursuing a liberal education.

The Clarence P. Gould Society, named for the emeritus chairman of the Department of History, is a local honorary group designed to recognize and encourage outstanding academic achievement in the College of Arts and Sciences. Membership in the Gould Society is confined to graduating students (with the exception noted below), who are elected on the following bases:

1. The student shall be a candidate for and shall have fulfilled all the requirements for the Bachelor of Arts or the Bachelor of Science degree with a major in one of the three divisions of the College of Arts and Sciences.

2. He shall be in the upper ten per cent of his class at graduation and shall have a cumulative point average of at least 3.50, based on all his academic college work.

3. He shall have better than a C average in the required courses in each of the three divisions of the College of Arts and Sciences. (A lower average in any division may be raised, for this purpose, by taking additional courses in that division.)

4. The student shall be elected by a faculty committee after consideration of his character and his complete academic record. At the discretion of this committee, a student may be elected during the semester preceding the completion of his work.

Kappa Delta Pi is an honor society in education. Membership is by invitation and is restricted to junior, senior, and post-graduate students who plan to teach and whose grades place them in the upper quintile of the University.

The Youngstown University Honor Guard is an honor society limited to students enrolled in advanced military science courses. It believes in developing good social conduct, the necessity of building character, maintaining leadership, encouraging scholarship, and the promotion of service to country.

The Youngstown University Society of Industrial Engineers aims to foster a high degree of integrity among the future members of the industrial engineering profession.

The Youngstown University Society of Student Civil Engineers has been organized to encourage the development of a professional consciousness and to promote friendly contacts with professional engineers.

The Youngstown University Student Chapter of the Ohio Society of Professional Engineers is open to all engineering students in good standing, except freshmen. The society's aim is the preservation of ethical and professional standards in its field.

Omicron Lambda is a local honorary society for biology majors. Several field trips a year are a part of its instructional program.

Phi Mu Alpha Sinfonia is a national honorary music fraternity, Delta Eta chapter of which is at Dana School of Music.

The National Society of Pershing Rifles is an honorary society for the promotion and development of interest and proficiency in the basic course of the R. O. T. C. program. Company P, 1st Regiment, is established at Youngstown University.

Sigma Alpha Iota is a national honorary music sorority, Alpha Nu chapter of which is at Dana School of Music.

Sigma Kappa Phi is a national honorary business administration fraternity, Gamma chapter of which was established on this campus in 1925. It is the oldest national organization at Youngstown University.

Sigma Tau is a national honorary fraternity for engineering students.

Student Organizations

All-University:

Alpha Pi Epsilon §†
Art Club
Classical Society
Composers, Authors, and Artists of America*
Dana Music Forum
Drama Guild
International Students Organization
Los Buenos Vecinos
Newman Club
Psychology Club
Religion-in-Life Fellowship
Student Democrats of Youngstown University
Student Education Association
Wilma A. Brown Home Economics Club
Young Republican Club
Youngstown University English Society
Youngstown University Student Association

Departmental:

Athletic Department
Varsity Y Club
Women's Recreation Association†

Secretarial School
Alpha Iota*†
Delta Chi Epsilon†
Tau Kappa Nu†

Engineering School
Dean's Council

Social Fraternities

The social fraternities at Youngstown University are:

Alpha Phi Delta*
Beta Tau*
Kappa Alpha Psi*
Kappa Sigma Kappa*
Phi Sigma Kappa*
Sigma Alpha Epsilon*
Sigma Phi Epsilon*
Sigma Tau Gamma*
Tau Kappa Epsilon*
Tau Omega
Theta Chi*
Zeta Phi

Social Sororities

The social sororities at the University are:

Alpha Omicron Pi*
Beta Sigma Omicron*
Phi Mu*
Sigma Sigma Sigma*

Inter-Fraternity Council and Pan-Hellenic Council

Inter-Fraternity Council is made up of one representative and one alternate from each active all-University social fraternity. It has two faculty advisers appointed by the president of the University. The Council governs the relations of such fraternities among themselves and with other groups.

Pan-Hellenic Council is composed of two representatives from each active all-University social sorority and has a faculty adviser appointed by the president of the University. The Council supervises the relations of such sororities among themselves and with other groups.

AWARDS AND PRIZES

Winners of awards and prizes are announced each year at Commencement, unless otherwise indicated below. Changes in awards and prizes may be made from time to time at the discretion of the donors.

The YU Pins. Youngstown University annually awards a pin to each of the three to five graduating students who have the largest number of honor points in scholastic and extra-curricular activities. The pin is pearl-studded, in the form of a Y superimposed on a U. The pins are awarded at the rate of one to each hundred members of the graduating class.

*National †Women Only §Service Organization

The Youngstown Vindicator Awards. Four cash awards are made annually as follows:

To the best all-around student, on the basis of academic achievement and extracurricular activity through four years of college: $200.

To the student ranking first in the humanities, on the basis of four years of study: $100.

To the student ranking first in English, on the basis of four years of study: $100.

To the student ranking first in the social science sequence courses, on the basis of comprehensive examinations at the end of the second year: $100.

The Dustheimer Award. An award of $75 is made annually to the junior who shows high proficiency in astronomy and needs financial aid to complete his senior year at Youngstown University. The award is named for its donor, Dr. O. L. Dustheimer.

The Greek Prize. An anonymous donor provides an award for the best student in elementary ancient Greek. The winner must have earned at least B in the course. In the absence of a deserving recipient, the prize may be awarded for excellence in advanced Greek.

The Roberts Deliberating Club Award in Social Sciences. The Roberts Deliberating Club of Youngstown annually awards $50 to the graduating student ranking highest in the social sciences.

The Chi Omega Alumnae Award. The Youngstown Chapter of the Chi Omega Alumnae gives an annual cash award to the highest-ranking woman student majoring in the social sciences.

The Omicron Lambda Honorary Biology Fraternity Award for Scholarship. Omicron Lambda Fraternity gives an annual cash award to the outstanding sophomore biology student.

The Scudder Award. The Phi Epsilon Fraternity annually presents an award to the outstanding senior who has majored in chemistry or chemical engineering. The award is named for Dr. Eugene Dodd Scudder, chairman of the Department of Chemistry.

The American Chemical Society Student Affiliates Award. The Youngstown University Chapter of Student Affiliates of the American Chemical Society annually presents Van Nostrand's *Chemists Dictionary* or another suitable book to the graduating senior, majoring in chemistry or chemical engineering, who has maintained the highest point average in chemistry or chemical engineering courses for at least three consecutive years.

The American Institute of Chemists Award. An Associate Membership in the American Institute of Chemists, for a period of a year, is awarded to a senior chemistry student outstanding in scholarship, leadership, and character.

The Student Council Purchase Prize. Youngstown University Student Council offers a purchase prize of $50 to the winner in any medium at the annual Youngstown University Art Exhibition.

The City Office and Art Company Awards. The City Office and Art Company gives three $10.00 purchase awards for outstanding works shown at the annual Youngstown University Art Exhibition.

Los Buenos Vecinos Art Award. Los Buenos Vecinos, the Youngstown University Spanish club, gives a prize of $10.00 for the best drawing shown at the annual Youngstown University Art Exhibition.

The Sigma Kappa Phi Fraternity Scholastic Award. Sigma Kappa Phi Fraternity awards a certificate and an emblem each year to the member of the graduating class with the highest point average in all business administration subjects and who has majored in accounting and fulfilled the requirements for a degree or title in business administration. The recipient must have completed at least 60 semester hours at Youngstown University.

The National Association of Accountants Award. The National Association of Cost Accountants gives an award each year to the graduating senior with the highest point average in accounting.

The Louis A. Deesz Memorial Award. The Mahoning Valley Chapter of the Ohio Society of Professional and Registered Engineers, Tri-County Section, gives an annual award to the graduating engineering student outstanding in academic achievement and personality over a period of four years. The award is made in honor of the memory of Louis A. Deesz, the first dean of William Rayen School of Engineering.

The American Society of Mechanical Engineers, Youngstown Section, Awards in Mechanical Engineering. The American Society of Mechanical Engineers, Youngstown Section, grants an annual award to the outstanding graduate in mechanical engineering. In addition, awards made possible by Mr. Henrik Ovesen, a life member of the society, are given to the two students with the next highest standings.

The American Institute of Industrial Engineers Award in Industrial Engineering. The American Institute of Industrial Engineers gives an award to the industrial engineering student of Youngstown University having the highest scholastic record. This is known as the "A. I. I. E. Award" and is presented at the May meeting of the Youngstown Chapter of the American Institute of Industrial Engineers.

The Sigma Tau Fraternity Engineering Award. The Sigma Tau honorary engineering fraternity annually presents an award to the freshman in the engineering school whose record is most outstanding.

The winners of the following awards are sometimes announced at times other than Commencement:

The Nathan Hale Chapter, Sons of the American Revolution Awards. The Nathan Hale Chapter, Sons of the American Revolution, annually awards a medal to each of two R. O. T. C. cadets, as follows:

To the cadet who completes the basic course with the most outstanding excellence in all academic subjects (exclusive of military), military science, leadership, and character.

To the cadet who completes the advanced course with the most outstanding excellence in all academic subjects (exclusive of military), military science, leadership, and character.

The names of the recipients are inscribed on a plaque presented to Youngstown University by the donors. No student may receive either award unless he has completed one full year of the R. O. T. C. course at Youngstown University.

The Mahoning Chapter, Reserve Officers Association, R. O. T. C. Honor Awards. The Mahoning Chapter, Reserve Officers Association, annually awards a medal to each of two R. O. T. C. cadets, as follows:

> To the cadet completing the basic course who is selected for and enrolls in the advanced course and who has best exhibited during his career at Youngstown University the qualities of leadership.
>
> To the cadet completing the advanced course who is commissioned in the Officers Reserve Corps of the Army of the United States and who has best exhibited during his career at Youngstown University the qualities of leadership.

Participation in extracurricular activities of the University for which honor points are awarded, as well as performance as a cadet, is considered in making selections for these awards.

The Association of the United States Army Medal. The Association of the United States Army awards a medal annually to the cadet completing the first year of the advanced course who is the most outstanding in all academic subjects (exclusive of military), military science, and personal qualifications, and who has completed one full year of the R. O. T. C. course at Youngstown University.

The Lieutenant Colonel Eugene Lash Award. The Commanding Officer, 177th Anti-aircraft Artillery Gun Battalion, Ohio National Guard, annually awards a medal to the Youngstown University R. O T. C. cadet completing the fourth-year course in military science with the most outstanding record of excellence in military subjects. The name of the recipient is inscribed on a plaque which remains on the Youngstown University campus.

The Corps of Cadets Awards. Medals are awarded annually by the professor of military science and tactics to R. O. T. C. cadets as follows:

> A silver medal is awarded to the Corps of Cadets squad leader whose squad is selected, through competitive drill, as the most proficient in squad drill.
>
> A silver medal is awarded to the first-year military science student who is selected, through competitive drill, as the most proficient freshman in individual drill, school of the soldier, and personal appearance.

The Armed Forces Communications and Electronics Association Award. The Armed Forces Communications and Electronics Association Award is presented annually to the outstanding senior R. O. T. C. cadet majoring in electrical engineering.

The Society of American Military Engineers Awards. The Society of American Military Engineers makes the following annual awards to R. O. T. C. students:

> A gold medal with key replica to 10 outstanding engineering students enrolled in general military science R. O. T. C.

units in the United States who are in the next to last year of their engineering course; and to 10 outstanding students who are in the last year.

Applications for these medals are submitted for one qualified student in each of these years.

The Superior Cadet Ribbon Award. This award is presented annually by the Department of the Army to the R. O. T. C. student in each academic class at Youngstown University who is judged the outstanding student in his class in military science.

The Distinguished Military Graduate Honor Award. Each year at graduation exercises the President of The Youngstown University designates distinguished military graduates from the recommended distinguished students in military science who have maintained required standards in the R. O. T. C. and in the University during their senior year.

The Professor of Military Science and Tactics Award. A trophy is presented annually by the Professor of Military Science and Tactics to the fourth year cadet whose record at the R. O. T. C. summer camp is most outstanding among the Youngstown University cadets attending.

Essay Contests. From time to time various organizations sponsor essay contests among the student body. The pertinent information is disseminated through normal campus channels.

SCHOLARSHIPS AND LOANS

All scholarships, grants-in-aid, and loans are under the supervision of the University Faculty Committee on Scholarships. Inquiries may be addressed to the Dean of the University.

Scholarships for entering freshmen are granted on the basis of (1) the student's high school record, (2) the recommendation of his high school principal or teachers, (3) his standing in a standard college entrance test, and (4) his need. For students already enrolled, the basis is scholastic ability and need.

Grants-in-aid are awarded on the basis of (1) character, (2) need, and (3) ability to make a creditable academic record. Loans are based on a consideration of scholastic ability, character, and need. The University participates in the National Defense Student Loan program. For details consult the office of the Dean of the University.

The Youngstown University Student Scholarship Fund. This fund is financed by a group of prominent business and professional men of the community for the purpose of aiding worthy students. The scholarships range in amount from $150 to $300.

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The John R. Rowland English Scholarship. This scholarship, established in 1957, is awarded annually to an outstanding student majoring in English. The stipend is the income from the John R. Rowland scholarship fund of $5,000.

The Youngstown Sheet and Tube Company Scholarships. These scholarships were established in 1951 by the Youngstown Sheet and Tube Company. Of the five offered each year, three are four-year scholarships for sons of company employees and provide tuition and fees for full-time study in the College of Arts and Sciences, the School of Business Administration, the School of Education, or William Rayen School of Engineering. The other two are for part-time study and are granted to employees on a year-to-year-basis. Further details are available from the company, to which application is made and which makes recommendations to the Committee on Scholarships.

The Sharon Steel Corporation Scholarships. These scholarships were established in 1945 by the Sharon Steel Corporation, which awards them each year to sons and daughters of its full-time employees (or employees of its wholly-owned subsidiaries) who are interested in studying engineering or the physical sciences. Each scholarship provides for the recipient's tuition, fees, textbooks, and supplies at Youngstown University to the extent of $3,000 for the four or five years required by the curriculum chosen. In addition, the Sharon Steel Corporation offers each winner part-time and vacation employment during his four years at Youngstown University. The recipients are selected by the Committee on Scholarships of Youngstown University on the basis of academic achievement, score in the College Entrance Examination Board tests, recommendation of the high school principal, and need. Application blanks may be obtained from the office of the Secretary, Sharon Steel Corporation, Sharon, Pennsylvania.

The Haig-Ramage Scholarships. Income from the Haig-Ramage Scholarship Fund makes possible the granting of several scholarships of $300 each for the freshman year. Selection is on the basis of scholastic and leadership qualities and need for assistance.

The General Motors College Scholarship. The General Motors Corporation, under its College Scholarship Plan, offers annually a four-year scholarship to an entering freshman selected on the basis of scholastic and leadership qualities and need for assistance. The scholarship covers tuition, fees and supplies, with an additional amount if need is established. (Award of this scholarship does not affect the recipient's eligibility for one of the National Scholarships offered each year by the General Motors Corporation.)

The Youngstown Building Material and Fuel Company Scholarships. This is an annual gift of $1200 for scholarships to be allocated by the Committee on Scholarships.

The Isaly Dairy Company Scholarships. The Isaly Dairy Company awards two scholarships of $500 each for the freshman year of study at Youngstown University, one to a man and the other to a woman. Those eligible are (1) sons, daughters, brothers, and sisters of full-time Isaly employees and (2) part-time employees who have worked for the company

for at least six months. Selection is based on scholarship, leadership, character, and need. Further details are availabe from the company, to which application is made and which makes recommendations to the Committee on Scholarships.

The Frank Purnell Scholarship. This scholarship in the amount of $300, established in 1960, is awarded on the basis of need and academic achievement.

The Business and Professional Women's Club Scholarship. A scholarship of $500 is awarded to an upperclass woman by the Business and Professional Women's Club of Youngstown.

The Youngstown District Purchasing Agents Association Scholarship. This scholarship, established in the amount of $300 in 1959, is awarded to a student majoring in industrial retailing.

The Tom Pemberton Memorial Scholarships. Two four-year scholarships of $400 are awarded to graduates of Mahoning County high schools, one to a man, one to a girl, from an endowment of $12,000 contributed as a memorial to Tom Pemberton. The recipients must be in the upper two-thirds of their high school classes and plan to major in health, physical, and recreation education. The scholarships were established in 1957.

The Westinghouse Achievement Scholarship in Electrical Engineering. This scholarship, established in 1952 by the Westinghouse Educational Foundation, is awarded annually to a junior majoring in electrical engineering, for high academic achievement and demonstrated qualities of leadership. The stipend is $500. The recipient is chosen on the basis of recommendations by the faculty of William Rayen School of Engineering.

The Westinghouse Achievement Scholarship in Mechanical Engineering. These are like the Westinghouse Achievement Scholarship in Electrical Engineering, but for a junior majoring in mechanical engineering.

The Westinghouse Industrial Scholarships in Engineering. These scholarships, established in 1956, are available to recent high school graduates with outstanding high school records. Recipients work part time at regular jobs in the engineering department of the Westinghouse transformer plant in Sharon, Pennsylvania, and attend the University as part-time students. Details may be obtained from the Dean of the University or from the Supervisor of Training, Industrial Relations Department, Westinghouse Electric Corporation, Sharon, Pennsylvania.

The American Society for Metals Foundation Scholarship. This scholarship of $400, established in 1955, is awarded, preferably to a student who has finished his sophomore year, upon the recommendation of the chairman of the Department of Metallurgical Engineering.

The Harry and Helene Meyer Freshman Scholarship. This scholarship of $400, established in 1955, is for a freshman planning to major in business administration or economics. The recipient is selected annually on the basis of superior scholarship and financial need.

The Medical Service Foundation Scholarship. This scholarship of $500, to be awarded to a pre-medical student by the Mahoning County Medical Society, was established in 1959.

The Dr. and Mrs. Raymond S. Lupse Pre-Medical Scholarship. Established in 1958, this scholarship is awarded annually to a freshman pre-medical student by Dr. Benjamin S. Lupse, M. D., F. A. C. S., and his wife.

The Dr. M. M. Szucs Scholarship. Established in 1959, this scholarship of $300 is awarded annually to a freshman by Dr. M. M. Szucs. Selection is made by the Scholarship Committee.

The Women's Auxiliary of the Mahoning County Medical Society Scholarship. This scholarship, established in 1959, covers tuition and fees for one year. Candidates must be residents of Mahoning County and must agree to complete the course in nursing sponsored by the Youngstown Hospital Association.

The American Business Women's Scholarship. This scholarship, instituted in 1957 in the amount of $150, is provided by the Youngstown Chapter of the American Business Women's Association. It is awarded to a girl in the field of business administration.

The Building Industry Scholarship of the Youngstown Dunbrick Company, Incorporated. This scholarship of $400 is awarded to a student in William Rayen School of Engineering who plans to make his career in the building industry. It was established in 1955.

The William F. Maag, Jr., Scholarship. This scholarship was established in 1947 in honor of Mr. William F. Maag, Jr. The revenue from invested capital pays $330 for one year to an upperclassman chosen annually on the basis of recommendations by Mr. Maag.

The National Office Management Association Scholarships. Five scholarships of $100.00 each were established in 1957 by the Youngstown Chapter of the National Office Management Association, for students in the field of business administration. Students eligible for these awards must be upperclassmen having acceptable scholastic standing and needing financial assistance. Recipients are selected by the Dean of the School of Business Administration.

The Yo-Mah-O Chapter, National Secretaries Association Scholarship. This scholarship of $500 ($250 for each of two years) is provided by the Youngstown Chapter of the National Secretaries Association (International). It is awarded to a girl interested in completing the two-year secretarial course and qualifying for the title of Associate in Business Administration.

The President and Mrs. Howard W. Jones Scholarship. This scholarship has been provided since 1947 by the faculty of Youngstown University in honor of President and Mrs. Jones. The funds for it are contributed annually and it pays $300 for one year to a student chosen on the basis of recommendations by Dr. and Mrs. Jones.

The Benjamin T. Davis Scholarship. This scholarship was established in 1949 by Judge John W. Davis as a memorial to his brother. The stipend is $300. It is awarded annually to a male graduate of Fitch High School, Austintown, chosen on the basis of recommendations by the Superintendent of Austintown Township schools, the principal of Fitch High School, and the president of the Austintown Township Board of Education.

The Rachel Davis Scholarship. This scholarship is like the Benjamin T. Davis Scholarship except that it is a memorial to Judge Davis's sister and is for a girl graduate, chosen similarly.

The Anthony Ierino Scholarships. Two scholarships of $200 each are awarded annually to needy and worthy students. These scholarships were made possible by a bequest of Mr. Antonio Ierino in 1954 and are available to students of any class.

The Latin Culture Foundation Scholarship. An annual award of $200 is offered by the Latin Culture Foundation to an outstanding student of the Italian language and culture. Selection is made by the Committee on Scholarships on the basis of academic achievement and need.

The C. J. Strouss Memorial Scholarship. This scholarship of $150 is awarded annually to an upperclassman in memory of the late C. J. Strouss. The award is made by the Committee on Scholarships. It was established in 1954.

The Grace M. and Blanche F. Vail Scholarship. This scholarship is awarded annually to a freshman or upperclassman of excellent character and scholarship who needs financial assistance. The stipend is the income from the Vail Scholarship Fund of $4,000 established in 1954.

The Mahoning Valley Technical Societies Council Scholarship. A scholarship of $200 is awarded to a sophomore or junior student in engineering from the Mahoning and Shenango Valleys.

R. O. T. C. Command Scholarships. Scholarships are granted to fourth-year military science students in recognition of their extraordinary responsibilities in administering the Youngstown Unversity Corps of Cadets. Recipients must have demonstrated outstanding leadership and scholastic ability, and must adequately perform their duties as cadet officers. The number of scholarships and the amount of each will be announced each year by the President of the Youngstown University. Each scholarship is made available at the beginning of the second semester.

The Women's Auxiliary of the Mahoning Valley Chapter of the Ohio Society of Professional Engineers Scholarship Grant. An annual grant of $100 is given to a deserving junior in William Rayen School of Engineering by the Women's Auxiliary of the Mahoning Valley Chapter of the Ohio Society of Professional Engineers.

The American Association of University Women, Youngstown Branch, Scholarships. A scholarship grant of $125, first given in 1950, is awarded each year by the Youngstown Branch of the American Association of University Women to an upperclass woman student, on the basis of high scholarship and need.

Music Scholarships. A limited number of scholarships are awarded by the University for proficiency in a band or orchestra instrument, in singing, or in accompanying. Applications may be sent to the dean of Dana School of Music, who makes recommendations to the Committee on Scholarships. The stipends vary.

The Strouss-Hirshberg Music Center Scholarships. These scholarships have been made possible each year since 1947 by the Strouss-Hirshberg Music Center. They provide annually one hundred dollars for each of four students in Dana School of Music. Applications may be sent to the dean of the School of Music, who makes recommendations to the Committee on Scholarships.

The Henry V. Stearns Scholarship. The Delta Eta chapter of the Phi Mu Alpha Sinfonia national honorary music fraternity awards a scholarship to a male junior or senior music student possessing outstanding musical and scholastic ability.

The Sigma Alpha Iota Scholarship. The local Alumni Chapter of Sigma Alpha Iota, honorary professional music sorority, offers a scholarship available only to members of Alpha Nu, the local undergraduate chapter of the sorority. The requirements for this scholarship may be learned from the chairman of the chapter's scholarship committee.

The Bessie Johnson Music Scholarships. The income from an endowment of $40,000 from the estate of Miss Bessie Johnson is used for scholarships awarded to music students. These scholarships were established in 1957. Applications may be sent to the dean of Dana School of Music, who makes recommendations to the Committee on Scholarships.

The Herman C. Ritter Scholarship for the Violin. An endowment of $10,000 from the estate of Mrs. Juliet L. Ritter was made available in 1957, the income of which is used for a scholarship award to a student who intends to make a career of music, who shows particular aptitude and promise in the playing of the violin, and who is without sufficient means to provide himself or herself with an education and training in music.

The William H. Dana Scholarship Loan Fund. This fund was established by the Alumni Association of Dana School of Music as a memorial to the school's founder. Information about loans may be secured from the association's secretary, at Dana School of Music.

Los Buenos Vecinos Foreign Study Scholarship. Los Buenos Vecinos annually awards to a sophomore or junior a scholarship for six weeks of summer study in a foreign country. The scholarship covers tuition and all other expenses.

The Salem Community Scholarship Association Scholarship Loans. Any student living in the Salem community who has satisfactorily completed at least two years of formal education beyond high school may apply to the president of the Salem Community Scholarship Association, Salem, Ohio, for a loan to help him complete his education.

The Paul C. Bunn Loan Fund. This fund, established in 1957, is a gift of the teachers of the Youngstown Public Schools in honor of Dr. Paul C. Bunn. Upperclassmen in the School of Education are eligible to receive loans from this fund.

Student Assistantships. Student assistantships are available to upperclassmen only. Applications may be made at the office of the Dean of the University. In return for a weekly amount of work stipulated by the administration, the student receives full tuition and fees for a limited load plus a salary of $20 a week for the first year assignment; $22.50 a week for the second year on the same assignment; and $25.00 a week for the third year on the same assignment. Half assistantships are awarded in some cases.

Graduate Scholarships. Many graduate scholarships, fellowships, and assistantships are available at other institutions. A file of these is maintained in the Office of the Dean of Women. Current notices are posted on the scholarship bulletin board adjacent to that office and on departmental bulletin boards.

Fulbright Scholarships. United States government scholarships for foreign study are available for graduate study abroad. Applications may be obtained at the office of the Dean of Women.

The Cecil Rhodes Scholarships. Men students of Youngstown University are eligible to apply for these scholarships, which provide for study at Oxford University in England. Scholarships are awarded each year to students selected through personal interviews by a regional committee.

Marshall Scholarships. These scholarships offer two years of study at any university in the United Kingdom. Applicants must be college graduates, citizens of the United States, and under 28 years of age.

The Woodrow Wilson Fellowship Awards. These are awarded yearly for graduate study, principally in the humanities and social sciences, for students who plan to become college teachers. Each appointee receives a liberal stipend and tuition. Candidates must be nominated by a faculty member. Further information may be obtained from the Director of the Division of Language and Literature.

General Requirements and Regulations

ADMISSION

Any graduate of a first grade high school or an accredited secondary school may be admitted to Youngstown University as a degree-seeking student upon proper application, presentation of a satisfactory official transcript of his high school credits, evidence of his good character, and, for full-time students, compliance with physical examination requirements (see Health Service, page 16). The applicant is also required to take the American College Test for purposes of advisement in English and engineering and for the School of Education. The College Entrance Examination Board test is considered an acceptable substitute.

The applicant, if accepted, is admitted to the Lower Division of the University. He becomes a candidate for a degree when he has completed 60 semester hours of credit and has been admitted to the Upper Division.

An applicant who stands in the lowest third of his high school class may be refused admission; if admitted, he may be placed on probation at the discretion of the Dean of the University until he has demonstrated his ability to meet the demands of college study.

Application

Application is made on a form available at the Registrar's office. It must be accompanied by an official statement of high school credits and by the Matriculation Fee of $15.00, which includes $3.00 for the American College Test. The application should be submitted to the Registrar as soon as possible after graduation from high school. Prospective students will receive a physical examination form with the application for admission.

Relation of High School Courses to University Graduation

The applicant for admission normally has credit for 16 units of high school study. These should include certain courses that are regarded as an important part of the student's preparation for college study. These preparatory courses are listed in the table below, where it will be seen that they are not the same for every degree offered by the University. It should be observed, moreover, that the high school courses

*The University is a testing center, administering the American College Test at announced dates to accommodate applicants to other institutions requiring the test for entrance or advisement.

specified for a particular degree are part of the requirements for graduation with that degree from Youngstown University.

If an applicant does not have credit for one or more of the pre-college courses specified for the degree he wants, he is not kept out of the University for that reason. He is allowed to enter with the privilege of completing the missing courses after beginning his college career, but with the understanding that he is expected to complete them before the beginning of his junior year. (The University offers him certain means of completing them, as indicated below; but the student may use any available means acceptable to the University, such as high school night classes or private tutoring.)

Since the specified preparatory courses are not the same for all degrees, admission to the University for study toward one degree does not necessarily mean that the student is equally qualified for study toward other degrees. The student should have this in mind if he later changes the degree for which he is studying, since his high school courses may not provide the preparation specified for his new objective, even though they were adequate for the original one.

G. E. D. Test Credits

Certain credits for successful results in United States Army General Education Development Tests may be accepted as indicating satisfactory preparation for study toward a degree, but not as a basis for granting credit for any University course.

Admission to Advanced Standing

A student applying for permission to transfer from another college or university must present, preferably one month before his enrollment, one transcript of all his previous high school records and two transcripts of his college records. He must present evidence of honorable dismissal from the institution last attended; he will not be accepted if he is ineligible to return to his former institution. His class standing at Youngsown University will depend on the quantity and quality of his previous credits. (For R. O. T. C. credit, see "Military Science and Tactics" in the College of Arts and Sciences section.) A transfer student with 45 or more hours of credit must file an application for admission to the Upper Division when he applies for admission to Youngstown University.

Special Students

Occasionally a student who is not a high school graduate, but who because of maturity seems capable of college study, may be admitted as a special student. He takes courses and receives grades like the ordinary student, but his credits cannot be ac-

cepted toward a degree unless he completes the requirements for and receives his high school diploma. (See also the paragraph headed "Auditors.")

Registration of Freshmen

Although the student enrolling for the first time is instructed at the Registrar's office about scheduling his courses and registering, he will find it helpful to read the General Regulations section. It may be pointed out here that an extra fee is charged for late registration, when that is permitted.

Freshman Day

Freshman Day is that on which prospective freshmen for the fall semester receive information helpful in enrolling and getting started properly. It occurs just before the opening of the fall semester; the date is given in the Calendar on page 3.

Guidance Examinations

Prospective freshmen may take general intelligence examinations for guidance purposes. Those who wish to do so should make arrangements with the Testing Office.

GENERAL REQUIREMENTS FOR GRADUATION

Catalog Governing Graduation Requirements

The requirements for graduation may be those stated in the catalog in effect at the time of the student's entrance into Youngstown University or those stated in any subsequent catalog; but the student must select *one* of the pertinent catalogs and complete the requirements as stated therein.* This rule is not affected by a change in major. The student is expected to make himself fully aware of all requirements applicable to him and is responsible for completing them.

General Requirements Other than Courses

A general requirement is one that must normally be met by all students, unless exceptions are established. Most general requirements apply only to degrees; a few apply to both degrees and titles.

For any *degree* or *title*, the following three requirements must be fulfilled:

Application. An application for graduation must be filed with the Recorder. For the time and fee for this procedure, see page 55. To avoid a penalty, it must be done by the first day of the last fall semester before the

*Certain exceptions apply here. In the School of Education, for instance, changes in requirements are governed by the Ohio State Department of Education.

time of intended graduation. No application for graduation is accepted after March 31. If the student does not graduate in the year for which he has filed an application, he must reapply the next time he plans to graduate.

Residence. The last 30 semester hours leading to the degree or title must be completed at Youngstown University, except that in curriculums such as the pre-law and the pre-medical, which allow the student to earn his final credit hours *in absentia*, the last 30 hours prior to this final stage must be spent at Youngstown University. Any modification of this requirement must be approved by the Dean of the University.

Grades. The point index must be not less than 2.00 (see page 50).

For a *degree*, the following requirements must also be fulfilled:

Upper Division Status. The student is not a candidate for a degree until he has been admitted to the Upper Division of the University, as explained on page 48. To achieve this, he must first have *made up any deficiency in high school units* for the desired degree.

This is the student's responsibility. The preparatory units are not the same for all degrees: they are listed in the table in the preceding section and should be read carefully, together with the explanatory notes accompanying them. This is especially important if the student changes the degree for which he is studying, as his high school preparation, even though satisfactory for his original objective, may not be satisfactory for the new one. *The fact that a student has been admitted to the University to study for one degree does not mean that he is equally qualified to become a student for every other degree the University offers.*

Course Levels. At least 60 semester hours must be completed in courses numbered 200 or higher; at least 40 of these 60 hours must be in courses numbered 300 or higher.

Major and Minors. The student must complete a major and at least one minor.

A departmental major consists of at least 30 semester hours with grades of C or better in one department.* A combined major, for which the courses are in more than one department, consists of at least 45 semester hours with grades of C or better.

A minor consists of at least 15 semester hours with grades of C or better in a department other than that of the major.

The head of the student's major department determines the course requirements for both the major and the minor or minors and sees that they are met. He may require the student to do more, but not less, than the minimums stated above. Both the major and the minor must meet his approval.

As soon as a student has decided on his major, he should consult the head of the department in which his major study

*For this purpose, the School of Education, Dana School of Music, and William Rayen School of Engineering are departments, and each foreign language is a department.

Condensed Table of Courses Required For Graduation

including Specified Preparatory Units

(For requirements other than course-requirements, see pages 39, 41-43.)

(For the full names of the degrees, see page 43.)	A.B.	B.S.	B.S. in Ed.	B.S. in B.A.	B.E.	Mus. B.
Pre-College[1]	(These figures mean high school units.)					
English	3	3	3	3	3	3
A foreign language[2]	2	2[3]	—	—	—	2
U. S history and civics	1	1	1	1	1	1
Algebra[4]	1 or 2[5]	1 or 2[5]	—	—	2	—
Geometry[4]	1	1	—	—	1	—
Biology, chemistry, or physics[4]	1	1	—	—	1[6]	—
Any mathematics[4]	—	—	1	1	—	1
Any science or additional mathematics[4]	—	—	1	1	—	—
Any science[4]	—	—	—	—	—	1
	9 or 10	9 or 10	6	6	8	8
Other subjects[7]	7 or 6	7 or 6	10	10	8[8]	8
Total high school units	16	16	16	16	16	16
In the University	(These figures mean semester hours of credit.)					
General						
Basic						
Communication	9	9	9	9	9	9
Health and Physical Education	4	4	4	4	4	4
Orientation[9]	1	1	1	1	1	1
Area						
Social Studies	12	12	12	12	9	12
Religion	3	3	3	3	3	3
For the Degree[10]						
Laboratory science	8	Included in the major	—	—	18	—
Science or mathematics	3		9[11]	9[11]	20	6
Foreign languages[12]	6	6[3]	—	—	—	—
English	3	—	3	3	3	—
Psychology	3	—	6	3	—	3[13]
Other courses[14]	73	71	78	81	85	100
Total credit hours	125	136[15]	125	125[15]	152	138[15]

NOTES

[1]Pre-college units lacking at the time of entering the University are to be made up before the beginning of the junior year.

[2]An entrant lacking these units may make up the deficiency by taking a first-year foreign language course without University course-credit, or by any other means acceptable to the Director of the Division of Language and Literature.

[3]Foreign language study is not required for the Bachelor of Science degree if the student is a registered nurse or completes the combined major in medical technology.

(Continued on the next page)

will be done. While no student is compelled to declare his major before he applies for admission to the Upper Division, in some departments it is essential that the planning be done not later than the beginning of the sophomore year, or in some cases earlier, to avoid delay in graduation.

General Course Requirements: Basic

The following *basic* requirements are ordinarily met through particular courses designed and specified for them. They apply to all degrees.

Communication. The candidate must show satisfactory proficiency in the use and understanding of the English language. The director of the Division of Language and Literature is the judge of this proficiency. Ordinarily he will grant a certificate to a student who has received a grade of C or higher in the final semester of his required course in communication or its equivalent.

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[4]An entrant who lacks one or more of these units may make up the deficiency by taking the relevant high-school-level course offered by the mathematics or physics department without University course-credit, or he may make it up in any other acceptable way.

[5]One unit is enough except for a major in a science or combination of sciences requiring Mathematics 101R or 101 or for a minor in mathematics.

[6]For the Bachelor of Engineering degree one unit of physics is required.

[7]It is suggested that these unspecified units include additional courses in history, foreign languages, English, laboratory sciences, and mathematics, since many specialized University curriculums leave little or no time for some of them, especially history, literature, and foreign languages.

[8]A unit of mechanical drawing and a half-unit of trigonometry or solid geometry, or both, are particularly advisable.

[9]Part-time students are not required to take the Orientation course until they have completed 60 semester hours.

[10]Requirements peculiar to a particular degree are explained more fully in the section of this catalog primarily concerned with that degree.

[11]Six of the nine semester hours required must be in science. The mathematics for the B. S. in B. A. degree may be Business Organization 131 or Merchandising 121.

[12]If this requirement is met with a language not previously studied, 12 hours are needed. No University course-credit is given for the first six hours if the student has not studied some one foreign language successfully for two years in high school. See "Credit Evaluation for the Foreign Language Requirement" in the College of Arts and Sciences section.

[13]For the Bachelor of Music degree with the major in music education, the requirement is six hours.

[14]These include all courses necessary for the major, minor or minors, teaching certification (if needed), and for any other special purposes. For many fields, all the courses required or suggested are listed in the form of year-by-year curriculums in the pertinent sections of this catalog.

[15]This total is a few hours higher in some fields of specialization. (One music curriculum, a special five-year combination course, totals 164; Accounting and Management total 136 each; General Business, Commercial Art, and Traffic and Transportation Management total 130 each.)

This requirement is normally met by taking Communication 105-106-107, totaling nine semester hours. A student who has had part or all of some other "freshman English" course, either at this institution or elsewhere, should consult the director of the Division of Language and Literature before registering at Youngstown University.

Health and Physical Education. Each candidate must normally have four semester hours of credit in health education and physical education. Usually this consists of two hours of health education (Health and Physical Education 109M or 109W [two credit hours], and four ½-credit-hour physical activity courses totalling two hours). The candidate who takes the two-year course in military science and tactics needs only two hours (see Modifications for R. O. T. C. Students, below). Other substitutions of courses or of training received in active military service to meet any part of this requirement must have the approval of the chairman of the Department of Health Education and Physical Education.

Orientation. Every candidate must have credit for Orientation 100, for one hour of credit.

General Course Requirements: Area

In addition to the basic course-requirements, there are the following general requirements in particular *areas* of study:

Social Studies. The candidate must have 12 credit hours in the social sciences, except for the Bachelor of Engineering degree for which the requirement is 9 hours.

Normally he must meet this requirement by taking Social Science 101 and 102 and History 201 and 202 (except for engineering students, who take one 200-level history course). However, a transfer student with less than 60 but more than 30 credit hours acquired elsewhere may omit Social Science 101 and 102, and a transfer student with 60 or more hours acquired elsewhere may omit all four courses, provided his credits include 12 hours in the social sciences at the time he graduates.

Religion. The candidate must have completed either a three-hour course in the Department of Philosophy and Religion, or Humanities 401 or 402.

Science. There is a requirement in this area for every degree, but there is considerable variation among the several degrees in the choice of courses allowed and in the rigor of the technical approach to the subject. The relevant details are therefore stated in the section pertaining to the particular degree.

Additional Requirements for Each Degree

A degree requirement is one which applies to all (or, in a few cases, to most) of the students seeking a particular degree, but is not necessarily a requirement for other degrees. Degree requirements will be found as follows:

Those for the degrees of *Bachelor of Arts* (A. B.), *Bachelor of Science* (B. S.), and *Bachelor of Science in Education* (B. S. in Ed.) are stated in the College of Arts and Sciences section of the catalog. Those for the *Bachelor of Arts* and *Bachelor of Science in Education* degrees are repeated in the School of Education section.

Those for the degree of *Bachelor of Science in Business Administration* (B. S. in B. A.) are in the School of Business Administration section.

Those for the degree of *Bachelor of Engineering* (B. E.) are in the William Rayen School of Engineering section.

Those for the degree of *Bachelor of Music* (Mus. B.) are in the Dana School of Music section.

Modifications for R. O. T. C. Students

The R. O. T. C. student may have certain courses waived, as follows:

a. A student completing Military Science 101, 102, 201, and 202 may omit Social Science 102 (3 hours), one hour in physical activity courses, and three other hours to be decided in consultation with his adviser. He may substitute Health and Physical Education 107 (1 hour) for the two hours of Health and Physical Education 109.

b. In addition, a student completing Military Science 301, 302, 401, and 402 may omit Psychology 201 (except as a prerequisite to other courses) and nine other hours to be determined in consultation with his adviser. For the degrees of Bachelor of Arts, Bachelor of Science in Business Administration, and Bachelor of Science in Education, the courses thus omitted may include three hours of science, provided that the candidate for the Bachelor of Arts degree takes eight hours of biology, chemistry, geology or physics.

Unless specifically named above, no course required for the degree sought may be waived.

Requirements for a Second Baccalaureate Degree

A student who has a degree from Youngstown University and desires a second degree must earn 18 semester hours of credit in addition to the total that he had when he completed the requirements for the first degree, meet all requirements for the second degree, and complete the requirements for another major.

A student who has a degree from another institution and desires a degree from Youngstown University must complete a total of 30 semester hours, meet all requirements for the second degree, and complete the requirements for a new major and minor.

Curriculums to Meet Special Requirements

All states have detailed programs of courses necessary for teaching certificates; medical schools have specific requirements for pre-medical study; and many law, theological, technological,

and graduate schools have more or less mandatory recommendations for those seeking admission. A prospective teacher, therefore, or anyone wishing to enter a professional, technological, or graduate school of any kind should consult the Dean of the University as early as possible. Such special needs can usually be met within the degree requirements of Youngstown University, but the proper selection of courses may have to begin in the freshman year.

Commencement Exercises

There is only one graduation ceremony each year: in June, at the end of the second semester of the academic year. A student who completes the requirements for a degree or title at the end of a first semester receives his diploma in June and is present, if at all possible, at the commencement exercises as a member of the graduating class. A student not eligible to graduate in June but planning to complete the necessary study during the ensuing summer session is present in cap and gown at the June ceremony but does not receive his diploma until he completes the requirements.

GENERAL REGULATIONS

Scheduling of Courses; Advisement

A student already attending the University makes out his schedule of courses for the next semester in consultation with a faculty adviser, and every student's schedule must have the signed approval of the adviser, even when a prescribed curriculum leaves him no actual choice of courses.

A student entering for the first time, or a former student wishing to re-enter, may get instructions for scheduling and advisement at the Registrar's office.

The student planning his program should understand that some courses are not offered every term. Those offered in a particular semester or summer session, with their times and places, can be ascertained from the *Schedule of Classes* for that term, which is published in time for use in advisement and scheduling for the term in question. For information about future offerings, or when a particular course will be offered again, the student may consult the dean of the unit concerned, or the department chairman.

Although the University tries, through the advisement system, to insure the student's taking all the courses needed for his degree, *the ultimate responsibility for meeting any requirement rests with the student.* He will do well to read the statements under Candidacy for a Degree, below.

Some Definitions

The *class hour** is a 50-minute class period and is the basic unit of instruction. The term *semester hour** signifies one class hour a week carried for one 17-week semester (or the equivalent in a summer term). A *semester hour of credit** is the amount of credit given for one semester hour successfully completed. *One* semester hour of credit represents *three hours of study and instruction* every week throughout the semester.

The Time/Credit Ratio

As seen above, credit is based on a time/credit ratio of three hours a week of study and instruction to one semester hour of credit. Of these three hours, the class hour is one; the other two are the time spent by the student in preparing for the class hour, or in supplementing it. In other words, *for every class hour, two additional hours are expected to be spent outside of class* in reading, thinking, writing, solving problems, laboratory activity, or whatever the course calls for. The exact amount may vary from day to day, depending on the particular assignment, the individual student, and other factors; but assignments are normally made on this one-plus-two principle, and the student is responsible for completing them.

Thus, for example, a so-called "three-hour" course actually involves nine hours a week, consisting of at least 150 minutes of class sessions (that is, three class hours**) and six hours of study done out of class. If the course involves laboratory periods, these form a part of the weekly total of nine hours.

Accordingly, the student carrying a 16-hour schedule, for example, should count on devoting to it an average of 48 hours a week (exclusive of time spent in extra-curricular activity, commuting, eating, etc.). The slower student may find that more than 48 hours is necessary. These facts should be kept in mind especially by students planning to hold jobs while attending the University.

The Student Load

The courses taken by a student during any semester constitute the *load* that he carries for that semester. The load is measured in semester hours. The size of the load a student is permitted to carry depends on the degree he is seeking (and

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*Often called simply "hour of credit." The expression "credit hour" sometimes means "semester hour of credit" and sometimes merely "semester hour."

**In a three-hour course the class hours may take the form of three 50-minute sessions, or two 80-minute sessions, or (as in some laboratory courses) one or two 50-minute class sessions and one or more laboratory periods which include instruction, or any other practicable form.

hence on the curriculum he is following) and to some extent on his grade average, as follows:

a. A student following a business administration, engineering, or music curriculum may carry as many hours as the curriculum requires, with the approval of the dean of his school. Such approval ordinarily is given.

b. All other students are governed by the following regulations:

1. A student with a point index of 3.0 or better may carry 18 semester hours with his adviser's approval, which ordinarily is given.

2. No student may carry more than 18 semester hours, and no student whose point index is below 3.0 may carry more than 16 semester hours, unless his written request to do so is approved by his adviser and by the Committee on Academic Standards.

3. In determining a student's semester load, all courses are counted, whether they give credit toward graduation or not, except Orientation 100 and the general-requirement courses in health education and physical education.

The form for an overload request is available at the Registrar's office. After grades for the preceding term are reported, a dean may reduce the schedule of any student in his unit whose record is poor.

Any student may, with his adviser's approval, carry a course in military science in addition to the semester load allowed him according to the preceding paragraphs.

Extra Hours' Credit

Credit for more than the stated hours may be obtained for extra work done in a course under the following restrictions:

1. Permission shall be limited to seniors.

2. A brief description of the extra work shall be supplied by the instructor.

3. Such extra work may be done only under the supervision of a full-time instructor.

4. The extra credit may not exceed one hour per course nor one course per semester.

5. An application form must include the signatures of the instructor and the department chairman, and receive the approval of the Dean of the University.

Auditors

A student may register for and attend any course as an auditor. An auditor is not held responsible for the regular classwork and preparation of assignments and receives no credit for the course. However, he pays the regular tuition for the course, as well as any applicable course-fees, and it is counted in his load. An auditor is not to be confused with a special student.

Registration

Every student registers in person for the work of each session on or before a final registration date. Only under exceptional circumstances may a student register after that date, and one who does is charged a fee. One who has begun his registration before the deadline may complete it late, but must likewise pay a fee. There is no reduction of tuition or other fees because of late entrance into courses.

No student may enter a course after the first meeting of the third week of a semester or after the seventh calendar day of a summer term.

For freshman registration see page 38.

Change of Registration

A student wishing to alter his schedule after registration must fill out a Change of Registration form, have it signed by the instructor or instructors concerned and by his adviser, and present it to the business office for approval and acceptance. A mark of WF (withdrawal with failing grade) is recorded for a course dropped without this procedure, since such withdrawal is not official.

Anyone changing his registration after the registration period pays a fee, unless the administration has requested the change.

Full-Time Status

A full-time student is one carrying 12 or more semester hours in courses that give credit toward graduation.

Class Rank

If the student is working for the degree of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Education, or Bachelor of Science in Business Administration, in which the number of hours required ranges from 125 to 136, he is ranked as a freshman until he has completed 32 hours, as a sophomore until he has completed 64 hours, as a junior until he has completed 96 hours, and thereafter as a senior.

If he is working for the degree of Bachelor of Engineering or Bachelor of Music, in which the number of hours required ranges from 152 to 167, he is ranked as a freshman until he has completed 38 hours, as a sophomore until he has completed 76 hours, as a junior until he has completed 114 hours, and thereafter as a senior. See also Candidacy for a degree, below.

Upper and Lower Divisions

Courses numbered from 100 to 199 are designed for the freshman level; from 200 to 299, the sophomore; from 300 to 399, the junior; and from 400 to 499, the senior. The freshman and sophomore levels constitute the Lower Division, and the junior and senior levels the Upper Division. (For graduation, a certain amount of credit is required in courses on each of these levels; see page 39).

No freshman may take an Upper Division course without the approval of the Dean of the University. A senior taking a 100-level course will receive only two-thirds of the normal credit for it, unless the head of his major department waives the rule.

Candidacy for a Degree

Every student who wishes to become a candidate for a degree from Youngstown University must, when he has completed from 45 to 60 semester hours, file with the Records Office an application for admission to the Upper Division. A transfer student with 45 or more semester hours must file such an application when he applies for admission to Youngstown University. Until admitted to the Upper Division, no student may be given junior or senior class standing or be considered a candidate for a degree.

His application form must indicate:

1. The degree for which he is a candidate. He may thereafter change his degree objective only by filing a new application for admission to the Upper Division as a candidate for the new degree.
2. Pertinent to the degree sought, his completion of
   (a) all pre-college requirements;
   (b) the Communication and English requirements through Communication 107;
   (c) the laboratory science requirement;
   (d) a total of 64 hours in excess of hours deducted to clear any pre-college requirement.
3. His major subject, with the signed approval thereof by the chairman of the major department. He may thereafter change his major only by formal application to the Dean of the University and with the approval of the chairmen of both the old and new major departments.

Grading System

The grade for a course completed may be: A, excellent; B, good; C, average; D, poor but passing; or F, failure.

The grade of E is given to a student who has not completed a course (including the final examination) when grades

are submitted. If he does not complete it within 60 days thereafter (except as noted below), the grade becomes an F unless circumstances warrant an extension of time. The instructor is notified before such an F is recorded.

If a student has been absent without explanation and it is not known whether he has dropped the course, the grade of E may be given if, in the teacher's judgment, the part of the course missed can be practicably made up and a grade other than F is possible on its completion.

If a student has received an E in a prerequisite course and has been allowed to enter the following course, he should see that the E is removed by the end of the sixth week of the second course. Otherwise, if the E becomes a grade that does not satisfy the prerequisite, he will have to drop the course he has been allowed to enter, and will receive F in it for dropping it later than the sixth week.

The grade of F can result from (1) unsatisfactory achievement; (2) failure to complete a course, as stated above; (3) dropping a course improperly (by unofficial withdrawal); or (4) cheating, or dishonesty of any kind in the course.

Other marks recorded are:

AUD, signifying that the student has attended the class as an auditor.

WP (withdrawal with passing status), representing official withdrawal from a course before the end of the sixth week of a semester, the first week of a five-week summer course, or the second week of a ten-week summer course.

WF means withdrawal with failing status.

(WP and WF are determined and recorded by the Recorder, not by the teacher.)

A student may appeal to the Committee on Credits and Admissions for reconsideration of any final grade, if he feels that the grade was given without proper regard for some pertinent factor or circumstance.

The distribution of grades follows in general the "normal curve," according to which from 5% to 10% of the grades in a class are A's, 20% to 25% B's, 40% C's, 20% to 25% D's, and 5% to 10% F's. The teacher, however, is expected to use his judgment and to regard the curve as a guide rather than as something to be rigidly imposed.

Teachers may use plus and minus modifications of the grades A, B, C, D, and F; but the recorder does not record such modifications, and they are disregarded in calculating point indexes.

Proficiency in English

The student's ability to express himself in English is not the concern of the Department of English alone, but of every member of the University faculty. Inadequate competence in this respect is to be regarded as a reason for lowering a student's grade in any course in the University.

The Point Index and Scholastic Standing

The student's scholastic standing is indicated by his point index (also called "grade average"). For determining this, every grade has a point value for each semester hour it represents, as follows: A, 4 points; B, 3 points; C, 2 points; D, 1 point; F or WF, no points. For example, an A in a 3-hour course is worth 12 points; a D in a 4-hour course, 4 points; and an F or WF in any course, no points. To find the point index, the total number of points earned is divided by the number of semester hours attempted. Thus a student who attempts 16 semester hours and earns 40 points has a point index of 2.50. The grades of Aud and WF and grades for courses that give no credit toward graduation are not included in the calculation of the point index. (See also Repetition of Courses, below.)

Grade Requirements and Probation

A student whose point index for a semester is less than 1.50 while he has fewer than 30 semester hours of credit, less than 1.75 while he has fewer than 61 hours, or less than 2.00 after he has 61 hours, will be on probation the following semester. If he does not raise his point index to the required minimum during the probationary semester, he will be readmitted for the following term only at the discretion of the Dean of the University. The student must have a cumulative point index of 2.00 to be eligible for a degree.

A student seeking the degree of Bachelor of Engineering must maintain a point index of 2.00 or higher at all times; see the section on William Rayen School of Engineering.

A student other than a beginning freshman who receives grades of F in half, or more than half, of the total number of semester hours for which he is registered will not be readmitted for the following term.

Grade Reports

A report of his grades is sent to every student by the Recorder as soon after the close of a semester as possible. A teacher may use other means to provide such information more quickly.

The Dean's List

The Dean's List consists of all undergraduates who earn a quality point average of 3.00 in any given semester.

The Honor Roll

The honor roll, announced once each year, consists of the five per cent of each class who have the highest point indexes. Class rank is determined by the definitions found on page 47. A student with less than 12 semester hours of credit acquired at Youngstown University is not included in the roll.

For freshmen and sophomores, the top five per cent are determined on a University-wide basis; for juniors and seniors, those included are the five per cent who stand highest among the candidates for each degree.

Graduation Honors

Graduating seniors who rank high scholastically are awarded special honors at commencement.

Those who attain a quality point average of 3.8 are granted their degrees *summa cum laude*.

Those who attain a point average of 3.6 are granted their degrees *magna cum laude*.

Those who attain a point average of 3.3 are granted their degrees *cum laude*.

Transfer students with 60 semester hours of credit are eligible for graduation honors, but no transfer work may be included in the calculation of the point average. No transfer student admitted to the University on probation is eligible for honors.

Repetition of Courses

A student may repeat a course once. If the course repeated is prerequisite to another course, the repetition must be successfully completed before the other course is taken. No course may be repeated if the student has received credit for a more advanced course in the same subject. If a course is repeated, the repetition is treated merely as another course, along with the first, in calculating the point index. A course repeated, however, may be counted only once for university credit.

Absence from Classes and Examinations

If a student is irregular in class attendance, the number of semester hours of credit he would otherwise earn may be reduced.

A student must have the instructor's consent in order to take any examination at a time other than the scheduled one. The instructor, if he gives such consent, may waive the Fee for Irregular Examination if such action seems warranted. If the

test is to be taken at the Testing Office, the student presents there a permit signed by the instructor. Permit forms are available at the unit dean's or the Registrar's office.

Honorable Dismissal

A transcript of credits serves as a statement of honorable dismissal except when such a statement is not merited. A transcript indicates whether a student is withdrawing in good standing and shows any disciplinary action he may have incurred while attending Youngstown University. No transcript is issued to a student who has not met all his financial obligations to the University and to recognized campus organizations.

If a separate statement of honorable dismissal is needed, the Dean of the University will furnish one, provided the student is of good character, has a satisfactory record of conduct, has no financial obligations to the University, and is withdrawing voluntarily for acceptable reasons; and provided that the student, if withdrawing during a term, follows the official procedure for a change of registration. A statement of dismissal issued with any of these conditions unmet may be expected to include an explanation of the circumstances.

FEES AND EXPENSES

All tuition and fees for any term are due at registration. No student may attend classes until he has completed his registration by paying his tuition or arranging with the business manager for its payment. (Late registration entails a penalty fee; see "Special Fees.") If payment is by installments there is a carrying charge on the unpaid balance, and lapse of payment results in suspension from classes; see "Tuition Payment by Installments."

No student may enroll for a new term until he has paid all his previous tuition. No student may graduate or receive a transcript of credits who has not met all his University obligations by May 1 of the year of his intended graduation or transfer, or by the previous December 1 if he intends to transfer at the end of the first semester.

The Business Office, including the cashier's window, is open during the following hours: 8:30-11:30 a. m., 12:30-4:30 p. m., and 6:30-8:30 p. m. Monday through Friday, and 8:30 to noon on Saturday.

Tuition and Fees for One Term

The rates in the following tables are for a single term. In determining the student's load for the assessment of regular fees for services and activities, all courses are counted except music ensemble courses for which no tuition is charged.

For All Students in the College of Arts and Sciences, the School of Business Administration, the School of Education, and William Rayen School of Engineering

Each Semester:

Tuition: each semester hour..... $ 16.00

Laboratory or other special course fees.
See Courses of Instruction in each school and Special Fees, below.

For Full-time Students in Dana School of Music*

Each semester:

Tuition (12 to 15 semester hours) $192.00
Each semester hour over 15 ..... 16.00
Applied Music Charge, basic (3 lessons a week) †.... ‡135.00
Each additional lesson-per-week.....†45.00

‡$327.00

For Part-Time Students in Dana School of Music *

Each semester:

Tuition: each semester hour..... $ 16.00
Applied Music rates:
One half-hour private lesson a week 59.50
Two half-hour private lessons a week 119.00

These figures become $68.00 and $136.00 if the lessons are taken from an artist-teacher.

NOTE: It is understood that any or all exceptions to the payment of fees shall be determined by the business manager.

In the Secretarial School

See the special brochure issued for this school. For full-time work taken for college credit, the tuition and fees are the same as for the School of Business Administration.

In the Technical Institute

For the present, tuition for this training is paid directly to the University by the participating firms.

Summer Session

The tuition rate for the summer session is $16.00 a semester hour, plus any additional course and/or laboratory fees.

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*A full-time music student is one enrolled in Dana School of Music and carrying 12 or more semester hours, inclusive of applied music but exclusive of music ensemble courses. A full-time music student who during a semester reduces his load to less than 12 hours is charged as a part-time student for the whole semester.

†The Applied Music Charge and Hours of Credit. Every music curriculum includes courses in applied music that require 3 private lessons a week, which are paid for at a reduced rate through the basic Applied Music Charge. The semester hours of credit that may be earned in such courses are included in the 12 or more hours covered by the tuition charge. The amount of the credit depends on the degree of proficiency and amount of practice demanded by the curriculum: a voice, instrumental, or sacred music major may enroll for and earn 4 semester hours of credit in applied music: a theory, composition, or music education major, 3 hours.
For refunds on withdrawal from applied music courses, see page 67.

‡For each lesson-per-week under an artist-teacher, add $14.50 for the semester.

A special bulletin describing the summer session and giving the schedule of classes is published each April.

If a student who during the academic year is a full-time music student takes summer courses in applied music, he pays tuition at the regular rate for the semester hours of credit, plus applied music charges at the rate of $45.00 per credit hour.

Audited Courses

A person auditing a course or courses pays tuition at the regular rate of $16.00 a semester hour, plus any laboratory, regular, or other special fees that may be applicable.

Special Fees

The following fees are payable by those to whom they apply. Any exception is determined by the business manager or as stated in the description of the fee.

Matriculation Fee. A fee of $15.00 is charged every new student, once only, to cover the cost of his initial registration. It must accompany his application for admission.

Records and Reports Fee. A fee of from $2.50 to $10.00, depending on the number of semester hours carried, may be charged anyone whose work, status, and/or purposes are such as to involve an amount of processing, record-keeping, or other clerical expense beyond that ordinarily necessary.

Laboratory Fees and similar special course-fees, indicated in the descriptions of the courses for which they are charged, cover the cost of materials consumed or other expenses peculiar to the courses concerned.

Activity Fee. Part-time students carrying 11 hours or less may obtain Student Activity and Athletic Books upon payment of a $5.00 fee.

Late Registration Fee. A fee of $5.00 is charged any student who completes his registration after the final registration date. Late registration includes failing to appear at final registration following the completion of any kind of pre-registration.

Change of Registration Fee. A fee of $2.00 is charged anyone changing his registration, unless he does so at the request of the administration. Waivers will be determined by the deans of the various schools or by the Directors of Divisions; the Dean of the University will determine waivers for independent departments. Appeals and approvals will be subject to the supervision of the Finance Committee.

Reinstatement Fee. A fee of $2.00 is charged anyone readmitted to classes after a suspension.

Fee for Credit by Equivalency or Examination. A tuition fee of $16.00 is charged for each hour of credit honored for graduation when such credit is given as the result of examination or equivalency evaluation without the student's having attended the regular classes for the course of instruction. This type of credit must have the approval of the department chairman, the division director or unit dean, and the Dean of the University.

Fees for Irregular Examinations. When a student is allowed to take an examination at a time other than the scheduled one, a fee of $5.00 for a final examination or $3.00 for any other examination is charged at the discretion of the instructor, except in case of illness, when the student must present a letter from his physician.

Graduation Fee. A fee is charged anyone who is to receive a degree or a title. The fee, which includes cap and gown rental, must be paid by May 1 of the year of expected graduation, whether the degree is to be received in June or in August; the amount depends on when the application for graduation is filed, as follows:

If the application for graduation is filed:	*the fee is:*
Before the last fall semester before graduation	$ 7.00
During the last fall semester before graduation	10.00
During the last February before graduation	15.00
During the last March before graduation	20.00

These fees apply for each degree or title granted (unless honorary), except that if two degrees are to be received by one person at the same commencement, the total fee is $5.00 more than the pertinent amount listed above.

Transcript of Credits Fee. One transcript of credits is furnished free of charge. A fee of $1.00 is charged for each additional or subsequent transcript.

Student Locker Deposit and Fee. A student assigned a locker deposits fifty cents at the time of assignment. At the end of the semester, or upon withdrawal from the University, he is refunded the deposit less a handling charge of ten cents. For further information on lockers, see page 18.

Military Equipment Deposit and Fee. Every student taking military science deposits $12.50, at the beginning of the college year, toward coverage of the cost of United States government property assigned him. When he turns in all such property at the end of the year or upon withdrawal from the University, he is refunded amounts as follows:

First year	$ 6.00	Third year	$ 9.50
Second year	12.50	Fourth year	12.50

R. O. T. C. Activity Fee. Every student registered for a course in military science is charged $2.00 each semester as a special activity fee. This fee provides funds for certain military purposes and R. O. T. C. extra-curricular activities which will enhance the value of the Corps to the University. These activities may be, but are not necessarily limited to:

1. The annual military ball.
2. Awards and/or recognition for meritorious service to the R. O. T. C. in athletics and in extra-curricular events.
3. Athletic events and contests.
4. Miscellaneous matters that the chairman of the Department of Military Science and Tactics may deem pertinent.

Special Fees for Music Students. The following fees are stated more fully in the Dana School of Music section:

Piano Practice Fee, major	$ 5.00 a semester
Piano Practice Fee, minor	2.00 a semester
Organ Practice Fee, major	40.00 a semester
Organ Practice Fee, minor	20.00 a semester
Instrument Rental Fee: each instrument	5.00 a semester
Student Recital Fee	$15.00 for each recital
Theory Placement Examination Fee	$5.00 (before taking examination)

Tuition Payment by Installments

Tuition (together with any other fees payable at the beginning of a term) may be paid in installments. The student electing to do so makes a down payment upon enrolling and arranges with the business office for payment of the balance. The business manager must approve the deferred payment plan before the student may complete his registration. The Finance Committee accepts appeals and recommends action on changes and refunds.

The minimum down payment of 33⅓% on tuition and fee charges of $75.00 or more and 50% on tuition and fee charges of less than $75.00 must be paid on the day of registration unless the balance remaining after the down payment is less than $25.00, in which event cash in full must be paid at registration. There is a carrying charge (maximum $15.00, minimum $1.00) on the unpaid balance remaining after the down payment. The balance of the tuition, including the carrying charge, must then be paid as follows: if the initial payment is 33⅓%, then at least another 33⅓% must be paid during the first third of the term and the remaining 33⅓% during the second third of the term. If the initial payment is 50%, the remaining balance including the carrying charge must be paid within the first half of the term. Any student paying his account in full before the expiration of his deferred period will be refunded a portion of the carrying charge. A table of refunds is on file in the business office. Any refund is made by that office.

The University holds each student responsible for his financial obligations; therefore the bill is made out to the student, not to a parent. Until it is properly revised, the bill is final. Reminders will be sent periodically during the installment period.

A student who fails to meet an installment payment when due is suspended from classes until payment has been made. He must then pay the Reinstatement Fee.

Withdrawals and Refunds

No student may enroll for less than a full term. If a student must withdraw from a course or from the University,

he must fill out an official Change of Registration form and present it to the registrar and business manager. Failure to attend class or merely giving notice to the instructor is not an official notice of withdrawal.

If a student is permitted to withdraw from a course or from the University, the tuition charge for the session, based on the date of the official acceptance of the change of registration or withdrawal by the business office, will be as follows:

	Length of Term:			
Date of Acceptance by Business Office:	16-19 Weeks Incl.	12-15 Weeks Incl.	9-11 Weeks Incl.	3-5 Weeks Incl.
First week	20%	20%	25%	50%
Second week	20%	40%	50%	100%
During third week	40%	60%	75%	100%
During fourth week	60%	80%	100%	——
During fifth week	80%	100%	——	——
Sixth week or following	100%	——	——	——

If a course is canceled by the University, tuition paid for it will be refunded in full or credited against another course or courses, as the student wishes. See additional policies and procedures shown below under "Exceptions."

Applied music. The foregoing applies to all courses except those in applied music. An applied music course dropped is charged at $3.50, times the number of lessons taken. For full-time music students a single semester hour of applied music is valued at $45.00. When an artist-teacher is the instructor, computation is made separately, using the pertinent rate.

Exceptions

A student who withdraws from the University for reasons beyond his control, such as illness, military service, or a transfer or shift change imposed by his employer, may have a part of his tuition refunded, in proportion to the number of weeks attended. He must withdraw officially and present valid evidence. The amount refunded depends on the date he last attended classes or when his status changed, whichever is more reasonable.

A student who withdraws voluntarily may have his tuition adjusted if he re-enters the University within one year, unless illness or military service extend his absence beyond a year. The adjustment is made only if the student has paid in full the tuition for the semester in which he withdrew and after the fees for the current semester have either been paid in full or the second installment made. Application for a settlement must be made to the Business Office. No adjustment is made if the student has withdrawn at the request of the University.

The College of Arts and Sciences

ORGANIZATION AND DEGREES

Organization and Program

Study done mainly or entirely in the College of Arts and Sciences leads to one of three degrees: Bachelor of Arts (A. B.), Bachelor of Science (B. S.), or Bachelor of Science in Education (B. S. in Ed.).* The divisions and departments of this unit are as follows:

Division of Language and Literature
- Department of Ancient Languages
- Department of English
- Department of Modern Languages
- Department of Speech and Dramatics

Division of Social Sciences
- Department of Economics
- Department of Geography
- Department of History
- Department of Philosophy and Religion
- Department of Political Science
- Department of Psychology
- Department of Sociology

Division of Science and Mathematics
- Department of Biology
- Department of Chemistry
- Department of Mathematics
- Department of Physics

Other departments
- Department of Art
- Department of Health Education and Physical Education
- Department of Home Economics
- Department of Military Science and Tactics

Courses are also offered in astronomy, communication, general science, geology, humanities, journalism, library service, and nursing. For other subjects the index may be consulted.

Major and Minor Fields

For the A. B. degree. The choice is virtually unlimited within the University's offerings. The major may be in any of the departments listed above (with most foreign languages regarded as separate departments for this purpose) except in geography and in military science and tactics. It may be an interdepartmental or combined major in classical studies, earth

*The degree of Bachelor of Arts may also be earned in the School of Education or in Dana School of Music. Most candidates for the Bachelor of Science in Education degree will receive it from the School of Education.

science, humanities, public relations, Romance languages, or social studies, or one of the combined majors mentioned in the next paragraph. It may be in music, or in any business administration or engineering subject in which a major is possible (except secretarial studies).

For the B. S. degree. Pure science majors are possible in biology, chemistry, mathematics, and physics. There are special combinations of sciences for pre-medical, pre-pharmacal, and other pre-professional purposes. Combinations of science courses and applied science or technological training are offered as majors in food and nutrition and medical technology.

For the B. S. in Ed. degree. The major is accomplished through completion of one of the teacher-training curriculums. Most of these appear in the School of Education section, where full details are given.

The minor or minors for any of these degrees, unless determined by a prescribed curriculum, may be in any subject or subjects in which it is possible to take 15 semester hours.

Requirements for the Degrees

Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Education

It is the student's responsibility to see that he satisfies all the graduation requirements for the degree he seeks. These consist of:

1. The pre-college or preparatory courses for each degree. These are normally taken in high school, but if not, they may be made up before the junior year in the University. They are listed briefly below; for further information see pages 40-41, where the explanatory notes should be read carefully.

2. The courses and other requirements to be completed in the University. These include:

a. The general requirements for graduation from the University. These are explained on pages 38-39 and 41-43 but are recapitulated below.

b. Requirements peculiar to the degree, which are stated and explained below.

c. Requirements for the student's major and minor fields and for any other purpose, such as teaching certification.

The curriculums leading to these degrees require a minimum of 125 semester hours of credit and are designed to be completed in four academic years.* A student willing and able to carry heavier loads successfully may finish in less time.**

*The minimum for the Bachelor of Science degree is eleven more semester hours, to permit sufficient specialization without reducing too greatly the student's general education. By attending summer sessions, however, he may complete any of the curriculums in four years.

**This plan is not encouraged if the student intends to hold a strenuous or time-consuming outside job regularly while in the University.

If a student wishes to include summer courses in his program, he should consult his adviser.

R. O. T. C. students are allowed certain modifications of the requirement, as explained on page 43.

Subject	*A. B.*	*B. S.*	*B. S. in Ed.*
1. Preparatory Units			
English	3	3	3
United States history and civics	1	1	1
A foreign language	2	2	
Algebra	1 or 2*	1 or 2*	
Geometry	1	1	
Any mathematics			1
Biology, chemistry, or physics	1	1	
Any science subjects or additional mathematics			1
2. In the University			
a. General			
Other than courses (see pages 38-39, 41):			
Completion of minimum number of semester hours of credit required for graduation	125	136**	125
Upper Division status (including completion of any specified preparatory units lacking at entrance)			
Major and minor requirements	Residence requirement		
Course-level requirements	Application for graduation		
Grade-average requirement			
Basic courses:	*Semester hours of credit*		
Communication 105-106-107	9	9	9
Health and Physical Education 109	2	2	2
Health and Physical Education activity courses	2	2	2
Orientation 100‡	1	1	1
Area courses:			
Social studies:			
Social Science 101 and 102	6	6	6
History 201 and 202	6	6	6
Religion: a Philosophy and Religion Department course, or Humanities 401 or 402	3	3	3
b. For the Degree			
Science	11	In the major	9

For the A. B. degree: eight hours of one laboratory science (biology, chemistry, geology, or physics) and three hours of astronomy, biology, chemistry, geology, mathematics, or physics. *For the B. S. in Ed. degree:* six hours in any science subjects plus an additional three hours in mathematics or science.

A foreign language (ancient or modern)	6 or 12	6 or 12	—

For the A. B. and B. S. degrees: the requirement is a reading knowledge of the language, defined as what a student should know after two years of

*One is enough except for a science major needing Mathematics 101 or 101R, or for a mathematics minor.

**See the first note on the preceding page.

‡Not required of part-time students until they have completed 60 semester hours.

successful college study or its equivalent. Whether a student will need six or twelve semester hours to attain this knowledge depends on his high school language courses: see "Credit Evaluation for the Foreign Language Requirement," a few pages further on.

For the B. S. degree: the language chosen must have the approval of the chairman of the major department. Chemistry majors ordinarily must have a reading knowledge of scientific German. No foreign language study is required of registered nurses or medical technology majors.

For the B. S. in Ed. degree: no requirement in this area of study.

English	3	—	3

For both degrees the requirement is 3 hours of literature.

Psychology 201	3	—	3

c. Other Courses

Teacher-training courses	—	—	19

Education 101, 301, 304, 404, three hours in special methods, and Psychology 202. These courses are also taken by students preparing to teach high school who prefer the A. B. degree. Most other teacher-training curriculums require additional teaching-methods courses.

Balance required for graduation	73	71	61

The student allots these hours, in accordance with requirements and his own desires, to completing a major, one or more minors, the foreign language requirement, teaching fields, other special objectives, and elective courses anywhere in the University for which he can satisfy the prerequisites. Except for the A. B. degree, however, most science and education curriculums allow comparatively little choice of courses.

Combined Liberal Arts-Professional Course: Law Students

A student who has acquired at least 95 semester hours of credit in the College of Arts and Sciences and has satisfied all requirements for the Bachelor of Arts degree except 125 hours of credit and the completion of a major, will be granted the degree of Bachelor of Arts on completing satisfactorily the remaining number of credit hours in any law school which grants the degree of Bachelor of Laws and which is approved by the proper accrediting agencies. The student may satisfy his major requirements by utilizing the remaining number of credit hours accepted for law study toward a combined major in social studies.

Combined Liberal Arts-Professional Course: Medical Students

A student who has completed at least 100 credit hours toward the degree of Bachelor of Arts (or 111 hours toward the degree of Bachelor of Science) and has satisfied all requirements for the degree except the completion of the total number of credit hours required and the completion of a major, will be granted the degree of Bachelor of Arts (or Bachelor of Science) on the satisfactory completion of the remaining number of

credit hours at any medical school granting the degree of Doctor of Medicine and approved by the American Medical Association, provided that he has been accepted for further study at the medical school. The student may satisfy his major requirement by utilizing the credit accepted for medical study toward a combined major in pre-medical sciences. He may thus secure the Bachelor of Arts or Bachelor of Science degree after from three to three and a half years in the University followed by approximately a year in medical school.

Credit Evaluation for the Foreign Language Requirement

For the Bachelor of Arts degree, four high school units, if all in the same language, will satisfy the requirement, with no further study in the University. A student who has three high school units in one language may meet the requirement by taking one semester of additional study in that language. A student with two high school units in one language may meet the requirement by taking two semesters of additional study in that language. A student with one high school unit in language or with none may meet the requirement by taking four semesters of study in one language, but he receives no University course-credit for the first two of them.* *Thus it is to the student's advantage to take at least two years of one foreign language in high school.*

For the Bachelor of Science degree, the same principle applies, but the language must be one that meets the approval of the chairman of the department in which the student is majoring. A student majoring in chemistry who intends to meet this requirement with German and does not take German 215-216 (Chemical German) must pass an examination in scientific German. The reading knowledge for either degree does not have to be the result of enrollment in classes; it may have been acquired in any way whatsoever. However, in the absence of credit for high school or college courses as stated above, the student must pass an examination in order to be certified.**

COURSE NUMBERS AND ABBREVIATIONS

It is important that the student familiarize himself with the course-numbering system and its significance, as well as the abbreviations used to indicate the amount of credit.

*A student who has had only one year in high school might go into the second semester of the elementary course in college, but such a step is usually inadvisable because of the difficulty of picking up the langunge again after an interruption.

**In such a case the student satisfies the requirement for the degree but receives no course credit. If he wishes, he may be given as many as 6 hours of credit by paying the Fee for Credit by Equivalency or Examination.

Hyphen. A hyphen between numbers (e. g., 101-102) indicates that credit is not given toward graduation for the work of the first semester until the work of the second semester is completed, except when special permission is granted by the chairman of the department in which the course is given.

Comma. Ordinarily, a comma between numbers (e. g., 105, 106) indicates that the course extends throughout the year, but that credit toward graduation is given for either semester. If the first semester of such a course is prerequisite to the second, it is so designated.

Course Numbers

Levels. Courses numbered from 100 to 199 are designed primarily for freshmen; 200 to 299, for sophomores; 300 to 399, for juniors; and 400 to 499, for seniors.

Abbreviations and Reference Marks

The abbreviation "h. c." at the end of a course description stands for "semester hours of credit." Credit for a two-semester course is indicated by such a notation as "3 + 3 h. c." meaning "three semester hours of credit each semester."

"Prereq." stands for "prerequisite."

An asterisk or other reference mark used in a curriculum ordinarily refers to a note immediately following that curriculum. Occasionally, however, such a note may be at the foot of the page.

COURSES OF INSTRUCTION AND CURRICULUMS

University Seminar

Associate Professor Harder; Assistant Professor Dobbert; Instructor Klasovsky.

401-402. *The University Seminar.* A critical investigation of certain ideas underlying civilization, embracing and integrating the particular studies of science, society, and the humanities. The seminar is conducted by three instructors—and occasional special lecturers—representing the above three fields. Meetings will be symposia in which the members present and discuss reports on projects embracing two or more fields of study. Eligibility for the seminar will be determined by faculty selection. Students completing the seminar with distinction will be granted special honors by the University. Department chairmen will determine what credit can be applied toward the student's major. *3 + 3 h. c.*

Ancient Languages and Literature

See Greek, Hebrew, and Latin. For literature in translation, see Humanities 201, 401 and 402, and Philosophy and Religion 230, 303, 309, and 330.

Combined Major in Classical Studies

A combined major in classical studies consists of 45 semester hours in courses chosen from the following: Greek 101-102, 201, 202, 301, and 302; History 105 and 352; Humanities 201, 401, and 402; Latin 101-102, 201, 202, 301, 302, 304, 305, 401, 402, 403, 404, and 405; and Philosophy and Religion 301 and 309. The student should consult the Director of the Division of Language and Literature before undertaking this major.

Art

Assistant Professors Naberezny (chairman) and Mills; Mr. Bertolini, Mr. Elwell, Mr. Leepard, Mrs. Newman, Mr. Pressly, and Mr. Vaccaro.

A suggested curriculum for the degree of Bachelor of Arts with a major in art appears below, after the course descriptions. For the degree of Bachelor of Science in Business Administration with a major in commercial art, a required curriculum will be found in the School of Business Administration section; for the curriculum required for the degree of Bachelor of Science in Education with a major in art education, see the School of Education section.

Lower Division Courses

110, 111. *Color and Design I.* Experimentation with all kinds of materials and media. Realizing the effects of color with color, color into color, and light on color; creating collages and mobiles to realize space, and experiments with light on these; shadow forms; use of various textures in collages and in two-dimensional design; relation of light and dark; getting forceful and expressive shapes. Art 110 is prerequisite to 111. *3 + 3 h. c.*

113, 114. *History and Appreciation of Art: General.* Lectures on what constitutes art: the plastic means rather than the subject matter, and the relationship of parts; attention to developments, influences, and experiments. Study of reproductions of museum collections and of surveys made. *3 + 3 h. c.*

201, 202. *Life Drawing and Painting.* Experience in drawing from the human figure. Attention to the power of line, the relation of shapes and colors, and their organization in established space. Reference to important historical styles influencing contemporary work. *3 + 3 h. c.*

203, 204. *Drawing.* Space division, the plastic means, line, plane, volume; light and dark, color and texture, and their relation to form and pattern. Use of different media—pencil, charcoal, water color, opaque water color, pastel, and collage—for still-life figure composition, life, and abstract forms, to develop a sense of plastic organization. Prereq.: Art 110, 111. Art 203 is prerequisite to 204. *3 + 3 h. c.*

211, 212. *Print Making.* Experimenting with all kinds of printing media. Block printing, silk screen techniques, and the various metals used for printing. Study in space division, plastic means, and their relation to form and pattern. Prereq.: Art 110 and 111. Art 211 is prerequisite to 212. *3 h. c.*

223, 224. *Advertising Art I.* Practice with different styles of lettering; application of principles of Art 110, 111 to layouts, reproduction of silk screen, linoleum block, monoprint, and dry point; study of current tendencies. Prereq.: Art 110, 111. Art 223 is prerequisite to 224. *3 + 3 h. c.*

Upper Division Courses

301, 302. *Technical Problems in Art.* Advanced technical problems in art for the art major. The student may elect to specialize in one of the following fields: fashion illustration, story illustration, textile design and production, furniture design, packaging, product design, exhibition display, or printmaking. He may continue in the same field the second semester, or elect a new one. Prereq.: Art 212. Art 301 is prerequisite to 302. *3 + 3 h. c.*

303, 304. *Drawing and Painting I.* Practice in oil painting. The student is encouraged to see significantly rather than imitatively, and to develop an explorative interest in techniques. Attention to the relation of shapes and volumes in the figure and in groups of figures, to achieve good organization. Prereq.: Art 203, 204. Art 303 is prerequisite to 304. *3 or 4 + 3 or 4 h. c.*

305. *History and Appreciation of Art: Italian Renaissance.* Review of formalism, mysticism, and classicism; the new humanism; detailed study of the great artists and their connection with the history and philosophy of the times. Prereq.: Art 113, 114. *3 h. c.*

306. *History and Appreciation of Art: Modern.* Viewing of art works through slides, prints, and originals to clarify ideas of the nature of creative art; classification according to trends and influences from earlier art expressions. Prereq.: Art 203, 204 or equivalent. *3 h. c.*

307. *History and Appreciation of Art: American.* Illustrated lectures on the art forms of America from the earliest periods to the present day trends in painting, sculpture, and architecture. Designed to promote the cultural growth of the non-art student as well as the art student. No previous training in art is required. *3 h. c.*

309-310. *History and Appreciation of Art and Music: General.* Designed to promote the cultural growth of the non-art and non-music student by helping him to develop an intelligent appreciation of art and music. Illustrated lectures on art and musical forms, comparisons of compositional styles and discussions of the developments, influences, and, experiments of the important periods to date. Open to all students of the University. No prior training in art or music required. Listed also as Music History and Literature 309-310. *3 + 3 h. c.*

316, 317. *Interior Decorating.* Application of experiences in Art 110, 111 to rooms and furnishings; development of feeling of space in interiors. Study of period furnishings, new designs, and textiles; building of models to carry out decoration plans; new trends. Visits to houses with special arrangements or styles of furnishings. Prereq.: Art 110, 111. Art 316 is prerequisite to 317. *3 + 3 h. c.*

319, 320. *Jewelry and Metal Work I.* Designing and shaping of copper ware; punching, etching, engraving. Jewelry design and fabrication. The properties and limitations of metals, learned through experience. Prereq.: Art 110, 111. Art 319 is prerequisite to 320. *3 + 3 h. c.*

325, 326. *Pottery and Modeling.* Pottery-shaping: coiling, hand-building, pinching; decoration and glazing; fashioning figures and heads to arrive at sculptural form; mold-making and casting; bas-relief. Prereq.: Art 110, 111. Art 325 is prerequisite to 326. *3 + 3 h. c.*

327, 328. *Advertising Art II.* Modern layout practice and technique with various media, including silk screen, air brush, collage; bookplates, trademarks, containers, illustration, booklets, menus; rapid and fine lettering; design as a basic element. Prereq.: Art 223, 224. Art 327 is prerequisite to 328. *3 + 3 h. c.*

329, 330. *Sculpture.* A special discipline, correlated with some of the "form in space" problems dealt with in earlier design classes but here concentrated through a more specific medium. Each student has ample op-

portunity to model in clay or carve directly in wood or soft stone. Prereq.: Art 110, 111. *3 + 3 h. c.*

350. *Architectural Drawing.* Proper use of instruments, correct drafting-room practice; conventional representation, lettering, free-hand sketching, geometric construction, orthographic and oblique projection, sectioning, isometric drawing; house plans. For the prospective art teacher. Not accepted for credit toward the Bachelor of Engineering degree. *3 h. c.*

403, 404. *Drawing and Painting II.* Continuation of Art 303, 304. Art 403 is prerequisite to 404. *3 + 3 h. c.*

405. *History and Appreciation of Art: Oriental.* The art of India, China, and Japan from the earliest times to the present, and its relation to the philosophies and religions of those countries; comparison of the characteristics of the great periods. Prereq.: Art 113, 114, 305, and 306. *3 h. c.*

410, 411. *Advanced Modeling.* Application of the principles of Art 110, 111 to clay and plaster; abstract volumes and their relations; modern tendencies in pottery forms and figure work. Prereq.: Art 325, 326. Art 410 is prerequisite to 411. *3 + 3 h. c.*

419. *Jewelry and Metal Work II.* Advanced work in processes; new problems in brass, silver, copper, and gold. Prereq.: Art 319, 320. *3 h. c.*

Suggested Curriculum for the Degree of Bachelor of Arts with a Major in Art

First Year	Hrs.
Art 110, 111 Color and Design I	6
Art 113, 114 History and Appreciation of Art: General	6
Comm. 105-106 Basic Course I-II	6
*Foreign language (or electives)	6
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Ed.	2
Orientation 100	1
	34

Second Year	Hrs.
Art 203, 204 Drawing and Painting	6
Art elective (200 or above)	3
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206, or 275	3
*Foreign language (or electives)	6
Hist. 201 and 202 The United States	6
H. & P. E. activity courses	1
Psych. 201 General Psychology	3
	31

Third Year	Hrs.
Art 301, 302 Technical Problems	6
Art 303, 304 Figure Drawing and Painting I	8-6
Art elective (200 or above)	3
History elective	3
Literature elective	3
Philosophy and Religion elective, or Humanities 401 or 402	3
*Science	8
	34-32

Fourth Year	Hrs.
Art 305 History and Appreciation of Art: Italian Renaissance	3
Art 306 History and Appreciation of Art: Modern	3
*Mathematics or other science	3
Sp. and Dram. 219, 220 Play Production I	6
Electives (Upper Division)	11-13
	26-28

*See pages 60-62.

Astronomy

Professor Dustheimer.

Lower Division Courses

103. *Descriptive Astronomy.* A descriptive and non-mathematical study of the solar system and the stars. A comparison of present theories of the universe. Observations with the telescope and field glasses will be made. *3 h. c.*

200. *Geodetic Astronomy.* The elements of general, spherical, and geodetic astronomy, with practical applications; the theory of the determination of time, latitude, longitude, and azimuth. Prereq.: Mathematics 103 or high school trigonometry. *3 h. c.*

201. *History of Astronomy.* A history of astronomy from the dawn of science to the present. The contemporary state of knowledge of the universe. The organization and evolution of astronomy as related to other sciences. Man's place in our sidereal system. Prereq.: Astronomy 103. *3 h. c.*

Bible

See Philosophy and Religion; also Humanities.

Biology

Professor C. Worley (chairman); Associate Professors C. Evans, Marcy, Tucker, Webster, and I. Worley; Instructor Hirabayashi; staff.

Biology courses are offered to meet the needs of the following students: those who want a general knowledge of the biological field; those who intend to do graduate or research work in any of the special branches of biology; those who desire to teach the biological sciences; and those who plan to enter professional fields such as medicine, nursing, pharmacy, forestry, horticulture, and others requiring a knowledge of biology.

General biology majors must take Biology 103, 124, 125, 224, 225, 321, two hours of seminar, and electives from Upper Division courses. Chemistry 321, 322, Biological Chemistry, may be counted toward a biology major.

Pre-medical students and co-operative nursing students should consult the special curriculums at the end of the College of Arts and Sciences section.

Lower Division Courses

103. *General Biology.* A survey of biological principles, covering the morphology and physiology of chromosomes, cells, and tissues as manifested in animals, bacteria, and green plants. Three two-hour laboratory-discussion periods a week. Fee: $10.00. *3 h. c.*

116. *Woody Plants, Winter.* Classification of woody plants in winter condition. Fifty-four contact hours. Latter half of fall semester or first half of spring semester. *1 h. c.*

117. *Spring Flora.* Classification of vernal flowering plants. Fifty-four contact hours. Latter half of spring semester. *1 h. c.*

118. *Woody Plants, Summer.* Classification of woody plants while in leaf. Fifty-four contact hours. Latter half of spring semester, or summer session. *1 h. c.*

119. *Summer Flora.* Identification of flowering plants exclusive of composites, umbels, and other difficult families. Fifty-four contact hours. Summer session only. *1 h. c.*

124. *Botany: Lower Forms.* The thallophytes and bryophytes. Two two-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 103. Fee: $10.00. *2 h. c.*

125. *Zoology: Invertebrates.* Completion of comprehensive study of the invertebrates. Two two-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 103. Fee: $10.00. *2 h. c.*

126. *Fresh-water Fishes.* An introduction to the classification, ecology, and conservation of local fishes. Field and laboratory work, 108 contact hours. Summer session only. *2 h. c.*

127. *Local Insects.* An introduction to the classification, ecology, and economic importance of local insects. Field and laboratory work. 108 contact hours. Summer session only. *2 h. c.*

151-152. *Functional Anatomy of the Human.* Dissection of a mammal, to illustrate the structures of the human body. Consideration of the physiology of the major systems of the human. One hour of lecture, two hours of laboratory, and two hours of discussion-demonstration a week. Fee: $10.00 each semester. *3 + 3 h. c.*

160. *Microbiology.* An introduction to the study of bacteria, and a consideration of members of the following that are pathogenic to the human: fungi and yeasts, rickettsia, spirochetes, protozoa, and viruses. Two hours of lecture and two hours of laboratory-testing a week. Prereq.: Chemistry 100 or 101. Fee: $10.00. *3 h. c.*

219. *Advanced Summer Flora.* Identification of the more difficult flowering plants. Fifty-four contact hours. Summer session or first half of fall semester. Prereq.: Biology 119, or consent of instructor. *1 h. c.*

224. *Botany: Vascular Plants.* A comprehensive study of the pteridophytes and spermatophytes. Three two-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 103. Fee: $10.00. *3 h. c.*

225. *Zoology: Vertebrates.* A comprehensive study of the morphology and taxonomy of the chordates. Three two-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 103. Fee: $10.00. *3 h. c.*

230. *Anatomy and Physiology I.* The dissection and interpretation of the cat, with correlations with the structures of the human body. Three two-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 225. Fee: $10.00. *3 h. c.*

250. *Anatomy and Physiology II.* Functions of the human body. Three one-hour lectures a week. Prereq.: C or better in Biology 230 or permission of the instructor. *3 h. c.*

Upper Division Courses

301. *Bacteriology.* The fundamentals of bacteria, and methods of handling and growing micro-organisms. Two one-hour lectures and two three-hour laboratory periods a week. Prereq.: 12 semester hours of credit in biology, a knowledge of the principles of organic chemistry, and the consent of the instructor. Fee: $10.00. *5 h. c.*

302. *Introduction to Ecology.* A study of the relationships of plants and animals to their environments. Six contact hours of lectures, laboratory exercises and field trips per week. Prereq.: Biology 124, 125, 224 and 225. Offered during spring semesters of odd-numbered years. Fee: $10.00. *3 h. c.*

303, 304. *Biological Seminar.* The study of current and historical literature in biology and closely related areas. Each semester some major topic constitutes the theme of the course. The course involves written and oral reports as well as round-table discussions. The entire staff will participate in these discussions. One hour of class and three hours of outside assignments per week. Prereq.: twelve hours of biology courses and permission of staff. *1 + 1 h. c.*

307. *Developmental Anatomy.* A correlated course including the materials and ideas listed under Biology 308 and Biology 309. Twelve contact hours per week. Prereq.: C or better in Biology 125 and 225. Fee: $20.00. *6 h. c.*

308. *Vertebrate Embryology.* Germ cells, maturation types of cleavage and gastrulation, and the development of the frog, chick, and mammal. Living material is used in demonstration. Two one-hour lectures and two two-hour laboratory periods a week. Prereq.: C or better in Biology 225. Fee: $10.00. *4 h. c.*

309. *Vertebrate Anatomy I.* A comparative study of the anatomical structures of a series of vertebrate animals exclusive of the mammals. Two

one-hour lectures and one three-hour laboratory period a week. Prereq.: C or better in Biology 225. Fee: $10.00. *3 h. c.*

310. *Vertebrate Anatomy II.* A study of the anatomy of mammals, based on the cat, with reference to Biology 309. Three two-hour laboratory-discussion periods a week. Prereq.: permission of the instructor. Fee: $10.00. *3 h. c.*

313. *Vertebrate Histology.* The microscopic anatomy of mammalian tissue, including preparation of tissues for study. Two three-hour laboratory-discussion periods a week. Prereq.: C or better in Biology 225. Fee: $10.00. *3 h. c.*

321. *Genetics.* Principles of inheritance, organic evolution, and eugenics. Three one-hour lectures a week. Prereq.: C or better in Biology 224 or 225. *3 h. c.*

331. *Phytomorphology.* Comparative anatomy and histology of the vascular plants. Two one-hour lectures and two two-hour laboratory periods a week. Prereq.: C or better in Biology 224. Fee: $10.00. Offered in alternate years. *4 h. c.*

332. *Plant Physiology.* The chemistry, physics, and functions of green plants. Two one-hour lectures and two three-hour laboratory periods a week. Prereq.: C or better in Biology 224. Fee: $10.00. Offered in alternate years. *4 h. c.*

383. *Ward Management and Teaching.* The fundamental principles in the management of the head nurse unit and the duties of the head nurse as teacher; discussions of the various problems that arise in the head nurse unit. Not applicable toward a major in biology. Prereq.: standing as a registered nurse. *3 h. c.*

403, 404. *Biological Seminar.* A continuation of Biology 304. Prereq.: Biology 304. *1 + 1 h. c.*

405. *General Physiology.* An introduction to the basic processes common to all organisms. Five one-hour lecture-demonstration periods weekly. Prereq.: two years of biology and one year of chemistry. *4 h. c.*

406. *Limnology.* The study of microscopic fresh-water organisms and their physical environment. Two four-hour laboratory-discussion periods a week. Prereq.: junior standing and permission of the instructor. Fee: $10.00. Offered in alternate years. *4 h. c.*

408. *Biological Techniques.* The techniques of making microscopical preparations, plastic mounts, models, etc. Two three-hour laboratory periods a week. Prereq.: 20 semester hours of biology and permission of the instructor. Fee: $10.00. *2 h. c.*

412. *Problems in Biology.* Special biological problems for which materials and equipment are available and for which the student is qualified. Available at all times. Prereq.: recommendation by staff. Fee: $10.00. *3 h. c.*

416. *Systematic Botany.* The theory of plant taxonomy. Prereq.: permission of instructor. *3 h. c.*

Botany

See Biology.

Chemistry

Professors Scudder (chairman), Bridgham, and Cohen; Associate Professor Bien; Assistant Professors Eastman, Luginbill, and McCoy; Dr. Goudsmit, Dr. Littman, and Mr. Musselman.

A student working for the Bachelor of Science degree with a major in chemistry must take Chemistry 111-112 (or 109-110 if he has not

had a satisfactory year of high school chemistry), 203, 204, 217, 218, 221, 222, 301, 302, 303, 304, 407, 408, 409, 410, 423, 424, and six hours of additional advanced work in chemistry. Also required are two years of mathematics, including calculus; one year of physics; and a reading knowledge of scientific German or French.

The student may take the degree of Bachelor of Arts with a major in chemistry, but the course leading to the degree of Bachelor of Science prepares him better for graduate study and for the more desirable industrial positions.

Following the descriptions of courses, curriculums are suggested for the degrees of Bachelor of Science with a major in chemistry and Bachelor of Science with a major in metallurgy.

Lower Division Courses

100. *Introduction to Chemistry.* A presentation of the principles and laws of chemistry and their application. The chemistry and uses of fats, carbohydrates, proteins, vitamins and hormones are considered. Two hours of lecture, one hour of recitation and quiz, and two hours of laboratory a week. Fee: $10.00. *4 h. c.*

103. *The Slide Rule.* Logarithms, significant numbers and manipulation of the slide rule. Problems in chemistry are emphasized. *1 h. c.*

109-110. *General Chemistry.* The fundamentals of chemistry for those who have not studied chemistry in high school. Three lectures and recitations and five hours of laboratory a week, including two dis-discussion periods. Prereq.: one year of high school mathematics. Fee: $10.00 per semester. *5 + 5 h. c.*

111-112. *General Chemistry.* The fundamentals of chemistry for those who have had a satisfactory year of high school chemistry. Three lectures and recitations and four hours of laboratory a week, including one discussion period. Prereq.: one year of high school chemistry and two years of high school mathematics. Fee: $10.00 each semester. *4 + 4 h. c.*

115, 116. *Everyday Chemistry.* For students who wish to take chemistry for its cultural value. Emphasis on the chemistry of things with which we have daily contact in the home, the parks and fields, and in business and industrial life. Only the simpler mathematical phases are involved. Not accepted toward credit for a major in chemistry or for engineering. A student who has taken this course may take additional courses in chemistry providing he first takes Chemistry 110. Three lectures and recitations and one three-hour laboratory period a week. Fee: $10.00 each semester. *4 + 4 h. c.*

115S, 116S. *Everyday Chemistry.* The same as Chemistry 115, 116 except that laboratory work is not included. *3 + 3 h. c.*

203, 204. *Qualitative Analysis.* This course is an extension of the study of the principles of chemical equilibrium. Their application to the analytical procedures in the laboratory is strongly stressed. An hour of lecture and three hours of laboratory per week. Prereq.: Chemistry 112 or the equivalent. Fee: $10.00 per semester. *2 + 2 h. c.*

209. *Elements of Organic Chemistry.* A survey of the fundamental principles including laboratory familiarization with standard apparatus and procedures. Primarily for students in home economics and dietetics. Three one-hour lectures and two three-hour laboratory periods a week. Prereq.: Chemistry 100, 110, 112 or 116. Fee: $10.00. *5 h. c.*

215. *Techniques of Glass Blowing.* The course is designed to teach the rudimentary techniques of glass blowing needed in present day laboratory work. Various types of glass are used and the relation of the

composition to working properties is considered. The course requires three hours of laboratory per week with discussion. Prereq.: standing as a major in chemistry. Fee: $10.00. *1 h. c.*

217. *Chemical Literature and Technical Writing.* Examination of standard reference works, periodicals, pamphlets, etc., with written reports following various technical writing procedures. One hour of class work and three hours of reference and composition work a week. *1 h. c.*

218. *The Growth of Chemical Theories.* A survey of early philosophic thinking and its effect on scientific development. Evolution of critical scientific thinking in the field of chemistry and the development of theories based on careful experimental work. Prereq.: Chemistry 112 or consent of instructor. *1 h. c.*

221, 222. *Organic Chemistry.* A systematic study of organic compounds, reactions, and theories, with laboratory work in typical preparations and tests. Three lectures and three hours of laboratory per week. Chemistry 221 is offered every fall semester and first half of summer session. 222 every spring semester and second half of summer session. Prerequisite or concurrent: Chemistry 203 or consent of instructor. Fee: $10.00 each semester. *4 + 4 h. c.*

Upper Division Courses

301, 302. *Intermediate Inorganic Chemistry.* A systematic study of the periodic classification of elements, and of certain descriptive inorganic chemistry; theoretical concepts; the preparation of representative inorganic compounds and the analyses for purity. Various types of techniques are studied; e.g., crystallization, fusion, non-aqueous solvent technique, oxidation-reduction, ion exchange, sealed tube technique, vacuum technique. Prereq.: Chemistry 204. Fee: $10.00 each semester. *2 + 2 h. c.*

303, 304. *Quantitative Analysis.* The applications of chemical equilibrium in the measurement of the amounts of ions present in inorganic substances. Both solids and solutions are analyzed by standard gravimetric or titrimetric procedures. Extensive practice in the use of an analytical balance and of volumetric apparatus to measure relatively high percentages of constituents, and some use of colorimetric apparatus. Emphasis on the influence of pH and other factors on all of the reactions taking place. Extensive calculations involving many types of quantitative procedures. One lecture and six hours of laboratory work each week. Prereq.: Chemistry 203, 204. Fee: $10.00 each semester. *3 + 3 h. c.*

309. *Plastics.* A course in the fundamentals of chemistry pertaining to plastics. Two hours of lecture and recitation per week. Prereq.: Chemistry 221. *2 h. c.*

321, 322. *Biochemistry.* The chemistry of living organisms. The study involves work in both plant and animal life in a broad sense; a study of biochemical methods now used; composition of cell structural parts in relation to their functions; biochemical substances; the unusual reactions which proceed in living organisms; and the overall result of many reactions; the growth of organisms. In the rapidly advancing portions of the subject, the latest research results are included. Two hours of lecture and three hours of laboratory work each week. Prereq.: Chemistry 203, 204 and 221, 222 and at least one course in biology. Fee: $10.00 each semester. *3 + 3 h. c.*

330. *Chemical Microscopy.* Analysis by means of procedures carried out on slides and observed under the microscope. Precipitation, filtration, decantation, sublimation, fusion, etc., permit the identification of the elements separately and from mixtures. Trace amounts of unknowns may be readily detected. One hour of lecture and six hours of laboratory a week. Prereq.: Chemistry 303. Fee: $10.00. *3 h. c.*

343. *Fuels and Fuel Analysis.* The study of various fuels and the analysis of natural and artificial gases, gas calorimetry, analysis and calori-

metry of coal, and analysis and physical testing of oils. One lecture and two three-hour laboratory periods a week. Prereq.: Chemistry 303. Fee: $10.00. *3 h. c.*

345. *The Rarer Elements.* A study of the rarer elements, including preparation, properties and qualitative separation. Prerequisite or concurrent: Chemistry 302. *2 h. c.*

405-406. *Advanced Analytical Chemistry.* A study of the theoretical foundations of instrumental procedures, and the application and use of instruments in analytical work. Prereq.: Chemistry 304. Fee: $10.00 each semester. *2 + 2 h. c.*

407, 408. *Physical Chemistry.* The principles of theoretical chemistry, including the structure of matter, equilibria, chemical kinetics, chemical thermodynamics, electro-chemistry, catalysis, and mechanism of reactions. Prereq.: Mathematics 210 and 20 semester hours in chemistry, metallurgy or physics. Chemistry 407 is prerequisite to 408. *3 + 3 h. c.*

409, 410. *Physical Chemistry Laboratory.* Quantitative investigation of gas laws, surface tension, speed of reaction, solutions, phase diagrams, electromotive force, hydrogen ion concentration and absorption. Two three-hour laboratory periods a week, including a discussion period. Prerequisite or concurrent: Chemistry 407, 408. Chemistry 409 is prerequisite to 410. Fee: 10.00 each semester. *2 + 2 h. c.*

411. *Thermodynamics.* Classical and axiomatic presentation of the laws of thermodynamics: thermodynamic functions and their applications to ideal systems. Listed also as Physics 411. Prereq.: junior standing with major in chemistry or physics. *2 h. c.*

412. *Thermodynamics.* Fugacity, activity and activity coefficient; non-ideal systems; strong electrolytes, theory of Debye and Hückel: the third law of thermodynamics, and statistical mechanics. Listed also as Physics 412. Prereq.: Chemistry 411. *2 h. c.*

415. *Electro-Chemistry.* The fundamental principles and applications of electro-chemistry, including potentiometric measurements, electrolysis, conductance, theories of Onsager and Flakenhagen, the relationship of electrochemical cell voltages to activities, free energies and entropies of aqueous salt solutions, and the Debye-Hückel theory of strong electrolytes. One lecture and two three-hour laboratory periods a week. Prereq.: Chemistry 304 and junior standing. Fee: $10.00. *3 h. c.*

419. *Advanced Inorganic Chemistry.* Theories of inorganic chemistry. Prereq.: Chemistry 302. *2 h. c.*

421. *Advanced Organic Chemistry.* An introduction to advanced study in organic reactions and theories. Two lectures per week. Offered in summer sessions for ten weeks. Prereq.: Chemistry 222. *2 h. c.*

423-424. *Organic Analysis.* Qualitative organic analysis. One lecture and three hours of laboratory during first semester, six hours of laboratory including one discussion per week during second semester. Chemistry 423 is offered every fall semester and 424 every spring semester. Prereq.: Chemistry 222 and 304. Fee: $10.00 each semester. *2 + 2 h. c.*

430. *Unit Design.* The development and study of apparatus to carry out laboratory-proved reactions. Prereq.: junior or senior standing with major in chemistry, physics, or chemical engineering, and permission of the chairman of the department. Fee: $10.00. Identical with Engineering 480. *Hours and credit to be arranged.*

437, 438. *Nuclear and Extranuclear Structure and Behavior.* Nuclear and extranuclear atomic structures and their relation to physical and chemical behavior. Quantum theory, transmutations, radioactivity, spectral transitions, etc. are studied. Prereq.: senior standing with major in chemistry or physics. *2 + 2 h. c.*

450. *Group Research.* Each student works on a different phase of a group problem; the work is co-ordinated and closely supervised by the instructor. Prereq.: senior standing, candidacy for the Bachelor of Science degree, and at least 30 semester hours of chemistry with a B average or better. Fee: $10.00. *Hours and credit to be arranged.*

452. *Chemistry Seminar.* Reports and discussions of research studies and problems. Prereq.: Chemistry 450. *2 h. c.*

Curriculums

If either of these curriculums is to be completed in four years, some courses must be taken in summer terms to avoid overloading.

Chemistry

Suggested Curriculum Leading to the Degree of Bachelor of Science with a Major in Chemistry

First Year	Hrs.
Chem. 111-112 General Chemistry (109-110 if no high school chemistry)	8
Comm. 105-106 Basic Course I-II	6
Mathematics	10
Soc. Sci. 101, 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Chem. 203, 204 Qualitative Analysis	4
Chem. 221, 222 Organic Chemistry	8
Chem. 218 Growth of Chemical Theories	1
*German 101-102 Elementary German	6
Math. 209-210 Calculus	10
Hist. 201, 202 The United States	6
H. & P. E. activity courses	1
	36

Third Year	Hrs.
Chem. 217 Chemical Literature	1
Chem. 301, 302 Intermediate Inorganic Chemistry	4
Chem. 303, 304 Quantitative Analysis	6
Comm. 107 Basic Course III	3
*German 215-216 Chemical German	3
Physics 201 & 202 General Physics	6
Physics 201L & 202L General Physics Laboratory	2
Electives (biology recommend)	6
	34

Fourth Year	Hrs.
Chem. 407, 408 Physical Chemistry	6
Chem. 409, 410 Physical Chemistry Laboratory	4
Chem. 423-424 Organic Analysis	4
Philosophy and Religion elective or Humanities 401 or 402	3
Electives (Upper Division chemistry)	6
Electives (Upper Division)	9
	32

*See pages 60-62.

Metallurgy

Suggested Curriculum Leading to the Degree of Bachelor of Science with a Major in Metallurgy

First Year	Hrs.
Chem. 111-112 General Chemistry (109-110 if no high school chemistry)	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Mathematics	10
Soc. Sci. 101, 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	37

Second Year	Hrs.
Chem. 203, 204 Qualitative Analysis	4
Comm. 107 Basic Course III	3
*German 101-102 Elementary German	6
Engr. 251 & 252 General Metallurgy	6
Physics 201 & 202 General Physics	6
Physics 201L & 202L General Physics Laboratory	2
Math. 209-210 Calculus	10
H. & P. E. activity courses	1
	38

Third Year	Hrs.
Chem. 303, 304 Quantitative Analysis	6
Engr. 351, 352 Physical Metallurgy	6
Engr. 351L, 352L, Metallography Laboratory	3
*German 215-216 Chemical German	6
Hist. 201, 202 The United States	6
Electives	6
	33

*See pages 60-62.

Fourth Year	Hrs.
Chem. 407, 408 Physical Chemistry	6
Chem. 409, 410 Physical Chemistry Laboratory	4
Chem. 411 & 412 Thermodynamics	4
Engr. 453, 454 Advanced Metallography	6
Engr. 455 Ferrous Metallurgy	3
Engr. 456 Nonferrous Production Metallurgy	3
Philosophy and Religion elective or Humanities 401 or 402	3
Electives (Upper Division science and mathematics)	6
	35

Classical Languages and Literature

See Greek and Latin, separately. For a combined major in classical translation, see Humanities 201, 401, 402, and Philosophy and Religion 309 and 330.

Communication

English and Speech staffs.

Communication 105-106-107 is the course ordinarily taken to meet the general requirement in communication. It may be counted toward a major in English, on the approval of the chairman of the Department of English.

Day students should take Orientation 100 concurrently with Communication 105.

Non-credit Courses

10. *English for Foreign Students.* An intensive course in speaking, comprehending, reading, and writing English as a second language. The course includes both class instruction and drill. Designed for foreigners who have an elementary knowledge of English, but one which is inadequate for the needs of the college classroom. The class meets daily for a total of six hours each week. A student may repeat the course as many times as necessary to achieve a satisfactory rating. The course carries no credit, but upon recommendation of the instructor, a student who receives a grade of Satisfactory may be permitted to enroll in Communication 106 without having taken Communication 105. Listed also as English 10. Offered in fall and spring semesters. *No Credit.*

50. *Improvement of Adult Reading Ability.* The techniques involved in the improvement of reading skill for adults. Of interest to adults who wish to improve their own reading ability. Meets two hours a week. Total tuition and fee: $20.00. *No Credit.*

Lower Division Courses

105-106-107. *Basic Course I-II-III.* This course attempts to improve the effectiveness of the student's speech and writing, with emphasis on logical organization and accurate expression, and to make him more aware of the nature, function and significance of the various media of communication. A grade of C or better in Communication 107 is required for graduation: no D grade is given in Communication 107. (For certification, graduation, and transfer purposes, this course may be interpreted as six hours of composition and three hours of speech.) Concurrent with 105, for day students: Orientation 100. *3 + 3 + 3 h. c.*

Dramatics

See Speech and Dramatics.

Earth Science

The combined major in earth science is designed to meet the needs of students who expect to enter graduate work in geology or geography. The major also fulfills the requirements for the teaching fields in geography and earth science. Advisement is conducted either by the Department of Geography or the Department of Geology.

Courses for the major include:

Chemistry 111-112 (or 109-110).
Geography 102, 119, 203, 204, 314, 315, and three semester hours of Upper Division geography courses.
Geology 101, 102, 201, 202, 203.

The minor is chosen in consultation with a departmental adviser and is dependent upon the student's area of interest. For example, students interested in graduate study in geology choose either chemistry or mathematics for the minor; students interested in other areas may require a different selection.

Suggested Curriculum for the Degree of Bachelor of Arts or Bachelor of Science with a Major in Earth Science

First Year	Hrs.
Chem. 111-112 or 109-110 General Chemistry	8-10
Comm. 105-106 Basic Course I-II	6
*Foreign Language (or elective)	6
Geog. 102 Principles of Geography	3
Geol. 101 Physical Geology	4
Math. 101-102 College Algebra	4
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	35-37

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206 or 275	3
*Foreign Language (or elective)	6
Geog. 119 Economic Geography	3
Geog. 204 Regional Climatology	3
Geol. 102 Historical Geology	4
Geol. 201 Economic Geology	3
Math. 103 Trigonometry	3
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
	35

Third Year	Hrs.
Geog. 203 Conservation of Natural Resources	3
Geog. 314 Geography of Anglo-America	3
Geol. 202 Geomorphology	3
Hist. 201 & 202 The United States	6
Psych. 201 General Psychology	3
Minor courses (or electives)	10-15
	28-33

Fourth Year	Hrs.
Geog. 313 Geography of Europe	3
Geog. elective (Upper Division)	3
Geol. 303 Physiography of the United States	4
Philosophy and Religion elective or Humanities 401 or 402	3
Minor courses (or electives)	14-20
	27-33

*See pages 60-62.

Suggested Electives

Astronomy 103, 200
Economics 202, 203, 305, 319, 402
History 302, 308, 364, 368
Physics 101-102 and 101L-102L
Political Science 304, 305, 403
Sociology 325, 325, 331

Economics

Professor Smith (chairman); Associate Professors McCarty and Mackall; Assistant Professors Hahn, Kermani, Nelson, Niemi, and Whitelock; Mr. Callahan, Mr. Desing, Mr. Holt, Mr. Reagan and Mr. Savasten.

A major in economics consists of 24 semester hours in addition to Social Science 101 and 102 and History 201 and 202. Courses in other

units and departments for which credit may be given toward the major in economics are Geography 119, Economic Geography; History 301, Economic History of Europe; History 302, Economic History of the United States; Business Organization 221, Mathematics of Finance; Merchandising 224, Marketing; and Engineering 465, Methods Engineering I. The major is designed to prepare students for research and statistical work in business and government service and to give a foundation for graduate study in the field.

For economic geography, see also Business Organization 120.

Lower Division Courses

202, 203. *Principles of Economics.* A survey of the basic principles of economics with special reference to the free enterprise system. Economics 202 is prerequisite to 203. Required of economics majors. Staff. *3 + 3 h. c.*

Upper Division Courses

303. *Financial Organization.* Intended to furnish a foundation for the more technical studies in the field of finance, and to describe the financial institutions with which most people come in contact, such as the commercial bank, the building and loan association, and the finance company. Prereq.: Economics 202. Staff. *3 h. c.*

304. *Public Finance.* The development and present status of public finance; federal, state, and local taxation; public credit; the budget; financial administration. Kermani. *3 h. c.*

305. *Economic and Social Statistics.* Measurements and interpretation of economic and social data. Tabular and graphic presentations, averages, ratios and coefficients, dispersion, correlation, measurement of trends, and collection of statistical material. Listed also as Sociology 305. Staff. *3 h. c.*

306. *Intermediate Economic Analysis.* The output, price and factor proportion problems of firms in different market situations; some problems in industry behavior; and co-ordination of basic economic processes. Some attention is also given to the theory of distribution dealing with wages, rent, interest, and profits. Prereq.: Economics 202, 203. Kermani. *3 h. c.*

315. *Corporation Finance.* Identical with Business Organization 315. Prereq.: Economics 202. Niemi. *3 h. c.*

319. *Economics of American Industry.* A study of American manufacturing: the evolution of major industries, and their technological and economic growth, maturity, current problems, and outlook for the future. Staff. *3 h. c.*

321. *International Trade and Finance.* Theory and practice of foreign trade and capital movements. Procedures of importing and exporting as affected by national protective measures. National and international measures to eliminate trade barriers. Prereq.: Economics 202, 203 or approval of instructor. Kermani. *3 h. c.*

401. *Labor Problems.* The history of the labor movement in England and in this country is outlined as a background for discussion of present issues. Smith. *3 h. c.*

402. *Comparative Economic Systems.* A comparative study of American capitalism, Russian communism, and British socialism, with a consideration of the theory of the corporate state. Sterenberg. *3 h. c.*

403. *Business and Government.* This course considers the rights of businessmen, the regulation of various businesses by our government, and the controls exercised over monopoly, credit, and prices. Kermani. *3 h. c.*

404. *Personnel Management.* The background of labor management; selection and training of employees; maintenance of business relationships, including wages and hours policy, safety and health, benefits, and labor relations. Prereq.: Social Science 101 and 102 and History 201 and 202. Staff. *3 h. c.*

407, 408. *History of Economic Thought.* Readings in the history of economic thought. Prereq.: standing as senior economics major. Staff. *3 + 3 h. c.*

English

Professors Dykema (chairman) and O'Brien; Associate Professors Harder, Ives, T. Miner, and W. Miner; Assistant Professors Allan, Schultz, and Udell; Mr. Freed.

English majors are expected to complete at least one course in American literature, 12 hours in English literature, English 351-352, and a course in advanced composition. Students who plan to teach high school English must complete courses 205 or 206, 351-352, 253 or 353 or 354, and two courses in English literature that include the study of poetry and prose, for a total of at least 24 hours in English.

Communication 105-106-107, or English 101-102 and Speech and Dramatics 115, 116, is required of all freshmen. English 102 or Communication 107 is prerequisite to all other English courses. A 200-level English course is normally prerequisite to other courses in literature. Under special circumstances, however, the instructor may grant permission to enter Upper Division courses without the prerequisite.

Besides the courses described below, credit in English will be given for Humanities 201, Mythology in Literature; Humanities 401, Greek Classics and the Old Testament; Humanities 402, Roman, Medieval, and Renaissance Classics and the New Testament; Humanities 403, Early Modern Classics; and Humanities 404, Later Modern Classics.

Non-Credit Course

10. *English for Foreign Students.* See Communication.

Lower Division Courses

101-102. *English Composition.* A study of the elementary principles of composition, to teach the habits of clear and correct expression. Reading of models, class discussions, and writing of themes. (Not offered regularly.) *3 + 3 h. c.*

105-106-107. *Basic Course* in communication. See Communication.

200. *Introduction to Literature.* A non-technical, non-historical course in which important contemporary and older works of literature are read and discussed critically for the purpose of increased delight and understanding. Prereq.: Communication 107 or its equivalent. *3 h. c.*

203, 204. *Survey of English Literature.* First half: from the beginnings through the nineteenth century. Second half: from the beginning of the nineteenth century to the present. Prereq.: Communication 107 or its equivalent. *3 + 3 h. c.*

205, 206. *Survey of American Literature.* First half: Colonial times to 1860. Second half: Civil War to the present. Prereq.: Communication 107 or its equivalent. *3 + 3 h. c.*

251. *Modern American English.* A brief survey of the earlier development of the English language, followed by a more thorough study of contemporary American pronunciation and usage. Not for English majors, who take English 351-352. Prereq.: Communication 107 or its equivalent. *3 h. c.*

253. *Advanced Composition, First Course.* A course designed to strengthen proficiency in the techniques of writing expository prose, with emphasis on style, development of ideas, clarity of thought, and analysis of prose expression. This course is especially designed for those who plan to teach English in high school. Prereq.: B or A in Communication 107 or permission of instructor. Offered in fall and spring semesters. *3 h. c.*

275. *Introduction to Shakespeare.* A critical survey of about 15 of Shakespeare's major comedies, chronicle plays, and tragedies. Prereq.: Communication 107. *3 h. c.*

Upper Division Courses

351-352. *History of the English Language.* The development of the language from Old English to Modern English, with an intensive study of Modern English sounds, inflections, syntax, word meanings, and usage. Prereq.: Communication 107 or its equivalent. First course offered in fall semester; second in spring semester. *3 + 3 h. c.*

353, 354. *Advanced Composition, Second Course.* A course in writing for mature students, providing opportunity to develop creative ability. Prereq.: preparation satisfactory to the instructor. First course offered in fall semester; second in spring semester. *1 to 3 h. c. + 1 to 3 h. c.*

355. *News Writing and Reporting.* The organization and functions of a newspaper office, with special attention to reporting, writing the different types of news stories, and copy reading. Prereq.: junior or senior standing. Offered in fall semester. *3 h. c.*

355L. *News Writing and Reporting Workshop.* Application through student publications of the principles of English 355. Six hours of workshop activity a week. Prereq.: permission of instructor. Prerequisite or concurrent: English 355. May be repeated once. Offered on demand. *1 h. c.*

357. *Editing and Make-Up.* The preparation of the printed page, with emphasis on the principles and mechanics of copy reading, editing, make-up, head writing, typography, the use of illustrations, and page layout. Prereq.: English 355. Offered in spring semester. *3 h. c.*

357L. *Editing and Make-Up Workshop.* Application through student publications of the principles of English 357. Six hours of workshop activity a week. Prereq.: permission of instructor. Prerequisite or concurrent: English 357. May be repeated once. Offered on demand. *1 h. c.*

A 200-level English course, or the permission of the instructor, is prerequisite to any of the following courses.

381. *The English Novel.* The history and development of the novel in England during the eighteenth and nineteenth centuries. Offered in Fall of 1961. *3 h. c.*

382. *The American Novel.* The history and development of the novel in the United States during the nineteenth and twentieth centuries. Offered in Summer of 1960. *3 h. c.*

383. *The Modern Novel.* A study of some classic European and English novels of the nineteenth and twentieth centuries, with particular attention to the ideas in them as reflections of some basic problems in modern society. Offered in Fall of 1960. *3 h. c.*

400. *Chaucer and his Period.* Reading of Chaucer's principal works, with a brief survey of his predecessors, contemporaries, and successors. Offered in Spring of 1962. *3 h. c.*

405. *English Drama.* English drama from the sixteenth century to the nineteenth, excluding Shakespeare. Emphasis is mainly on the works of Elizabethan and Restoration writers. Offered in Summer of 1960. *3 h. c.*

406. *Modern Drama.* English and Irish drama from the Ibsen revival to the present. Continental plays that have been influential are included, in translation. Offered in Spring of 1961. *3 h. c.*

407. *American Drama.* The emphasis will be mainly on the drama since 1915. Offered in Fall of 1960. *3 h. c.*

412. *Shakespeare, Second Course.* An intensive study of the text and background of three or four of Shakespeare's major tragedies. Prereq.: English 275. Offered in Summer of 1961. *3 h. c.*

450, 451. *Methods of Research.* A seminar for English majors who expect to do graduate work. Prereq.: senior standing with major in English. Offered on demand. *1 + 1 h. c.*

461. *The Sixteenth Century.* The more important non-dramatic works in prose and verse from the early humanists to 1600, with particular attention to Spenser. Offered in Spring of 1961. *3 h. c.*

471. *The Seventeenth Century.* Milton and the non-dramatic literature to 1700. Offered in Summer of 1961. *3 h. c.*

481. *The Eighteenth Century.* The major writers of the period but excluding novels and plays. Offered in Fall of 1961. *3 h. c.*

491, 492. *The Nineteenth Century.* The major writers of the period but excluding novels and plays. English 491 offered in Fall of 1960; 492 in Spring of 1961. *3 + 3 h. c.*

493. *Modern American and British Poetry.* An intensive study of poetry in English published since 1890. Offered in Summer of 1961. *3 h. c.*

Foreign Languages and Literature

See French, German, Greek, Hebrew, Italian, Latin, Portuguese, Russian, and Spanish. For literature in translation, see Humanities.

French

Associate Professor Richardson (chairman); Assistant Professor Dykema; Mrs. Ackworth, Mrs. Hammond, and Mrs. Low.

A major in French consists of 24 semester hours above the elementary level, plus six hours in Latin, Italian, or Spanish, or six hours of Upper Division French. For a combined major in humanities, see Humanities.

The prerequisite for any Upper Division course is French 202, or four years of high school French, or the consent of the instructor. Freshmen who satisfy this prerequisite may enter Upper Division courses.

Lower Division Courses

101-102. *Elementary French.* Fundamental principles of grammar and the reading of simple prose. No credit is given for this course if the student has credit for two years of high school French. *3 + 3 h. c.*

201. *Intermediate French.* Modern prose works are read and discussed. Grammar is reviewed briefly. Prereq.: C or better in French 102 or in second-year high school French. *3 h. c.*

202. *Intermediate French.* A continuation of French 201, using texts of increasing difficulty. Prereq.: French 201 or three years of high school French, or consent of instructor. *3 h. c.*

Upper Division Courses

325. *Advanced French Grammar.* A review of the essential rules of French grammar, with particular stress on generic differences between French and English, especially as regards the verb. *3 h. c.*

326. *French Civilization.* A summary study of the geography, history, and traditions of contemporary France with a view to facilitating the reading of modern books and periodicals. *3 h. c.*

327. *Cours de Style.* Through translation of English literary selections into French and of French passages into literary English, the relative differences in expression between the two languages are studied. *3 h. c.*

328. *French Literary Tradition.* A brief survey of the principal significant writers of France together with the reading of selections from the great masterpieces of French literature. *3 h. c.*

329. *Conversational French.* One hour a week of systematic drill in pronunciation, and two hours of conversation based on composition exercises. *3 h. c.*

330. *Contemporary French Literature.* A study of modern France in the writings of such contemporaries as Duhamel, Gide, Giraudoux, Romains, Valéry, and others. *3 h. c.*

411, 412. *Comparative Grammar of the Romance Languages.* First part: the phonetics and morphology of the chief Romance dialects. Second part: syntax and semantic development. Listed also as Italian 411, 412 and Spanish 411, 412. *3 + 3 h. c.*

General Science

Associate Professors Dehnbostel (supervisor) and Glenny; Mr. Matzye, Mr. Petretich, and Miss Thomas.

Credit for these courses is not applicable toward the degree of Bachelor of Science or Bachelor of Engineering; it is applicable toward the Bachelor of Arts degree only if the courses form all or part of a teaching minor in general science.

Lower Division Courses

120. *Physical Science.* Basic principles and fundamental facts underlying the newer concepts of matter and energy as revealed by chemistry. Problems and questions involving these principles are used to encourage reasoning and the application of the principles to specific problems. (Not open to students who have had high school chemistry.) *3 h. c.*

121. *Physical Science.* Basic principles and fundamental laws of physics as illustrated by mechanics, sound, light, heat and electricity. (Not open to students who have had high school physics.) *3 h. c.*

122. *Plant and Animal Life.* Biological principles of plant and animal life. Physiology, types, distribution, and ecology; relationship to human life and activity. Not open to students who have had one year of high school biology. *3 h. c.*

203. *Our Natural Resources and their Conservation.* Identical with Geography 203. Prereq.: Geography 102. *3 h. c.*

222. *Structure and Function of Man.* A study of the organic systems of the human organism and the important functions of each system. Consideration is given to the course of development of the human, the role

Art Exhibit at Butler Institute

Life Class

Science Activity

Zoology Laboratory

of hereditary characteristics, and man's position in relationship to other mammals. Prereq.: General Science 120 or 121 and General Science 122 or high school biology. *3 h. c.*

Geography

Associate Professor Glenny; Instructor Klasovsky (acting chairman); Miss Berich and Mr. Matzye.

Lower Division Courses

102. *Principles of Geography.* A study of causal relationships between life activities and their physical surroundings. *3 h. c.*

119. *Economic Geography.* An introduction to the study of the distribution and supply of raw materials of the earth; land and water utilization, and problems in population distribution. *3 h. c.*

203. *Our Natural Resources and their Conservation.* The public domain of the United States; its nature, use, disposal, and conservation. The soil; erosion; lands; land reclamation; forests; water supply, waterways, flood control; mineral and other resources; wildlife and fisheries. Prereq.: Geography 102. Listed also as General Science 203. *3 h. c.*

204. *Regional Climatology.* The general principles of climatology. The nature and elements of climate; factors governing climatic types and their distribution; influences on soils, landforms, plants, and man; simplified classification of climates; detailed treatment of the major types of continents. Prereq.: Geography 102 or equivalent. Offered in the fall semester. Fee: $5.00. *3 h. c.*

225. *General Meteorology.* Identical with Physics 225. Prereq.: sophomore standing. *3 h. c.*

Upper Division Courses

302. *Introduction to Political Geography.* A study of the geographic, political, and economic factors influencing the course of world politics. Basic emphasis is on human geography and the factors associated with the supply of raw materials, regional natural resources, and manufacturing; consideration of ethnic origins, minorities, and geopolitics; the concept of "living space" or "human territory"; social evolution and development of political territorial divisions; problems of language and communication; transportation and its relationship to social, economic, and geo-political evolution. Prereq.: Geography 102 and History 202. *3 h. c.*

310. *Regional Geography of Latin America.* A regional approach to the economic and cultural backgrounds of the countries of South and Central America, stressing the application of geographic principles in Latin-American development and behavior. Prereq.: Geography 102, 119, or equivalent. Offered in the spring semester. *3 h. c.*

311. *Regional Geography of Asia.* A regional approach to the economic and cultural backgrounds of the countries of Asia, stressing the application of geographic principles in Asian development and behavior. Prereq.: Geography 102. *3 h. c.*

312. *Regional Geography of Africa and the Middle East.* Resource endowments, political affiliations, and stages of economic development of Africa and the Middle East. Prereq.: Geography 102. *3 h. c.*

313. *Geography of Europe.* Geographic factors in the economic, social, and political progress of the nations of Europe. Major problems of the continent in the light of their geographic backgrounds. Prereq.: Geography 102 and 119 or Business Organization 120. Offered in the fall semester. *3 h. c.*

314. *Regional Geography of Anglo-America.* The physical background of the English-speaking parts of North America and its relation to

their economics and culture. The physiographic regions; the types of climate and their factors; natural vegetation; soils; the historical geography; the geographical regions. Prereq.: Geography 102. *3 h. c.*

Geology

Instructors Scudder and Klasovsky.

Lower Division Courses

101. *Physical Geology.* A study of the earth and the geologic processes that have worked on the earth. Laboratory study of minerals, rocks, maps, and aerial photographs. Three hours of lecture and two hours of laboratory work per week. Fee: $10.00. *4 h. c.*

101S. *Physical Geology.* The same as Geology 101 except that there is no laboratory work. *3 h. c.*

102. *Historical Geology.* A study of the history of the earth through the various eras as determined by fossils and stratigraphy. Laboratory study of fossils, map interpretation, sedimentation, stratigraphy, and history of various localities. Three hours of lecture and two hours of laboratory work per week. Prereq.: Geology 101 or permission of the instructor. Fee: $10.00. *4 h. c.*

102S. *Historical Geology.* The same as Geology 102 except that there is no laboratory work. *3 h. c.*

201. *Economic Geology.* A study of the origin, mode of occurrence, and major mining areas of important mineral resources. Three one-hour lectures per week. Offered in fall semester of even numbered years. Not considered a laboratory science. Prereq.: Geology 101. *3 h. c.*

202. *Geomorphology.* A study of the various types of landforms and their origins. The laboratory part of the course includes study of aerial photographs and topographic maps in order to recognize landforms. Two hours of lecture and one three-hour laboratory period per week. Prereq.: Geology 101. Offered in spring semester of odd numbered years. Fee: $10.00. *3 h. c.*

303. *Physiography of the United States.* A study of the physiographic regions of the United States with respect to what they are, and when and how they were formed. Maps, diagrams, and aerial photographs are used in laboratory work. Three hours of lecture and two two-hour laboratory periods per week. Prereq.: Geology 202. Offered in fall semester of odd numbered years. Fee: $10.00. *4 h. c.*

German

Associate Professor Richardson (chairman); Instructor Weltman; Mrs. Beers and Mrs. Goodman.

A major in German consists of 24 semester hours above the elementary level, plus English 351-352. For a combined major in humanities, see Humanities.

The prerequisite for any Upper Division course is German 202, four years of high school German, or the consent of the instructor. Freshmen who satisfy this prerequisite may enter Upper Division courses.

Lower Division Courses

101-102. *Elementary German.* The fundamentals of grammar, drill in inflectional forms, elementary conversation, and reading of easy prose and poetry. No credit is given for this course if the student has credit for two years of high school German. *3 + 3 h. c.*

201. *Intermediate German.* Elementary composition based on grammar review. Reading material is chosen both to furnish a basis for further study of German literature and to provide a working knowledge of the modern language. Prereq.: C or better in German 102 or in second-year high school German. *3 h. c.*

202. *Intermediate German.* A continuation of German 201, using texts of increasing difficulty; conversation and composition. Prereq.: German 201 or three years of high school German, or consent of instructor. *3 h. c.*

215-216. *Chemical German.* A basic course designed to develop expeditiously an ability to read chemical literature in German. Prereq.: German 101-102 and Chemistry 111-112 or equivalent. *3 + 3 h. c.*

Upper Division Courses

313. *Conversational German.* Conducted entirely in German, this course stresses pronunciation, vocabulary and speech patterns, and gives the student some fluency in German besides introducing him to German civilization and selected literature. Prereq.: German 202 or equivalent. *3 h. c.*

325. *German Literary Tradition.* A brief survey of significant German writers, illustrated by selections from their writings. Prereq.: German 202 or equivalent. *3 h. c.*

326. *German Civilization.* A study of the geography, history, and traditions of contemporary Germany, to provide a background for reading modern German authors. Prereq.: German 202 or equivalent. *3 h. c.*

327. *German Literary Style.* Through exercises in translation, modes of literary expression in German and English are compared. Prereq.: German 202 or equivalent. *3 h. c.*

328. *Goethe and Schiller.* Representative works of these two great German classical writers are read and discussed. Prereq.: German 202 or equivalent. *3 h. c.*

329. *Advanced German Grammar.* A study of the most characteristic features of German word and sentence structure, with reference to analogies in English. Prereq.: German 202 or equivalent. *3 h. c.*

330. *Contemporary German Literature.* Twentieth century writers and tendencies. Prereq.: German 202 or equivalent. *3 h. c.*

Greek

Associate Professors Richardson (chairman) and Ives.

A major in Greek is not offered, but credit in Greek may be counted toward a major in Latin and toward a combined major in classical studies (see Ancient Languages and Literature) or in humanities.

Lower Division Courses

101-102. *Elementary Greek.* Grammar, syntax, and simple composition; reading selections from various Greek writers and the New Testament. Introduction to Greek literature, history, and civilization; attention to the Greek element in the English language. *3 + 3 h. c.*

201, 202. *Greek Prose and Poetry.* Selections from prose writers and poets, including the dramatists, according to the needs and preferences of the class. Prereq.: Greek 101-102 or equivalent. *3 + 3 h. c.*

Upper Division Courses

301, 302. *Readings in Classical Greek Authors.* Readings from the principal Greek writers, selected with consideration for the students' tastes and interests. The course can be given on request by arrangement with the Director of the Division of Language and Literature. Prereq.: Greek 202 or equivalent, and consent of the instructor. *3 + 3 h. c.*

Health Education and Physical Education

Men's Section: Associate Professor Glenny; Assistant Professors Carson (department chairman) and Rosselli; Instructor Reilly; Mrs. Hunter, Mr. Pollock, Mrs. Reed, and staff.

Women's Section: Assistant Professors Laborde (supervisor), and Chuey; Instructors Reilly and Slaughter.

The Department of Health Education and Physical Education offers two types of courses: (1) those through which the general requirement in health and physical education is met; (2) those designed for the professional preparation of teachers of health education and/or physical education.

I. Required Courses

Every student seeking a degree from Youngstown University must earn a minimum of four semester hours of credit in health education and physical education. Of these, two hours are in health education (usually Health and Physical Education 109 [two credit hours]; the other two, normally, are in physical activity (four one-semester courses, each providing one-half hour of credit).

The form of activity is chosen by the student; previous experience in it is not necessary. For men it may, and for women it must, differ each semester. Members of the varsity baseball, basketball, football, golf, swimming, tennis, and track and field squads may receive physical activity credit through such participation.

Men and women students are scheduled in separate sections for Health and Physical Education 109. Activity courses may be taken separately or coeducationally, depending on the activity. A woman student purchases the required uniform through the women's section of the Department of Health Education and Physical Education; a man provides suitable clothing himself, but should consult his instructor first. Most of the other equipment for required physical activities is available for use without charge. A student wishing to use his own racket, golf clubs, bow, etc., may do so, but he is advised to consult his instructor before buying new equipment.

If a student is excused from the regular activity courses for any reason, the chairman of the department may substitute suitable courses. Evening students are ordinarily permitted such substitution if they prefer it. Handicapped students and those needing remedial work receive special attention.

In addition to the regular tuition charge ($8.00 for one half-hour of credit), there is a course fee for most half-hour activity courses taken.

Lower Division Courses Meeting the General Requirement

For Men

107M. *Health Education I.* Personal health and good community living, including study of such common disorders as heart disease, cancer, and tuberculosis, and of other communicable diseases and their control. Open only to students taking military science courses. Rosselli. *1 h. c.*

108M. *Health Education II.* Home nursing, including care of the sick and the sickroom, bedfast patients, and infants and children. Prereq.: Health and Physical Education 107M. Reilly or staff. *½ h. c.*

109M. *Health Education.* Personal health, mother and child care, and good community living, including study of such common disorders as heart disease, cancer, tuberculosis, other communicable diseases and their control. Not open to students who have had Health and Physical Education 107M and 108M. Reilly and staff *2 h. c.*

Activity courses:

116M. *Football.* Course requirements are met by completing a season of participation as a member of the intercollegiate football squad. Staff. *½ h. c.*

117M. *Basketball.* Course requirements are met by completing a season of participation as a member of the intercollegiate basketball squad. Staff. *½ h. c.*

118M. *Baseball.* Course requirements are met by completing a season of participation as a member of the intercollegiate baseball squad. Staff. *½ h. c.*

119M. *Track and Field.* Course requirements are met by completing a season of participation as a member of the intercollegiate track squad. Staff. *½ h. c.*

125M. *Gymnasium Sports.* Calisthenics and one or more of the following: basketball, soccer, softball, squash, swimming, touch football, volleyball. Two hours a week, at the Y. M. C. A. Fee: $2.50. Y. M. C. A. staff. *½ h. c.*

126M. *Beginning Wrestling.* Elements of wrestling, for Health and Physical Education majors or minors. Fee: $2.50. Staff. *½ h. c.*

135M. *Golf.* Course requirements are met by completing a season of participation as a member of the intercollegiate golf squad. Staff. *½ h. c.*

137M. *Tennis.* Course requirements are met by completing a season of participation as a member of the intercollegiate tennis squad. Staff. *½ h. c.*

152M. *Swimming.* Course requirements are met by completing a season of participation as a member of the intercollegiate swimming squad. Staff. *½ h. c.*

Coeducational

206C. *Health Principles.* The basic principles of personal and community health, including home nursing techniques. May be taken in place of Health and Physical Education 107 and 108 or 109 upon approval of the chairman of the Department of Health Education and Physical Education. Prereq.: sophomore standing. Reilly or Pollock. *2 h. c.*

213C. *Sports Appreciation.* The rules, mechanics, skills, social benefits, contemporary status, and other aspects of baseball, football, golf, tennis, skiing, sailing, fishing, and many other sports. Fee: $2.50. Carson or Hunter. *2 h. c.*

Activity courses:

120C. *A, B, C, D Adapted Activities.* Designed for students restricted from participation in the general program. Physical activities and recreational games are adapted to individual needs and capacities. Prereq.: recommendation of a physician and approval of the chairman of the department. Fee: $2.50. Staff. *½ h. c.*

130C. *Archery.* Techniques of target archery. Consideration is also given to the selection, care, and repair of equipment. Fee: $2.50. Staff. ½ *h. c.*

131C. *Badminton.* The skills, mechanics and rules of badminton. Fee: $2.50. Staff. ½ *h. c.*

132C. *Beginning Badminton and Archery.* The beginning skills and rules of badminton and of target archery. Fee: $2.50. Staff. ½ *h. c.*

134C. *Fencing.* Fundamentals of foil fencing. Basic techniques of attack and parry and elements of bouting and officiating. Fee: $2.50. Staff. ½ *h. c.*

135C. *Golf.* Fundamentals for beginning and intermediate golfers. Fee: $2.50. Staff. ½ *h. c.*

137C. *Beginning Tennis.* The skills, mechanics, and rules of tennis with emphasis on the doubles game. Fee: $2.50. Staff. ½ *h. c.*

153C. *Beginning Social Dance.* Designed for the student with no experience in ballroom dance. Emphasis is on the basic steps in the fox trot, waltz, tango, and rhumba. The polka, jitterbug, and other popular dance steps are also included. Fee: $2.50. Staff. ½ *h. c.*

155C. *Folk and Square Dance.* European folk dances and American square and couple dances. Stress is placed on the schottische, waltz, polka, and two-step. Fee: $2.50. Staff. ½ *h. c.*

157C. *Beginning Tap Dance.* Basic tap technique for the beginner. Fee: $2.50. Staff. ½ *h. c.*

160C. *Intermediate Modern Dance.* A continuation of Health and Physical Education 159W. Consideration is given to problems in composition. Prereq.: Health and Physical Education 159W or permission of the instructor. Fee: $2.50. Staff. ½ *h. c.*

For Women

107W. *Health Education I.* Principles of personal health, including posture and body mechanics, body care, nutrition, and the study of such common disorders as heart disease, cancer, tuberculosis and poliomyelitis. Open only to students who have entered the University before September, 1960. Reilly and staff. *1 h. c.*

108W. *Health Education II.* Home nursing, including care of the sick and the sickroom, bedfast patients, and infants and children. Open only to students who have taken Health and Physical Education 107W. Reilly and staff. ½ *h. c.*

109W. *Health Education.* Personal health, mother and child care, and good community living, including study of such common disorders as heart disease, cancer, tuberculosis, other communicable diseases and their control. Not open to students who have had Health and Physical Education 107W and 108W. Reilly and staff. *2 h. c.*

Activity courses:

100W. *Physical Activities.* Techniques and rules of field hockey, soccer, and volleyball. Prereq.: standing as a freshman physical education major or minor. Fee: $2.50. Staff. ½ *h. c.*

101W. *Physical Activities.* Techniques and rules of bowling, basketball, and softball. Prereq.: standing as a freshman physical education major or minor. Fee: $2.50. Staff. ½ *h. c.*

110W. *Team Sports.* Techniques and rules of playing field hockey or soccer and volleyball. Fee: $2.50. Staff. ½ *h. c.*

111W. *Team Sports.* Techniques and rules of playing basketball and softball. Fee: $2.50. Staff. ½ *h. c.*

120W. *A, B, C, D Adapted Activities.* Designed for students restricted from participation in the general program. Physical activities and recreational games are adapted to individual needs and capacities. Prereq.: recommendation of a physician and approval of the supervisor of the women's section of the department. Fee: $2.50. Staff. ½ *h. c.*

130W. *Archery.* Techniques of target archery. Consideration is also given to the selection, care, and repair of equipment. Fee: $2.50. Staff. ½ *h. c.*

131W. *Badminton.* The skills, mechanics, and rules of badminton. Fee: $2.50. Staff. ½ *h. c.*

132W. *Beginning Badminton and Archery.* The beginning skills and rules of badminton and of target archery. Fee: $2.50. Staff. ½ *h. c.*

133W. *Beginning Bowling.* Fundamentals of bowling, including equipment selection, use of the straight ball delivery, and scoring. For the inexperienced bowler. Fee: $2.50. Staff. ½ *h. c.*

134W. *Beginning Fencing.* Fundamentals of foil fencing. Basic technique of attack and parry, and elements of bouting and officiating. Fee: $2.50. Staff. ½ *h. c.*

136W. *Gymnastics, Apparatus, Stunts, and Tumbling.* Gymnastic exercises, stunts, and tumbling activities. Instruction in apparatus includes the horse, box, ropes, trampoline, and buck and parallel bars. Fee: $2.50. Staff. ½ *h. c.*

137W. *Beginning Tennis.* The skills, mechanics, and rules of tennis with emphasis on the doubles game. Fee: $2.50. Staff. ½ *h. c.*

145W. *Beginning Swimming.* Adjustment to the water, fundamental skills, elementary backstroke, front crawl, and elementary water safety. For non-swimmers. Fee: $2.50. Staff. ½ *h. c.*

146W. *Intermediate Swimming I.* Proper form of the elementary back stroke, sidestroke, breast stroke, back crawl and front crawl, elementary diving, and personal safety. Prereq.: Health and Physical Education 145W or the equivalent. Fee: $2.50. Staff. ½ *h. c.*

147W. *Intermediate Swimming II.* Continuation of Intermediate Swimming I, with consideration given to the proper form for the trudgeon, trudgeon crawl, overarm sidestroke, inverted breast stroke, and the variations of the nine basic styles of swimming. Emphasis is placed on improving endurance as well as form. Prereq.: Health and Physical Education 146W or the equivalent. Fee: $2.50. Staff. ½ *h. c.*

148W. *Advanced Swimming.* Synchronized swimming and elements of plain and fancy diving, including the competitive aspects of swimming and diving. Prereq.: Health and Physical Education 147W or the equivalent. Fee: $2.50. Staff. ½ *h. c.*

153W. *Beginning Social Dance.* Designed for the student with no experience in ballroom dance. Emphasis is on the basic steps in the fox trot, waltz, tango, and rhumba. The polka, jitterbug, and other popular dance steps are included. Fee: $2.50. Staff. ½ *h. c.*

155W. *Folk and Square Dance.* European folk dances and American square and couple dances. Stress is placed on the schottische, waltz, polka, and two-step. Fee: $2.50. Staff. ½ *h. c.*

157W. *Beginning Tap Dance.* Basic tap technique for the beginner. Fee: $2.50. Staff. ½ *h. c.*

159W. *Beginning Modern Dance.* Fundamental movement techniques, elements of rhythmic and musical patterns. Basic composition. Fee: $2.50. Staff. ½ *h. c.*

160W. *Intermediate Modern Dance.* A continuation of Health and Physical Education 159W. Consideration is given to problems in composition. Prereq.: Health and Physical Education 159W or permission of instructor. Fee: $2.50. Staff. ½ *h. c.*

II. Professional Courses

Youngstown University is fully approved by the Ohio State Department of Education for the preparation of health education and physical education teachers for public schools. The major may be in either health education or physical education.

For Men

Lower Division Course

250M. *Life-Saving Methods.* Techniques of life-saving, with American Red Cross methods as the basis of instruction. Upon satisfactory completion, Red Cross certification is granted. Three class hours a week. Prereq.: permission of instructor. *1 h. c.*

Upper Division Courses

309M. *Intramural Sports: Organization and Administration.* The principles and problems of conducting an intramural sports program, including pupil participation, awards, tournaments, types of officiating, publicity, sportsmanship, and other details. Rosselli. *3 h. c.*

311M-312M. *Teaching of Individual and Dual Sports.* Methods of playing and teaching various individual and dual sports, including tennis, badminton, fencing, free exercise, stunts, tumbling, apparatus activities and archery. Prereq.: sophomore rank. Fee: $2.50 each semester. Carson. *3 + 3 h. c.*

350M. *Water Safety Methods for Instructors.* Techniques of organizing and teaching swimming, diving, and life-saving activities. Red Cross instructor's certificate is awarded upon satsfactory completion. Prereq.: current certification as Red Cross Senior Life Saver. Staff. *2 h. c.*

369M. *Camping.* This course is designed to give the student experience in outdoor living and an insight into problems of camping trips. Particular attention is given to the care and handling of camping equipment canoeing, outdoor cooking, study of wildlife, fishing, and fire prevention and control, as well as selection and preparation of camp sites. The course has a duration of two weeks in Canada. Prereq.: permission of instructor. Fee: Special. Glenny. *2 h. c.*

370M. *Theory of Camp Counseling.* Camp administration, program planning, objectives, and campcraft as related to camp leadership. Trips to nearby camps and camp sites afford practical experience. Prereq.: permission of instructor. Fee: $2.50. Staff. *3 h. c.*

403M. *Health and Physical Education: Organization and Administration.* Study and practice of techniques involved in the organization and administration of the school health education and physical education program. Prereq.: Health and Physical Education 303C. Carson. *3 h. c.*

409M. *Coaching of Baseball and Track and Field.* Prereq.: Health and Physical Education 312M. Carson and Rosselli. *3 h. c.*

410M. *Coaching of Football and Basketball.* Prereq.: Health and Physical Education 312M. Carson and Rosselli. *3 h. c.*

418M. *Remedial and Corrective Physical Education.* The organization of physical education programs adapted to the individual needs of handicapped persons. Consideration of abnormal conditions such as posture defects, cardiac defects, foot defects, post-operative cases, and certain orthopedic conditions. Evaluation of therapeutic exercises and activities. Prereq.: Health and Physical Education 417C. Fee: $2.50. Carson. *3 h. c.*

427M. *Seminar in Athletics.* Study of special problems pertaining to athletics. Prereq.: senior standing. Staff. *2 h. c.*

For Men and Women

Lower Division Courses

200C. *Introduction to Health, Physical Education, and Recreation.* A content survey of the areas of health, physical education, and recreation. Introduction to professional preparation. Prereq.: Education 101. Laborde. *2 h. c.*

201C. *First Aid and Care of Athletic Injuries.* Accident prevention and first aid procedures, especially for injuries common in physical activities. Principles and methods of athletic taping. The American Red Cross manual is followed. Standard, advanced and instructor's certification are granted upon satisfactory completion. Reed. *2 h. c.*

303C. *History and Principles of Health and Physical Education.* The historical development and biological, sociological, psychological, and educational principles related to the field of health and physical education. Prereq.: Biology 103, Psychology 202, and junior standing. Carson or Laborde. *3 h. c.*

306C. *Advanced Health Education.* Personal and community health, disease control, mental and social hygiene, nutrition and family living. The course includes materials necessary for teachers of school health and hygiene courses. Prereq.: standing as sophomore health education or physical education major or minor. Laborde. *3 h. c.*

307C. *Community Health Agencies.* The administrative interrelationships of special agencies dealing with community health. Prereq.: Health and Physical Education 306C. Laborde. *2 h. c.*

321C. *Health Education in Elementary Schools.* Methods and materials for health instruction; use and administration of health services; maintenance of health factors in the schoolroom; recognition of common disorders in children. Prereq.: junior standing and Health and Physical Education 107 and 108 or 109 or 206C. Pollock. *2 h. c.*

322C. *Physical Education for Elementary Grades.* Study of an extensive program of low-organization games, rhythms, plays, and stunts, their purposes, and methods of teaching them to children. The teacher-in-training learns the games and participates in them. Prereq.: sophomore standing. Fee: $2.50. Chuey or Slaughter. *2 h. c.*

404C. *Playgrounds: Organization and Administration.* Study and practice of techniques involved in the organization and administration of playgrounds. Prereq.: junior standing. Staff. *3 h. c.*

405C. *Recreational Activities: Organization and Administration.* The relation of physical education to recreation. The principles and aims of recreation; finding material for recreational group activities, and organizing and administering them. Prereq.: junior standing. Fee: $2.50. Carson. *3 h. c.*

415C. *School Health Education.* Principles, curriculum planning, teaching methods, evaluation, organization and administration of health education in elementary and secondary schools. Prereq.: Health and Physical Education 306C. Pollock. *4 h. c.*

417C. *Kinesiology and Applied Anatomy.* Muscular structure and function in relation to physical movement; analysis of fundamental movements. Prereq.: Biology 230. Fee: $2.50. Laborde. *2 h. c.*

419C. *Teaching of Rhythmic Activities I.* Rhythm and movement fundamentals; methods and materials of teaching folk, square, and social dance. Prereq.: Health and Physical Education 312M or 312W. Fee: $2.50. Staff. *3 h. c.*

420C. *Teaching of Rhythmic Activities II.* Methods and materials of teaching tap and modern dance. Prereq.: Health and Physical Education 419C. Fee: $2.50. Staff. *3 h. c.*

425C. *Seminar in Physical Education.* Study of special problems pertinent to physical education. Prereq.: senior standing. Staff. *2 h. c.*

426C. *Seminar in Health Education.* Study of special problems pertinent to health education. Prereq.: senior standing. Staff. *2 h. c.*

428C. *Normal and Physical Diagnosis.* A study of common physical deficiencies and defects that influence physical, mental, and social development. Techniques of conducting health examinations, clinical services, and other procedures. Prereq.: Health and Physical Education 418M or 418W. Staff. *2 h. c.*

465C. *Communicable Diseases.* The study of common communicable diseases and regional health problems: a study of pathogenic bacteria, protozoa, parasitic worms, and insect or arthropod vectors of diseases: a consideration of factors in and methods of control of human communicable diseases. Three one-hour discussion and three one-hour periods of demonstration and laboratory study each week. Fee: $2.50. Glenny. *4 h. c.*

466C. *Public Health and Sanitation.* The study of community problems in sanitation and public health: a study of community health institutions and agencies, including water supply and distribution, sewage disposal, milk and restaurant inspection, school and public health nursing programs: study of special wards, hospitals, and clinics for the care and treatment of communicable diseases. Two three-hour periods of field work and experience each week, to provide for adequate field observation and training in recognition of communicable diseases and problems. Field trip fee: $2.50. Glenny. *2 h. c.*

For Women

Lower Division Course

250W. *Life-Saving Methods.* Techniques of life-saving, with American Red Cross methods as the basis of instruction. Upon satisfactory completion, Red Cross certification is granted. Three class hours a week. Prereq.: permission of instructor. Fee: $2.50. Staff. *1 h. c.*

Upper Division Courses

311W-312W. *Teaching of Individual and Dual Sports.* Methods of playing and teaching various individual and dual sports including tennis, badminton, fencing, free exercise, stunts, tumbling, apparatus activities, and archery. Prereq.: sophomore rank. Fee: $2.50 each semester. Laborde and staff. *3 + 3 h. c.*

350W. *Water Safety Methods for Instructors.* Techniques of organizing and teaching swimming, diving, and life-saving activities. Red Cross instructor's certificate is awarded upon satisfactory completion. Prereq.: current certification as Red Cross Senior Life Saver. Staff. *2 h. c.*

370W. *Theory of Camp Counseling.* Camp administration, objectives, activities, program planning, and campcraft as related to camp leadership. Trips to nearby camps and camp sites afford practical experience. Prereq.: junior standing and permission of instructor. Fee: $2.50. Laborde. *3 h. c.*

371W. *Practice of Camp Counseling.* Application of camp leadership skills is emphasized. Supervised counseling is afforded the student through co-operation with nearby camps. Prereq.: Health and Physical Education 370W and permission of instructor. Laborde. *1 to 6 h. c.*

403W. *Health and Physical Education: Organization and Administration.* Study and practice of techniques involved in the organization and administration of the school health education and physical education program. Prereq.: Health and Physical Education 303C. Fee: $2.50. Laborde. *3 h. c.*

407W-408W. *Techniques of Officiating.* The theory and practice of officiating in field hockey, soccer, basketball, volleyball, softball, tennis, and badminton. Fee: $2.50 each semester. Staff. *2 + 2 h. c.*

411W-412W. *Teaching of Team Sports.* The theory and practice of teaching field hockey, soccer, basketball, volleyball, softball, and track and field. Prereq.: Health and Physical Education 312C. Fee: $2.50 each semester. Laborde and staff. *3 + 3 h. c.*

418W. *Remedial and Corrective Physical Education.* The organization of physical education programs adapted to the individual needs of handicapped persons. Consideration of abnormal conditions such as posture defects, cardiac defects, foot defects, dysmenorrhea, post-operative cases, and certain orthopedic conditions. Evaluation of therapeutic exercises and activities. Prereq.: Health and Physical Education 417C. Fee: $2.50. Staff. *3 h. c.*

470W. *Seminar in Camp Administration.* Study of special problems pertinent to camp administration. Prereq.: senior standing. Staff. *2 h. c.*

Curriculum

(For the MAJOR in Health Education and Physical Education)

Curriculum Leading to the Degree of Bachelor of Science in Education and an Ohio Provisional Special Certificate for Teaching Health Education and Physical Education in Grades 1 through 12.

First Year	Hrs.
Biol. 103 General Biology	3
Biol. 225 Zoology: Vertebrate	3
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
H. & P. E. 200C Introduction to Health Ed., Physical Ed., and Recreation	2
Psych. 201 General Psychology	3
Soc. Sci. 101, 102 Introduction to the Social Sciences	6
*H. & P. E. activity courses (4)	2
Orientation 100	1
Elective	3
	30

Second Year	Hrs.
Biol. 230 Anatomy and Physiology I	3
Biol. 250 Anatomy and Physiology II	3
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206, 251 or 275	3
**H. & P. E. 201C First Aid and Care of Athletic Injuries	2
†H. & P. E. 306C Advanced Health Education	3
H. &. P. E. 311M-312M or 311W-312W Teaching of Individual and Team Sports	6
H. & P. E. 322C Physical Education for Elementary Grades	2
Hist. 201, 202 The United States	6
Psych. 202 Psychology of Education	3
	34

Third Year (Men)	Hrs.
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Educ. 308 Educational Psychology	2
H. & P. E. 201C First Aid and Care of Athletic Injuries	2
H. & P. E. 303C History and Principles of Health and Physical Ed.	3
H. & P. E. 307C Community Health Agencies	2
H. & P. E. 309M Intramural Sports	3
H. & P. E. 370M Theory of Camp Counseling, 404C Playgrounds, or 405C Recreational Activities	3
H. & P. E. 409M Coaching of Baseball and Track and Field	3
H. & P. E. 410M Coaching of Football and Basketball	3
H. & P. E. 417C Kinesiology and Applied Anatomy	2
H. & P. E. 418M Remedial and Corrective Physical Education	3
	31

Third Year (Women)	Hrs.
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Educ. 308 Educational Sociology	2
H. & P. E. 303C History and Principles of Health and Physical Ed.	3
H. & P. E. 307C Community Health Agencies	2
H. & P. E. 370W Theory of Camp Counseling	3
H. & P. E. 407W-408W Techniques of Officiating	4
H. & P. E. 411W-412W Teaching of Team Sports	6
H. & P. E. 417C Kinesiology and Applied Anatomy	2
H. & P. E. 418W Remedial and Corrective Physical Education	3
	30

Fourth Year	Hrs.
Educ. 404 Student Teaching	6
H. & P. E. 403M or 403W Health and Physical Ed: Organization and Administration	3
H. & P. E. 415C School Health Education	4
H. & P. E. 419C Teaching of Rhythmic Activities I	3
††H. & P. E. 420C Teaching of Rhythmic Activities II	3
Philosophy and Religion elective or Humanities 401 or 402	3
‡Psych. 305 Child Psychology or Psych. 306 Psychology of Adolescence	3
Psych. 308 Personality and Mental Hygiene	3
‡‡Electives	2-6
	30-31

*For women, one of the activity courses is Health and Physical Education 100W or 101W.

**Not taken by men in this year; the total for men is thus 32 hours.

†Students taking Health and Physical Education 306C are exempt from the general requirement of Health and Physical Education 109M or 109W.

††Men are not required to take Health and Physical Education 420C.

‡Women may take Health and Physical Education 428C, Normal and Physical Diagnosis (two hours) instead of Psychology 305 or 306, thus making the total 29 or 30 hours.

‡‡For men, electives in the senior year amount to six hours; for women, electives are two or three hours.

Courses for the MINOR in Health Education and Physical Education Leading to the Degree of Bachelor of Science in Education and an Ohio Provisional High School Certificate with a Teaching Field Limited to High School Education and Physical Education

Course or Subject	Hours
Group A	
(Biological Life Sciences: Biology, Zoology, Comparative Anatomy, Human Anatomy, and Physiology)	
Biology 103, General Biology	3
Biology 225, Zoology: Vertebrates	3
Biology 230, Anatomy and Physiology I	3
Biology 250, Anatomy and Physiology II	3
Group B	
(Principles, Organization, and Administration of Physical Education, including Athletics, Recreation, and Intramural Sports)	
Health and Physical Education 403M or 403W Organization and Administration of Health Education and Physical Education	3
Group C	
(Methods and Materials in Rhythms, Games of Low Organization, Stunts, Tumbling, Apparatus, Recreational Group Activities, and Elementary Activities)	
Health and Physical Education 311M-312M or 311W-312W, Teaching of Individual and Dual Sports	6
Health and Physical Education 322C Physical Education for Elementary Grades	3

Group D

(Methods and Materials in Dance, Athletic Sports, including Football, Basketball, Baseball, Track, Tennis, Golf, Swimming, Soccer, Speedball, Volleyball and others commonly used in Secondary and College Programs)

Health and Physical Education 409M, Coaching of Baseball and Track and Field (for men) 3
Health and Physical Education 410M, Coaching of Football and Basketball (for men) 3
Health and Physical Education 411W-412W, Teaching of Team Sports (for women) 6
Health and Physical Education 419C, Teaching of Rhythmic Activities I 3

Group E

(Principles, Organization, and Administration of School Health Education, including School and Community Relationships, Methods and Materials for Teaching Health, and Evaluation)

Health and Physical Education 415C, School Health Education 4

Group F

(Personal and Community Hygiene, Nutrition, Disease Prevention and Control, Mental and Emotional Health, Accident Prevention and Control, Health Factors in Marriage and Problems of Medical Care)

Health and Physical Education 201C, First Aid and Care of Athletic Injuries 2
Health and Physical Education 306C, Advanced Health Education 3

Hebrew

Associate Professor Richardson (chairman); Lecturer Dunetz.

Lower Division Courses

101-102. *Elementary Hebrew.* Fundamental principles of grammar and the reading of simple prose, in preparation for reading narrative portions of the first five books of the Old Testament. Introduction to elementary conversational Hebrew. *3 + 3 h. c.*

201-202. *Intermediate Hebrew.* Reading of selections from the Book of Genesis. Acquisition of a sufficient vocabulary for simple conversation in Hebrew. Prereq.: Hebrew 101-102 or equivalent. *3 + 3 h. c.*

History

Professor Behen (chairman); Associate Professors Fulkerson and Low; Assistant Professors Dobbert, Dodd, Johnson, and Skardon; Mrs. Behen, Mr. Darling, Dr. Garcia, Mr. Hallaman, Mr. Nolfi, and Mr. Slavin.

A major in history consists of thirty semester hours including History 201 and 202 and two courses from each of the three following groups:

Group A—History 105, 106, 107.
Group B—History 252, 302, 304, 305, 309, 310, 317, 318, 319, 325, 333, 376, 390.

Group C—History 213, 214, 254, 304, 305, 306, 307, 308, 313, 321, 322, 352, 360, 364, 368.

It is recommended that the student in choosing his electives should acquire as broad a background as possible in the social sciences and the humanities. Particular attention is called to courses offered by the departments of English, Economics, Political Science, Philosophy, Art, Music, Geography, and Sociology, and to the Humanities courses. Students contemplating graduate work in history should consider taking more foreign language courses than the minimum necessary to meet the general degree requirement. Finally, the student is reminded that the Department of History takes seriously the University's emphasis on the importance of adequate competence in the English language (see "Proficiency in English," page 50); when there is need, students majoring in history should include in their programs advanced composition courses and courses in speech.

Lower Division Courses

105, 106. *History of Western Civilization.* The development of Western culture from its earliest appearance in a civilized form in the Near East down to the present day, with emphasis upon Europe. Fulkerson and Dobbert. *3 + 3 h. c.*

107. *Eastern Civilizations.* A brief survey of the Far East, Southeast Asia, the Middle and Near East, and North Africa, with emphasis on the nineteenth and twentieth centuries. Low. *3 h. c.*

200. *American Military History, 1607 to the Present.* A military history of the United States from 1607 to the present, including the social, political, and economic aspects during the period. Listed also as Military Science 200. Staff. *3 h. c.*

201. *The United States to 1865.* The general, political, social, and economic development of the United States from the beginning of our history to the end of the Civil War. Listed also as Social Science 201. Staff. *3 h. c.*

202. *The United States Since 1865.* A continuation of History 201, emphasizing the period following the Civil War. Listed also as Social Science 202. Staff. *3 h. c.*

213, 214. *English History.* From the earliest times to the present, with emphasis on social, industrial, and commercial development, the growth of parliament, the contest for religious freedom, and the literary and intellectual development of the British people. Fulkerson. *3 + 3 h. c.*

252. *Latin America.* A survey of Latin America from the European conquest to the present, emphasizing political, economic, cultural, and social developments. Garcia. *3 h. c.*

254. *Modern Spain.* A survey of Spanish history from the Middle Ages to the present. Garcia. *3 h. c.*

Upper Division Courses

302. *Economic History of the United States.* The economic development of the United States from Colonial times to the present, emphasizing the influence of economic forces on society and the individual. Prereq.: History 201 and 202. Behen and Dodd. *3 h. c.*

304, 305. *International Relations.* Identical with Political Science 304, 305. *3 + 3 h. c.*

306, 307. *Constitutional History of England.* The unfolding of Anglo-Saxon governmental and legal institutions from early Germanic times to the present day. Development of the court system, common law, rep-

resentative government, the cabinet system, and imperial federation. Especially recommended to pre-law and political science students. Prereq.: junior standing or consent of instructor. History 306 is prerequisite to 307. Fulkerson. *3 + 3 h. c.*

308. *The Far East.* A brief survey of the early history and civilization of China, Japan, and their dependencies, followed by a more detailed study since the mid-nineteenth century, with emphasis on East-West relationships. Prereq.: History 107 or consent of instructor. Low. *3 h. c.*

309, 310. *Constitutional History of the United States.* Identical with Political Science 309, 310. *3 + 3 h. c.*

313. *Medieval Civilization.* A political, economic, intellectual, and cultural history of Europe from the Germanic invasions to the High Middle Ages (400 to 1500). Prereq.: History 105 or consent of instructor. Dobbert. *3 h. c.*

317. *Civil War and Reconstruction.* An intensive study of the Union's disintegration and reconstruction beginning with the Compromise of 1850 and ending with the election of Cleveland in 1884. Prereq.: History 201 and 202. Skardon. *3 h. c.*

318. *The United States Since 1900.* The period from the Peace of Versailles to the present is emphasized, with special attention to economic problems and the New Deal. Prereq.: History 201 and 202. Behen, Mrs. Behen. *3 h. c.*

319. *The Revolution and the Constitution.* A brief survey of the colonial background, the causes and events of the Revolution, the conditions leading to the Convention of 1787, and the formation of the Constitution. Prereq.: History 201 and 202. Behen, Fulkerson. *3 h. c.*

321. *Europe in the Nineteenth Century.* Europe from the Congress of Vienna to the First World War, with emphasis on the rise of modern nationalism, the march of liberalism and democracy, and the growth of imperialism. Prereq.: History 106 or consent of instructor. Low. *3 h. c.*

322. *The Renaissance and Reformation.* A political, cultural, economic, and intellectual history of Europe from the High Middle Ages to the end of the religious wars. Prereq.: History 105 or 106 or consent of instructor. Dobbert. *3 h. c.*

325. *The West in American History.* A study of the advancing frontier from colonial times to the twentieth century, with attention to the interaction of East and West in diplomatic, political, economic, social, and intellectual history. Prereq.: History 201 and 202. Behen, Mrs. Behen. *3 h. c.*

333. *History of the United States and Pennsylvania.* The history of the State of Pennsylvania with emphasis on its position in general American history. Prereq.: History 201 and 202. Behen. *3 h. c.*

352. *Classical Civilization.* A survey of the political, economic, intellectual, and cultural achievements of the Greek and Roman world and its contributions to modern life. Prereq.: History 105 or consent of instructor. Dobbert. *3 h. c.*

360. *Europe from Westphalia to Waterloo.* A political, economic, intellectual, and cultural history of Europe from 1648 to 1815 with special emphasis on the French Revolutionary and Napoleonic periods. Prereq.: History 106 or consent of instructor. Dobbert, Slavin. *3 h. c.*

364. *Russia in the Twentieth Century.* The history of Tsarist Russia from the turn of the century; the Revolution of 1917; the political, economic, social, and intellectual development of Russia in the Soviet period, and its emergence as a world power. Prereq.: History 106 or consent of instructor. Low. *3 h. c.*

368. *Europe in the Twentieth Century.* Europe excluding Russia, with emphasis on the period after 1918, the coming of the Second World

War, its aftermath, and the beginnings of European integration. Prereq.: History 106 or consent of instructor. Low. *3 h. c.*

376. *The Early National Period.* An intensive study of the United States from the establishment of the national government in 1789 to the beginning of the Union's disintegration around 1850. Prereq.: History 201 and 202. Skardon. *3 h. c.*

388. *The History of American Business.* A study of American business in its historical setting from the colonial period to the present, with emphasis on the interaction of economic and political factors. Prereq.: History 201, 202 or the equivalent, and junior standing. Behen. *3 h. c.*

390. *Diplomatic History of the United States.* An historical survey of the development, major trends, and problems of the foreign relations of the United States. Identical with Political Science 390. Prereq.: History 201 and 202. Behen. *3 h. c.*

Home Economics

Assistant Professor Feldmiller; Mrs. Houston, Mrs. Hugli, and Mrs. Love

The Department of Home Economics offers opportunities both for the student who wishes a general knowledge of the field as a preparation for homemaking and for the student who wishes to prepare for a profession.

For those who wish to qualify for teaching home economics in the secondary schools, courses are offered leading to the degree of Bachelor of Science in Education with a major in home economics. Such a student, in addition to the general requirements for that degree, must complete the following courses:

Biology 160 and 250
Chemistry 101 and 209
Education 101, 301, 304, and 404
Home Economics 101, 101L, 103, 201, 202, 204, 301, 303, 304, 305, 307, 400, 402 and 450
Psychology 201 and 202

The student should also read carefully the information provided in the School of Education section on the requirements of that school and of the State of Ohio for certification as a teacher.

For those interested in careers in dietetics or nutrition, courses are offered leading to the degree of Bachelor of Science with the major in food and nutrition. For this purpose the student, besides meeting all general requirements for the Bachelor of Science degree, must complete the following courses:

Biology 160 and 250
Chemistry 100 and 209.
Home Economics: 35 semester hours, including 101, 101L, 201, 202, 303, 309, 310, 407, 408, 409, 410, and 450
Psychology 201 and 202

Lower Division Courses

101. *Food and Nutrition.* The fundamentals of human nutrition as they apply to normal requirements. Study of the body's need for essential nutrients, the contributions of various food groups, the selection of an adequate diet, and the importance of diet in achieving and maintaining optimum health. Feldmiller. *2 h. c.*

101L. *Food and Nutrition Laboratory.* Application of the basic principles of nutrition in the selection and preparation of the foods commonly served for the three meals of the day. Experience in planning and preparing simple meals to provide an adequate diet. One two-hour laboratory period a week. Taken concurrently with Home Economics 101. Fee: $5.00. Feldmiller. *1 h. c.*

103. *Clothing Selection and Construction.* Designed to assist the student in analyzing personal and family resources and needs in the selection, purchase, use, and care of the wardrobe. Study and use of the commercial pattern and the fundamental processes and problems in the construction of simple garments. Two one-hour lectures and one two-hour laboratory period a week. Love. *3 h. c.*

201. *Principles of Food Preparation.* The basic principles and comparative methods in the preparation of commonly used foods. Two one-hour lectures and two two-hour laboratory periods a week. Prereq.: Home Economics 101 and 101L. Fee: $5.00. Feldmiller. *4 h. c.*

202. *Family Meal Planning and Service.* Principles of menu planning and table service for the family and for special occasions at various economic levels. One one-hour lecture and two two-hour laboratory periods a week. Prereq.: Home Economics 201. Fee: $5.00. Feldmiller. *3 h. c.*

204. *Advanced Clothing Construction.* Planned to develop greater understanding and proficiency in the selection, fitting, and construction of garments to meet individual needs. Construction of garments requiring more difficult techniques. One one-hour lecture and two two-hour laboratory periods a week. Prereq.: Home Economics 103. Love. *3 h. c.*

Upper Division Courses

301. *Textiles.* A basic study of fibers, yarns, fabric construction, and finishes and their importance in the selection, purchase, care, and serviceability of textiles for clothing and home use. Two one-hour lectures and one two-hour laboratory period a week. Prereq.: Home Economics 103. Feldmiller. *3 h. c.*

302. *Design and Flat Pattern-Making.* Planned to develop greater understanding and skill in the designing, fitting, and construction of garments. Making of a basic pattern and the creation of new designs by use of it. One one-hour lecture and two two-hour laboratory periods a week. Prereq.: Home Economics 204 and 301 Feldmiller. *3 h. c.*

303. *Household Equipment.* The selection, care, and use of various items of household equipment, with comparison of the merits of different types in respect to materials, design, cost, and performance. Two one-hour lectures and one two-hour laboratory period a week. Prereq.: consent of the instructor. Feldmiller. *3 h. c.*

304. *Home Furnishings.* The fundamentals and principles involved in the judicious selection and arrangement of home furnishings. Consideration is given to family needs and resources, aesthetic principles, and the importance of planning in furnishing the home attractively. Two one-hour lectures and one two-hour laboratory period a week. Prereq.: consent of the instructor. Feldmiller. *3 h. c.*

305. *Child Development.* Identical with Psychology 305 except for the addition of directed observation. Staff. *4 h. c.*

307. *Marriage and Family Relations.* Identical with Psychology 307. Listed also as Sociology 307. Staff. *3 h. c.*

309. *Advanced Nutrition.* Designed to broaden and extend the student's knowledge of the science of nutrition, with special emphasis on food nutrients, the metabolism of food, and recent advances in the field of nutrition. Prereq.: Biology 250, Chemistry 209, and Home Economics 202. Houston. *3 h. c.*

310. *Diet in Disease.* The modifications and adaptations of normal diets to meet the special nutritional needs in abnormal conditions where choice of food is of particular importance. Prereq.: Home Economics 309. Staff. *3 h. c.*

400. *Methods of Teaching Home Economics.* A study of the problems involved in teaching home economics in junior and senior high schools. Observation of teaching in the public schools. Prereq.: Education 301 and 15 hours of credit in home economics. Feldmiller. *3 h. c.*

402. *Home Management.* Study of the home, its functions, operation, and the resources available for promoting family well-being and satisfaction. Prereq.: Home Economics 303 and 304. Feldmiller. *3 h. c.*

407. *Institutional Marketing and Equipment.* The selection and purchase of food and equipment for institutional food service with consideration of needs, quality, cost, and market practices. Two two-hour class periods and one two-hour laboratory period a week. Prereq.: junior or senior standing as food and nutrition major. Staff. *3 h. c.*

408. *Quantity Cookery.* Study and use of large equipment and the application of the principles of cookery in planning, preparing, and serving food for institutions. Six laboratory-discussion hours a week. Prerequisite or concurrent: Home Economics 407. Fee: $5.00. Staff. *3 h. c.*

409. *Institutional Management.* The principles of business organization and management as applied to problems of institutional food service. Six laboratory-discussion hours a week. Prereq.: Home Economics 408. Fee: $5.00. Staff. *3 h. c.*

410. *Experimental Cookery.* Application of scientific principles and experimental procedures to cooking and to cooking processes. Two two-hour laboratory periods a week. Prereq.: Chemistry 209 and Home Economics 202. Fee: according to materials used. Hugli. *2 h. c.*

450. *Seminar in Home Economics.* Required of all seniors majoring in home economics. Prereq.: senior standing and consent of the instructor. Feldmiller. *1 h. c.*

Humanities

Professor Dykema (chairman); Associate Professor Ives.

The material of the four Upper Division courses in Humanities is drawn from the great writings of Western culture. The primary purpose of the readings is to arouse the students morally, intellectually, and aesthetically through the stimulus of these writings. An important secondary purpose is to acquaint them with a body of writing which has been extremely influential in the development of Western culture and to relate that material to the society in which it was produced and to our present society.

Full credit in all humanities courses is acceptable toward a major in English. Credit in Humanities 401, 402, 403, and 404 is acceptable toward a major in any of the following subjects, to the extent indicated: history, 1/3 credit; philosophy, 1/3 credit; political science, 1/6 credit; sociology, 1/6 credit. Should a student be doing major work in both English and one of the other departments mentioned, he may (a) apply credit in humanities courses entirely toward his English major, or (b) apply part of it toward his other major and the balance toward his English major. Humanities 401 and 402 give full credit toward the general requirement in religion.

Lower Division Course

201. *Mythology in Literature.* An introductory study of myths, chiefly classical, with some attention to their origins and cultural significance, and of works of literature, both classical and modern, in which myths are used. Prereq.: Communication 107 or equivalent with grade of C. *3 h. c.*

Upper Division Courses

401. *Older Classics I.* Extensive readings in English from most or all of the following (and perhaps others): The Old Testament, Homer, Greek lyric poetry, Greek drama, Herodotus, Thucydides, Plato, Aristotle, Roman poets, Plutarch. Prereq.: junior or senior standing. *3 h. c.*

402. *Older Classics II.* Extensive readings in English from most or all of the following (and perhaps others): The New Testament, Plato, Aristotle, Cicero, Lucretius, Virgil, Horace, Ovid, Augustine, Dante, Boccaccio, Chaucer, Machiavelli, Erasmus, More, Rabelais, Montaigne, Cervantes. Prereq.: junior or senior standing. *3 h. c.*

403. *Early Modern Classics.* Shakespeare, Descartes, Milton, Molière, Spinoza, Locke, Lessing, Voltaire, Fielding, Rousseau, Adam Smith, Gibbon. Prereq.: junior or senior standing. *3 h. c.*

404. *Later Modern Classics.* Goethe, Balzac, Mill, Thackeray, Dostoevsky, Huxley, Ibsen, Tolstoy, Henry Adams, Hardy, William James, Shaw. Prereq.: junior or senior standing. *3 h. c.*

Combined Major in Humanities

A combined major in humanities consists of Humanities 401, 402, 403, and 404, and 33 hours chosen from the following courses:

English 101-102 (or its equivalent), 200, 203, 204, 205, 206, 275, 381, 382, 383, 400, 405, 406, 407, 412, 461, 471, 481, 491, 492, 493.
French 101-102, 201, 202, 328, 330.
German 101-102, 201, 202, 325, 328, 330.
Greek 101-102, 201, 202, 301, 302.
Humanities 201.
Italian 101-102, 201, 202, 328, 330.
Latin 101-102, 201, 202, 301, 302, 304, 305, 401, 402, 403, 405.
Philosophy and Religion 230, 303, 309, 330.
Russian 101-102, 201, 202, 305, 306, 307.
Spanish 101-102, 201, 202, 301, 302, 401, 403, 404, 405, 406, 407.
Courses (totaling not more than nine hours) in certain related fields, such as history, with the approval of the adviser.

Of these, 15 hours must constitute a concentration unit chosen from one of the following groups:

a. English 200, 203, 204, 205, 206, 275, 381, 382, 383, 400, 405, 406, 407, 412, 461, 471, 481, 491, 492, 493.

b. French 328, 330; German 325, 328, 330; Italian 328, 330; Russian 305, 306, 307; Spanish 301, 302, 401, 403, 404, 405, 406, 407.

c. Greek 201, 202, 301, 302; Latin *201, *202, 301, 302, 304, 305, 401, 402, 403, 405; Philosophy and Religion 230, 303, 309, 330.

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*At the discretion of the adviser.

Italian

Associate Professor Richardson (chairman); Mr. Polito.

A major in Italian consists of 24 semester hours above the elementary level, plus 6 hours in Latin, French, or Spanish. For a combined major in humanities, see Humanities.

The prerequisite for any Upper Division course is either Italian 202 (or its equivalent) or the consent of the instructor. Freshmen who satisfy this prerequisite may enter Upper Division courses.

Lower Division Courses

101-102. *Elementary Italian.* The fundamentals of grammar, with attention to correct pronunciation and diction: reading of simple modern texts. No credit is given for this course if the student has credit for two years of high school Italian. *3 + 3 h. c.*

201. *Intermediate Italian.* Grammar review; elementary composition. Modern texts are read and used as a basis for conversation in Italian. Prereq.: C or better in Italian 102 or in second-year high school Italian. *3 h. c.*

202. *Intermediate Italian.* A continuation of Italian 201, with stories and plays studied both as literature and as language. Prereq.: Italian 201 or three years of high school Italian, or consent of instructor. *3 h. c.*

Upper Division Courses

325. *Advanced Italian Grammar.* A review of the essentials through grammatical analysis of a modern text. *3 h. c.*

326. *Italian Civilization.* A study of the geography, history, and traditions of modern Italy with a view to understanding its influence on our own civilization. *3 h. c.*

327. *Corso di Stile.* Through translation of English masterpieces into Italian and models of Italian style into English, the means of expression in both languages are compared and contrasted. *3 h. c.*

328. *Italian Literary Tradition.* A brief survey of the principal writers of Italy, with special attention to Dante. *3 h. c.*

329. *Conversational Italian.* Thorough drill in pronunciation, and conversation based on a composition text. *3 h. c.*

330. *Contemporary Italian Literature.* A study of modern Italian literary tendencies as expressed in the principal writers of the twentieth century, using the anthology *Poeti d'Oggi.* *3 h. c.*

411, 412. *Comparative Grammar of the Romance Languages.* Identical with French 411, 412; listed also as Spanish 411, 412. *3 + 3 h. c.*

Journalism

See English. Besides a major in English, the student of journalism should secure a broad education in the liberal arts with emphasis on the social sciences and the humanities.

Latin

Associate Professors Richardson (chairman) and Ives; Instructor Morgan.

A major in Latin consists of 18 hours of Latin of 300 or 400 level plus 12 hours (of any level) of Latin, Greek, and/or other pertinent courses acceptable to the Director of the Division of Language and Literature.

For a combined major of 45 hours in classical studies or in humanities, see the sections under those headings.

The prerequisite for any Upper Division course is two years of high school Latin plus Latin 201 and 202; or three years of high school Latin plus Latin 202; or four years of high school Latin; or the consent of the instructor. A freshman satisfying either of the latter two prerequisites may enter an Upper Division course.

Lower Division Courses

101-102. *Elementary Latin.* Essentials of Latin grammar and some reading of connected prose. Designed for pre-law students and majors in English and modern languages as well as for students planning to continue work in Latin. No credit is given for this course if the student has credit for two years of high school Latin. *3 + 3 h. c.*

201. *Cicero; Prose Composition.* Selections from Cicero's letters and orations. Prereq.: Latin 101-102 or two years of high school Latin. *3 h. c.*

202. *Virgil.* Selections from the *Aenid*, books I-VI. Prereq.: Latin 201 or three years of high school Latin. *3 h. c.*

Upper Division Courses

301. *Ovid.* Selections from the Metamorphoses and other writings. *3 h. c.*

302. *Cicero's* De Amicitia *and* De Senectute: *Prose Composition.* *3 h. c.*

304. *Latin Lyric Poetry: Horace and Catullus.* *3 h. c.*

305. *Pliny's* Letters; *Prose Composition.* *3 h. c.*

401. *Roman Historians.* Selected passages from Sallust, Livy, and Tacitus. *3 h. c.*

402. *Virgil and Lucretius.* The emphasis is on Virgil: the *Aeneid* (all twelve books), the *Georgics*, and the *Eclogues*. Some study of Lucretius' *De Rerum Natura*. *3 h. c.*

403. *History of Latin Literature.* A study of the development of Latin literature from its beginning through the Silver Age. *3 h. c.*

404. *Latin Syntax and Advanced Composition.* A review of the principles of Latin syntax with practice in the writing of Latin. *3 h. c.*

405. *Advanced Readings.* Selections from various Latin authors. *1 h. c.*

Law

A pre-law curriculum is suggested at the end of the College of Arts and Sciences section. See also page 61.

Library Service

Assistant Professor G. Jones.

Lower Division Course

101. *Use of Books and Libraries.* A survey of library resources and services; what the library is and how to use it; arrangement of books in the library; the card catalog; general reference sources and aids in special fields. Designed to aid the college student in his study and research. G. Jones. *1 h. c.*

Mathematics

Professor Dustheimer; Associate Professor Malak (acting chairman); Assistant Professors Dillon, Mavrigian, Ricksecker, and Yozwiak; Instructors Barnard, Ciotola, Knauf, and Whipkey; staff.

Mathematics may be the major subject for the degree of Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Education.[1]

The student majoring in mathematics is required to complete, in addition to the general University requirements for the degree (see pages 59-60), the following mathematics courses: Mathematics 101, 102, 103, 104, 209, 210, 309 and any five of the following: 310, 311, 312, 320, 330, 340, 341, 345, 350, 360, 370.

The minor field of study for candidates for the Bachelor of Science degree must be in biology, chemistry, or physics.

Non-Credit Courses

The following courses provide no University course-credit. They are for students whose pre-college study is incomplete in mathematics at the time of their admission to the University.

10. *High School Algebra, First Year.* Three hours a week, at night. Evaluated as one high school credit.

11. *Plane Geometry.* Three hours a week, at night. Evaluated as one high school credit.

Lower Division Courses

101R. *College Algebra.* A remedial course in algebra offered primarily for students deficient in mathematics. The subject matter is identical with that of Mathematics 101. Five hours a week. Prereq.: one year of high school algebra and one year of high school geometry or Mathematics 10 and 11. *2 h. c.*

101-102. *College Algebra.* The number system, elementary algebraic operations, algebraic functions and their graphs, the solution of linear algebraic equations, quadratic equations, Inequalities, arithmetical and geometric progressions, mathematical induction, the binomial theorem, permutations and combinations, determinants and other topics. Prereq.: for Mathematics 101, two years of high school algebra and one year of high school geometry; for Mathematics 102, Mathematics 101 or 101R. *2 + 2 h. c.*

103. *Trigonometry.* Trigonometric functions, graphs of trigonometric functions, trigonometric equations, and trigonometric identities. Solution of right and oblique triangles. A thorough investigation of logarithms, complex numbers, and the inverse trigonometric functions. Prereq.: high school geometry or Mathematics 11. Prerequisite or concurrent: Mathematics 101. *3 h. c.*

104. *Analytic Geometry.* A detailed study of curve tracing. Two-dimensional rectangular Cartesian and polar co-ordinate systems. The straight line and the conic sections. Transformations of the co-ordinate axes—translation and rotation. Parametric equations. Three dimensional co-ordinate frames. The plane in three dimensions and quadric surfaces. Empirical curves. Prereq.: Mathematics 101 or 101R and 103. Prerequisite or concurrent: Mathematics 102. *3 h. c.*

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[1]Students interested in secondary school teaching should refer to the secondary education curriculum in the School of Education section.

209-210. *Differential and Integral Calculus I and II.* A study of limits. The derivative of a function of a single independent variable—its definition, interpretation, and its application to geometry and mechanics (curve-tracing, maximum-minimum problems, velocity and acceleration, simple harmonic motion, curvature). The differential of a function. Approximations. The theorem of the mean. Partial differentiation and the total differential of multi-variable functions. The integral of a function of a single variable and the integral of a function of several variables—their definitions, interpretations, and application to geometry and mechanics (areas, volumes, arc lengths, centroids, and engineering problems). Taylor series expansions. Approximate integration. Prereq.: Mathematics 102 and 104. Mathematics 209 is prerequisite to 210. *5 + 5 h. c.*

Upper Division Courses

309. *Ordinary Differential Equations.* An introductory course in the theory and solution of ordinary differential equations. Emphasis on the techniques for solving linear equations with applications to geometric, physical science, and engineering problems. Additional or special techniques for obtaining a solution—operator methods, transforms of the calculus, series expansions, and also graphical and numerical methods. A study of various classical ordinary differential equations, including the Legendre and Bessel equations. Prereq.: Mathematics 210. *3 h. c.*

310. *Partial Differential Equations.* An introduction to the theory of linear partial differential equations with applications to initial and boundary-value problems in mathematical physics. Techniques for solving partial differential equations—Fourier series expansions, the Laplace transformation, the method of separation of variables, and numerical methods. A discussion of Lagrange's equation, Laplace's equation, and the wave, heat, and telegrapher's equations; additional selected topics in applied mathematics. Prereq.: Mathematics 309. *3 h. c.*

311. *Theory of Equations.* The solution of cubic and quartic equations. Graeffe's method; symmetric functions; determinants; systems of linear equations; resultants; discriminants. Prereq.: Mathematics 209. Offered in alternate years. *3 h. c.*

312. *Modern Algebra.* A postulational study of numbers. A discussion of groups, fields, matrices, vector spaces, linear transformations, and other selected topics. Prereq.: Mathematics 210. Offered in alternate years. *3 h. c.*

320. *Vector Analysis.* The elementary vector operations; scalar and vector products of two or three vectors, differentiation of vectors. Applications to electrical theory and to mechanics. Prereq.: Mathematics 309. Offered in the spring semester. *3 h. c.*

330. *College Geometry.* The study of geometric constructions by various methods. The use of loci, indirect elements, and similar and homothetic figures; properties of the triangle; the nine-point circle, the orthocentric quadrilateral; recent geometry of the triangle. Prereq.: Mathematics 209. Offered in alternate years. *3 h. c.*

340-341. *Mathematical Statistics I and II.* The mathematical bases for the statistical design of research: probability, frequency distributions, estimation, tests of hypotheses, correlation, general principles for testing hypotheses, small sample distributions, and the design of experiments. Prerequisite or concurrent: Mathematics 210. Mathematics 340 is prerequisite to 341. *3 + 3 h. c.*

345. *Operations Research.* An introduction to operations research: problem formulation, linear programming, and design of research. Emphasis on mathematical methods. Prereq.: Mathematics 340. *3 h. c.*

350. *History of Mathematics.* A course designed to give prospective teachers of secondary mathematics a survey of the historical development of

mathematics. Prereq.: Mathematics 209. Offered in alternate years. *3 h. c.*

360. *Numerical Analysis.* The theory and techniques of numerical computation. The solution of an equation or a system of equations: the method of finite differences; interpolation methods; numerical differentiation and integration; numerical solution of ordinary differential equations; least squares techniques. Prerequisite or concurrent: Mathematics 309. *3 h. c.*

370. *Intermediate Analysis.* An introduction to the theory of functions of real variables with a more critical presentation of the fundamentals of the differential and integral calculus. Prereq.: Mathematics 309. *3 h. c.*

Metallurgy

See Chemistry and the William Rayen School of Engineering section.

Military Science and Tactics

A unit of the Reserve Officer's Training Corps was established at this institution in 1950 and is administered as the Department of Military Science and Tactics.

A student enrolled in the R. O. T. C. is not a member of the Army. He is instructed, however, from the latest Army textbooks by Army officers. Instruction is based on the latest methods and theories evolved during and after World War II, and includes practical exercises in many fields, utilizing the most modern army equipment as well as facilities of the University.

Every graduate of the R. O. T. C. program, after successfully completing four years of academic study at college level, is tendered a commission as a second lieutenant in the United States Army Reserve. A graduate may, at his request and subject to the needs of the services, be commissioned in any arm or service of the Army for which he is professionally qualified.

A cadet who distinguishes himself in academic and military subjects, and who demonstrates outstanding qualities of character and leadership, may, at the end of his junior year, be designated a distinguished military student and may then apply for a Regular Army commission. This opportunity is open to any qualified individual, regardless of the degree toward which he is working.

The military science program consists of two courses: the basic course, comprising the first two years; and the advanced course, comprising the last two years. Each two-year course may be elected separately, but *only* in its entirety. Only under unusual circumstances may a student drop a two-year course in military science, once he has elected it. In such cases no credit is granted for previously completed semesters of the same two-year course. No two semesters of the basic course may be taken simultaneously.

Study in military science and tactics done in other institutions is credited as follows:

a. A student who has done one year's work receives credit for it upon completing the basic course.

b. A student with two years' work receives credit for the basic course.

c. A student with three years' work receives credit for the basic course on entering and credit for the third year upon completing the advanced course.

The basic course is available to any male student of Youngstown University who

(1) is a citizen of the United States not less than 14 years of age.

(2) is physically qualified.

(3) has not reached his 23rd birthday at the time of initial enrollment.

(4) has at least three academic years remaining in his course at this institution, and

(5) may be authorized to enroll in Military Science 201-202 by virtue of having had at least six months' previous active service or active duty training in the United States Army, Navy, Air Force, Marine Corps, or Coast Guard.*

The advanced course is available to any male student of the University who

(1) is a citizen of the United States,

(2) is physically qualified,

(3) has not reached his 26th birthday,

(4) has successfully completed the two years of the basic course or who may be authorized to enroll in Military Science 301-302 by virtue of having had at least twelve months' active service or active duty training in the United States Army, Navy, Air Force, Marine Corps, or Coast Guard.*

(5) has been selected for the course by the president of the University and the professor of military science,

(6) executes a written agreement with the government that, in consideration of commutation of subsistence to be furnished in accordance with law, he will complete the advanced course at this institution or at any other institution where such a course is given and pursue the course of camp training during the period prescribed.

(7) has at least two academic years to complete for graduation, and

(8) agrees to accept appointment in the United States Army Reserve if tendered.

Military science students are organized into a Corps of Cadets, commanded and administered by students designated as cadet officers and cadet non-commissioned officers. In order to encourage development of characteristics of leadership, cadet officers and non-commissioned officers are given the maximum possible responsibility and authority in training and administering the cadet corps. Scholarships are awarded to students selected for the highest positions of cadet leadership (see page 33).

No compensation is paid the student by the government during the basic course. An advanced-course student receives an allowance from the government in lieu of subsistence, which at presents amounts to 90 cents a day for not more than 595 days during the two academic years.

*Each case will be judged individually so that the best interests of the student, the University, and the service will be served.

By agreement between the United States government and the University, the Army furnishes instructors, equipment, textbooks, student uniforms, etc., while the University furnishes all other facilities for the four-year program. A Military Equipment Deposit and fee is required of each student in military science. A refund is made to him when he turns in, at the end of the school year (or upon withdrawal from the University), the government property which has been issued him by the University.

Each advanced military science student must attend one summer camp of about six weeks' duration. He is paid $78 a month while there and is allowed travel expense at 5 cents a mile to and from camp.

Students enrolled or considering enrollment in R. O. T. C. should read the pertinent information on pages 43 and 46.

A curriculum leading to the degree of Bachelor of Science is offered for the student who wishes to prepare himself specifically for a military career. Students who wish such a curriculum should consult the chairman of the Department of Military Science and Tactics.

Lower Division Courses

101-102. *Basic Course, first year (Military Science I).* Organization of the Army and R. O. T. C.; individual weapons and marksmanship; American military history; leadership, drill and command. *2 + 2 h. c.*

200. *Basic course, first year (Military Science I).* American military history; leadership, drill and command. Prereq.: Military Science 101. Second semester. Listed also as History 200. *3 h. c.*

201-202. *Basic course, second year (Military Science II).* Map and aerial photograph reading; United States Army and national security; crew-served weapons and gunnery; leadership, drill and command. Prereq.: Military Science 101 and 102, or waiver of these on the basis of active military service. *2 + 2 h. c.*

Upper Division Courses

301-302. *Advanced course, first year (Military Science III).* Leadership; military teaching methods; small unit tactics and communications; leadership, drill and command. Prereq.: Military Science 101-102, 201-202, or waiver of these on the basis of active military service. *3 + 3 h. c.*

401-402. *Advanced course, second year (Military Science IV).* Operations; logistics; Army administration and military justice; service orientation; leadership, drill and command. Prereq.: Military Science 302. *3 + 3 h. c.*

402L. *R. O. T. C. Summer Camp.* Six weeks' summer camp at an Army post. Practical exercises in organization, functions, and missions of the Army. Physical training, small arms, small unit tactics and communications, leadership, drill and command. Prereq.: Military Science 302. *½ h. c.*

Modern Languages and Literature

See English, French, German, Hebrew, Italian, Portuguese, Russian, and Spanish. For literature in translation, see Humanities.

Music

A major in the history and literature of music is acceptable for the degree of Bachelor of Arts. For the music courses for such a major, see the Dana School of Music section.

Various courses at Dana School of Music may be taken as electives by students in other units.

Nursing

Information on courses for those interested in nursing training or public school nursing, as well as on programs for graduate nurses who wish to complete the requirements for a bachelor's degree, will be found near the end of the College of Arts and Sciences section. See also Biology 383.

Orientation

Professor Dykema and staff.

Orientation 100 is a requirement for graduation. Every day freshman should take it concurrently with Communication 105. Evening students take the course during their junior year — after they have 60 semester hours of credit and before they are classified as seniors.

Lower Division Course

100. *Freshman Orientation.* A lecture course designed to help the student orient himself to college. Discussion of the relation of college to society, organization of Youngstown University, entrance and graduation requirements, employment opportunities for college graduates, grades, studying in college, etc. The class text is the University catalog; there will be examinations on it and on the lectures. One hour a week for freshmen; a more concentrated course for juniors. *1 h. c.*

Philosophy and Religion

Professor O'Brien; Associate Professors Riley (chairman), Harder, and W. Miner; Assistant Professor, Father Lucas; Instructor Stein; Rabbi Azneer, Dr. Beach, Mr. Eminhizer, Father Lang, Mr. Murphy, and Mr. Schulman.

Philosophy is the traditional major of pre-ministerial students. While admission to accredited theological schools may be granted upon completion of practically any university major, it is generally conceded that a thorough familiarity with the major problems which have occupied human thought, together with the solutions which have historically been offered to such problems, is a highly desirable foundation for theological studies. In many seminaries such knowledge is assumed and the ministerial student is at a disadvantage without it.

The major in philosophy has been planned in recognition of these needs, as well as those of the student who plans to make philosophy his life work. It consists of thirty hours in the department, including Philosophy and Religion 203, 220, 301, 302, and 305. These required courses must be passed with a grade of C or better.

A major in religion, for the student desiring to prepare himself for social work, church school work, or related professional activity, may be planned in consultation with the chairman of the department and the Director of the Division of Social Sciences.

The student is assumed to understand that the approach made to the subject matter in any course, or section of a course, will be that of the teacher in charge.

The three-hour general requirement in religion may be met by taking any course in the Department of Philosophy and Religion. Humanities 401 and 402 also meet this requirement.

One-third credit toward either the philosophy or the religion major will be allowed for any courses listed under Humanities.

Lower Division Courses

201. *Contemporary Religion and its Backgrounds.* An exposition of Judaism, Roman Catholicism, and Protestantism: their beliefs, rituals, and usage; their origins and historical development; and their approaches to the problems of man in modern society. Staff. *3 h. c.*

203. *Introduction to Philosophy.* The nature of philosophy, and its relation to science, art and religion. Examination of the mind-body problem, freedom and determinism, the nature and validity of knowledge, and some bases for value judgment, with the implications of all these for free ethical choice. Dr. Riley, Father Lucas, Mr. Eminhizer, Mr. Murphy, Mr. Schulman. *3 h. c.*

207. *The Christian Ethic.* A study of the biblical foundations for Christian decisions in self and society, marriage and family, economic life, racial relations, the state, war, peace, and international order and culture Dr. Beach. *3 h. c.*

208. *The Beginnings of Christianity.* An introductory review of Christian origins, including the cultural and historical backgrounds of the movement, the career and teaching of Jesus, and the birth and growth of the Church. The relation of these factors to the literature of the New Testament. Dr. Riley or Mr Eminhizer. *3 h. c.*

212. *Church History I.* The history of the Christian Church from its origin to the Reformation. Father Lucas or Mr. Eminhizer. *3 h. c.*

213. *Church History II.* A continuation of Philosophy and Religion 212. The rise and development of Protestantism. The counter-reformation. The major Protestant denominations, and the influences operative in their origins. Present tendencies in world Christianity. Dr. Riley or Mr. Eminhizer. *3 h. c.*

220. *Logic.* The laws that lie behind all our thought processes. The nature of concept and the divisions of its expression, the term. Judgment and the valid forms of immediate inference. Reasoning and its laws; formal and material fallacies; inductive reasoning. Dr. Harder, Mr. Eminhizer, or Father Lang. *3 h. c.*

222. *Christian Apologetics.* The relation of reason and revelation. The natural and supernatural orders. Revelation and mysteries. The possibility and necessity of revelation. Miracles and prophecies. The authenticity and historicity of the New Testament. Christ. His miracles and prophecies. Father Lucas, Father Lang, or Mr. Murphy. *3 h. c.*

230. *Introduction to Biblical Literature.* A survey of the literature of the Old and New Testaments, with attention to the authorship and purposes of the various books, the history of their compilation into the present canon, their structure and style, and the applicability of their teachings to the problems of today. Mr. Eminhizer or Mr. Schulman. *3 h. c.*

Upper Division Courses

301. *History of Philosophy.* The development of philosophic thought from early Greek times through the Middle Ages. Dr. Riley or Dr. O'Brien. *3 h. c.*

302. *History of Philosophy.* Continuation of Philosophy and Religion 301 from the end of the Middle Ages to the present. Dr. Riley or Dr. O'Brien. *3 h. c.*

303. *Old Testament.* Reading of the Old Testament, with attention to the nature of the Bible; the authorship, origin, and meaning of the various books; the development of religious and ethical ideas throughout the Old Testament period; the significance of the law and of the prophets in Hebrew life; and the contribution of the Hebrews to the life of mankind. Dr. Riley or Rabbi Azneer. *3 h. c.*

304. *Philosophy of Religion.* The meaning of religion, and its relation to other aspects of culture. The function and evaluation of religious experience. The existence and nature of God; the problem of evil; the soul, with the problems of freedom and immortality. Prayer. Current trends toward skepticism and faith. Dr. Riley or Father Lucas. *3 h. c.*

305. *Ethics.* The principles upon which valid choice between moral standards can be made. The consideration of reasons why such a study is possible, including a critique of authoritarianism, cultural relativism, absolute determinism, and other views denying this possibility. The examination and evaluation of the major ethical theories. Dr. Riley, Mr. Eminhizer, or Dr. O'Brien. *3 h. c.*

306. *Psychology of Religion.* The analysis of religious experience. An investigation of the psychological processes, conscious and unconscious, which produce, accompany, and are set in motion by, the various personal experiences called religious. Prereq.: Psychology 201. Identical with Psychology 303. Dr. Riley. *3 h. c.*

307. *Types of Philosophy.* The principal approaches to the problems of philosophy, and their differences; an outline of the historical answers to the questions indicated in Philosophy and Religion 203. Prereq.: Philosophy and Religion 203. Dr. Riley. *3 h. c.*

308. *Prophetic Religion.* A social and psychological analysis of the prophetic mentality; the differences between the prophetic approach to religion and that of the priest; an analysis of great prophetic books with a view to the sociological and psychological factors involved; an attempt to delineate the essential elements in prophecy. Rabbi Azneer. *3 h. c.*

309. *Aesthetics.* Classical and modern philosophies of beauty, especially as they apply in criticism of the fine arts. The problem of the relative and the absolute in judgments of taste. Reading in aesthetics from such writers as Plato, Aristotle, Longinus, Kant, and Croce. Dr. O'Brien. *3 h. c.*

310. *Making of the Modern Mind.* The philosophic, religious, scientific, political, and social developments out of which our present patterns of thought have arisen. Rabbi Azneer. *3 h. c.*

315. *History of Religion.* An introductory course. The mechanisms of religious origins; primitive religion and its concepts; comparison of ethnic and prophetic religions; the classic religions of the ancient world, and their contributions to Judaism and Christianity; an introductory historical review of living religious systems. Dr. Riley. *3 h. c.*

322. *Philosophy of Man.* A discussion of the sentient, emotional, and rational life of man. Life: mechanism versus vitalism. Sensation and its philosophical explanations. Rational life and its principles. Freedom of the will versus determinism. The human soul, and its origin and destiny. A philosophical discussion of evolution. Father Lucas, Father Lang, or Mr. Murphy. *3 h. c.*

323. *Theories of Knowledge.* The epistemological problem and its attempted solution. The position of the skeptic, the pragmatist, the sensist, the idealist; the moderate realists' solution. Truth and certitude: their nature, sources, and ultimate criteria. Prereq.: Philosophy and Religion 220. Father Lucas. *3 h. c.*

324. *Philosophy of Being.* The metaphysical concept of abstract being. Essence and existence; act and potency; substance and accident; the possibles. Cause and causality; the meaning and nature of relations. Father Lucas. *3 h. c.*

325. *Metaphysics of Matter.* A philosophical consideration of the nature and constitution of matter. Hylomorphism; the origin of the physical universe; physical laws; miracles; space-time concepts. Father Lucas. *3 h. c.*

326. *Philosophy of God.* Proofs for the existence of God; the nature of God and his attributes; God's knowledge and its media; the *scientia media;* providence and the problem of evil; miracles. Father Lucas. *3 h. c.*

329. *Contemporary Philosophy.* Whitehead's philosophy of organism, the various schools of existentialism, logical positivism, and the current philosophies of language. Consideration of contemporary movements in particular areas of philosophy, to which these systems have given rise. Dr. Riley. *3 h. c.*

330. *Philosophical Classics.* Reading and discussion of some of the great documents of philosophy: Plato's *Republic,* Aristotle's *Nicomachean Ethics,* Descartes' *Meditations,* Kant's *Critique of Pure Reason,* and James's *Essays,* or alternative selections of comparable significance. Dr. Riley or Dr. O'Brien. *3 h. c.*

331. *Philosophy in America.* History of philosophic ideas in this country and an introduction to its intellectual history. American intellectual currents will be related to their background in the history of philosophy. Dr. W. Miner. *3 h. c.*

333. *Philosophy of Education.* This course explores the foundation of modern education in the several schools of educational thought, and considers theory and practice, indoctrination and propaganda, vocationalism and culture, teaching controversial issues, and the relation of education to social planning. Prereq.: junior or senior standing. Listed also as Education 333. Rabbi Azneer. *3 h. c.*

409. *History of Social Philosophy.* Identical with Sociology 409. Mrs. Botty. *3 h. c.*

427. *Moral Conduct: Basic Principles.* The definition of moral good and moral evil established by positive proof. The nature and true norm of morality; false norms. The "Eternal and Natural Laws"; obligation and sanction of the "Natural Law"; conscience; the nature of rights and duties; the existence of natural rights. Father Lucas, Father Lang, or Mr. Murphy. *3 h. c.*

428. *Moral Conduct: Specific Applications.* The application of the "Natural Law" to human activities. Man's duties to God; the natural right to property; rights and duties of conjugal society; marriage and divorce. Industrial ethics; the solution of the communist; wages, strikes, labor unions. The nature of civil society. Father Lucas or Father Lang. *3 h. c.*

431. *The Psycho-Social Dynamics of Religion.* An objective examination of religious institutions and practices in relation to the human problems to which they correspond. A comparative appraisal of their effectiveness in meeting the psychic and environmental needs of their adherents. Reasons for their success or failure, in terms of depth psychology, sociology, and anthropology. Several of the classic religions are studied. Prereq.: Philosophy and Religion 315 or 306 and the consent of the instructor. Dr. Riley. *3 h. c.*

432. *The Psycho-Social Dynamics of Religion.* The same considerations as in Philosophy and Religion 431, applied to present-day religious cults. Prereq.: Philosophy and Religion 315 or 306, and the consent of the instructor. Listed also as Psychology 432 and Sociology 432. Dr. Riley. *3 h. c.*

Physical Education

See Health Education and Physical Education.

Physics

Associate Professors Ellis (acting chairman) and Clark; Instructor Lyu; Mr. Gilboy; staff.

Physics courses are organized with the following aims: (1) to acquaint the non-specializing student with scientific methods and with the place of physics in the modern world; (2) to provide basic training for engineering and pre-medical students; (3) to provide well-rounded training in physics for those needing it for secondary school teaching, industry, or graduate study.

Following the course descriptions below are the curriculums required for the degrees of Bachelor of Arts and Bachelor of Science with the major in physics. A student desiring to teach physics in the public schools should consult the Dean of the School of Education.

Non-Credit Course

The following course is for students whose preparation for college is incomplete in physics or in other laboratory sciences at the time of their admission to the University. It provides no University course-credit.

20. *High School Physics.* Three hours a week for one semester. Evaluated as one high school credit.

Lower Division Courses

101-102. *Fundamentals of Physics.* The elementary laws of physics, illustrated through elementary mechanics, sound, light, heat, and electricity. Not open to mathematics or physics majors or to engineering students. Prerequisite or concurrent: one year of high school physics or Physics 20; Mathematics 101 and 103. *3 + 3 h. c.*

101L-102L. *Fundamentals of Physics Laboratory.* Two hours a week; taken concurrently with Physics 101-102. Fee: $10.00 each semester. *1 + 1 h. c.*

201. *General Physics: Mechanics, Heat, and Sound.* Composition and resolution of forces; Newton's laws of force and motion; accelerated motion, circular and simple harmonic motion; molecular forces in liquids and solids; surface phenomena; fluids at rest and in motion; expansion and thermometry; heat energy and calorimetry; the kinetic theory of matter; elementary thermodynamics; transfer of heat and radiation; wave motion and vibration; sound and hearing; combination of sound waves. Prereq.: one year of high school physics, or Physics 20. Prerequisite or concurrent: Mathematics 209. *3 h. c.*

201L. *General Physics Laboratory.* Three hours a week; taken concurrently with Physics 201. Fee: $10.00. *1 h. c.*

202. *General Physics: Light and Electricity.* Propagation of light by wave motion; mirrors and lenses; reflection, refraction, absorption, and dispersion of light; diffraction and interference; optical instruments; fundamental phenomena of charge at rest; introduction to current electricity; electric current and its production; magnetic phenomena; Ohm's and Kirchhoff's laws; measurements in simple circuits, electrical energy, and power; elementary electrical oscillations. Prereq.: Physics 201. *3 h. c.*

202L. *General Physics Laboratory.* Three hours a week; taken concurrently with Physics 202. Fee: $10.00. *1 h. c.*

208. *Sound.* The production of sound by means of vibrating strings, vibrating air columns, and vibrating plates. Simple harmonic motion, and the representation of complex sound waves as a summation of pure sine waves. The principles of reflection, refraction, interference, and resonance applied to sound waves. Sound and hearing. Application of the principles of sound to musical instruments. The reproduction and recording of sound waves with a study of room acoustics. *3 h. c.*

225. *General Meteorology.* An introductory course dealing with cloud types, pressure, temperature, humidity, precipitations, atmospheric composition and circulation, types of stability, air mass analysis, and analysis of surface maps. Prereq.: sophomore standing. Listed also as Geography 225. *3 h. c.*

Upper Division Courses

301. *Classical Mechanics.* Elements of vector algebra and vector calculus. Statics and dynamics of a particle and of a rigid body. Inertial and accelerated co-ordinate systems. Prereq.: Physics 201 and 202 and Mathematics 209-210. *4 h. c.*

304, 305. *Introduction to Modern Physics.* A presentation of the basic physical ideas of atomic and nuclear physics. The application of the quantum theory and the theory of relativity to the study of the structure of atoms and of atomic nuclei. Prereq.: Mathematics 209-210 and Physics 201 and 202. *3 + 3 h. c.*

322. *Physical Optics and Advanced Light.* Elementary theory of thick and thin lenses, interference, diffraction, and polarization phenomena; wave surfaces, resolving power of optical instruments. Prereq.: Mathematics 209-210 and Physics 201 and 202. *3 h. c.*

322L. *Physical Optics and Advanced Light Laboratory.* Experiments relating to the principles studied in Physics 322, with the emphasis on physical optics: wave propagation, interference, diffraction, refraction, dispersion, polarization, radiation, and spectroscopic analysis of line band spectra. Two hours a week; taken concurrently with Physics 322. Fee: $10.00. *1 h. c.*

401-402. *Thesis.* The student investigates a subject, selected by either the student or the chairman of the Department of Physics, and submits a written report, of at least 2,500 words, in three bound copies according to specifications available to him on request. For credit, the thesis must be accepted by the chairman of the department. Prereq.: senior standing. Estimated thesis expense: $50-$60. *2 + 2 h. c.*

403. *Electricity and Magnetism.* Static electric and magnetic fields. Properties of dielectric materials and of conductors. Direct currents. Vector methods are used extensively. Prereq.: Mathematics 210-209 and Physics 202. Concurrent: Mathematics 309. *3 h. c.*

404. *Electricity and Magnetism.* Time-dependent electric fields, magnetic fields, and currents. Maxwell's equations. Electromagnetic radiation. Prereq.: Physics 403. *3 h. c.*

411, 412. *Thermodynamics.* Identical with Chemistry 411 and 412. *2 + 2 h. c.*

424. *History of Physics.* The history of physics from early times, the lives of the great physicists, and the development of the physical laboratory. Prereq.: consent of the chairman of the department. *3 h. c.*

425. *Theory of Heat Transmission.* The theory of heat transmission for radiation, convection, and conduction. Development of dimensional analysis and heat transfer. Prerequisite or concurrent: Mathematics 310 or 420, and Physics 411, 412. *3 h. c.*

426-427. *Elements of Nuclear Physics.* A study of the sub-atomic particles of matter essential for the understanding of modern concepts of

atomic structure, covering the electron, the electric discharge, cathode rays, isotopes, natural radiation activities, atomic nuclei, and artificial disintegration. Prereq.: consent of instructor. *3 + 3 h. c.*

Required Curriculum for the Degree of Bachelor of Science with the Major in Physics and a Minor in Mathematics.*

First Year	Hrs.
Comm. 105-106 Basic Course I-II	6
Chem. 111-112 General Chemistry	8
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Comm. 107 Basic Course	3
Engr. 213 and 213L Principles of Electrical Engineering	4
†Foreign Language (or elective)	6
Hist. 201 & 202 The United States	6
Math. 209-210 Differential and Integral Calculus I-II	10
Physics 201-201L & 202-202L General Physics	8
H. & P. E. activity courses	1
	38

Third Year	Hrs.
Chem. 203, 204 Qualitative Analysis	4
Engl. 200, 203, 204, 205, 206 or 275	3
Engr. 311-311L Alternating Current Circuits	4
Engr. 312-213L Electrical Networks	4
Math. 309 Ordinary Differential Equations	3
Math 310 Partial Differential Equations	3
Physics 301 Classical Mechanics	4
Physics 304, 305 Introduction to Modern Physics	6
	31

Fourth Year	Hrs.
Chem. 411, 412 Thermodynamics	4
Engr. 415-415L Electronic Circuit Elements	4
Engr. 472 Principles of Nuclear Reactors	3
Philosophy and Religion elective or Humanities 401 or 402	3
Physics 401-402 Thesis	4
Physics 403 & 404 Electricity and Magnetism	6
Physics 426 Elements of Nuclear Physics	3
Psychology 201 General Psychology	3
Elective	3
	33

†See pages 60-62.

Political Science

Professor Smith; Associate Professors Low and Sterenberg; Assistant Professors Boyer (chairman) and Rees; Mr. Schuman and Mr. Westenfield.

A major in political science consists of 24 semester hours in addition to Social Science 101 and 102 and History 201 and 202. The major is designed to prepare students for graduate study in political science or law, and to provide a background for the student interested in a career in government or politics.

Courses in other departments for which credit may be given toward the political science major are: Economics 304, Public Finance; Economics 402, Comparative Economic Systems; History 308, The Far East; and History 306, 307, Constitutional History of England. One-sixth credit will be allowed toward a major in political science for any courses listed under Humanities.

Lower Division Courses

201. *American National Government and Politics.* The historical background, form, structure, administrative organization, and expanding activities of the Federal Government. Rees. *3 h. c.*

*The curriculum for the Bachelor of Arts degree with the major in physics is outlined for the student by an adviser in the Department of Physics. The courses for the freshman and sophomore years for either degree are identical. Semester-by-semester versions of the curriculum for either the Bachelor of Arts or Bachelor of Science degree are available at the office of the Department of Physics.

202. *American State and Local Government.* The form, structure, administrative organization, and functioning of state, county, and municipal government in the United States. Boyer. *3 h. c.*

Upper Division Courses

301. *Comparative State Government.* A comparison of the Ohio constitution with other state constitutions, to acquaint the student with the need for revising the Ohio constitution. Prereq.: Political Science 202 or consent of the instructor. Staff. *3 h. c.*

304. *International Politics.* A systematic analysis of the principles underlying politics among nations and a study of their application to present international problems. Prereq.: History 106 or Political Science 201 or consent of instructor. Sterenberg. *3 h. c.*

305. *Foreign Policies of the Great Powers.* A comparative study of the governmental machinery for formulation and execution of foreign policy, and a survey of the foreign policies of the great powers with attention to current developments. Prereq.: History 106 or Political Science 201 or consent of instructor. Staff. *3 h. c.*

306. *International Law and Government.* Principles of international law as they have developed through custom and usage, international agreement, and judicial decisions; international organization with emphasis on the United Nations in action. Prereq.: Political Science 201 or History 106. Low. *3 h. c.*

307. *American Political Parties.* The origin, functions, and development of the political party, with emphasis on its relation to practical politics, propaganda, and pressure groups. Prereq.: Social Science 101 and 102. Schuman. *3 h. c.*

308. *Public Administration.* The organization and practice of national, state, and local administration, including problems of governmental reorganization, civil service, budget procedures, and administrative law. Prereq.: Political Science 201 and 202. Staff. *3 h. c.*

309, 310. *Constitutional History of the United States.* The formation, amendment, and interpretation of the Constitution of the United States. Of special interest to pre-law students. Prereq.: Social Science 101 and 102. Prerequisite or concurrent: History 201 and 202. Political Science 309 is prerequisite to 310. Listed also as History 309, 310. Rees. *3 + 3 h. c.*

311. *Development of American Foreign Policy.* The diplomatic problems that have confronted the United States from the American Revolution to the present. Prereq.: History 201 and 202. Staff. *3 h. c.*

312. *Municipal Government and Administration.* The principles and forms of city government in the United States. Problems of the modern city: home rule, public utilities, administrative organization, finance, city planning, public health and recreation, school systems. Prereq.: Social Science 101 and 102. Westenfield. *3 h. c.*

390. *Diplomatic History of the United States.* Listed also as History 390. Staff. *3 h. c.*

403. *Comparative Government.* The structure and functioning of the principal types of national governments, with emphasis on the governments of the western European nations and of Soviet Russia. Prereq.: one of the following: Political Science 201, History 201, 202, 309, 310, or Economics 402. Sterenberg. *3 h. c.*

405, 406. *Development of Political Thought.* Political theories from antiquity to modern times, with emphasis on their practical applications and the resulting relationship of individual and state. Prereq.: one of the following: Political Science 201, History 105, 106, and junior standing. Low. *3 + 3 h. c.*

Portuguese

Associate Professor Richardson (chairman) and staff.

Lower Division Courses

101-102. *Elementary Portuguese.* Grammar, pronunciation drill, vocabulary; dictation, reading of simple texts, oral and written composition. No credit will be given for this course if the student has credit for two years of high school Portuguese. *3 + 3 h. c.*

201. *Intermediate Portuguese.* Vocabulary building, oral and written practice; readings from Portuguese and Brazilian authors. Prereq.: C or better in Portuguese 102 or in second-year high school Portuguese. *3 h. c.*

202. *Intermediate Portuguese.* A continuation of Portuguese 201, using texts of increasing difficulty; conversation and composition. Prereq.: Portuguese 201 or three years of high school Portuguese, or consent of instructor. *3 h. c.*

Pre-Law Study

A suggested curriculum for the pre-law student is provided at the end of the College of Arts and Sciences section. See also page 61.

Pre-Medical Study

Suggested pre-medical curriculums are at the end of the College of Arts and Sciences section. See also pages 61-62.

Psychology

Professor Mayer (chairman); Assistant Professors Beckman, Dehnbostel, Ebeling and M. Smith; Instructors Bare and Dobrich; Mr. Luce, Dr. Scollon, Mr. Shushereba, Mr. Tear and Dr. Varkonda.

A major in psychology consists of 30 semester hours including Psychology 201, 302, and 320. Biology 321, Philosophy and Religion 333, and Sociology 405 may be counted toward the major.

Psychology 201 is prerequisite to all other psychology courses except Psychology 101.

Lower Division Courses

101. *Introduction to Psychology.* The basic principles of behavior. Motivation and learning; individual development; the role of conflict; the problems of human adjustment. Not applicable toward a major or minor in psychology. Staff. *3 h. c.*

201. *General Psychology.* The fundamental principles of human behavior. The relationship of physiological structure to behavior; the nature and development of perception, emotion, behavior, and other factors in the integration of personality. Prereq.: Social Science 101 and 102. Not open to freshmen. Staff. *3 h. c.*

202. *Psychology of Education.* The psychological principles in learning, teaching, and the growth of a successful personality. Prereq.: Psychology 201. Staff. *3 h. c.*

211. *General Experimental Psychology.* An introduction to the experimental study of behavior; methods and apparatus, design of experiments, and treatment of data; laboratory problems in such areas as sensory functions, discriminative processes and capacities, learning, emotion, and social interaction. Prereq.: Psychology 201. Staff. *3 h. c.*

Upper Division Courses

300. *Social Psychology.* The underlying psychological principles that give rise to the self, personality, and social-cultural reality: aspects of human conflict such as prejudice, revolution, and war; mass behavior; the crowd, fashion, public opinion, and propaganda; the psychology of social control and power. Prereq.: Psychology 201. Listed also as Sociology 300. Staff. *3 h. c.*

301. *Applied Psychology.* The psychological factors in the human relationships of everyday living; psychological principles applied to individual development, education, religion, and various vocations. Prereq.: Psychology 201. Staff. *3 h. c.*

302. *Psychology of the Abnormal.* The causes, nature, and trend of mental maladjustments and injured personality, especially the major illnesses; the place of mental hygiene. Prereq.: Psychology 201. Staff. *3 h. c.*

303. *Psychology of Religion.* Identical with Philosophy and Religion 306. Riley. *3 h. c.*

304. *Psychology of Music.* A study of important psychological investigations bearing upon musical composition, performance, and appreciation, as an aid to the understanding of individual differences in musical capabilities and to the application of such an understanding in teaching. Current psychological tests and measurements in music are also studied. Prereq.: Psychology 201. R. Dehnbostel. *3 h. c.*

305. *Child Psychology.* A genetic study of child development from the prenatal period to puberty, stressing the characteristic behavior and suitable training methods for each period of development. Prereq.: Psychology 201. Listed also as Home Economics 305, *Child Development* (in which the classroom study is supplemented by two hours a week of directed observation of children, for a total of four credit hours). Staff. *3 h. c.*

306. *Psychology of Adolescence.* Characteristics and behavior problems of teen-age children. Prereq.: Psychology 201. Staff. *3 h. c.*

307. *Psychology of Marriage and Family Relations.* The social and psychological factors contributing to marital success and happiness in the modern family; processes of courtship, marriage, and parent-child interactions; sex relations, eugenics, mental hygiene, homemaking with economic and religious correlations. Talks by a staff of guest lecturers. Prereq.: Psychology 201 and junior standing. Listed also as Home Economics 307 and Sociology 307. Luce and M. Smith. *3 h. c.*

308. *Personality and Mental Hygiene.* The principles and habits that insure a well-balanced personality and a sound mind. Prereq.: Psychology 201. Staff. *3 h. c.*

310. *Mental and Educational Measurement.* The construction, administering, scoring, and interpreting of the objective examination; the selection, administering, scoring, and interpretation of results of standardized tests and scales, and their use in vocational and educational guidance. Prereq.: Psychology 201 and junior or senior standing. Staff. *3 h. c.*

312. *Industrial Psychology.* An attempt to bring into a meaningful whole the major aspects of individual differences, improvement of work methods, training, fatigue, accident prevention, motivation, attitudes, morale, personnel counseling, labor relations, and supervision. Prereq.: Psychology 301. Staff. *3 h. c.*

320. *Statistical Methods in Psychology.* An introductory course in frequency distributions, measures of central tendency, measures of variability, calculation and meaning of percentiles, the normal curves, reliability and validity of measures and simple correlation. Listed also as Education 320. Prereq.: Psychology 201. Staff. *3 h. c.*

330. *Learning.* A study of the learning process, with emphasis on factors such as forgetting, motivation, reinforcement, transfer, etc.; an introduction to modern learning theories. Staff. *3 h. c.*

332. *Psychology of Exceptional Children.* The discovery, psychology, and treatment of children having inferior or superior intellectual ability, defects of vision, hearing, or speech, or neurological or orthopedic handicaps; delinquent children. Their emotional needs, and programs of educational treatment and training. Prereq.: Psychology 305. Staff. *3 h. c.*

401. *Business Psychology.* The psychological factors in employment, selling, and advertising. Prereq.: Psychology 301. Staff. *3 h. c.*

402. *Psychology of Personality.* An investigation of the variables which determine personality. Normal and abnormal patterns of behavior are discussed, and consideration is given to the more prominent theories of personality. Prereq.: Psychology 201. Staff. *3 h. c.*

403. *Comparative Psychology.* The evolution of behavior from single-celled organisms to man; the relationship between various stages of behavior and the evolving nervous systems. Prereq.: Psychology 201 and Biology 103. Staff. *3 h. c.*

405. *Interviewing and Counseling.* The basic principles, purposes, and psychological problems of interviewing; special-purpose interviews and counseling; recording and evaluation of facts. Reporting and discussion of actual interviews; discussion of problems of class-members. Prereq.: Psychology 201. Staff. *3 h. c.*

406. *Vocational Guidance.* Techniques of vocational guidance and their application to high school students, college students, vocational rehabilitation subjects, and adults in general. Prereq.: Psychology 301. Bare. *3 h. c.*

407. *Clinical Training.* Clinical experience, for a limited number of qualified students, of mental and physical illness and delinquency. Hospital and institutional work is supplemented by seminar sessions. Prereq.: Psychology 302 and consent of instructor. Staff. *3 h. c.*

425. *Guidance of High School Students.* Principles and procedures in vocational, educational, personal, and social counseling at the high school level. The discovery of students' problems and needs; methods of interviewing and testing; classroom procedures and organization of guidance programs. Prereq.: Psychology 202. Staff. *2 h. c.*

428. *Physiological Psychology.* The structuro-functional relationships of the various divisions and sub-divisions of the neural system, their relationsbips to the organism as a whole, and their contributions to human behavior. Prereq.: Psychology 301 and 302 and Biology 103. Staff. *3 h. c.*

429. *Introduction to Psychiatry.* The fundamental psychoses and psychoneuroses, with special attention to schizophrenia, manic-depressive psychosis, alcoholism, and psychopathic personalities. Electroshock, insulin, and other forms of psychotherapy. Prereq.: Psychology 300, 302, and 308. Staff. *3 h. c.*

430. *Contemporary Schools of Psychology.* A survey of psychological theories: their evolution, salient principles, and current status of acceptance. Prereq.: Psychology 301 and 302. P. Beckman and Mayer. *3 h. c.*

432. *The Psycho-Social Dynamics of Religion.* Identical with Philosophy and Religion 432; listed also as Sociology 432. Riley. *3 h. c.*

Public Relations

A suggested curriculum leading to the degree of Bachelor of Science in Business Administration with the major in public relations will be found in the School of Business Administration section. It may be added that in view of the many kinds of public relations work that exist, the student, especially if his interest in not primarily in business or industry, should also consult members of the faculties of the Divisions of Language and Literature and of Social Sciences before planning a curriculum.

Religion

See Philosophy and Religion.

Romance Languages and Literature

See French, Italian, Portuguese, and Spanish separately. For literature in translation, see Humanities.

R. O. T. C.

See Military Science and Tactics.

Russian

Associate Professor Richardson (chairman); Instructor Low.

Lower Division Courses

101-102 *Elementary Russian.* The fundamental differences between Russian and English are explained graphically so as to afford a simplified approach to easy scientific texts and minimize the time needed for acquiring the essential vocabulary of conversation. No credit will be given for this course if the student has credit for two years of high school Russian. *3 + 3 h. c.*

201. *Intermediate Russian.* Elementary composition based on grammar review. Reading material is chosen with the double purpose of furnishing a basis for the further study of Russian literature and providing practice in technical reading for those who wish it. Prereq.: C or better in Russian 102 or in second-year high school Russian. *3 h. c.*

202. *Intermediate Russian.* A continuation of Russian 201, using texts of increasing difficulty; conversation and composition. Prereq.: Russian 201 or three years of high school Russian. *3 h. c.*

Upper Division Courses

305, 306. *Russian Literary Tradition.* A survey of the important writers of Russia up to the Revolution, with special attention to Pushkin, Turgenev, Tolstoy, Dostoyevsky, and Chekhov. Prereq.: Russian 202 or equivalent. *3 + 3 h. c.*

307. *Contemporary Russian Literature.* Readings in the works of Russian writers, both in the Soviet Union and abroad, since the Revolution. Prereq.: Russian 202 or equivalent. *3 h. c.*

308. *Informative Readings in Russian.* Reading of books and articles that serve the interests and requirements of the individual student. Prereq.: Russian 202 or equivalent. *3 h. c.*

Social Science

Professor Smith; Associate Professors Botty, Fulkerson, and Sterenberg; Assistant Professors Boyer, Crites, and Skardon; Instructors C. Gay, McDonald, Low, and Stein; Mr. Almgren, Miss Berich, Mr. A. Chambers, Mr. Cumminas, Mr. Foster, Mr. Goterba, Mr. Kiriazis, Mr. J. Miller, Dr. Mowry, Mr. Olynyk, Mr. Powers, Mr. Schumacher, and Mr. Sedlacko; staff.

Twelve credit hours in courses in the social sciences are required of every student graduating from Youngstown University, with certain exceptions stated on pages 42 and 43. This requirement is met by taking the four courses listed below, except that transfer students may meet it by taking other courses as explained on page 42.

Lower Division Courses

101. *Introduction to the Social Sciences I.* Methods and concepts used to describe and analyze social behavior; prevailing patterns and values of human life in modern society; the processes by which the individual is oriented to them, with special emphasis on organized economic activity. (For certification and transfer purposes, this is regarded as a course in introductory economics.) Staff. *3 h. c.*

102. *Introduction to the Social Sciences II.* A continuation of Social Science 101, emphasizing our political community and the powerful interests of government, business, and labor. Students are advised to take Social Science 101 before 102 and not to attempt both in one semester. (For certification and transfer purposes, this is regarded as a course in introductory political science.) Staff. *3 h. c.*

201. *The United States to 1865.* Identical with History 201. Staff. *3 h. c.*

202. *The United States Since 1865.* Identical with History 202. Staff. *3 h. c.*

401, 402. *Social Science Seminar.* Advanced readings from the literature of social science, with emphasis upon discussion. These two courses are offered in alternate spring semesters, with a registration limited to twelve students. The readings for the two courses are independent and do not overlap each other. The grade achieved will depend upon a comprehensive examination. Prereq.: junior standing and consent of instructor. Fulkerson. *3 + 3 h. c.*

Combined Major in Social Studies

A combined major in social studies consists of Social Science 101 and 102, History 201 and 202, Psychology 201, and 30 semester hours in other courses in the Division of Social Sciences which comprises the economics, geography, history, philosophy and religion, political science, psychology, and sociology departments.

This major is suitable for those who expect to teach in the public schools, to perform non-professional social work, to enter the civil service, and for those whose ultimate aim is professional social work, the study of law, or graduate work in any of the social science fields.

Suggested Social Studies Curriculum

First Year	Hrs.
*Biol. 103 General Biology and 124 or 125 Botany or Zoology	5
Comm. 105-106 Basic Course I-II	6
**Foreign Language (or elective)	6
Hist. 105, 106 or 107 Western Civilization or Eastern Civilizations (any two)	6
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
(Maximum load)	33

Second Year	Hrs.
*Biol. 224 Vascular Plants and 225 Vertebrates	6
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206 or 275	3
**Foreign Language (or elective)	6
Hist. 201 and 202 The United States	6
Philosophy and Religion 203 Introduction to Philosophy or 220 Logic	3
Psych. 201 General Psychology	3
Elective: Econ. 202, Pol Sci. 201 or 202, or Sociology 203	3
H. & P. E. activity courses	1
(Maximum load)	34

*Chemistry or physics may be substituted, and other combinations of biology courses are appropriate; but eight hours must be in one laboratory science, with three additional hours in the same science, in one of the other two, or in astronomy, geology or mathematics.

**See pages 60-62. French or German is preferred for admission to graduate schools. The prospective graduate student should consider the advisability of two years' study in each.

Third and Fourth Years. A student may find it necessary to complete some of his second-year work in the third year, for often it is wise not to attempt the maximum load during the first year, or until adequate skill has been developed with written English (see Proficiency in English) and until he knows the extent to which he may safely burden himself with outside employment and extracurricular activities. Otherwise, he may fulfill his major and other requirements according to his needs and aspirations from among the optional courses above, plus Sociology 204, and from Upper Division courses in sociology, political science, history (except History 333) and humanities; and from the following: Economics 304, 305, 401, 402, and Philosophy and Religion 301, 302, 305, 306, 308, 310, 330, 333. A rather wide selection is to be preferred.

A student taking the arts-law course may apply toward such a major 30 hours of credit obtainable in a school of law.

Sociology

Associate Professor Botty (chairman); Instructor McDonald; Mr. Cummings, Mr. Goterba, Mr. Harris, Mr. Kiariazis, Mr. J Miller, Mr. Pollack, and Dr. Sprinzen.

A major in sociology consists of 24 semester hours in addition to Social Science 101 and 102 and History 201 and 202. The major is designed to furnish useful background for students contemplating professional training in social work, law, the teaching of sociology, and allied fields.

Economics 402, Comparative Economic Systems, and Political Science 308, Public Administration, may be counted toward a major in sociology; one-sixth credit will be allowed for any courses listed under Humanities.

Lower Division Courses

203. *Principles of Sociology.* Underlying principles of the science of society, with reference to types of societies, groups, and classes; development of culture; laws of population; structure and organization of social institutions; dynamics of social change. Prereq.: Social Science 101 and 102. *3 h. c.*

204. *Cultural Anthropology.* An approach to a science of culture. The origin, diffusion, and continuity of primitive social institutions, and their relation to contemporary social phenomena. Prereq.: Social Science 101 and 102. *3 h. c.*

Upper Division Courses

300. *Social Psychology.* Identical with Psychology 300. *3 h. c.*

302. *Social Pathology.* The causes and present status of a selected number of social maladjustments, and possible remedies for them. Defective social structure and control in their relation to youth, war, poverty, vice, suicide. Prereq.: Sociology 203. *3 h. c.*

303. *The Sociology of Aging.* The characteristics of our aging population, the problems arising from it, and their implications; personal adjustment to the aging process; the significance to older people of services performed for them; some basic skills needed for such service. Prereq.: junior standing, or current employment in an agency serving the aged, or consent of the instructor. *3 h. c.*

305. *Economic and Social Statistics.* Identical with Economics 305. *3 h. c.*

306. *The Family.* Family and kinship systems as a major social institution; their development, functions and relation to other basic institutions as found in different cultures and social strata. Prereq.: Psychology 201 and junior standing. *3 h. c.*

307. *Psychology of Marriage and Family Relations.* Prereq.: Psychology 201 and junior standing. Identical with Psychology 307. Listed also as Home Economics 307. *3 h. c.*

308. *Educational Sociology.* Identical with Education 308. *2 h. c.*

311. *Juvenile Delinquency.* Social and psychological factors underlying delinquency; the juvenile court and probation; treatment in the community and in institutions; preventive measures. Prereq.: Social Science 101 and 102. *3 h. c.*

312. *Historical Introduction to Social Welfare.* The historical background of social work as it functions in the United States. A survey of social and public welfare services, with analysis of programs of local agencies and their interrelationships with national welfare services and with other local organizations. Visits to local agencies. Prereq.: Sociology 203. *3 h. c.*

315. *Criminology I.* The legal, psychological, and social factors underlying crime, criminal behavior, and crime prevention. Prereq.: Social Science 101 and 102. *3 h. c.*

316. *Criminology II.* Modern thought concerning methods of apprehension, treatment, and institutional care of adult criminals. Procedures governing probation and parole. Prereq.: Social Science 101 and 102. *3 h. c.*

325. *Cultural Anthropology: New World Ethnography I.* An analysis of the origins, culture, and achievements of the Inca, Mayan, and Aztec civilizations with special emphasis on their art, symbolism, and social institutions. Prereq.: Social Science 101 and 102, and Sociology 204. *3 h. c.*

326. *Cultural Anthropology: New World Ethnography II.* An analysis of selected North American, Central American and South American Indian tribes, with special emphasis on their art, symbolism, and social institutions. Prereq : Social Science 101 and 102, and Sociology 204. *3 h. c.*

327. *Cultural Anthropology: Old World Ethnography.* An analysis of ancient and contemporary primitive cultures found throughout Asia, Africa, Australia, and the Pacific islands with special emphasis on their art, symbolism, and social institutions. Prereq.: Social Science 101 and 102 and Sociology 204. *3 h. c.*

330. *Industrial Sociology.* Industrial social organization in our culture with consequent urbanization; small and large enterprises related to each other, to our social class system, to minority groups, and other areas within our society such as the family, government and power politics, social change; technological progress and its repercussions. Prereq.: Social Science 101 and 102. *3 h. c.*

331. *Urban Sociology.* The city in modern industrial civilization; its physical plant and land-use pattern; its changing social structure viewed from the perspectives of livelihood, stratification and power, family, school, church, health and welfare, mass communication, and government; the sociological aspects of planning redevelopment. Prereq.: Sociology 203. *3 h. c.*

404. *Political Sociology.* The social conditions that affect government and politics, determine political order and regulate struggles for power; political behavior and processes such as pressure groups; associations, political parties and movements to stabilize or change the political order. Special

reference will be made to the 19th and 20th century movements. Prereq.: Social Science 101 and 102, History 201 and 202, and Sociology 203. *3 h. c.*

405. *Social Control.* Means of control in primitive and advanced societies. The role of the family, school, church, clubs, leagues, corporations, labor unions, trade and professional associations, the press, radio, and movies. The modification of individual and group behavior by group valuations, praise, ridicule, rewards, punishments, symbols, slogans, and propaganda. Prereq.: Sociology 203 and Psychology 201. *3 h. c.*

406. *Social Research.* Seminar in methods of obtaining, interpreting, and presenting sociological data through the use of case studies, social surveys, etc. Each student makes an intensive study of an existing situation. Prereq.: Sociology 305, senior standing with major in sociology or social studies, and consent of instructor. *3 h. c.*

409. *History of Social Philosophy.* The evolution of social theory, with emphasis upon various present-day schools of thought. Prereq.: Sociology 203 and nine semester hours of Upper Division sociology courses. Listed also as Philosophy and Religion 409. *3 h. c.*

410. *Minority Groups.* A survey of the origin, characteristics, status, and adjustment of national and racial minority groups, with emphasis on the significance of membership in such a group for in-group, out-group, and community solidarity. Prereq.: Sociology 203 or consent of the instructor. *3 h. c.*

413. *Introduction to Social Casework Methods.* Analysis of the major processes employed in social casework: the relation of these methods to other fields such as nursing, teaching, legal counseling, personnel, and business administration. Prereq.: Sociology 312 and 313, or senior standing with a major in sociology or social studies. *2 h. c.*

414. *Introduction to Social Group Work Methods.* Analysis of the major processes employed in social group work: relation of social work methods to other fields such as teaching, recreational leadership, committee work, and participation in civic and community affairs. Prereq.: Sociology 312 and 313, or senior standing with a major in sociology or social studies. *2 h. c.*

415. *Introduction to Community Organization Methods.* Analysis of the major processes employed in community organization and social action for the purpose of achieving a more effective adjustment between social welfare needs and community resources: relation of community organization methods to areas other than social work, such as civic leadership, industrial planning, political and legal services. Prereq.: Sociology 312 and 313, or senior standing with a major in sociology or social studies. *2 h. c.*

432. *The Psycho-Social Dynamics of Religion.* Identical with Philosophy and Religion 432; listed also as Psychology 432. *3 h. c.*

Spanish

Associate Professors Richardson (chairman), and Mills; Dr. Garcia.

A major in Spanish consists of 24 semester hours above the elementary level, including Spanish 301, 302, six hours in Latin, French, or Italian, or six hours of Upper Division Spanish. For a combined major in humanities, see page 99.

The prerequisite for any Upper Division course is Spanish 202, or four years of high school Spanish, or the consent of the instructor. Freshmen who satisfy this prerequisite may enter Upper Division courses.

Lower Division Courses

101-102. *Elementary Spanish.* The essentials of Spanish grammar, taught through written and oral exercises and the reading of simple texts. No credit is given for this course if the student has credit for two years of high school Spanish. *3 + 3 h. c.*

201. *Intermediate Spanish.* Review of grammar, with imitative exercises in composition. Reading of selected classics of Spanish and Spanish-American prose narration. Prereq.: C or better in Spanish 102 or in second-year high school Spanish. *3 h. c.*

202. *Intermediate Spanish.* A continuation of Spanish 201, using modern stories and plays and conversational exercises based on the text. Prereq.: Spanish 201 or three years of high school Spanish, or consent of instructor. *3 h. c.*

201L, 202L. *Spanish Conversation.* A laboratory course in oral Spanish, with the instructor using the direct conversational approach to help the student speak Spanish in practical, everyday situations. Prerequisite or concurrent: Spanish 201, 202. *1 + 1 h. c.*

205. *Oral Practice in Latin-American Countries.* Two weeks in one or more more Spanish-speaking countries, accompanied by an instructor. One and a half hours of instruction daily for twelve days. Prereq.: Spanish 101-102, or consent of the instructor, with whom arrangements should be made. The student pays his own expenses. *1 h. c.*

211-212. *Commercial Spanish.* An introduction to the specialized field of commercial Spanish, with emphasis on the development of a vocabulary practical for all types of business. Practice in dictation, letter writing, and translation. Prereq.: C or better in Spanish 102 or in second-year high school Spanish. (This course does not satisfy the prerequisite for Upper Division courses in Spanish.) *3 + 3 h. c.*

Upper Division Courses

All Upper Division courses (except 411, 412) are conducted in Spanish.

301. 302. *Survey of Spanish Literature.* An introduction to the study of Spanish literature, aimed at acquainting the student with the main classical works and writers and the principal literary tendencies and movements. First half: from the origins to 1700. Second half: from 1700 to the present. Required for the major in Spanish. *3 + 3 h. c.*

311. *Advanced Composition and Grammar.* A practical course in advanced composition and grammar. Study of peculiarities in Spanish style, vocabulary, and idiom. Translation into Spanish; free composition. *3 h. c.*

312. *Curso de Estilo.* Through translations from English to Spanish and from Spanish to English an insight is given into the fundamental differences in expression between the two languages. *3 h. c.*

313. *Spanish Civilization.* Spain: the land and the people; the Golden Age and the modern period. A study of the traditions, history, and geography of Spain, and the national character as expressed in everyday life—material fundamental to the understanding of Spanish literature. All assigned readings are in Spanish *3 h. c.*

314. *Latin-American Civilization.* A survey of the chief cultural characteristics of the Hispanic-American republics since their independence: their way of life, the evolution of their institutions, their social and political structure. Assigned readings are in Spanish. *3 h. c.*

401. *Classical Spanish Literature.* The literature of the Golden Age, with special emphasis on the dramatists, Cervantes, Tirso, Lope de Vega, Zorrilla, Calderon. *3 h. c.*

403, 404. *Nineteenth Century Spanish Literature.* The literary movements of the nineteenth century, studied through extensive reading, written and oral reports, and explanation of texts in class discussion. First half: romanticism, realism, naturalism, and the *costumbrista* movement; special study of the drama. Second half: the renaissance of the novel. *3 + 3 h. c.*

405. *The Generation of '98.* The principal writers of the early twentieth century: Baroja, Unamuno, Valle-Inclán, Azorin, Benavente, and others. *3 h. c.*

406. *Twentieth Century Spanish Literature.* A survey of the leading writers of the twentieth century with a special study of their principal work. Class discussion of representative novels, poems, and dramas. Oral and written reports. *3 h. c.*

407. *The Spanish-American Novel.* An outline of the development of the Spanish-American novel up to the present day. Reading and analysis of significant novels. *3 h. c.*

411, 412. *Comparative Grammar of the Romance Languages.* Identical with French 411, 412; listed also as Italian 411, 412. *3 + 3 h. c.*

Speech and Dramatics

Professor Dykema (chairman); Assistant Professors Crites, Elser, and Foley.

Majors are expected to complete the basic requirements for the English major. Courses in speech and dramatics may be counted toward a major in English, with the approval of the chairman of the Department of English. Students preparing to teach in high school will find Speech 219 especially valuable.

The prerequisite to all other courses in speech is Speech and Dramatics 115 and 116, or Communication 105-106-107, or preparation satisfactory to the instructor.

Lower Division Courses

105-106-107. *Basic Course* in communication. See Communication.

115, 116. *Fundamentals of Speech.* This course aims to develop self-expression through mind, body, and voice, by means of a study of proper speech habits and practice in the delivery of numerous extemporaneous and prepared speeches. Speech and Dramatics 115 is prerequisite to 116. (The combination of these courses with English 101-102 is equivalent to Communication 105-106-107.) *2 + 2 h. c.*

213. *Public Speaking.* The effective construction and delivery of speeches. Frequent presentation of short talks before the class. Adaptable to the needs of professional and business men. *2 h. c.*

215, 216. *Public Speaking and Oral Interpretation.* A continuation of Speech and Dramatics 115, 116 on a more advanced level. Those who wish may concentrate on oral interpretation. *2 + 2 h. c.*

217. *Principles and Practices of Broadcasting.* A lecture and observation course designed to familiarize students with the principles, tools, and skills required in radio and television broadcasting. *2 h. c.*

219, 220. *Play Production I.* This course has three purposes: to develop interest in and appreciation of legitimate drama, particularly as found in the little theaters of today; to instruct in the production of such drama; and to provide practical experience through producing plays in class and for the public. Two hours of lecture and two hours of laboratory. *3 + 3 h. c.*

221. *Voice and Diction.* A fundamental study of the voice mechanism: breath control, tone, enunciation, articulation, vocal variety. *2 h. c.*

223, 224. *Rehearsal and Performance.* Detailed study of a play or opera through preparing it for public performance. The class is formed after casting and continues through the final production date. May be repeated. *½ to 2 + ½ to 2 h. c.*

Upper Division Courses

315. *Debating and Public Discussion.* The principles of argumentative and deliberative speaking, with practical training in analyzing questions, finding and selecting evidence, debating, and public discussion. *2 h. c.*

317. *Acting I.* Rehearsal and classroom performance of scenes and pantomimes. Students of Speech and Dramatics 421 and 422 assist in directing, under faculty supervision. *2 h. c.*

319, 320. *Play Production II.* Theory and practice of staging, scene design, lighting, and costuming of period productions. Construction of stages in miniature from drawings, after research into method. Prereq.: consent of instructor. *3 + 3 h. c.*

323. *Applied Public Speaking.* Preparation of speeches and their delivery before various groups. Conducted mainly through individual conferences. Prereq.: consent of instructor. *2 or 3 h. c.*

421. *Theater Directing I.* The director's interpretation of the play: its setting, movement, and dialogue. Class-members assist in the work of Speech and Dramatics 317. Prereq.: consent of instructor. *2 h. c.*

422. *Theater Directing II.* An advanced approach to the work of Speech and Dramatics 421. Each student directs a play. Prereq.: consent of instructor. *2 h. c.*

University Seminar

See page 63.

Zoology

See Biology.

Pre-Law Study

Following is a curriculum recommended for the student who expects to enter a school of law. In addition, he should consult his adviser.

Suggested Pre-Law Curriculum for the Degree of Bachelor of Arts

The major may be a combined major of 45 semester hours in social studies or a major of 30 semester hours in some department of the College of Arts and Sciences. This may vary with the requirements of the law school to which the student seeks entrance.

The University will accept a maximum of 30 credit hours from an approved law school toward the completion of the degree of Bachelor of Arts. See page 61.

First Year	Hrs.
Acctg. 201-202 & 201L-202L Elementry Accounting & E. A. Laboratory or Hist. 105, 106 Western Civilization	6
*Biology or chemistry	8
**Comm. 105-106 Basic Course I-II	6
†Foreign language (or elective)	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Comm. 107 Basic Course III	3
†Foreign language (or elective)	6
Hist. 201 & 202 The United States	6
Pol. Sc. 201 & 202 American Government or Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Psych. 201 General Psychology	3
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Electives	4
	31

Third Year	Hrs.
Engl. 200, 203, 204, 205, 206, or 275	3
Hist. 306, 307 Constitutional History of England	6
History, political science, sociology, economics, accounting (in any selection or combination)	12
Mathematics or science	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Elective (Upper Division)	3
	30

Fourth Year	Hrs.
Electives (Upper Division)	30
	30

*Eight hours of biology cannot be completed in two semesters; the student electing it must rearrange this curriculum slightly, and should consult his adviser.

**English 101-102 and Speech and Dramatics 115, 116, totaling 10 hours, may be substituted for Communication 105-106-107.

†Foreign language requirements are explained on pages 60-62.

Pre-Medical Study and Allied Fields

Following are curriculums recommended for students planning to enter schools of medicine, nursing, and allied fields. The student following one of these curriculums should consult with his adviser, who will be a member of the department indicated below for each field.

Suggested Pre-Medical and Pre-Veterinary Curriculum for the Degree of Bachelor of Arts

The major is a combined major of at least 45 hours in biology, chemistry, and physics, varying with the requirements of the medical school to which entrance is sought. Advisement is provided by the Department of Biology.

The University will accept a maximum of 25 credit hours of study in an approved medical school toward the completion of such a pre-medical curriculum: see pages 61-62.

First Year	Hrs.
Biol. 103 General Biology	3
Biol. 125 Zoology: Invertebrates	2
Comm. 105-106 Basic Course I-II	6
Math. 101 or 101R and 102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytical Geometry	3
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Biol. 225 Zoology: Vertebrates	3
Biol. 308 Vertebrate Embryology	4
Chem. 109-110 General Chemistry	10
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206 or 275	3
Physics 101-102 and 101L-102L Fundamentals of Physics	8
H. & P. E. activity courses	1
	32

Third Year	Hrs.
Biol. 309 Vertebrate Anatomy I	3
Biol. 310 Vertebrate Anatomy II	2
Chem. 201 Analytical Chemistry I	4
**Chem. 202 Analytical Chemistry II	4
Chem. 305 Organic Chemistry	4
*Foreign language (or elective)	6
Hist. 201 & 202 The United States	6
Psych. 201 General Psychology	3
	32

Fourth Year	Hrs.
**Biol. 313 Vertebrate Histology	3
**Biol. 321 Genetics	3
**Chem. 306 Organic Chemistry	4
*Foreign language (or elective)	6
Philosophy and Religion elective (Upper Division) or Humanities 401 or 402	3
Electives (Upper Division)	11
	30

*See pages 60-62.

**Recommended but not required. However, there must be a minimum of 40 semester hours in Upper Division courses.

Pre-Dentistry, Pre-Pharmacy, Pre-Chiropody, and Pre-Osteopathy

The two-year curriculums suggested for these purposes are similar to the first two years of the pre-medical curriculum. For details, consult the chairman of the Department of Biology.

Nursing

1. Pre-Nursing.

For the student wishing two years of college as preparation for entering a nursing school, the following curriculum is suggested:

First Year	Hrs.
Biol. 103 General Biology	3
Biol. 225 Zoology: Vertebrates	3
Chem. 109-110 General Chemistry	10
Comm. 105-106 Basic Course I-II	6
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	32

Second Year	Hrs.
Biol. 230 Anatomy and Physiology I	3
Biol. 250 Anatomy and Physiology II	3
Comm. 107 Basic Course III	3
Engl. 200 Introduction to Literature	3
Hist. 201 and 202 The United States	6
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
Electives	9
	31

Advisement is provided by the Department of Biology. These courses may be counted toward a bachelor's degree if the student wishes to resume college study after getting the nurse's certificate (see section 4 below).

2. Youngstown Hospital Association Affiliation.

The first-year student in the Youngstown Hospital Association School of Nursing takes:

a. A course in orientation to the nursing arts and techniques which is carried concurrently with the courses listed under "b."

b. The following courses at Youngstown University:

First Year	Hrs.
Biol. 151 Functional Anatomy of the Human	3
Chem. 100 Introduction to Chemistry	4
	7

Second Year	Hrs.
Biol. 152 Functional Anatomy of the Human	3
Biol. 160 Microbiology	3
Home Ec. 101 Food and Nutrition	2
Home Ec. 101L F. and N. Laboratory	1
	9

Advisement is provided by the Department of Biology. The college courses may be counted toward a bachelor's degree if the student wishes to resume college study after getting the nurse's certificate (see section 4 below).

3. Public School Nursing.

For the curriculum leading to the degree of Bachelor of Science in Education for public school nurses, the student may consult the Dean of the School of Education.

4. For the Registered Nurse.

Program Leading to the Degree of Bachelor of Science or the Degree of Bachelor of Arts

A registered nurse is allowed credit, on the basis of standard achievement tests, for study at an accredited nursing school. A balance of 90 or more semester hours must be completed in college, including:

a. One acceptable academic major.

b. Biology 383 (Ward Management and Teaching).

c. All other requirements for either (1) the degree of Bachelor of Science, except those in foreign language and in health and physical education, or (2) the degree of Bachelor of Arts, except those in health and physical education. See pages 59-62.

General advisement for a student following this program is provided by the Department of Sociology.

Medical Technology

The degree of Bachelor of Science with a major in medical technology is granted to those who have completed the requirements for the Bachelor of Science degree with the exception of the foreign language requirement, which is waived. Thirty hours of the required 136 are granted for the technical training which must be taken in a medical technology laboratory accredited by the Council on Medical Education and Hospitals of the American Medical Association. The remaining 106 hours are in biology, chemistry, mathematics, physics, and non-science courses, as specified below. Advisement is provided by the Department of Chemistry.

However, students interested in medical technology frequently prefer to obtain degrees with majors in biology or chemistry and obtain their technology training afterward. In such cases, the regular curriculum of the major department is followed, and advisement is provided by the major department.

At present, students are admitted to medical technology laboratories after completing the first two years of college work, but completion of three years before starting the training period is strongly recommended.

Required Curriculum Leading to the Degree of Bachelor of Science with a Major in Medical Technology

First Year	Hrs.
Biol. 103 General Biology	3
Biol. 225 Zoology: Vertebrates	3
Chem. 109-110 or 111-112 General Chemistry	10 or 8
Chem. 119-120 Chemical Mathematics	2
Comm. 105-106 Basic Course I-II	6
Math. 101 or 101R and 102 College Algebra	4
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	32 or 30

Second Year	Hrs.
Biol. 230 Anatomy and Physiology I	3
Biol. 250 Anatomy and Physiology II	3
Chem. 201-202, 201L-202L Analytical Chemistry I	8
Comm. 107 Basic Course III	3
Physics 101-102 and 101L-102L Fundamentals of Physics	8
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
	32

Summer Session

	Hrs.
Chem. 305-306 Organic Chemistry	8

Third Year

	Hrs.
Biol. 308 Vertebrate Embryology	4
Biol. 313 Histology	3
Biol. 321 Genetics	3
Chem. 321, 322 Biochemistry	6
Engl. 200, 203, 204, 205, 206 or 275	3
Hist. 201, 202 The United States	6
Philosophy and Religion elective (300 or above) or Humanities 401 or 402	3
*Electives (Upper Division)	8
	†36

Fourth Year

	Hrs.
Technological training, credited as 30 semester hours, of which 15 are evaluated as 200-level and 15 as 300-level.	30

***Suggested Courses**

	Hrs.
Biol. 309 Vertebrate Anatomy	3
Biol. 405 General Physiology	4
Chem. 307 Chemical Literature	2
Chem. 400 Advanced Quantitative Analysis	2
Chem. 401 Instrumental Methods of Analysis	3
Chem. 404 Organic Analysis	4
Other Upper Division courses	

† Since this is an overload, a part may be taken during the following summer, or an application for an overload may be submitted to the Academic Standards Committee if the student's point average is high.

The School of Business Administration

ORGANIZATION AND DEGREES

The School of Business Administration has five departments: Accounting, Advertising, Business Organization, Merchandising, and Secretarial Studies.

Majors are offered in accounting, advertising, commercial art, general business, management, merchandising, public relations, traffic and transportation management and secretarial studies. Minors are offered in accounting, advertising, business organization, merchandising, and transportation.

The degrees to which courses in the fields may lead are those of Bachelor of Science in Business Administration, the requirements for which are listed below, and Bachelor of Science in Education with a major in business education, for which see the School of Education section. A two-year curriculum leading to the title of Associate in Business Administration is also offered.

Requirements for the Degree

Bachelor of Science in Business Administration

It is the student's responsibility to see that he satisfies all the graduation requirements for the degree he seeks. For the Bachelor of Science in Business Administration degree, these are:

1. The pre-college or preparatory courses, normally taken in high school. These are listed briefly below; for further information see pages 36-37.

2. The courses and other requirements to be completed in the University, comprising:

a. The *general* requirements for graduation from the University, explained on pages 38-42 and recapitulated below.

b. Requirements peculiar to the *degree*, which are stated below.

c. Requirements for the major and minor fields, and for any other purpose.

The curriculums leading to the degree require a minimum of 125 semester hours of credit (130 for general business, commercial art, or traffic and transportation management, 136 for accounting and management), and are designed to be completed in four academic years. A student willing and able to carry heavier loads successfully may finish in less time.* If a student wishes to include summer courses in his program, he should consult his adviser.

*This plan is not encouraged if the student intends to hold a strenuous or time-consuming outside job regularly while enrolled in classes.

R. O. T. C. students are allowed certain modifications of the requirements, as explained on page 43.

1. Pre-college

Subject	*High school units*
English	3
United States history and civics	1
Any mathematics	1
Science or additional mathematics	1
Others	10

2. In the University

a. General

Other than courses (see pages 38-39, 41): — *Credit hours*

Completion of number of credit hours required for degree — 125 to 136

Upper Division status (including completion of any specified preparatory courses not completed at time of entrance).

Major and minor requirement. Residence requirement.
Course-level requirements. Application for graduation.
Grade-average requirement.

Basic courses:

Communication 105-106-107, Basic Course I-II-III	9
Health and Physical Education 109M or 109W, Health Education	2
Health and Physical Education activity courses	2
Orientation 100, Freshman Orientation	1

Area courses:

Religion, a course in the Department of Philosophy and Religion, or Humanities 401 or 402	3
Sciences: specified below under degree requirements	
Social studies:	
Social Science 101 and 102, Introduction to the Social Sciences (or Social Science 101 and a course equivalent to Social Science 102 as prescribed for certain curriculums)	6
History 201 and 202, The United States	6

b. For the Degree*

Non-professional in purpose:

English	3

Three hours of literature, English 200, 203, 204, 205, 206 or 275, or English 251 or 253.

Psychology 201, General Psychology	3
Science	9

Six hours in any science courses, and Business Organization 131 (Mathematics of Business) or Merchandising 121 (Merchandising Mathematics) where applicable.

Professional in purpose:

Accounting 201-202, Elementary Accounting	6
**Advertising 227, Advertising Principles	3
**Advertising 228, Advertising Procedures	3
†Business Organization 111, Principles of Business	3
Business Organization 201 and 202, Business Law I and II	6
Business Organization 322, Credits and Collections	3
Merchandising 224, Marketing	3

*When the major is in secretarial studies, some of these degree-requirement courses may be replaced by courses taken in the Secretarial School, and the science requirement differs a little. See the suggested curriculum for that major, at the end of this section.

**Not required for the major in accounting or traffic and transportation management.

†Not required for the major in merchandising.

c. Other Courses

The courses required for the majors in accounting, advertising, and merchandising are stated in the announcements of those departments. Those required for the combined majors in commercial art or general business, and those suggested for a combined major in management, public relations or traffic and transportation management, are stated in the announcements of the Department of Business Organization. The year-by-year curriculums that appear later in this section include all required courses. The minor for this degree must be in a field related to the major or in one approved by the dean of the School of Business Administration.

Requirements for the Title

Associate in Business Administration

The title of Associate in Business Administration will be granted to a student having a total of 60 to 66 semester hours (depending on the major) of acceptable academic credit with a point average of not less than 2.00, including Communication 105-106; Social Science 101; and Business Organization 201 and 202. A major in advertising, merchandising, or a combined major in public relations is 60 semester hours; a combined major in commercial art, general business, or traffic and transportation management requires 63 semester hours; and a major in accounting or a combined major in management requires 66 semester hours.

The title of Associate in Business Administration will also be granted to a student who completes the first two years of the four-year curriculum in secretarial studies for a total credit of 64 hours.

The grade in Communication 105-106 or its equivalent must be C or better in order to be certified in English proficiency by the director of the Division of Language and Literature.

COURSES OF INSTRUCTION AND CURRICULUMS

It is important that the student familiarize himself with the course-numbering system and its significance, as well as the abbreviations used to indicate the amount of credit. These are explained in the College of Arts and Sciences section, on pages 62-63.

Curriculums for the several major fields open to business administration students will be found after the course descriptions for merchandising, except the one for secretarial studies, which follows the last course description in that subject.

NOTE. The parts of a hyphenated course must be taken in numerical order, and both parts must be successfully completed before credit toward graduation can be given for the first part.

Accounting

Professor Miller (chairman); Assistant Professors Jenkins, Niemi, and Reilly; Instructors Donchess, Evans, and Petrych; Messrs. Bannach, Berquist, Chuey, Fazzalore, Fry, Fuller, Goddard, Hosick, McConnell, Nicastro, Reali, and Scheel; Lecturers Connelly and Rodkey.

Accounting courses provide a study of bookkeeping methods and the presentation, analysis, and interpretation of financial data. They also cover machine accounting, cost analysis, consolidated statements, auditing, taxes, systems of accounting, and other advanced work. They are designed for students who wish to become private accountants in business and industrial firms; to prepare for certification through experience in the employ of certified public accountants; to become cost analysts or general business executives; or to teach bookkeeping or accounting.

In view of this variety of aims and interests, the accounting curriculum diverges in its last two years. A major in accounting may be in either public accounting or private accounting. A major in public accounting consists of 40 semester hours; a major in private accounting consists of 46 semester hours; each includes Accounting 201-202, 300, 301-302, 303, 304, 401, 403, 404, 405, 407, 410 and 415 and other courses included in the curriculums printed below. A student majoring in accounting must have a minor of 15 hours in a related field or in a field approved by the Dean of the School of Business Administration.

A grade of C in Accounting 202 is prerequisite to all more advanced courses in accounting. *A point index of at least 3.0 in accounting is necessary to carry two accounting courses the following year.*

Lower Division Courses

201-202. *Elementary Accounting I-II.* The theory and use of balance sheets, operating accounts, and working papers, with special attention to books of original entry and special ledger accounts. The setting up of accounts and adjusting and closing of books at the end of the fiscal period are developed through practice sets and problems. Accounting 201L-202L must be taken concurrently. *3 + 3 h. c.*

201L-202L. *Elementary Accounting Laboratory I-II.* For all students in Accounting 201-202. This requirement can be waived only on the approval of the dean of the school. The class meets two hours a week, for work equivalent to that for one hour of credit. *No Credit.*

Upper Division Courses

300. *Basic Concepts of Machine Accounting.* An approach to accounting methods through the use of the unit record card. Fundamentals of punched card machine operations and a logical approach to systems developments and procedures including: the unit record and what it will do; machine fundamentals; applications involving billing, accounts receivable, accounts payable, inventory and payroll; and a case study of a mechanized installation. Prereq.: standing as a junior. *2 h. c.*

301-302. *Intermediate Accounting I-II.* Financial statements, classification of real and nominal accounts, and special features pertaining to partnerships and corporations. The theoretical background of accounting principles and procedures, with emphasis on profits, surplus, dividends, depreciation, funds, and reserves. Accounting 301L-302L must be taken concurrently. Prereq.: C or better in Accounting 202. *3 + 3 h. c.*

301L-302L. *Intermediate Accounting Laboratory I-II.* For all students in Accounting 301-302. This requirement can be waived only on the approval of the dean of the school. The class meets two hours a week, for work equivalent to that for one hour of credit. Prereq.: Accounting 201-202 and 201L-202L. *No Credit.*

303. *Basic Cost Accounting.* The principles of cost-finding for manufacturing accounts, including the three-fold division of costing: material accounting, payroll records, and the recording and applying of manufacturing expense. Job order and process costs are covered, with emphasis on budgeting as a means of overhead control. Appropriate problems and practice sets are used. Prereq.: C or better in Accounting 202. *3 h. c.*

304. *Advanced Cost Accounting.* A continuation of Accounting 303, covering estimating, standard, distribution, differential, and by-product costing, with emphasis on the use of cost data as a means of managerial control. Prereq.: C or better in Accounting 303. *3 h. c.*

400. *Principles of Business Computers.* An approach to business procedures and systems through the use of electronic computers. Basic techniques of computer programming; adaptation of data processing fundamentals to business problems; and a case study of an electronic computer installation. Prereq.: Accounting 300. *3 h. c.*

401. *Advanced Accounting.* Partnerships and liquidations in installments; joint ventures; installment sales; insurance; receivership; estates and trusts; branch accounting; consolidations and mergers. Prereq.: C or better in Accounting 302. *3 h. c.*

403. *Federal Taxes I.* The principles underlying our income tax law as it pertains to the individual. The student files specimen returns based on actual case studies. Prereq.: C or better in Accounting 302, or senior standing. *3 h. c.*

404. *Federal Taxes II.* The federal income tax for partnerships and corporations; the gift tax, the estate tax, and social security taxes. The student files specimen returns based on actual case studies. Prereq.: Accounting 403. *3 h. c.*

405. *State and Local Taxes.* A condensed study of all Ohio taxes, including sales, tangible, and intangible, personal property, franchise, stamp, and other related taxes. The student fills out forms required of business by various governmental agencies. Prereq.: standing as senior majoring in accounting. *3 h. c.*

407. *Auditing.* Methods of auditing, with emphasis on the verification of balance sheets and operating statements and the analysis and use of prepared statements. A short audit case is worked through by the student. Prereq.: C or better in Accounting 302 and 304. *3 h. c.*

408. *Auditing Practice and Report Writing.* A practical case in auditing is worked through with emphasis on the special recommendations for procedures used in actual practice. Prereq.: Accounting 407. *2 h. c.*

410. *Statement Analysis.* The flow of funds as reflected in financial statements. The use of ratios and other indices in interpreting a concern's financial position, trends, and other variations. Each student prepares an analysis of some prominent corporation and makes comparisons with its principal competitors. Prereq.: C or better in Accounting 302. *2 h. c.*

411, 412. *C. P. A. Problems I, II.* All types of accounting and auditing problems are solved and discussed from the standpoints of both theory and practice, with special emphasis on accuracy and clarity in such problems as are encountered in C. P. A. examinations. Prereq.: grade of C or better in Accounting 407 or permission of the instructor. Offered on demand. *3 + 3 h. c.*

415. *Systems.* Principles underlying the design and installation of accounting systems to meet the needs of all types of business concerns.

Machine accounting methods and manuals of procedure are also studied. Prereq.: Accounting 401, 403 and 407. *3 h. c.*

416. *Budgetary Control.* Compilation and preparation of budget data, for managerial and administrative purposes. Various types of budgets are prepared and selected problems of budgeting worked. Prereq.: Accounting 304 and 401. *3 h. c.*

417. *Controllership.* The duties and responsibilities of the chief accounting officer in a private business concern. The use of accounting and statistical data in the planning, co-ordination, control, and protection of business. Prereq.: Accounting 304 and 401. *3 h. c.*

451. *Seminar.* Individual research in accounting problems. The student chooses his topics and prepares papers and talks for the benefit of the group. Prereq.: Accounting 304 and 401, and senior standing. *1 to 3 h. c.*

Advertising

Assistant Professor Flad (chairman); Instructor Braden; Messrs. Farragher, Hackett, Mamula, Schafer, and Walls; Lecturers Mittler and Pratt.

Advertising courses provide a study of the forms, methods, costs, and uses of advertising. They are designed both for students who plan to enter the advertising field and for those who wish a knowledge of advertising for other purposes.

A major in advertising consists of 30 semester hours; it includes Advertising 227, 228, 329, 330, 401, 411, 414, 415, and Art 110 and 223. The combined major in commercial art consists of 45 semester hours in advertising and art as prescribed in the curriculum printed below. A student majoring in either advertising or commercial art must have a minor of 15 semester hours in a related field or in a field approved by the Dean of the School of Business Administration.

Lower Division Courses

227. *Advertising Principles.* A survey of advertising as an instrument of modern business, including the various forms of advertising. This course includes the economics, methods, and psychology of advertising, with discussion of visualization, copy, layout, printing, photo-engraving, and the graphic arts. Prereq.: sophomore standing. *3 h. c.*

228. *Advertising Procedures.* This course deals with such problems as the study of the product, determination of appeals to be used, selection of media, publication schedules, various types of campaigns; radio, television, outdoor advertising, market research, copy testing, packaging, labeling, and point-of-sale advertising. Prereq.: Advertising 227. *3 h. c.*

Upper Division Courses

329. *Advertising Copy.* Practical, creative applications of basic advertising objectives. Newspaper, magazine, direct-mail, billboard, bus card, and radio copy are written as outside assignments and classroom projects. Prereq.: Advertising 228. *3 h. c.*

330. *Advertising Layout.* Graphic presentation of an advertising idea. Study of composition, design, balance, and the arrangement of such elements as illustration, headline, sub-headline, body copy, and signature according to their importance. Prereq.: Art 223 and Advertising 329. *3 h. c.*

335. *Window Display.* Identical with Merchandising 335. Prereq.: junior standing. *3 h. c.*

401. *Advertising Problems.* Application of fundamental theories and practices to various advertising and merchandising problems, including the development of budgets and the planning and proper use of advertising campaigns for retail, consumer, and industrial advertising. Prereq.: Advertising 330 and senior standing. *3 h. c.*

411. *Direct Advertising.* The planning and preparation of the major forms of direct advertising, including discussion and writing of sales letters, folders, leaflets, booklets, catalogs, house magazines, etc., and a study of multigraphing, mimeographing, printing, and engraving. Prereq.: Advertising 330. *3 h. c.*

414. *Advertising Case Studies.* A study of case histories taken from leading business firms. Analyses of these cases and their backgrounds provide an understanding of the application of advertising to specific business situations. The student is in the position of the business executive who must make decisions on advertising problems. Prereq.: Advertising 330. *3 h. c.*

415. *Radio and Television Advertising.* Its history, organization, and practice from the viewpoints both of the advertiser and of the stations and networks. Consideration of such problems as choosing the station, the time and method of broadcast, types of programs, the writing and production of commercials, and selling the campaign. Prereq.: Advertising 329. *3 h. c.*

451. *Seminar.* Each student undertakes original research in some phase of advertising or the advertising business and presents his findings to the class, who study and discuss them. Prereq.: senior standing with major in advertising. *1 to 3 h. c.*

Business Organization

Professor Miller; Associate Professors Glenny, Harder, and McCarty; Assistant Professors Reilly Achairmanq, M. Browne, Jenkins, Kermani, Provance, Rees, and Whitelock; Instructors Brennan, Donchess, Evans, Klasovsky, Lengyel, J. Long, L. Long, Petrych, Tahmasebi, and Teodorescu; Mr. Cunningham, Mr. Edwards, Mr. G. Elser, Mr. H. Fisher, Mrs. Goldstein, Miss Hamady, Mr. Macejko, Mr. Mamula, Mr. Matzye, Mr. Mediate, Mr. Meinets, Mr. Meshel, Mr. D. Nelson, Mr. Nicastro, Mr. Pipino, Mr. Roberts, Mr. Rudibaugh, and Mr. Zerbonia; Lecturers Amaduri, Beil, and N. Moore.

The Department of Business Organization offers courses in various business subjects which (a) complement those of the other departments of the School of Business Administration, (b) provide many of the courses for the combined majors in general business, commercial art, management, public relations, and traffic and transportation management, and for the major in business education, and (c) provide for the minor in business organization.

The combined major in *general business* consists of a total of 45 semester hours in accounting, advertising, business organization, merchandising, and economics. The combined major in *management* consists of a total of 45 semester hours in business organization, economics, engineering, and merchandising. The combined major in *public relations* consists of a total of 45 semester hours in accounting, advertising, business organization, economics, English, and merchandising. The combined major in *traffic and transportation management* consists of a total of 45 hours in accounting and business organization. The minor for each of these majors consists of 15 additional semester hours in a related field or in a field approved by the

Dean of the School of Business Administration. The major in *business education* is done under the direction of the School of Education.

Lower Division Courses

111. *Principles of Business.* An introductory course covering the development of forms of business enterprises, management, employer-employee relationship, credit, banking, and elementary accounting. *3 h. c.*

120. *Economic Geography.* An elementary survey of the raw materials of the earth, methods of livelihood, land utilization, and population problems. *3 h. c.*

131. *Mathematics of Business.* Designed to meet the needs of students of business, to provide the kind and amount of mathematical background needed for success in the study of finance, commerce, accountancy, business statistics, merchandising operations, and related topics. *3 h. c.*

201. *Business Law I.* A study of legally binding agreements between persons and of their enforcement, including the making of a contract, the effect of fraud, duress, etc.: designed to provide a practical knowledge of contracts, agency, negotiable instruments, bailments, carriers, and sales. Prereq.: Communication 106 and Social Science 101. *3 h. c.*

202. *Business Law II.* A study of the law of partnerships, corporations, property, bankruptcy, and insurance. The course covers wills, estates, and the relationships of debtor and creditor. Prereq.: Business Organization 201. *3 h. c.*

210. *Public Relations.* An introduction to public relations and the media thereof, emphasizing management-labor-community relationships. Prereq.: sophomore standing. *3 h. c.*

212. *Business Letters and Reports.* A study of sound business letters and reports, stressing content, effective sentences, intelligent punctuation, psychology of tone, and the internal structure of the sales letter. The location of information on any business subject in writing reports is also covered. Prereq.: Communication 107. *3 h. c.*

215. *Principles of Transportation.* The historical and economic background of the growth and development of the five modes of transportation, with attention to the increasing importance of carrier co-ordination and to such controversial subjects as promotional policy, subsidies, and railroad control of competing modes of transportation. Prereq.: Economics 202. *3 h. c.*

216. *Elementary Traffic and Transportation.* Designed to acquaint the student with the use of classification of freight and freight classification, shipping documents and special services. Prereq.: Business Organization 215. *3 h. c.*

217. *Intermediate Traffic and Transportation.* Designed to acquaint the student with the construction of freight rates and tariffs, and to enable him to analyze or prepare a tariff. Prereq.: Business Organization 216. *3 h. c.*

221. *Mathematics of Finance.* Designed for students majoring in accounting and for advanced general business students. Graphs and index numbers, progression, foreign exchange, compound interest, annuities, bonds and bond interest valuation, asset valuation accounts, building and loan associations, permutations and combinations, probability and mortality, life annuities, net premiums, and valuation of life insurance policies. Prereq.: Business Organization 131. *3 h. c.*

222. *Insurance.* Considerations essential in the purchase of insurance by the individual and by business enterprises: kinds of risk to be covered: types of coverage offered: evaluation of types of insurance companies: self-insurance: and methods used by insurance companies to establish rates. Prereq.: Business Organization 131 and 201. *3 h. c.*

Upper Division Courses

301. *Air Transportation.* An introductory course in air transportation, with emphasis on its historical background, federal regulation, and problems of monopoly, expansion, and government subsidies. *3 h. c.*

306. *Advanced Traffic and Transportation.* An analysis, from the legal point of view, of through rates and routes, technical tarriff and rate interpretation, milling in transit, overcharges and undercharges, loss and damage and export procedures. Prereq.: Business Organization 217. *3 h. c.*

307. *Commercial Motor Transportation.* Passenger and freight operations of road vehicles, financing and leasing of vehicles for delivery, rate-making constructions and economics of motor carrier services, insurance and proper protection for carriage, and liability for cargo and passengers; terminal methods and procedure, and federal, state and municipal regulations and restrictions as to weight, length, and public liability. *3 h. c.*

310. *Industrial Organization.* The growth and present status of industrial organization. The indications of trends, with particular attention to the evolution of management, organizational problems, equipment and working conditions, the product, wages and incentives, and personnel relations. Prereq.: junior standing. *3 h. c.*

315. *Corporation Finance.* Promotion of new industries, capital structure of corporations, evolution of a business, working capital, surplus, dividends, voting trusts, investment trusts, public utilities, co-operative plans, and reorganizations. Prereq.: Business Organization 202. Listed also as Economics 315. *3 h. c.*

317. *Real Estate Principles.* Principles of real property ownership and real estate practices; types of deeds, leases, restriction; real estate brokerage, selling, advertising; property management; subdividing and developing; zoning and its effects. Prereq.: Business Organization 202. *3 h. c.*

318. *Real Estate Finance and Problems.* Methods of financing the ownership or occupancy of real property. Real estate and real estate paper as a field of investment. Problems involved in appraisal, and practical methods of appraisal. Individual research. Prereq.: Business Organization 317. *2 h. c.*

320. *Advanced Public Relations.* Practical application of the principles of public relations, with attention to organization of ideas, writing for all types of media, psychology and timeliness of presentation, and extemporaneous speaking. Prereq.: standing as a junior, Advertising 227, Business Organization 210 and 212. *3 h. c.*

322. *Credits and Collections.* Credit instruments and classes of credits; credit agencies, collection agencies, collections, collection methods, and the place of the credit man in business. Prereq.: Business Organization 202 and Accounting 202. *3 h. c.*

330. *Investment Analysis and Management.* General considerations for the buying of insurance, real estate, securities, etc., from an investment standpoint, with emphasis on the purchase of securities by individuals. Operational procedure of stock exchanges and brokers, use of various types of trusts, sources of investment data and their interpretation, collateral, loans, and margin operations. Prereq.: Business Organization 131 and 201. *2 h. c.*

340. *Office Management and Methods.* Office organization, personnel, plan, and layout; office operation and control; time and duty analysis in office operations, including work flow and incentive methods; executive techniques required of an office manager. *3 h. c.*

346. *Industrial Traffic Management.* The nature and function of the traffic manager in industrial organizations; classification, tariffs, and rate formulation, routing, transit privileges, carriers, terminal services, claims

procedure, regulation and regulatory procedure, warehousing, material handling, export and import phases of traffic management. Prereq.: Business Organization 215. *3 h. c.*

350. *Business Management.* The application of functions and techniques of management, including basic market and product considerations; planning for physical facilities, manpower and production. A study of financing the enterprise, determining the organizational structure and the use of case studies to show the role management plays in the operation of a successful business. Prereq.: Accounting 202, Business Organization 202 and Economics 202. *3 h. c.*

406. *Interstate Commerce Commission Practice and Procedure.* A general discussion of the construction and application of the Interstate Commerce Act and practice and procedure before the Interstate Commerce Commission. Prereq.: Business Organization 306. *3 h. c.*

419. *Production Management.* A brief review of the principles, policies, and definitions of management, followed by an examination of the functions of typical production planning and control departments. Specific work on the techniques of scientific management, such as co-ordination of manufacturing plans with sales budgets, analyzing manufacturing capacities for job scheduling, and keeping records. Discussion and analysis of specific types of management controls. Prereq.: Accounting 303 and Business Organization 310 or permission of the instructor. *3 h. c.*

422. *Advanced Credits and Collections.* Credit policy determination in business and industry; planning an effective credit investigation program; analysis of financial statements for credit purposes, and control of accounts receivable in relation to sales, inventory, and working capital; collection of delinquent accounts, legal aids for credit departments. Prereq.: Business Organization 322. *2 h. c.*

450. *Development of Executive Ability.* The development of the basic processes of administration; the nature, goals and limits in planning administrative actions; proper organization by departmentation of activities, delegation of authority, the role of staff members, decentralization versus centralization, and the use of organizational charts and manuals; determination of executive personnel needed, selection, development and compensation, and the directing and controlling of administrative actions through budgets, standards, appraisals of performance and test checks. Case studies of actual management problems will be presented in the discussion forum laboratory which must be taken concurrently. Prereq.: senior standing and consent of instructor. *2 h. c.*

450L. *Development of Executive Ability Laboratory.* A two hour per week discussion forum in which actual business case studies are presented. The class is divided into small groups for discussion and solving of a particular management problem. Each group presents its decision. Each student has a chance to conduct group discussions, presents his group's decisions to the class and participate in his group's decisions. Prereq.: senior standing and consent of the instructor. *1 h. c.*

Merchandising

Assistant Professors McK. Browne (chairman), M. Browne, Einstein, and Gillespie; Instructors Braden and Lengyel; Messrs. Buttar, Brickley, Hulme, James, LaLumia, Malone, Rutecki, and Sheppa; Lecturer Pratt.

Merchandising courses comprise a study of materials and their sources, buying and selling methods, quality analyses, fashions, and methods of promotion. They are designed for the student who wishes to become a store owner, department manager, buyer, stylist, or sales executive.

A major in merchandising may be in either retail merchandising or industrial merchandising. A major in retail merchandising consists of 34 semester hours and a major in industrial merchandising consists of 30 semester hours: they include Merchandising 224, 225, 326, 420 and other courses included in the curriculums printed below. A student majoring in merchandising must have a minor of 15 hours in a related field or in a field approved by the Dean of the School of Business Administration.

Lower Division Courses

121. *Merchandising Mathematics.* This course is designed to provide complete, detailed and yet simple explanations of the mathematics of the many merchandising problems. The primary objective of the course is to aid the student to understand and apply merchandising mathematics to practical situations. *3 h. c.*

224. *Marketing.* A general survey, with attention to marketing functions and policies and marketing institutions. *3 h. c.*

225. *Salesmanship.* Knowledge of goods; study of customers and their wants, buying motives, and attitudes; planning a sale, meeting objections, closing the sale; cultivation of personality; problems in sales management, organization, planning, and research. May be counted as an Upper Division course in the business education curriculum. *3 h. c.*

Upper Division Courses

309. *Retail Marketing.* The entire marketing system considered from the consumer's viewpoint, with the retailer as his purchasing agent. Consumer attitude toward marketing institutions and their policies; sales promotion, publicity, and public relations as they affect consumer choice; government control as protection to the consumer. Prereq.: Merchandising 224 and 225. *2 h. c.*

320. *Industrial Marketing.* Characteristicts of manufacturers' goods; channels of distribution; function of middlemen; distribution costs; marketing research; government control and legal limitations. Product policies; service policies; packaging policies; price policies. Industrial advertising organization, planning and budgeting; use of advertising agencies and national advertising media; sales manuals; dealer helps; Prereq.: Merchandising 224 and 225. *3 h. c.*

331. *Non-Textiles: Apparel Accessories.* This course is designed to meet the needs of buyers, copywriters, training departments, comparison shoppers, and instructors in the consumer or distributive education fields. Sources of raw materials, manufacturing processes, care, use, and selling points of the following types of merchandise are studied: leather, shoes, handbags, luggage, furs, jewelry, metals, precious and semi-precious stones, cosmetics, soaps, and perfume. *3 h. c.*

332. *Textile Fabrics.* Textile fibers: cotton, silk, linen, wool, nylon, rayon, and other new materials; methods of dyeing and printing; weaves: twill, plain, satin, jacquard; tests to distinguish the fibers. Government rulings are studied; uses and wearability of materials are investigated. Swatches of materials are used as illustrations. *3 h. c.*

333. *Furnishings.* A detailed study of furnishings for the home and industries. Consideration is given raw materials, the finished product, quality, selling points, government rulings, and the care of furnishings. Designed for buyers, purchasing agents, sales people and teachers. *3 h. c.*

335. *Window Display.* The principles of interior and window display. Selection and preparation of merchandise for display. Planning, selecting, and preparing merchandising arrangements and seasonal backgrounds. Selection, care, and employment of display fixtures and forms. Discussion

of display department organization, functions, and management; merchandise promotion through display; window and departmental signs and price tickets; window and case illumination; and display rooms and work shop. Prereq.: junior standing. Listed also as Advertising 335. *3 h. c.*

407. *Chain Store Operation.* General merchandising for all types of chain stores: public relations, legal aspects of store operation, organization, personnel work in customer-employee relations, personnel training, buying, managers' most common problems; past, present, and future trends, and other phases. Prereq.: senior standing. *3 h. c.*

411. *Buying and Merchandising Methods.* The methods used by retail organizations in buying from sources of supply; sales planning; dollar and unit control, involving six-month merchandising plans, purchase planning, model stocks and calculation of customer demand and re-order quantities. Prereq.: senior standing. *3 h. c.*

412. *Techniques of Retail Merchandising.* The course aims to teach a merchandiser to adjust prices and quantities of offerings to customer demand in such a way as to earn a profit; to have a sensitivity to customer demand and flexibility in operation; and to develop the quality of leadership essential to success. Prereq.: Merchandising 411. *3 h. c.*

413. *Marketing Research.* To introduce the student to marketing research; in particular, the application of marketing research in the major areas of interest to marketers: defining a problem and carrying out research necessary for its solution. Prereq.: senior standing. *3 h. c.*

420. *Sales Promotion.* A critical analysis of the range and activities of sales promotion: determining what and where to promote, and selecting merchandise for promotion; budgeting, planning, and executing promotional activities; external and internal methods of promotion; and co-ordination of all sales promotion activities. Prereq.: senior standing. *3 h. c.*

425. *Sales Management.* This course deals with the functions of the sales manager. Principal topics considered are: sales organizations, identification of merchandise, including testing, branding, packaging, labeling, warranties, and service; free deals and allowances; planning quotas and territories; selecting, training, and compensating salesmen; promotional campaigns and supervision; and the use of cost data as a guide to the formulation of sales and price policies. Prereq.: senior standing. *3 h. c.*

430. *Women's Fashions.* The merchandising of women's fashions. A course designed to familiarize the student with trends and cycles in European and American markets, the co-ordination of styling and fashion promotion for women's apparel, and the determination of value in buying and selling women's merchandise. *2 h. c.*

431. *Men's Fashions in Apparel.* A comprehensive study of men's clothing materials, their use, and when to wear them, and of day and night formal, summer formal, dinner, business, and play attire with the correct accessories. For fashion merchandise buyers and salespeople. *2 h. c.*

432. *Advanced Textile Fabrics.* An intensive study of materials used in women's, men's, infants', and children's wearing apparel and in house furnishings and domestics. Designed both to enable buyers and salespeople to select the correct materials and to provide the necessary mrechandising information. Prereq.: Merchandising 332 or consent of the instructor. *3 h. c.*

440. *Blueprint Reading.* To be taken with Merchandising 441 for the purpose of teaching basic skills needed for reading and interpreting blue prints as an aid in industrial purchasing. Prereq.: senior standing. *1 h. c.*

441. *Industrial Purchasing I.* To present the organization, principles and procedures of industrial purchasing. Case studies are used and field trips are taken to various industries in the area. Purchasing agents are guest lecturers. Prereq.: senior standing. *3 h. c.*

442. *Industrial Purchasing II.* Consideration of unit control, legal aspects, tools and industrial purchasing policies. Purchasing agents are guest lecturers. Prereq.: Merchandising 441. *3 h. c.*

451. *Seminar.* Each student undertakes original research in some phase of merchandising or the merchandising business and presents his findings to the class, who study and discuss them. Prereq.: senior standing with major in merchandising. *1 to 3 h. c.*

Curriculums

Required Curriculums for the Degree of Bachelor of Science in Business Administration with the Major as Indicated

The following curriculums all lead to the degree of Bachelor of Science in Business Administration. Each curriculum contains all the courses prescribed for a major in the field indicated, and enables the student to complete a minor in a related field. It also provides the 125 to 136 credit hours (as specified) needed for graduation and includes courses that meet all general course-requirements, all degree course-requirements, and the general course-level requirements.

R. O. T. C. students may have certain course-requirements waived or modified; see page 43.

Accounting

Attendance is required in the non-credit laboratory courses taken in conjunction with Accounting 201-202 and 301-302.

The Accounting curriculum requires a total of 136 hours.

First Year	Hrs.
Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Bus. Org. 111 Principles of Business	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Acctg. 301-302 & 301L-302L Intermediate Accounting & I. A. Laboratory	6
Bus. Org. 201 & 202 Business Law I and II	6
Bus. Org. 221 Mathematics of Finance	3
Comm. 107 Basic Course III	3
Econ. 202 Principles of Economics	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Hist. 201 & 202 The United States	6
Mdsg. 224 Marketing	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	37

Specialization in Public Accounting

Third Year	Hrs.
Acctg. 300 Basic Concepts of Machine Accounting	2
Acctg. 303 Basic Cost Accounting	3
Acctg. 304 Advanced Cost Accounting	3
Acctg. 401 Advanced Accounting	3
Acctg. 407 Auditing	3
Bus. Org. 212 Business Letters and Reports	3
Bus. Org. 222 Insurance	3
Bus. Org. 322 Credits and Collections	3
Bus. Org. 350 Business Management	3
Econ. 303 Money and Banking	3
Economics Elective	3
Liberal Arts Elective	3
	35

Specialization in Private Accounting

Third Year	Hrs.
Acctg. 300 Basic Concepts of Machine Accounting	2
Acctg. 303 Basic Cost Accounting	3
Acctg. 304 Advanced Cost Accounting	3
Acctg. 401 Advanced Accounting	3
Acctg. 407 Auditing	3
Bus. Org. 212 Business Letters and Reports	3
Bus. Org. 322 Credits and Collections	3
Econ. 303 Money and Banking	3
Econ. 305 Economics and Social Statistics	3
Philosophy and Religion Elective or Humanities 401 or 402	3
Liberal Arts Electives	5
	34

Fourth Year	Hrs.
Acctg. 403 Federal Taxes I	3
Acctg. 404 Federal Taxes II	3
Acctg. 405 State and Local Taxes	3
Acctg. 410 Statement Analysis	2
Acctg. 415 Systems	3
Bus. Org. 450 and 450L Development of Executive Ability and Laboratory	3
Econ. 305 Economics and Social Statistics	3
Philosophy and Religion Elective or Humanities 401 or 402	3
Liberal Arts Electives	5
Elective	2
	30

Fourth Year	Hrs.
Acctg. 403 Federal Taxes I	3
Acctg. 404 Federal Taxes II	3
Acctg. 405 State and Local Taxes	3
Acctg. 410 Statement Analysis	2
Acctg. 415 Systems	3
Acctg. 416 Budgetary Control	3
Acctg. 417 Controllership	3
Bus. Org. 310 Industrial Organization	3
Bus. Org. 419 Production Management	3
Liberal Arts Elective	3
Elective	2
	31

Advertising

The Advertising curriculum requires a total of 125 hours.

First Year	Hrs.
Art 110 Color and Design I	3
Bus. Org. 111 Principles of Business	3
Bus. Org. 120 Economic Geography	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Art 223 Advertising Art I	3
Comm. 107 Basic Course III	3
Hist. 201 & 202 The United States	6
Mdsg. 224 Marketing	3
Mdsg. 225 Salesmanship	3
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Adv. 329 Advertising Copy	3
Adv. 330 Advertising Layout	3
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 210 Public Relations	3
Bus. Org. 212 Business Letters and Reports	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Philosophy and Religion elective, or Mdsg. 331 Non-Textiles, 332 Textiles, or 333 Furnishings	3
Humanities 401 or 402	3
Psych. 201 General Psychology	3
Elective (Upper Division)	2
	32

Fourth Year	Hrs.
Adv. 335 Window Display	3
Adv. 401 Advertising Problems	3
Adv. 411 Direct Advertising	3
Adv. 414 Advertising Case Studies	3
Adv. 415 Radio and Television Advertising	3
Adv. 451 Seminar	1
Bus. Org. 322 Credits and Collections	3
Econ. 305 Economic and Social Statistics	3
Mdsg. 420 Sales Promotion	3
Elective (Upper Division)	3
	28

Commercial Art

The Commercial Art curriculum requires a total of 130 hours.

First Year	Hrs.
Art 110, 111 Color and Design I	6
Art 113, 114 History and Appreciation of Art: General	6
Bus. Org. 111 Principles of Business	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Art 201 Life Drawing and Painting	3
Art 223 Advertising Art I	3
Comm. 107 Basic Course III	3
Mdsg. 224 Marketing	3
Mdsg. 225 Salesmanship	3
Science	6
H. & P. E. activity courses	1
	34

Third Year	Hrs.
Adv. 329 Advertising Copy	3
Adv. 330 Advertising Layout	3
Art 224 Advertising Art I	3
Art 303 Figure Drawing and Painting I	3
Art 327 Advertising Art II	3
Bus. Org. 201 Business Law I	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Hist. 201 & 202 The United States	6
Mdsg. 332 Textile Fabrics	3
Psych. 201 General Psychology	3
	33

Fourth Year	Hrs.
Adv. 411 Direct Advertising	3
Art 301, 302 Technical Problems in Art	6
Art 306 History and Appreciation of Art: Modern	3
Econ. elective (Upper Division)	3
Mdsg. 333 Non-textiles: Home Furnishings	3
Mdsg. elective (Upper Division)	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives (Upper Division)	6
	29

General Business

The General Business curriculum requires a total of 130 hours.

First Year	Hrs.
Bus. Org. 111 Principles of Business	3
Bus. Org. 120 Economic Geography	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Acctg. 201-202 and 201L-202L Elementary Accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 210 Public Relations	3
Comm. 107 Basic Course III	3
Econ. 202 Principles of Economics	3
Mdsg. 224 Marketing	3
Mdsg. 225 Salesmanship	3
H. & P. E. activity courses	1
	34

Third Year	Hrs.
Acctg. 303 Basic Cost Accounting	3
Adv. 329 Advertising Copy or elective (Upper Division)	3
Bus. Org. 212 Business Letters and Reports	3
Bus. Org. 215, 216, 301, or 307	3
Bus. Org. 222 Insurance	3
Bus. Org. 315 Corporation Finance	3
Bus. Org. 330 Investment Analysis and Management	2
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Hist. 201 & 202 The United States	6
Psych. 201 General Psychology	3
	32

Fourth Year	Hrs.
Bus. Org. 322 Credits and Collections	3
Bus. Org. 340 Office Management and Methods	3
Bus. Org. 350 Business Management	3
Bus. Org. Elective (400 level)	3
Econ. 305 Economic and Social Statistics	3
Econ. 319 Economics of American Industry or elective (Upper Division)	3
Econ. 401 Labor Problems or 404 Personnel Management	3
Mdsg. 411 Buying and Merchandising Methods or 441 Industrial Purchasing I	3
Mdsg. 412 Techniques of Retail Merchandising or 442 Industrial Purchasing II	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Elective	3
	33

Merchandising

The Merchandising curriculums require 125 hours.

First Year	Hrs.
Bus. Org. 120 Economic Geography	3
Comm. 105-106 Basic Course I-II	6
Mdsg. 121 Merchandising Mathematics	3
Mdsg. 224 Marketing	3
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Specialization in Retail Merchandising

Second Year	Hrs.
Acctg. 201-202 and 201L-202L Elementary accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Bus. Org. 210 Public Relations	3
Bus. Org. 212 Business Letters and Reports	3
Comm. 107 Basic Course III	3
Hist. 201 & 202 The United States	6
Mdsg. 225 Salesmanship	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	34

Third Year	Hrs.
Acctg. 303 Basic Cost Accounting or Econ. 305 Economic and Social Statistics	3
Adv. 329 Advertising Copy	3
Bus. Org. 201 & 202 Business Law I & II	6
Econ. 202, 401, 403, or 404	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Mdsg. 309 Retail Marketing	2
Mdsg. 326 Applied Salesmanship	3
Mdsg. 331 Non-Textiles: Apparel Accessories	3
Mdsg. 332 Textile Fabrics	3
Mdsg. 333 Furnishings	3
	32

Fourth Year	Hrs.
Bus. Org. 322 Credits and Collections	3
Mdsg. 335 Window Display	3
Mdsg. 411 Buying and Merchandising Methods	3
Mdsg. 412 Techniques of Retail Merchandising	3
Mdsg. 420 Sales Promotion	3
Mdsg. 430 Women's Fashions or 431 Men's Fashions in Apparel	2
Mdsg. 432 Advanced Textile Fabrics	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives	5
	28

Specialization in Industrial Merchandising

Second Year	Hrs.
Acctg. 201-202 and 201L-202L Elementary accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Bus. Org. 210 Public Relations	3
Bus. Org. 212 Business Letters and Reports	3
Comm. 107 Basic Course III	3
Econ. 202 Principles of Economics	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Mdsg. 225 Salesmanship	3
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Acctg. 303 Basic Cost Accounting	3
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 215, 301, or 307	3
Econ. 305 Statistics	3
Hist. 201 & 202 The United States	6
Mdsg. 320 Industrial Marketing	3
Mdsg. 326 Applied Salesmanship	3
Mdsg. 331, 332, or 333	3
Psych. 201 General Psychology	3
	33

Fourth Year	Hrs.
Bus. Org. 310 or elective (Upper (Division)	3
Bus. Org. 322 Credits and Collections	3
Bus. Org. 419 Production Management	3
Econ. 319 Economics of American Industry or Economics elective	3
Mdsg. 420 Sales Promotion	3
Mdsg. 425 Sales Management	3
Mdsg. 440 Blueprint Reading	1
Mdsg. 441 & 442 Industrial Purchasing I & II	6
Mdsg. elective	2
Philosophy and Religion elective, or Humanities 401 or 402	3
	30

Management

Suggested Curriculum for the Degree of Bachelor of Science in Business Administration with the Major in Managment and the Minor in Accounting

The Management curriculum requires 136 hours.

First Year	Hrs.
Acctg. 201-202 Elementary Accounting & E. A. Laboratory	6
Comm. 105-106 Basic Course I-II	6
Math. 101 or 101R and 102 College Algebra	4
Mdsg. 224 Marketing	3
Soc. Sci. 101 Introduction to the Social Sciences I	3
Science (Laboratory)	8-10
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34-36

Second Year	Hrs.
Acctg. 301-302 & 301L-302L Intermediate Accounting & I. A. Laboratory	6
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 210 Public Relations	3
Bus. Org. 212 Business Letters and Reports	3
Bus. Org. 221 Mathematics of Finance	3
Comm. 107 Basic Course III	3
Econ. 202 Principles of Economics	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Soc. 203 Principles of Sociology	3
H. & P. E. activity courses	1
	34

Third Year	Hrs.
Acctg. 303 Basic Cost Accounting	3
Acctg. 304 Advanced Cost Accounting	3
Adv. 227 Advertising Principles	3
Bus. Org. 215 Principles of Transportation or 222 Insurance	3
Econ. 303 Financial Organization	3
Econ. 305 Economic and Social Statistics	3
Engr. 364 Job Analysis and Evaluation	2
Hist. 201 & 202 The United States	6
Mdsg. 225 Salesmanship	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Psych. 201 General Psychology	3
	35

Fourth Year	Hrs.
Bus. Org. 322 Credits and Collections	3
Bus. Org. 340 Office Management and Methods	3
Bus. Org. 350 Business Management	3
Bus. Org. 419 Production Management	3
Econ. 401 Labor Problems	3
Engr. 366, 367 Industrial Organization and Management	6
Mdsg. 309 Retail Marketing or 320 Industrial Marketing	3
Mdsg. 411 Buying and Merchandising Methods or 441 Industrial Purchasing I	3
Electives	6-4
	33-31

The following courses are suggested as electives:

Acctg. 416 Budgetary Control
Acctg. 417 Controllership
Bus. Org. 320 Advanced Public Relations
Econ. 304 Public Finance
Econ. 319 Economics of American Industry
Pol. Sci. 201 American National Government and Politics
Pol. Sci. 202 American State & Local Government
Pol. Sci. 307 American Political Parties
Pol. Sci. 308 Public Administration
Psych. 300 Social Psychology
Psych. 308 Personality and Mental Hygiene
Sp. & Dram. 213 Public Speaking
Sp. & Dram. 315 Debating & Public Discussion

Public Relations

Suggested Curriculum for the Degree of Bachelor of Science in Business Administration with the Major in Public Relations

The Public Relations curriculum requires 125 hours. At least nine hours of electives, including three hours of literature, must be courses in the College of Arts and Sciences. Suggested electives are listed below the curriculum.

Attendance is required in the non-credit laboratory course taken in conjunction with Accounting 201-202. The student should see also "Public Relations" under Courses of Instruction in the College of Arts and Sciences section.

First Year	Hrs.
Bus. Org. 111 Principles of Business	3
Bus. Org. 120 Economic Geography	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 210 Public Relations	3
Comm. 107 Basic Course III	3
Mdsg. 224 Marketing	3
Mdsg. 225 Salesmanship	3
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Acctg. 303 Basic Cost Accounting	3
Adv. 329 Advertising Copy	3
Bus. Org. 212 Business Letters and Reports	3
Econ. 202 Principles of Economics	3
Econ. 305 Economic and Social Statistics	3
Engl. 200, 203, 204, 205, 206 or 275	3
Hist. 201 & 202 The United States	6
Psych. 201 General Psychology	3
Psych. 300 Social Psychology or Elective (Upper Division)	3
Soc. 203 Principles of Sociology	3
	33

Fourth Year	Hrs.
Bus. Org. 320 Advanced Public Relations	3
Bus. Org. 322 Credits and Collections	3
Econ. 319 Economics of American Industry	3
Econ. 401 Labor Problems or 404 Personnel Management	3
Engl. 355 News Writing and Reporting	3
Engl. 357 Editing and Make-Up	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives (Upper Division)	9
	30

The following courses are suggested as electives:

Bus. Org. 315 Corporation Finance
Econ. 303 Financial Organization
Hist. 252 Latin America
Hist. 302 Economic History of the U.S.
Hist. 308 The Far East
Literature courses (English or foreign)
Phil. and Rel. 201 Contemporary Religion and Its Backgrounds
Philosophy and Religion 301 & 302 History of Philosophy
Pol. Sci. 304 International Politics
Pol. Sci. 305 Foreign Policies of the Great Powers
Psych. 301 Applied Psychology
Psych. 401 Business Psychology
Psych. 405 Interviewing and Counseling
Soc. 404 Modern Social Movements
Soc. 405 Social Control
Sp. and Dram. 213 Public Speaking
Sp. and Dram. 217 Principles and Practices of Broadcasting
Sp. and Dram. 315 Debating and Public Discussion

Traffic and Transportation Management

Suggested Curriculum for the Degree of Bachelor of Science in Business Administration with the Major in Traffic and Transportation Managment

The Traffic and Transportation Management curriculum requires 130 hours. There may be substitution of courses or waiver of courses because of experience at the discretion of the adviser and the chairman of the Department of Business Organization.

First Year	Hrs.
Bus. Org. 111 Principles of Business	3
Bus. Org. 120 Economic Geography	3
Bus. Org. 131 Mathematics of Business	3
Comm. 105-106 Basic Course I-II	6
Science	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Acctg. 201-202 & 201L-202L Elementary Accounting & E. A. Laboratory	6
Bus. Org. 201 & 202 Business Law I & II	6
Bus. Org. 210 Public Relations or Mdsg. 225 Salesmanship	3
Bus. Org. 215 Principles of Transportation	3
Comm. 107 Basic Course III	3
Econ. 202 Principles of Economics	3
Hist. 201 & 202 The United States	6
Mdsg. 224 Marketing	3
H. & P. E. activity courses	1
	34

Third Year	Hrs.
Acctg. 301-302 & 301L-302L Intermediate Accounting & I. A. Laboratory	6
Bus. Org. 212 Business Letters and Reports	3
Bus. Org. 216 Elementary Transportation	3
Bus. Org. 217 Intermediate Transportation	3
Bus. Org. 222 Insurance	3
Econ. 305 Economic and Social Statistics	3
Econ. 319 Economics of American Industry	3
Engl. 200, 203, 204, 205, 206, 251, 253, or 275	3
Psych. 201 General Psychology	3
Sp. & Dram. 213 Public Speaking	2
	32

Fourth Year	Hrs.
Bus. Org. 306 Advanced Transportation	3
Bus. Org. 310 Industrial Organization	3
Bus. Org. 322 Credits and Collections	3
Bus. Org. 340 Office Management and Methods	3
Bus. Org. 346 Industrial Traffic Management	3
Bus. Org. 350 Business Management	3
Bus. Org. 406 I. C. C. Practice and Procedure	3
Econ. 404 Personnel Management	3
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives (Upper Division)	6
	33

The following courses are suggested as electives:

Bus. Org. 301 Air Transportation
Bus. Org. 307 Commercial Motor Transportation
Bus. Org. 315 Corporation Finance
Bus. Org. 419 Production Management
Econ. 304 Public Finance
Econ. 402 Comparative Economic Systems
Hist. 302 Economic History of the United States
Mdsg. 320 Industrial Marketing
Mdsg. 441 Industrial Purchasing I
Modern Languages (6 hours)
Philosophy and Religion 301 History of Philosophy
Pol. Sci. 304 International Relations
Psych. 312 Industrial Psychology

Secretarial Studies

Instructors Williams (director), Hanna, Sebestyen, Sozio, and Turner; Mr. Broderick, Mr. Cook, Mr. Janosik, Miss Switka, and Mrs. Williamson.

The courses described below are offered in the Secretarial School. They are designed for students interested in secretarial positions and the more advanced types of office work. They give credit only toward (1) the degree of Bachelor of Science in Business Administration with a major in secretarial studies, (2) the degree of Bachelor of Science in Education with a major in business education, and (3) the title of Associate in Business Administration.

For the first of these, a curriculum is suggested following the course descriptions below; for the second, consult the School of Education section; for the third, see the first two years of the curriculum below.

Lower Division Courses

100. *Typewriting.* For beginners. A speed of 20 words a minute must be attained. Sebestyen or Wilds. *2 h. c.*

101. *Typewriting.* Advanced letter-writing, legal papers, tabulating, forms, mimeographing, and speed work. A speed of 40 words a minute must be attained. Prereq.: a speed of 20 words a minute. Sebestyen or Wilds. *2 h. c.*

104, 105. *Secretarial Accounting.* Fundamental principles of bookkeeping for single proprietorship, partnership, and corporation accounting. Janosik. *3 + 3 h. c.*

200. *Shorthand.* For beginners. The fundamentals of the Gregg system are presented. Volume 1 is to be completed. Cook or Williamson. *4 h. c.*

201. *Transcription.* Advanced typewriting and transcribing. A speed of 60 words a minute must be attained. Sebestyen or Wilds. *2 h. c.*

202. *Business Mathematics.* Computation for accounting, discount, insurance, interest, payroll security, taxes, etc. Turner. *2 h. c.*

207. *Business Communication.* Business terms; the psychology, mechanics, and principles of effective letter-writing; practice in writing various types of letters and in correcting common errors. Turner or Williamson. *3 h. c.*

208. *Commercial Law.* A brief study of the following: contracts, sales, bailments, negotiable instruments, guaranty and suretyship, agency, master and servant, partnership, corporations, insurance, property, wealth and income and their management, the financial system and investing, buying and selling relations, and the organization and operation of business. Williams. *3 h. c.*

215, 216. *Office Machines.* The operation of adding, calculating, and bookkeeping machines and dictaphones. Sozio. *3 + 3 h. c.*

Upper Division Courses

300-301. *Shorthand.* Beginning dictation and transcription. A speed of 60 words a minute must be attained in the first part, and 80 words a minute in the second part. Prereq.: Secretarial Studies 200, or passing a qualifying test. Hanna, Murphy, or Williamson. *2 + 2 h. c.*

302. *Shorthand.* A dictation speed of 100 words a minute must be attained, and a transcription rate of 25 words a minute. Hanna or Murphy. *2 h. c.*

303. *Secretarial Dictation.* Dictation at 120 words a minute and transcription at 35 words a minute. Hanna or Murphy. *2 h. c.*

304. *Advanced Dictation and Transcription.* For acquiring greater speed and accuracy in transcription. Prereq.: Secretarial Studies 303. *2 h. c.* Hanna.

403. *Office Practice.* Application of theory to practice: typical office problems, dictation, transcription, copy-work, answering letters, filling in forms; discussion of office procedure. Prereq.: Secretarial Studies 301. *3 h. c.* Hanna.

404. *Filing and Indexing.* The basic principles of filing and indexing, and practice in the most widely used procedures. Hanna. *1 h. c.*

Curriculum

Suggested Curriculum Leading to the Degree of Bachelor of Science in Business Administration with a Major in Secretarial Studies

A student may receive the title of Associate in Business Administration after satisfactorily completing the first two years of this curriculum.

First Year	Hrs.
Comm. 105-106 Basic Course I-II	6
Sec. St. 100 and 101 Typewriting	4
Sec. St. 104, 105 Secretarial Accounting	6
Sec. St. 200 Shorthand	4
Sec. St. 215 Office Machines	3
Sec. St. 300-301 Shorthand	4
Soc. Sci. 101 Introduction to the Social Sciences I	3
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Comm. 107 Basic Course III*	3
Sec. St. 201 Transcription	2
Sec. St. 202 Business Mathematics	2
Sec. St. 207 Bus. Communication	3
Sec. St. 208 Commercial Law	3
Sec. St. 216 Office Machines	3
Sec. St. 302 Shorthand	2
Sec. St. 303 Secretarial Dictation	2
Sec. St. 304 Advanced Dictation	2
Sec. St. 403 Office Practice	3
Sec. St. 404 Filing and Indexing	1
Soc. Sci. 102 Introduction to the Social Sciences II	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	33

Third Year	Hrs.
**Acctg. 303 Basic Cost Accounting	3
Bus. Org. 210 Public Relations	3
Bus. Org. 222 Insurance	3
Econ. 202 Principles of Economics	3
Hist. 201 & 202 The United States	6
Mdsg. 224 Marketing	3
Mdsg. 225 Salesmanship	3
†Science	8 or 9
	32 or 33

Fourth Year	Hrs.
Adv. 227 Advertising Principles	3
Adv. 228 Advertising Procedures	3
Bus. Org. 315 Corporation Finance	3
Bus. Org. 322 Credits and Collections	3
Bus. Org. elective (Upper Division)	3
Econ. 305 Economic and Social Statistics	3
Philosophy and Religion Elective or Humanities 401 or 402	3
Psych. 401 Business Psychology	3
Electives (Upper Division)	8 or 7
	28 or 29

*Not required for the title of Associate in Business Administration.

**The student's qualifications for entering this course will be determined by the chairman of the Department of Accounting.

†Either eight hours of biology, of chemistry, or of physics, or nine hours in any science subjects.

The School of Education

ORGANIZATION AND DEGREES

The School of Education is primarily an Upper Division school and has three departments: General Education, Elementary Education, and Secondary Education. With the cooperation of the College of Arts and Sciences, the School of Business Administration, and Dana School of Music, it prepares teachers for both public and private schools.

Professional courses are offered leading to teacher certification and to either of two degrees: Bachelor of Science in Education or Bachelor of Arts. Majors may be earned in one of the three departments of the school or in a teaching field (including Special Field education). The degree may be conferred either by the School of Education, by the College of Arts and Sciences, or by Dana School of Music, according to the course or the degree the student seeks, as outlined below. A two-year curriculum leading to a cadet certificate is also offered.

The student who wishes to qualify for a teaching certificate normally enrolls in the College of Arts and Sciences for the first two years and must be admitted to the School of Education by his junior year in order to become a candidate for certification. The candidate for the cadet certificate, however, enrolls in the School of Education after completing 30 hours. (A special bulletin for the cadet program is available from the School of Education.)

All candidates for any form of teaching certificate must meet the requirements for admission to the School of Education, but the degree earned may be conferred in accordance with the area of major emphasis:

1. The candidate for the elementary or kindergarten-primary certificate normally earns a Bachelor of Science in Education degree. He may qualify for the Bachelor of Arts degree, but this will usually entail a greater number of credit hours. The degree is conferred by the School of Education.

2. The candidate for the high school certificate may major either in secondary education or in a subject-matter field, and may earn either degree with either type of major. If the major is in secondary education the degree is conferred by the School of Education: if it is in a subject-matter field, it is conferred by the College of Arts and Sciences, with the following exceptions:

a. If the major is in business education, the degree is conferred by the School of Education.

b. If the major is in music, the degree is conferred by Dana School of Music.

3. The student who majors in general education may normally qualify only for the Bachelor of Arts degree conferred by the School of Education.

4. The student in the Dual Program, leading to both high school and elementary teaching certificates, majors in elementary education and receives his degree from the School of Education.

Requirements for the Degrees

Bachelor of Science in Education and Bachelor of Arts

It is the student's responsibility to see that he satisfies all the graduation requirements for the degree he seeks. These consist of:

1. The pre-college or preparatory courses for each degree. These are normally taken in high school, but if not, they may be made up before the junior year in the University. They are listed briefly below; for further information see pages 40-41, where the explanatory notes should be read carefully.

2. The courses and other requirements to be completed in the University. These include:

a. The general requirements for graduation from the University. These are explained on pages 38-39 and 41 but are recapitulated below.

b. Requirements peculiar to the degree, which are stated and explained below.

c. Requirements for the student's major and minor fields. (For the B. S. in Ed. degree the major is in Education, except for Business Education; the minor, unless determined by a prescribed curriculum, may be in any subject or subjects in which it is possible to take 15 semester hours. For the A. B. degree, the choice for the major is ordinarily the teaching field; the minor is in Education.)

The curriculums leading to these degrees require a minimum of 125 semester hours of credit and are designed to be completed in four academic years. A student willing and able to carry heavier loads successfully may finish in less time.*

If a student wishes to include summer courses in his program, he should consult his adviser.

R. O. T. C. students are allowed certain modifications of the requirements, as explained on page 43.

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*This plan is not encouraged if the student intends to hold a strenuous or time-consuming outside job regulary while in college.

1. Preparatory Units

Subject	*B. S. in Ed.*	*A. B.*
English	3	3
United States history and civics	1	1
A foreign language		2
Algebra		1 or 2*
Geometry		1
Any mathematics	1	
Biology, chemistry, or physics		1
Any science subjects or additional mathematics	1	

2. In the University

a. General

Other than courses (see pages 38-39, 41):

Completion of minimum number of semester hours of credit required for graduation	125	125
Upper Division status (including completion of any specified preparatory units lacking at entrance)		
Major and minor requirements	Residence requirement	
Course-level requirements	Application for graduation	
Grade-average requirement		

Basic courses:	*Semester hours of credit*	
Communication 105-106-107	9	9
Health and Physical Education 109M or 109W	2	2
Health and Physical Education activity courses	2	2
Orientation 100‡	1	1
Area courses:		
Social studies:		
Social Science 101 and 102	6	6
History 201 and 202	6	6
Religion: a Philosophy and Religion Department course, or Humanities 401 or 402	3	3

b. For the Degree

Science	9	11

For the B. S. in Ed. degree: six hours in any science subjects plus an additional three hours in mathematics or science. *For the A. B degree:* eight hours of one laboratory science (biology, chemistry, geology, or physics) plus three hours of astronomy, biology, chemistry, geology, mathematics, or physics.

A foreign language (ancient or modern)	—	6 or 12

For the A. B. degree: the requirement is a reading knowledge of the language, defined as what a student should know after two years of successful college study or its equivalent. Whether a student will need six or twelve semester hours to attain this knowledge depends on his high school language courses; see "Credit Evaluation for the Foreign Language requirement" in the College of Arts and Sciences section.

English	3	3
Psychology 201	3	3

c. Professional Courses

Education courses	19	30

Education 101, 301, 304, 404, three hours in special methods, and Psychology 202 are required for both degrees and are taken by students preparing to teach high school who prefer the A. B. degree. Most other education curriculums require additional teaching-method courses.

Balance required for graduation	61	73

*One is enough except for the student needing Mathematics 101 or 101R, or for a mathematics minor.

‡Not required of a part-time student until he has completed 60 semester hours.

COURSES OF INSTRUCTION AND CURRICULUMS

Faculty

Professors Swartz and Wilcox; Associate Professor Shipman; Assistant Professors Braden, Dehnbostel, Gabel, Glasgow, and Webb; Instructor Miller; Mr. Baehler, Miss Batham, Mr. Bishop, Mrs. Cruise, Miss A. Davis, Miss S. Davis, Mrs. D'Isa, Mrs. Flood, Mrs. Gray, Miss Hedlund, Miss Hastings, Miss Jewett, Miss Laughbaum, Miss Ledger, Mr. Lehman, Mr. Lepore, Mrs. Martin, Miss McCune, Dr. Moore, Mrs. D. Nelson, Miss Reese, Miss Robertson, Mrs. Russo, Dr. Schoenhard, Mr. Smith, Miss Terpack, Dr. Varkonda, Miss Viets, Mr. Wagner, Mr. Walter, and Mr. Winsen.

Each curriculum leads to an Ohio State Provisional Certificate. Minimum requirements for teachers' certificates are determined by the Ohio Department of Education; if those requirements change, they become effective immediately at Youngstown University. State Department minimal requirements may be and usually are exceeded by University requirements. The teaching candidate in the University must exhibit better than average grades in all his courses. *Admission to the University does not guarantee admission to candidacy for a teaching certificate;* this is controlled by the School of Education. The student must apply for admission to the School of Education, and he must be approved before he enrolls in Upper Division education courses. Before admission, he is considered a Pre-Education student. The degree of Bachelor of Science in Education is granted only to the student who qualifies for a teaching certificate. He should take Education 101 in his freshman year; this course explains the requirements fully.

The Pre-Education student is advised by the faculty of the College of Arts and Sciences or by the faculty of his special school or department. Upon admission to the School of Education, the candidate is advised by the faculty of the School of Education if his major is in Education, or by this faculty in co-operation with the faculty of his major department or school if his major is in a teaching field.

The candidate for the Provisional High School Certificate must complete the requirements for at least one teaching field; he should prepare for more, if possible. He should observe carefully the requirements in the various fields as stated in pamphlets available from the School of Education. The student who expects to teach in high school or elementary school should participate in extracurricular activities in order to be qualified to direct such activities.

All majors in education require 30 semester hours of appropriate Education courses. A course in student teaching (Education 404 or 405) is required in each curriculum, and the candidate should read the prerequisites for the course on page 157.

Within the limits permitted by certification requirements, credit toward the education major may be granted for the following courses in other schools.

For all majors:

Psychology 201, General Psychology
Psychology 202, Psychology of Education

Psychology 308, Personality and Mental Hygiene
Psychology 310, Psychological Aspects of Personnel Relations

For the Elementary Education major:

English 251, Modern American English
Health and Physical Education 321C, Health Education in Elementary Schools
Health and Physical Education 322C, Physical Education for Elementary Grades
Music 321, Music Education for Elementary Teachers
Music 323, Music in the First Six Grades

For the Secondary Education major:

Music 324, Junior and Senior High School Methods

For the Elementary or Secondary Education major:

Health and Physical Education 415C, School Health Education
Psychology 305, Child Psychology

For the General or Secondary Education major:

Psychology 306, Psychology of Adolescence
Psychology 405, Interviewing and Counseling
Psychology 406, Vocational Guidance
Psychology 425, Guidance of High School Students

Education 101 is prerequisite to any other course in education unless waived by the Dean of the School of Education.

General Education

(All General Education Courses carrying credit may apply toward either the Elementary or Secondary Education Major.)

Non-Credit Courses

10. *English for Proficiency.* A course for prospective teachers who need improvement in English usage and proficiency. Enrollment is by permission of the School of Education only. *Students who exhibit English weaknesses as evidenced by required test scores may be required to enroll in the course as a condition of admission to the School of Education,* provided that they have shown promise as interpreted by course marks and other entrance criteria. Evaluated as three hours for load and billing purposes. *No Credit.*

20. *Arithmetic for Proficiency.* A remedial and drill course for elementary teachers. *May be required as a prerequisite* for Education 313 (The Teaching of Arithmetic), where need is shown. Evaluated as three hours for load and billing purposes. *No Credit.*

Lower Division Course

101. *Introduction to Education.* Thorough orientation in state, institutional, and School of Education policies pertaining to graduation and certification requirements, and presentation of a broad background for subsequent courses in education, with wide supplementary reading. *2 h. c.*

Upper Division Courses

(Open only to students who have been approved for admission to the School of Education.)

304. *Classroom Management.* Problems of classroom administration, control, and organization: attendance, curriculum, program, procedure, and extracurricular activities in the light of a modern philosophy of education. Observation of teaching in public schools. *2 h. c.*

307. *History of Education.* The historical development of educational organizations, objectives, curriculums, and methods, studied with a view to a better understanding of modern educational conditions and problems. The place of education in various civilizations, especially modern Western civilization. Elective. Post-graduate students may substitute Education 307 for 101. *3 h. c.*

308. *Educational Sociology.* The sociological foundations of education; the relation of the individual and the social group; the school as a social institution; the relations between education and the home, the community, the state, social control, social progress, democracy, efficiency, and culture. The social aspects of specific school problems: the selection of educational objectives, the educative process, the curriculum, educational guidance, school control, moral education, and the selection and improvement of teachers. Listed also as Sociology 308. *2 h. c.*

310. *Educational Measurement and Guidance.* Construction, administration, scoring, and interpreting of objective examinations; selection, administration, scoring, and interpretation of results of standardized tests and scales, and their use in vocational and educational guidance. Prereq.: junior or senior standing. *3 h. c.*

320. *Statistical Methods in Education.* Identical with Psychology 320. *3 h. c.*

321. *Speech Education for the Classroom Teacher.* A consideration both of speech improvement for all pupils and speech correction for pupils with speech and hearing problems, on the kindergarten, elementary, and secondary levels. Types of speech and voice difficulties; techniques and materials for development and continued use of good voice and acceptable speech. Demonstration of therapy techniques by the instructor with children exhibiting speech difficulties. Prereq.: junior standing. Elective. *3 h. c.*

330. *Audio-Visual Education.* The aims and theory of audio-visual aids, and the use of various kinds of materials and projects; the relation of teaching practices to such aids, and their correlation with other aspects of teaching. Reports, demonstrations, and practice as operators. Elective. *3 h. c.*

332. *The Exceptional Child in the Regular Classroom.* The fundamentals of special education for the classroom teacher. Discovering the exceptional child; the causes, prevention, and treatment of physical and mental handicaps in children; handling mentally gifted children and those who are behavior problems. Prereq.: Psychology 201. Listed also as Psychology 332. Elective. *3 h. c.*

333. *Philosphy of Education.* Identical with Philosphy and Religion 333. Elective. *3 h. c.*

420. *Problems of the Classroom Teacher.* Adjustment to teaching surroundings; seeking practical and acceptable solutions to problems through re-thinking of philosophy, instruction methods, and ethics; the professional, legal, and social status of the teacher; teacher-pupil relations, and other problems. Elective. *3 h. c.*

433. *Teaching Slow Learners in the Regular Classroom.* Problems, techniques, and helps, with opportunity to study individual problems and attention to curricular units, guidance, and planning. Elective. *3 h. c.*

434. *Teaching the Mentally Retarded Child.* Materials, equipment, and general course of study applicable for severely retarded children. Emphasis on children with intelligence quotients lower than 50. Prereq.: successful teaching experience or Psychology 305 plus at least six hours of elementary methods. Elective. *3 h. c.*

441. *Pupil Problems.* The problems of school routine, such as discipline, attendance, public school delinquency, child labor, and school-parent relationship; practical cases. Social agencies as auxiliaries to the school program. *3 h. c.*

Elementary Education

Lower Division Courses

214. *Children's Literature.* Familiarization with children's literature; methods of helping children use and enjoy books, with emphasis on recent books. Principles of selection, historical development, authors, illustrators; visits to book departments, libraries, and classrooms. *3 h. c.*

225. *General Art for Elementary Teachers.* Drawing, painting, lettering, and design in many different materials such as crayons, chalk, water color, tempera paints and cut paper to give experiences in the media used in elementary schools. Making illustrations, using portraits and figures, also making murals and dioramas to fill specific needs. *3 h. c.*

Upper Division Courses

305. *Apprenticeship.* For elementary school teachers. Experience in an actual elementary school situation under the direction of a regular elementary school teacher. An elective for elementary candidates except that the course may be required in individual cases at the discretion of the Dean of the School of Education. *3 h. c.*

312. *The Teaching of Handwriting.* Methods of teaching penmanship; improving the student's own handwriting. *1 h. c.*

313. *The Teaching of Arithmetic.* Principles in the learning of arithmetic and their application to its effective teaching. *3 h. c.*

314. *The Teaching of Content Subjects.* Principles effective in the learning of content subjects, and their application to the teaching of history, geography, and other content subjects. *3 h. c.*

322. *Crafts.* Creative experiences in many kinds of material used in elementary and high schools, such as paper, cloth, wood, clay, metal, and scrap materials. *3 h. c.*

323. *Advanced Crafts.* A continuation of Education 322. Prereq.: Education 322. *3 h. c.*

324. *Teaching of Art.* A study of the needs of children at different age levels and the means of providing desirable art experiences. Objectives and procedures considered from the standpoint of the child's level of development. Children's paintings and drawing evaluated. Two hours required for elementary teaching. The third hour presents a continuation of the study of the art needs of children on the secondary level. Third hour optional for elementary teaching. The full three hours are required for special Art students, who register for Education 324X. *2 or 3 h. c.*

401. *Purposes and Practices of the Elementary School.* An analysis of current education, its aims, its sources, its strengths and weaknesses. Current practices are traced to their contributors, from Pestalozzi and Froebel to the modern group, but the focus is on the means by which modern education promotes the growth of the whole child in a democratic society.

405. *Supervised Student Teaching: Elementary Education.* The same as Education 404, but for the elementary grades. See Education 404 under Secondary Education. Fee: $10.00. *9 h. c.*

413. *The Teaching of Reading.* The principles and techniques of teaching reading, and the function of reading in the day's program. Oral, silent, and audience reading, and diagnostic and remedial measures. *3 h. c.*

431. *Childhood Education I.* Analysis of and provision for the physical, emotional, intellectual, and social needs of kindergarten-primary children. Required for the kindergarten certificate. *3 h. c.*

432. *Childhood Education II.* The findings of Education 431 are applied to the practical and specific phases of the kindergarten-primary period, with attention to school and community environment, curriculum, equipment, daily program, and materials. Required for the kindergarten certificate. *3 h. c.*

Secondary Education

Upper Division Courses

301. *Principles of Teaching.* General methods of high school teaching: classroom procedures, methods utilized by superior teachers, attention to individual differences, measuring the results of teaching, planning the instruction. Observation of teaching in high schools. *3 h. c.*

317. *Extracurricular Activities.* Various points of view on extracurricular activities, development of satisfactory personal attitudes toward them, and discussion of the best practices in the organization, supervision and administration of such activities as student council, dramatics, clubs, etc. Elective. *3 h. c.*

400. *Special Methods.* A study of the problems involved in the teaching of different high school subjects. Each student specializes in the subject of his main interest. Observation of teaching in public secondary schools; reports; term paper. Each student confers with the head of the department of his major teaching subject. Prereq.: Education 301 and senior standing. *3 h. c.*

404. *Supervised Student Teaching and Apprenticeship: High School.* Observation and teaching of high school classes, under supervision. Taken in the last semester in the University.

Application. Application to take this course must be made on a special form, not later than the end of the fourth week of the preceding semester.

Prerequisites. The applicant must have senior standing at the time of application; a point index of 2.5 in all college work and an average of B in two-thirds of the minimum subject field requirements, with no subject field course below C; a percentile rank of 34 or higher in the Ohio State University Psychological Test, and of 40 or higher in the American Council on Education Co-operative English Test; and the unqualified approval of the chairman of the department of each of his teaching fields and of the Dean of the School of Education.

Quality and Nature of Work. Classroom teaching must be satisfactory at all times or it may be discontinued without warning. The apprenticeship part of the course is under the direction of the principal of the high school to which the student is assigned or under someone designated by him. Besides teaching, the apprentice teacher may be assigned to any duty that a regular teacher might have to perform. Students failing to attend the first conference will be automatically dropped.

Schedule. The applicant, if accepted, leaves a half-day free, every day, in his schedule for the semester in which he takes this course. One class meeting each week; individual conferences with the course instructor or with the regular classroom teacher, as needed. Fee: $10.00. *6 h. c.*

The School of Education sponsors certain supplementary courses designed for members of Roman Catholic religious orders and lay teachers in Roman Catholic schools. These courses do not satisfy the University's general course requirement in religion nor may they be substituted for courses required for certification. They are electives only.

351. *Guidance and Character Formation.* The purpose of this course is to supply principles for guiding and directing the moral growth and development of the child. Special efforts are made to provide the

means and techniques necessary to aid the child in developing self-control through a disciplined will, suitable habits, emotional balance, and right attitudes. Elective. *3 h. c.*

352. *The Elementary School Curriculum: Basic Principles and Content.* The philosophical principles which guide the selection of materials for the elementary school curriculum, with a study of the allocation of those materials in the different years and subject-matter areas. Elective. *3 h. c.*

353. *Social Studies in the Roman Catholic Elementary School Curriculum.* The basic philosophical and theological principles governing the area of the social studies, with particular reference to the Roman Catholic elementary schools. Elective. *3 h. c.*

354. *Roman Catholic Philosophy of Education I.* On the premise that a philosophy of education implicity or explicity is founded on a philosophy of life and an answer to life's basic problems, this course investigates and analyzes the assumptions and principles underlying the various modern philosophies of education. Elective. *3 h. c.*

355. *Roman Catholic Philosophy of Education II.* The classic presentations of the Roman Catholic philosophy of education are analyzed to discover the basic principles. Modern practice is examined and criticized in the light of these principles. Elective. *3 h. c.*

Education Curriculums

Semester-by-semester curriculums may be obtained from the School of Education.

(An asterisk or other reference mark in any of these curriculums refers to a note immediately following the curriculum in which the mark is used.)

Art Education

Required Curriculum Leading to the Degree of Bachelor of Science in Education with a Major in Art Education and to a Provisional Special Certificate in Art Education

First Year	Hrs.
Art 110, 111 Color and Design I	6
Art 113, 114 History and Appreciation of Art: General	6
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
Science	3
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	33

Second Year	Hrs.
Art 203, 204 Drawing and Painting	6
Art 211, 212 Color and Design II	6
Comm. 107 Basic Course III	3
Engl. 200, 203, 204, 205, 206, or 275	3
Hist. 201 and 202 The United States	6
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
H. & P. E. activity courses	1
	31

Application for admission to the School of Education must be approved at the end of the sophomore year or the course changed.

Third Year	Hrs.
Art 223 Advertising Art I	3
Art 303, 304 Figure Drawing and Painting	6
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Educ. 322 Crafts	3
Educ. 308 Educational Sociology	2
Educ. 324X Teaching of Art	3
Science	6
Elective (Upper Division)	3
	31

Fourth Year	Hrs.
Art 306 History and Appreciation of Art: Modern	3
Art 319 Jewelry and Metal Work I	3
Art 325 Pottery and Modeling	3
Art 329 Sculpture	3
Art 350 Architectural Drawing	3
Educ. 404 Supervised Student Teaching and Apprenticeship: High School	6
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives (Upper Division)	6
	30

Dual Curriculum

Required Curriculum Leading to the Degree of Bachelor of Science in Education with a Major in Elementary Education and to both the Elementary and the High School Provisional Certificates

First Year	Hrs.
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
*Science	5 to 10
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
Teaching Field	6
	29 to 34

Second Year	Hrs.
Comm. 107 Basic Course III	3
Educ. 214 Children's Literature	3
Educ. 225 General Art	3
**Engl. 200, 203, 204, 205, 206, or 275	3
Hist. 201 and 202 The United States	6
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
*Science	3
H. & P. E. activity courses	1
Teaching Field	3
	31

Application for admission to the School of Education must be approved at the end of the sophomore year or the course changed.

Third Year	Hrs.
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Educ. 308 Educational Sociology	2
Educ. 313 Teaching of Arithmetic	3
Educ. 314 Teaching of Content Subjects	3
Educ. 322 Crafts	3
Educ. 324 Teaching of Art	2
Educ. 413 Teaching of Reading	3
H. & P. E. 321C Health Teaching in Elementary Grades	2
H. & P. E. 322C Games for Elementary Grades	2
Mus. 321 Music Education for Elementary Teachers	2
Philosophy and Religion elective, or Humanities 401 or 402	3
Teaching Field	3
	33

Fourth Year	Hrs.
Educ. 400 Special Methods	3
Educ. 401 Principles of Education	3
Educ. 404 Student Teaching: High School	3
Educ. 405 Student Teaching: Elementary School	6
Teaching Field	15
	30

*Any laboratory or non-laboratory science will satisfy the requirements within limits, as noted in this catalog. If any one science is to be the student's teaching field, the selected science necessarily will be in that area. For example, Biology 103 (three hours) would be followed by Biology 124 (two hours) for the biology teaching field; Chemistry 109 (five hours) would be followed by Chemistry 110 (five hours) for the chemistry or physical science teaching field, etc.

**For the teaching field in English, the student should take English 203.

Elementary Education

Required Curriculum Leading to the Degree of Bachelor of Science in Education with a Major in Elementary Education and to a Provisional Elementary Certificate

Every candidate following this curriculum must take a comprehensive examination covering the content and skills of the elementary school. A student found deficient in any elementary school subject must take a review course in it until he reaches a satisfactory standard.

First Year	Hrs.
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Geog. 102 Principles of Geography	3
Hist. 105 or 106 History of Western Civilization	3
Mus. 121 Introduction to Music for Elementary Teachers	2
Science	6
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	32

Second Year	Hrs.
Comm. 107 Basic Course III	3
Educ. 214 Children's Literature	3
Educ. 225 General Art	3
Engl. 200, 203, 204, 205, 206, or 275	3
Engl. 251 Modern American English	3
Hist. 201 and 202 The United States	6
Mus. 221 Music Literature and Appreciation for Elementary Teachers	2
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
Science	3
H. & P. E. activity courses	1
	33

Application for admission to the School of Education must be approved at the end of the sophomore year or the course changed.

Third Year	Hrs.
Educ. 304 Classroom Management	2
Educ. 308 Educational Sociology	2
Educ. 310 Educational Measurement and Guidance	3
Educ. 313 Teaching of Arithmetic	3
Educ. 314 Teaching of Content Subjects	3
Educ. 322 Crafts	3
Educ. 324 Teaching of Art	2
H. & P. E. 321C Health Teaching in Elementary Grades	2
H. & P. E. 322C Games for Elementary Grades	2
Mus. 321 Music Education for Elementary Teachers	2
Philosophy and Religion elective, or Humanities 401 or 402	3
Psych. 305 Child Psychology	3
	30

Fourth Year	Hrs.
Educ. 401 Principles of Education	3
Educ. 405 Supervised Student Teaching: Elementary School	9
Educ. 413 Teaching of Reading	3
Electives (or, for Kindergarten-Primary, Educ. 431 and 432 Childhood Education)	6
Electives (Upper Division)	9
	30

Kindergarten-Primary Education

A Kindergarten-Primary Certificate may be earned by taking Education 431 and 432 in addition to the elementary education curriculum, and taking three semester hours of the student teaching credit in student teaching in the kindergarten and three in a primary grade, preferably the first grade.

Business Education

For a business education curriculum, consult the School of Education.

Health Education and Physical Education

For a health education and physical education curriculum, see Health Education and Physical Education in the College of Arts and Sciences section.

Music Education

For music education curriculums, see the Dana School of Music section.

Nursing Education

There are several possibilities in the field of nursing education. Many school districts in Ohio require school nurses to possess a degree in addition to the nursing certificate. Some school nurses combine teaching with nursing duties and complete the requirements for a teaching certificate. Others prepare to teach in schools of nursing. A registered nurse seeking a degree in nursing education should consult the School of Education. See also the section on Nursing in the College of Arts and Sciences section, pp. 127-128.

Secondary Education

Required Curriculum leading to the Degree of Bachelor of Science in Education or Bachelor of Arts and a Provisional High School Certificate

The student seeking the Bachelor of Science in Education degree should follow this curriculum except that a foreign language is not required and nine hours of any sciences may be substituted for the 11 hours of sciences specified for the Bachelor of Arts degree. The student should read carefully the information on science requirements for the degrees.

The major may be in education or in a teaching field. Electives should be chosen carefully to provide one or more teaching fields, as required for the Provisional High School Certificate.

First Year	Hrs.
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
*Foreign language (or elective)	6
Science	6
Soc. Sci. 101 and 102 Introduction to the Social Sciences	6
Teaching Field elective	3
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	33

Second Year	Hrs.
Comm. 107 Basic Course III	3
**Engl. 200, 203, 204, 205, 206, or 275	3
Foreign language (or electives)	6
Hist. 201 and 202 The United States	6
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
Science	5
H. & P. E. activity courses	1
Teaching Field elective	2
	32

Application for admission to the School of Education must be approved at the end of the sophomore year or the course changed.

Third Year	Hrs.
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Educ. 308 Educational Sociology	2
Philosophy and Religion elective, or Humanities 401 or 402	3
Teaching Field electives	21
	31

Fourth Year	Hrs.
Educ. 400 Special Methods	3
Teaching and Apprenticeship High School	6
Teaching and Apprenticeship	6
Teaching Field electives	20
	29

*See page 62.

**For the teaching field in English the student should take English 203.

William Rayen School of Engineering

GENERAL INFORMATION

Objectives

The aim of William Rayen School of Engineering is to impart such special and technical knowledge, based on a sound understanding of the fundamental sciences and arts upon which all engineering rests, as will enable its graduates to enter the various branches of engineering and to maintain themselves while gaining professional experience; and at the same time to enable them to develop their general cultural and educational background.

Each engineering curriculum therefore combines three interrelated programs: the basic science program, the technical program, and the social relations program. The basic science program, consisting of mathematics and the physical sciences, provides the basis for the technical program and increases the student's knowledge of the physical world around him. The technical program teaches the application of science to the problems of engineering. The social relations program is designed to teach the student to express himself clearly and to understand better both himself and other people, and thus deal more intelligently with the problems he will face both as an engineer and as a citizen and an individual.

In addition, certain courses in business administration are included, to improve the student's understanding of the broader area in which his engineering training will be applied.

Buildings and Facilities

Rayen Building, the former home of Rayen School, was made available to Youngstown University in 1945, and after it had been thoroughly remodeled and reinforced to enable it to house heavy machinery, William Rayen School of Engineering was established there as a main unit of the University. It is on Wick Avenue between Rayen Avenue and Wood Street.

The school's spacious laboratories have up-to-date equipment not only for all standard experiments, but, in most fields, for much advanced study. Its ample drawing rooms, classrooms, study, and offices are entirely modern in lighting and all other essentials. The school has its own power-generating equipment, steam supply, and machine shop.

The electrical engineering laboratories comprise a machinery laboratory, a networks and measurement laboratory, and an electronics laboratory.

The *Electrical Machinery Laboratory* has a variety of a. c. and d. c. machines such as d. c. motors and generators, induction motors, alternators,

synchronous motors and converters, transformers, an induction frequency converter, an induction regulator, and an ignition rectifier. There is a large selection of meters and other instruments, loading resistors and reactors, and other apparatus.

The *Networks and Measurement Laboratory* has an artificial telephone line, oscillators, oscilloscopes, measuring instruments, and the necessary resistors, inductors, and capacitors for the study of electrical networks. It also contains bridges, standard meters, resistors, and cells, potentiometers, microwave equipment, and an electronic computor.

The *Electronics Laboratory* is equipped with vacuum, gas-filled, and special-purpose tubes; impedance bridges; vacuum-tube voltmeters; cathode-ray oscilloscopes; signal generators; audio oscillators; an electronic switch; radio transmitters and receivers; power supplies; and a wide variety of resistors, condensers, inductors, transformers, and precision meters.

The *Energy Conversion Laboratory* has a variety of equipment for the study of electrical circuits, electromagnetic fields and electromagnetic apparatus. There are several generalized rotating machines, cathode-ray oscilloscopes, photographic and mechanical recording equipment, harmonic analyzers and signal generators. There is also a variety of electrical metering and test equipment.

The *Strength of Materials Laboratory* has three Universal testing machines: a 400,000-pound hydraulic Olsen and two motor-driven Riehles, one 60,000-pound, and one 20,000-pound; a 10,000-pound Baldwin-Southwark tester; Fairbanks-Morse concrete-briquet-testing equipment; Rockwell, Brinell, and Scleroscope hardness-testing equipment; and high-precision measuring instruments.

The *Mechanical Engineering Laboratory* has a complete power plant including a 150-psi, 150-horsepower boiler, a 60-kw turbo-generator, a 35-kw horizontal steam-engine generator, and a 10-kw vertical steam-engine generator with pumps, condensers, and cooling tower. There are also another complete but smaller power plant; a 25-kw Cummings Diesel-driven generator; internal combustion units; hydraulic pumps and reservoir; commercial refrigeration and air-conditioning units; a motor-driven blower set for airflow study; and various heat exchangers, calorimeters, gage testers, gas analyzers, etc.

The Department of Metallurgical Engineering is located in Clingan-Waddell Hall on nearby Rayen Ave. Of its five laboratories, the first, a furnace room, houses grinding equipment, electric resistance heat-treating furnaces and a gas-fired welding unit with precision pyrometers and automatic temperature controls. The second laboratory contains two specimen mounting presses, three motorized specimen polishers, sectioning tools and chemical laboratory facilities for specimen etching. The third laboratory consists of a fully equipped darkroom for developing and printing photomicrographic and X-ray diffraction plates and films. The fourth laboratory is an elemental metallographic laboratory equipped with a collection of approximately 400 prepared metallic specimens, sixteen metallurgical microscopes and one wide-field stereoscope microscope. The fifth laboratory is an advanced metallographic laboratory containing a research metallograph with

cameras, a Rockwell hardness tester, a micro hardness tester, X-ray diffractometer and an X-ray spectrograph with autographic electronic recorders. Also available to the department is a high speed metal cut-off machine and a 250,000 volt X-ray radiographic machine, both located in the main engineering building.

Adjunct Faculty

Most of the school's courses may be taken in either day or evening sections. This is possible in part because of the number of highly qualified engineers and other technologists in the Youngstown area who are available as instructors to supplement the permanent staff. These men hold important posts with such firms as the United States Steel Corporation, Jones and Laughlin Steel Corporation, General Fireproofing Company, Ohio Edison Company, Sharon Steel Corporation, Truscon Steel Company, Westinghouse Electric Corporation, William P. Pollock Company, Youngstown Foundry and Machine Company, and Youngstown Sheet and Tube Company. Their number embraces engineers, designers, metallurgists, draftsmen, and other technical specialists, and includes men in such positions as plant engineer, district engineer, chief metallurgist, division industrial engineer, and general foreman. The interest of these people in the academic side of their professions provides a staff in whom expert training and up-to-the-minute practical experience are combined to an unusual degree, and the student is thus brought into closer contact with the professional world he is preparing to enter.

Awards and Prizes

Awards and prizes for engineering students are listed in the general section on Awards and Prizes.

Tuition and Fees

See pages 52-57.

Scholarships and Loans

Scholarships and loan funds applicable to engineering students are listed in the general section on Scholarships and Loan Funds.

ADMISSION AND GRADUATION REQUIREMENTS

For admission to William Rayen School of Engineering see the general section on Admission to the University. For courses leading to the degree of Bachelor of Engineering, see the pages below.

Grade Requirements

An engineering student whose point index is less than 2.00 at the end of any semester will be on probation the following

semester. If he fails to raise his point index to 2.00 during the probationary semester, he will not be readmitted as a student for the Bachelor of Engineering degree. No student shall carry more than 16 semester hours unless his point index for the previous semester is 3.00 or more. (See section b-2 on page 46. For the significance of the point index, see page 50.)

Requirements for the Degree

Bachelor of Engineering

It is the student's responsibility to see that he satisfies all the graduation requirements for the degree he seeks. For the Bachelor of Engineering degree, these consist of:

1. The pre-college or preparatory courses. These are normally taken in high school, but any deficiencies may be made up before the junior year in the University. They are listed briefly below; for further information see pages 40-41, where the explanatory notes should be read carefully.

2. The course requirements and other requirements to be completed in the University. These comprise:

a. The *general* requirements for graduation from the University, explained on pages 38-39 and 41 and recapitulated below.

b. Requirements peculiar to the *degree*, which are stated below.

c. Courses required for the student's *major*, which is specialization in a branch of engineering. (A minor is completed through the required courses in mathematics.)

The curriculums leading to this degree require a minimum of 152 semester hours of credit and are designed to be completed in five academic years.* The program can be accelerated for completion in four calendar years by the student willing and able to carry heavier loads.** A student planning to take summer courses should consult his adviser†.

R. O. T. C. courses are considered additional electives and must be carried in excess of the minimum requirements for a degree in engineering.

1. Pre-College

Subject	*High school units*
English	3
United States history and civics	1
Algebra	2
Geometry	1
Physics	1
Others‡	8

*The curriculum for Chemical Engineering is designed for a four-year program.

**This plan is not encouraged if the student intends to hold a strenuous or time-consuming outside job regularly while enrolled in classes.

†It is recommended that such courses be the non-science courses, such as Social Science 101 and 102 and Business Organization 201 and 202.

‡A unit of mechanical drawing and a half-unit of trigonometry or solid geometry, or both, are strongly advised.

2. In the University

a. General

Other than courses (see pages 38-39):

Upper Division status (including completion of any specified preparatory courses not completed at time of entrance).
Major and minor requirements.
Course-level requirements.
Grade-average requirement.
Residence requirement.
Application for graduation.

Basic courses: *Credit hours*

Communication 105-106-107, Basic Course I-II-III	9
*English 200, 203, 204, 205, 206, 275	3
Health and Physical Education 109, Health Education	2
Health and Physical Education activity courses	2
Orientation 100, Freshman Orientation	1

Area courses:

Religion: a course in the Department of Philosophy and Religion, or Humanities 401 or 402	3
Science: included in the degree requirements listed below	
Social studies:	
Social Science 101 and 102, Introduction to the Social Sciences	6
*History 200, 201, 202, 213, 214, 252, 254	3
Economics 319, Economics of American Industry	3
	32

b. For the Degree

Other than courses:

Completion of at least 152 credit hours.
Grade average of 2.00 ("C") *at all times.*

Science and mathematics courses:

Chemistry 111-112, General Chemistry	8
Mathematics 101-102, College Algebra	4
Mathematics 103 and 104, Trigonometry and Analytic Geometry	6
Mathematics 209-210, Calculus I and II: Differential and Integral	10
Physics 201-202 and 201L and 202L, General Physics	8

Engineering courses:

Engineering 102, Engineering Drawing	3
Engineering 202, Engineering Drawing: Descriptive Geometry	3
Engineering 220, Analytical Mechanics: Statics	3
Engineering 301, Report Writing	2
Engineering 326 and 326L, Elementary Strength of Materials	4
Engineering 401-402, Thesis	4
	55

Curriculums

Semester-by-semester curriculums are available in the offices of William Rayen School of Engineering.

*Except for Chemical Engineering majors.

Chemical Engineering

The following curriculum is designed to be completed in four years, but it is recommended that the student plan to extend his program over a longer period. A total of 152 semester hours is required.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
Soc. Sci 101 & 102 Introduction to the Social Sciences	6
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	37

Second Year	Hrs.
Chem. 203, 204 Qualitative Analysis	4
Comm. 107 Basic Course III	3
Engr. 202 Engineering Drawing: Descriptive Geometry	3
Engr. 220 Analytical Mechanics: Statics	3
Engr. 252 General Metallurgy: Extractive	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
H. & P. E. activity courses	1
Elective	3
	38

Third Year	Hrs.
Bus. Org. 201 & 202 Business Law I & II	6
Chem. 221, 222 Organic Chemistry	8
Engr. 313 Fundamentals of Electrical Engineering	4
Engr. 314 & 314L Elements of Electrical Machines	4
Engr. 317 & 317L Applied Thermodynamics	4
Engr. 326 & 326L Elementary Strength of Materials	4
Engr. 380-381 Principles of Chemical Engineering	6
Engr. 382 Chemical Engineering Techniques	3
Engr. 480 Unit Design	3
	42

Fourth Year	Hrs.
Chem. 407, 408 Physical Chemistry	6
Econ. 319 Economics of American Industry	3
Engr. 301 Report Writing	2
Engr. 328 & 328L Hydraulics	4
Engr. 374 & 374L Heat Engineering	4
Engr. 383, 384, 385 Unit Operations	9
Engr. 401-402 Thesis	4
Philosophy and Religion elective or Humanities 401 or 402	3
	35

Civil Engineering

The Civil Engineering curriculum requires a total of 153 semester hours. In addition to the required 141 hours, each student must complete 12 hours (six technical and six non-technical) from the list of electives given below.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engr. 130 Surveying	3
Engr. 202 Engineering Drawing: Descriptive Geometry	3
Engr. 220 Analytical Mechanics: Statics	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
H. & P. E. activity courses	1
	31

Third Year	Hrs.
English 200, 203, 204, 205, 206, or 275	3
Engr. 230 Route Surveying	3
Engr. 251 General Metallurgy: Adaptive	3
Engr. 325 Analytical Mechanics: Dynamics	3
Engr. 326 & 326L Strength of Materials	4
Engr. 328 & 328L Hydraulics	4
Hist. 200, 201, 202, 213, 214, 252, or 254	3
Math. 309 Differential Equations	3
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
	32

Fourth Year	Hrs.
Econ. 319 Economics of American Industry	3
Engr. 301 Report Writing	2
Engr. 313 Fundamentals of Electrical Engineering	4
Engr. 314 & 314L Elements of Electrical Machines	4
Engr. 330 Theory of Structures	3
Engr. 331 Design of Steel Structures	3
Engr. 332 Highway Construction	3
Engr. 333 Sewage Disposal	3
Engr. 433 Indeterminate Structures	3
Philosophy and Religion elective or Humanities 401 or 402	3
	31

Fifth Year	Hrs.
Engr. 401-402 Thesis	4
Engr. 430 Concrete Construction	3
Engr. 432 Water Supply	3
Engr. 434 & 434L Soil Mechanics	4
Engr. 437 Seminar	2
Electives (technical)	6
Electives (non-technical)	6
	28

Electives

	Hrs.
Bus. Org. 201 Business Law I	3
Bus. Org. 202 Business Law II	3
Engr. 317 & 317L Applied Thermodynamics	4
Engr. 327 & 327L Advanced Strength of Materials	4
Engr. 435 Sewage Systems Design	6
Engr. 438 Civil Engineering Surveying	3
Engr. 440 Advanced Concrete Design	3
Engr. 441 Computer Techniques	3
Engr. 476 Mechanical Vibrations	3
Engr. 477 Compressible Fluid Flow	3
Foreign Language (German, French, or Russian)	6
Math. 310 Partial Differential Equations	3
Math. 320 Vector Analysis	3
Math. 340 Statistics	3
Math. 360 Numerical Analysis	3
Humanities	3
Social Science (200-level or above)	3

Electrical Engineering

The Electrical Engineering curriculum requires a total of 158 hours. In addition to the required 146 hours, each student must complete 12 hours (six technical and six non-technical) from the list of electives given below.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engr. 202 Engineering Drawing: Descriptive Geometry	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Engr. 213 & 213L Principles of Electrical Engineering	4
Engr. 220 Analytical Mechanics: Statics	3
Engr. 311 & 311L Alternating Current Circuits	4
Engr. 312 & 312L Electrical Networks	4
Engr. 325 Analytical Mechanics: Dynamics	3
Engr. 418 & 418L Electromagnetic Field Theory	4
Engl. 200, 203, 204, 205, 206, or 275	3
Hist. 200, 201, 202, 213, 214, 252 or 254	3
Math. 309 Ordinary Differential Equations	3
Math. 310 Partial Differential Equations or 320 Vector Analysis	3
	34

Fourth Year	Hrs.
Econ. 319 Economics of American Industry	3
Engr. 251 General Metallurgy: Adaptive	3
Engr. 315 & 315L Transient Analysis	4
Engr. 317 & 317L Applied Thermodynamics	4
Engr. 326 & 326L Elementary Strength of Materials	4
Engr. 413 & 413L Electromagnetic Apparatus I	4
Engr. 414 & 414L Electromagnetic Apparatus II	4
Engr. 415 & 415L Electronic Circuit Elements	4
	30

Fifth Year	Hrs.
Engr. 301 Report Writing	2
Engr. 401-402 Thesis	4
Engr. 416 & 416L Electronic Applications	4
Engr. 421 & 421L Servomechanism	4
Physics 426 Elements of Nuclear Physics	3
Philosophy and Religion elective or Humanities 401 or 402	3
Electives (technical)	6
Electives (non-technical)	6
	32

Electives

	Hrs.
Engr. 252 General Metallurgy: Extractive	3
Engr. 327 & 327L Advanced Strength of Materials	4
Engr. 374 & 374L Heat Engineering	4
Engr. 417 Electric Power Transmission	3
Engr. 419 Industrial Applications	3
Engr. 420 Industrial Electronics	3
Engr. 471 Refrigeration and Air Conditioning	3
Engr. 472 Principles of Nuclear Reactors	3
Engr. 476 Mechanical Vibrations	3
Engr. 478 Heat Transfer	3
Foreign Language (German, French, or Russian)	6
Humanities or Social Science	6

If a student wishes to elect a course not listed above, he may do so upon approval of the Engineering School Curriculum Committee.

Industrial Engineering

The Industrial Engineering curriculum requires a total of 153 hours. In addition to the required 141 hours, each student must complete 12 hours (six technical and six non-technical) from the list of electives given below.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engr. 202 Engineering Drawing: Descriptive Geometry	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Acctg. 201 Elementary Accounting I	3
Acctg. 303 Basic Cost Accounting	3
Bus. Org. 201 & 202 Business Law I & II	6
Engr. 220 Analytical Mechanics: Statics	3
Engr. 251 General Metallurgy: Adaptive	3
Engr. 317 & 317L Applied Thermodynamics	4
Engr. 365 Quality Control	3
Math. 340-341 Mathematical Statistics I-II	6
	31

Fourth Year	Hrs.
Bus. Org. 221 Mathematics of Finance	3
Econ. 319 Economics of American Industry	3
Engr. 301 Report Writing	2
Engr. 313 Fundamentals of Electrical Engineering	4
Engr. 314 & 314L Elements of Electrical Machines	4
Engr. 325 Analytical Mechanics: Dynamics	3
Engr. 326 & 326L Elementary Strength of Materials	4
Engr. 364 Job Analysis and Evaluation	2
Engr. 366, 367 Industrial Organization and Management I, II	6
	31

Fifth Year	Hrs.
Econ. 401 Labor Problems	3
Engr. 401-402 Thesis	4
Engr. 461 Production Planning and Control	3
Engr. 465 & 466 Methods Engineering I & II	4
Philosophy and Religion elective or Humanities 401 or 402	3
Electives (technical)	6
Electives (non-technical)	6
	29

Electives

	Hrs.
Econ. 404 Personnel Management	3
Engr. 252 General Metallurgy: Extractive	3
Engr. 311 & 311L Alternating Current Circuits	4
Engr. 327 & 327L Advanced Strength of Materials	4
Engr. 330 Theory of Structures	3
Engr. 331 Design of Steel Structures	4
Engr. 371 & 371L Elementary Machine Design	4
Engr. 374 & 374L Heat Engineering	4
Engr. 433 Indeterminate Structures	3
Engr. 470 & 470L Advanced Machine Design	4
Engr. 475 & 475L Internal Combustion Engines	4
Engr. 477 Compressible Fluid Flow	3
Engr. 478 Heat Transfer	3
Foreign Language (German, French, or Russian)	6
Math. 309 Ordinary Differential Equations	3
Math. 310 Partial Differential Equations	3
Math. 360 Numerical Analysis	3
Social Science or Humanities	6

Mechanical Engineering

The Mechanical Engineering curriculum requires a total of 152 hours. In addition to the required 140 hours. each student must complete 12 hours (six technical and six non-technical) from the list of electives given below.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engr. 202 Engineering Drawing I: Descriptive Geometry	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
H. & P. E. activity courses	1
	31

Third Year	Hrs.
Engl. 200, 203, 204, 205, 206 or 275	3
Engr. 220 Analytical Mechanics: Statics	3
Engr. 301 Report Writing	2
Engr. 313 Fundamentals of Electrical Engineering	4
Engr. 314 & 314L Elements of Electrical Machines	4
Engr. 317 & 317L Applied Thermodynamics	4
Engr. 343 Fuels	3
Hist. 200, 201, 202, 213, 214, 252 or 254	3
Math. 309 Ordinary Differential Equations	3
Math. 310 Partial Differential Equations	3
	32

Fourth Year	Hrs.
Econ. 319 Economics of American Industry	3
Engr. 252 General Metallurgy: Adaptive	3
Engr. 325 Analytical Mechanics: Dynamics	3
Engr. 326 & 326L Elementary Strength of Materials	4
Engr. 327 & 327L Advanced Strength of Materials	4
Engr. 328 & 328L Hydraulics	4
Engr. 374 & 374L Heat Engineering	4
Philosophy and Religion elective or Humanities 401 or 402	3
	28

Fifth Year	Hrs.
Engr. 371 & 371L Elementary Machine Design	4
Engr. 401-402 Thesis	4
Engr. 470 & 470L Advanced Machine Design or 475 & 475L Internal Combustion Engines	4
Engr. 472 Principles of Nuclear Reactors	3
Physics 426 Elements of Nuclear Physics	3
Electives (technical)	6
Electives (non-technical)	6
	30

Electives

	Hrs.
Bus. Org. 221 Mathematics of Finance	3
Chem. 203, 204 Qualitative Analysis	4
Econ. 303 Financial Organization	3
Econ. 401 Labor Problems	3
Engr. 213 & 213L Principles of Electrical Engineering	4
Engr. 252 General Metallurgy: Extractive	3
Engr. 311 & 311L Alternating Current Circuits	4
Engr. 330 Theory of Structures	3
Engr. 351 Physical Metallurgy	3
Engr. 365 Quality Control	3
Engr. 366 Industrial Organization and Management I	3
Engr. 367 Industrial Organization and Management II	3
Engr. 430 & 430L Concrete Construction	4
Engr. 433 Indeterminate Structures	3
Engr. 471 Refrigeration and Air Conditioning	3
Engr. 476 Mechanical Vibrations	3
Engr. 477 Compressible Fluid Flow	3
Engr. 478 Heat Transfer	3
Foreign Language (German, French or Russian)	6
Hist. 302 Economic History of the United States	3
Hist. 390 Diplomatic History of the United States	3
Math. 320 Vector Analysis	3
Math. 340 Mathematical Statistics I	3
Math. 341 Mathematical Statistics II	3
Math. 360 Numerical Analysis	3
Physics 301 Classical Mechanics	4
Physics 303 & 303L Electricity and Magnetism	4
Physics 322 & 322L Physical Optics and Advanced Light	4
Philosophy and Religion or Humanities	6
Pol Sci. 201 American National Government and Politics	3
Pol. Sci. 202 American State and Local Government	3

Metallurgical Engineering

The Metallurgical Engineering curriculum requires a total of 152 hours. In addition to the required 140 hours, each student must complete 12 hours (six technical and six non-technical) from the list of electives given below and from the suggested electives included in the curriculum.

First Year	Hrs.
Chem. 111-112 General Chemistry	8
Comm. 105-106 Basic Course I-II	6
Engr. 102 Engineering Drawing	3
Math. 101-102 College Algebra	4
Math. 103 Trigonometry	3
Math. 104 Analytic Geometry	3
H. & P. E. 109 Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	31

Second Year	Hrs.
Comm. 107 Basic Course III	3
Engr. 202 Engineering Drawing: Descriptive Geometry	3
Engr. 251 General Metallurgy: Adaptive	3
Engr. 252 General Metallurgy: Extractive	3
Math. 209-210 Calculus I-II	10
Physics 201, 202 and 201L, 202L General Physics	8
H. & P. E. activity courses	1
	31

Third Year	Hrs.
*Chem. 203, 204 Qualitative Analysis	4
Engr. 220 Analytical Mechanics: Statics	3
Engr. 255 Metallurgical Calculations	3
Engr. 313 Fundamentals of Electrical Engineering	4
Engr. 314 & 314L Elements of Electrical Machines	4
Engr. 325 Analytical Mechanics: Dynamics	3
Engr. 351, 352 Physical Metallurgy	6
Engr 351L, 352L Metallography Laboratory	3
Soc. Sci. 101 & 102 Introduction to the Social Sciences	6
	36

Fourth Year	Hrs.
*Chem. 407, 408 Physical Chemistry	6
Econ. 319 Economics of America Industry	3
Engl. 200, 203, 204, 205, 206 or 275	3
Engr. 301 Report Writing	2
Engr. 326 & 326L Elementary Strength of Materials	4
Engr. 453, 454 Advanced Metallography	6
Engr. 455 Ferrous Production Metallurgy	3
Engr. 456 Nonferrous Production Metallurgy	3
History elective	3
Physics 426, Elements of Nuclear Physics	3
	36

Fifth Year	Hrs.
*Engr. 327 & 327L Advanced Strength of Materials	4
Engr. 401-402 Thesis	4
Engr. 406 Metallurgical Processes: Extractive	3
*Engr. 407 Metallurgical Processes: Adaptive	3
Engr. 457 X-Ray Metallography	3
Engr. 472 Principles of Nuclear Reactors	3
Philosophy and Religion elective or Humanities 401 or 402	3
	23

*Elective

Electives

	Hrs.
Engr. 365 Quality Control	6
Foreign Language (German, French or Russian)	6
Math. 309 Ordinary Differential Equations	3
Math. 310 Partial Differential Equations	3
Math. 340-341 Mathematical Statistics I-II	6
Social Science or Humanities	6

COURSES OF INSTRUCTION†

Faculty

Chemical Engineering: *Assistant Professors Luginbill (chairman) and Shadduck.*

Civil Engineering: *Associate Professors Cernica (chairman) and Fok; Instructors Mosure and Solomon; Mr. Ault.*

Electrical Engineering: *Associate Professors Kramer (chairman) and Klingshirn; Assistant Professors Gibbs and Siman; Instructors Richley and Vojtko; Mr. Kowalczyk.*

Industrial Engineering: *Professor Charignon (chairman;) Messrs. Baker, Marcone, and Varraux.*

Mechanical Engineering: *Professor Charignon; Associate Professor D'Isa (chairman); Assistant Professor Benkner; Instructors Deuchler, Petrek, Tarantine, and Wilder; Messrs. Browne and Johnson.*

Metallurgical Engineering: *Assistant Professor Fisher (chairman); Messrs. Evers, Frazier, Heindlhofer, Phillips, and Terlecki.*

†It is important that the student familiarize himself with the course-numbering system and its significance, as well as the abbreviations used to indicate the amount of credit. These are explained in the College of Arts and Sciences section, on page 63.

Lower Division Courses

102. *Engineering Drawing.* The use of drafting instruments, orthographic projection, sections, isometric drawing, technical sketching, and detail and assembly drawings of machine parts, with special attention to pencil and ink line techniques and the fundamentals of dimensioning. One hour of lecture and five hours of laboratory a week. Fee: $2.50. *3 h. c.*

130. *Surveying.* The theory of surveying, and the use of instruments. Practical problems in leveling, traversing, and topography. Maps are drawn from field notes. One hour of recitation and five hours of laboratory. Prereq.: Mathematics 101-102, 103 and 104 and Engineering 102. Fee: $10.00. *3 h. c.*

202. *Engineering Drawing: Descriptive Geometry.* Exercises in points, oblique lines, and oblique planes in space. Determination of distances, intersections, and angular measurements. The fundamental geometric solids are cut by oblique planes and surfaces developed. Prereq.: Engineering 103. Fee: $2.50. *3 h. c.*

213. *Principles of Electrical Engineering.* A presentation of the fundamental theories of electrical engineering, with emphasis on the concept of electric and magnetic circuits and fields; direct current network solutions; network theorems; simple transients. For electrical engineering majors. Prereq.: Mathematics 209, Physics 201 and 201L.; prerequisite or concurrent: Mathematics 210, Physics 202 and 202L. *3 h. c.*

213L. *Principles of Electrical Engineering Laboratory.* Three hours a week; taken concurrently with Engineering 213. Fee: $10.00. *1 h. c.*

220. *Analytical Mechanics: Statics.* The fundamental principles of mechanics and their application to problems of engineering. Forces, components, vectors, moments, couples, cables, and friction. Moments of inertia are introduced in preparation for the strength of materials course. Prereq.: Mathematics 209 and Physics 201 and 201L. Prerequisite or concurrent: Mathematics 210 and Physics 202 and 202L. *3 h. c.*

230. *Route Surveying.* Preliminary route location, with the necessary office and field work, including curves used in railroad and highway construction and earth work. Prereq.: Engineering 130. Fee: $10.00. *3 h. c.*

251. *General Metallurgy: Adaptive.* An introductory study of the constitutional structure, physical properties, and thermal and mechanical behavior of the metals and their alloys as related to the adaptive process of casting, hot and cold working, heat treatment, welding, etc. Includes a comparative consideration of non-metallic materials of construction. Prereq.: Chemistry 109-110 or 111-112. *3 h. c.*

252. *General Metallurgy: Extractive.* An introductory study of the principles of extraction of metals from their ores and the principles of refining as applied in the ferrous and nonferrous metallurgical industries. Prereq.: Chemistry 109-110 or 111-112. *3 h. c.*

255. *Metallurgical Calculations.* Problems and calculations in pyrometallurgical fuel production and combustion, endothermic and exothermic process reactions, and charge:product valence for the iron blast furnace and the Bessemer, open hearth, and electric steel-making processes. Prereq.: Mathematics 101-102, 103 and 104 and Engineering 251; prerequisite or concurrent: Engineering 252. *3 h. c.*

Upper Division Courses

301. *Report Writing.* The content of the engineering report, and methods of presenting it; construction of a comprehensive report, using data from previous studies. Prereq.: Communication 107 and junior standing in engineering. *2 h. c.*

311. *Alternating Current Circuits.* Sinusoidal currents and voltages; vector representation; solution of series and parallel circuits; real and apparent

power; voltage and current loci; balanced and unbalanced polyphase circuits; power in polyphase systems; Fourier analysis of non-sinusoidal waves. Prereq.: Engineering 213, Mathematics 210, Physics 202 and 202L. *3 h. c.*

311L. *Alternating Current Circuits Laboratory.* Three hours a week; taken concurrently with Engineering 311. Fee: $10.00. *1 h. c.*

312. *Electrical Networks.* Network theorems; methods of network solution; resonance phenomena; coupled circuits and impedance transformation; filter design and analysis; transmission lines, infinite line and reflection, transient and steady-state behavior of lines. Prereq.: Engineering 311 and 311L. *3 h. c.*

312L. *Electrical Networks Laboratory.* Three hours a week; taken concurrently with Engineering 312. Fee: $10.00. *1 h. c.*

313. *Fundamentals of Electrical Engineering.* An introductory course in electrical engineering for non-electrical engineering majors. Conductors and insulators; network solution of direct current circuits, network theorems; magnetic fields, inductance, solutions of magnetic circuits; electric fields and capacitance; simple transients; electrodynamic principles; elementary theory of alternating current circuits. Prereq.: Mathematics 210, Physics 202 and 202L. *4 h. c.*

314. *Elements of Electrical Machines.* A course in direct and alternating current machines for non-electrical majors. Theory and application of direct current motors and generators, transformers, alternators, synchronous motor and converters, and induction motors. Prereq.: Engineering 313. *3 h. c.*

314L. *Elements of Electrical Machines Laboratory.* Three hours a week; taken concurrently with Engineering 314. Fee: $10.00. *1 h. c.*

315. *Transient Analysis.* General linear differential equation solutions in engineering problems by classical method, Fourier series and integrals, La-Place transforms, and super-position integrals. Prereq.: Engineering 325 and Mathematics 309. Prerequisite or concurrent: Engineering 312. *3 h. c.*

315L. *Transient Analysis Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 315. *1 h. c.*

317. *Applied Thermodynamics.* The law of conservation of energy and its illustration in the transformation of energy. General energy equations, the characteristic and energy equations of a perfect gas, reversible non-flow processes of gases, the Carnot cycle; heat power plants; steam and steam calorimetry, steam fuels and combustion, steam boilers, steam generator auxiliaries; feedwater treatment, feedwater heaters; draft apparatus, chimneys, fans. Prereq.: Physics 201, 202, 201L, and 202L, and Mathematics 209-210. *3 h. c.*

317L. *Applied Thermodynamics Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 317. Fee: $10.00. *1 h. c.*

325. *Analytical Mechanics: Dynamics.* The motions of a particle, the dynamics of moving bodies, Newton's laws, simple harmonic motion, mechanical vibrations, impulse and momentum, balancing, the gyroscope, governors, and work and energy. Prereq.: Engineering 220. *3 h. c.*

326. *Elementary Strength of Materials.* Application of elementary theory to problems of tension and compression, direct and torsional shear, bending, and columns. Statically determinate and indeterminate and combined stress problems are considered. Prereq.: Engineering 220. *3 h. c.*

326L. *Elementary Strength of Materials Laboratory.* Principles of testing applied to tension and compression, direct and torsional shear, bending, hardness, and impact. Materials tested include ferrous and non-ferrous metals, wood, concrete, and brick. Taken concurrently with Engineering 326. Fee: $10.00. *1 h. c.*

327. *Advanced Strength of Materials.* Theories of failure for combined stresses; fatigue, impact and creep properties of materials; structure of materials and the control of their properties. Prereq.: Engineering 326. *3 h. c.*

327L. *Advanced Strength of Materials Laboratory.* Elementary theory and application of electrical strain gages, photoelasticity, and brittle lacquers. Taken concurrently with Engineering 327. Fee: $10.00. *1 h. c.*

328. *Hydraulics.* The laws of fluid mechanics and their application; properties of fluids; statics of fluids, compressible and incompressible; accelerated liquids; dynamics of fluids, flow of fluids in pipes; flow with free surface; orifices and nozzles; impulse and momentum; resistance to immersed and floating bodies; dynamical similitude. Prereq.: Engineering 220 and 325. *3 h. c.*

328L. *Hydraulics Laboratory.* Two hours a week; taken concurrently with Engineering 328. Fee: $10.00. *1 h. c.*

329. *Dynamics of Machinery.* Application of analytical mechanics, with particular emphasis on machines. One hour of lecture and three hours of laboratory a week. Concurrent: Engineering 325. Fee: $2.50. *2 h. c.*

330. *Theory of Structures.* Reactions, shears, bending moments, and deflections in beams and trusses due to external fixed and moving loads; design of simple trusses and beams; analytical and graphical methods of solution. Three hours of lecture and recitation a week. Prereq.: Engineering 220 and 337. *3 h. c.*

331. *Design of Steel Structures.* The theory and design of beams, girders, steel bridges, and steel roofs. Three hours of lecture and recitation and three hours of design and calculation a week. Prereq.: Engineering 330. *4 h. c.*

332. *Highway Construction.* The design and construction of roads and pavements; the materials used in their construction; their location and maintenance. Prereq.: Engineering 230. *3 h. c.*

333. *Sewage Disposal.* The collection, treatment, and disposal of sewage, with special attention to municipal sewage and the construction of disposal plants. Prereq.: Chemistry 109-110 or 111-112, and Engineering 328 and 328L. *3 h. c.*

343. *Fuels.* The origins, production, and combustion of natural and manufactured fuels, and the chemical principles involved; the utilization of fuel and burners in metallurgical furnaces. Prereq.: Chemistry 110 or 112 and Engineering 317. *3 h. c.*

351, 352. *Physical Metallurgy.* The crystal structure of pure metals and alloys, the freezing of metals, phase diagrams for metallic systems, solid solution alloys, intermetallic compounds, eutectic systems, the plastic deformation of metals and the principles of hot and cold working, recrystallization, X-ray diffraction for study of metal structures, diffusion in metals, the mechanical properties of metals and alloys, flow of heat in metals, magnetic properties, damping capacity, other physical properties of metals, powder metallurgy. Prereq.: Engineering 251 and 252. *3 + 3 h. c.*

351L, 352L. *Metallography Laboratory.* Study of the more common microstructures of both ferrous and nonferrous metals and alloys. The student studies approximately fifty prepared specimens under the microscope, writes a description of each, and draws its typical microstructure. Instruction in microscope technique. Taken concurrently with Engineering 351, 352. One three-hour period a week. Fee: $10.00 each semester. *1½ + 1½ h. c.*

364. *Job Analysis and Evaluation.* The fundamentals and techniques of job descriptions, job specifications, salary determination, and the use of charts in setting up labor grades, locality surveys, and merit ratings for purposes of wage determination, with examples from actual practice. The mechanics of making a plant job evaluation. Prereq.: admission to upper division status. *2 h. c.*

365. *Quality Control.* Objectives of statistical quality control in manufacturing, through sampling methods. Control charts for variables, attributes, and defects per unit. A statistical approach to acceptance procedures. Applications of statistical quality control to various types of manufacturing operations. Prereq.: Mathematics 340. *3 h. c.*

366, 367. *Industrial Organization and Management I and II.* The general principles of industrial organization and management. Prereq.: admission to upper division status. *3 + 3 h. c.*

371. *Elementary Machine Design.* A study of the design of machine elements such as shafts, keys, screws, belts, brakes, clutches, and flywheels. Prereq.: Engineering 202 and 327. *3 h. c.*

371L. *Elementary Machine Design Laboratory.* Two or three practical design problems, each incorporating the design of several machine elements. Taken concurrently with Engineering 371. *1 h. c.*

374. *Heat Engineering.* Practical application of thermodynamic principles to steam, air, and gas power. Prereq.: Engineering 317 and 343. *3 h. c.*

374L. *Heat Engineering Laboratory.* Three hours a week; taken concurrently with Engineering 374. Prereq.: Engineering 317 and 317L. Fee: $10.00. *1 h. c.*

380-381. *Principles of Chemical Engineering.* Orientation in the philosophy and attitudes needed in practice. An overall appraisal of the profession in terms of the practical application of theoretical physio-chemical principles. Illustrations of the proper analytical and evaluating procedures for solutions of problems in process design. The flow sheet; material, energy, and economic balances; static and dynamic equilibria; the transfer and transmission rates of heat. Prereq.: Chemistry 203, 204. *3 + 3 h. c.*

382. *Chemical Engineering Techniques.* A systematic survey of well-established and readily available methods for implementing the usual types of operational or process procedure. Where several techniques may be applicable, the advantages and limitations of each are considered. Prereq.: Chemistry 202. *3 h. c.*

383, 384, 385. *Unit Operations.* A study of the development and application of the theoretical concepts involved in the physical conversions of matter, in respect to its state, flow, particle size, separation, diffusion, and absorption, in relation to the energy transformation and transfer requirements accompanying or affecting such changes. Prereq.: Engineering 380-381 and 382. *3 + 3 + 3 h. c.*

401-402. *Thesis.* The student prepares a written report, of at least 2,500 words, of an investigation of a subject selected by either the student or the dean of the engineering school. Three bound copies are required; specifications are available on request. For credit, the thesis must be accepted by both the dean and the adviser. Prereq.: senior standing. Estimated thesis expense: $50.00-$60.00. *2 + 2 h. c.*

406. *Metallurgical Processes: Extractive.* Advanced lectures and problems in the technology of ore dressing, smelting, refining, roasting, leaching, electrodeposition, and other extractive processes used in the production of ferrous and nonferrous metals. Prereq.: Engineering 255 and 351, 352, and 351L, 352L. *3 h. c.*

407. *Metallurgical Processes: Adaptive.* Advanced lectures and problems relating to the technology of casting, hot working, cold working, welding, cementation, coating, compacting, and heat treatment of the ferrous and nonferrous metals and alloys. Prereq.: Engineering 351, 351L, and 352, 352L. *3 h. c.*

411. *Direct Current Machines.* Dynamo principles; armature windings; armature reaction; voltage characteristics of generators; speed-torque characteristics of motors; starting and speed control of motors; ratings, losses,

and efficiencies; special direct current machines such as Amplidyne, Rototrol, and others. Prereq.: Engineering 213. *3 h. c.*

411L. *Direct Current Machines Laboratory.* Three hours a week; taken concurrently with Engineering 411. Fee: $10.00. *1 h. c.*

413. *Electromagnetic Apparatus I.* Introduction to energy conversion Principles. Electromagnetic transducers, electromechanical systems, electromagnetic transmission. Energy functions, Lagange's equations, and equivalent circuits are used. Prereq.: Engineering 312, 315, and 418. *1 h. c.*

413L. *Electromagnetic Apparatus I Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 413. Fee: $10.00. *1 h. c.*

414. *Electromagnetic Apparatus II.* Rotating electromagnetic energy conversion devices, multiple excited electromagnetic energy converters under steady state and transient conditions, and control systems. Prereq.: Engineering 411. *3 h. c.*

414L. *Electromagnetic Apparatus II Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 414. Fee: $10.00. *1 h. c.*

415. *Electronic Circuit Elements.* A study of the theory of high vacuum, gaseous and crystal devices. Contingent field theory, electron ballistics and optics, emission at metallic surfaces and boundaries, gaseous conduction, parametric circuit equations of devices, characteristic curves, and basic utilization circuits. Prereq.: Engineering 311-311L. Prerequisite or concurrent: Engineering 312-312L. *3 h. c.*

415L. *Electronic Circuit Elements Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 415. Fee: $10.00. *1 h. c.*

416. *Electronic Applications.* The analysis of feedback and class C amplifiers, multiple-phase rectifiers, oscillators, modulators, detectors; pulse and wave forming, triggering and timing circuits; utilization of high-vacuum gas-filled and crystal elements. Prereq.: Engineering 415 and 415L, or equivalent. *3 h. c.*

416L. *Electronic Applications Laboratory.* Three hours a week; taken concurrently with Engineering 416. Fee: $10.00. *1 h. c.*

417. *Electric Power Transmission.* Transmission line parameters; solution of the short and long line; circle diagrams; symmetrical components and their application to fault calculations and sequence impedance of machines; and other topics relating to power transmission. Prereq.: Engineering 312, 413. *3 h. c.*

418. *Electromagnetic Field Theory.* Definitions of fields and potentials, study of the static electric and magnetic field, steady currents and the associated magnetic field, changing electric and magnetic fields. Maxwell's equations and their applications to waves in dielectric and conducting media, reflection, radiation, Poynting's vector. Vector notation is used throughout the course. Prereq.: Mathematics 309, Engineering 311 and 311L. *3 h. c.*

418L. *Electromagnetic Field Theory Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 418. Fee: $10.00. *1 h. c.*

419. *Industrial Applications.* The design, construction, and operating characteristics of alternating-and direct-current controllers and control devices for various types of motors. Plugging; dynamic braking; motor acceleration problems; manual and automatic starters. Prereq.: Engineering 411 and 411L; prerequisite or concurrent: Engineering 414 and 414L. *3 h. c.*

420. *Industrial Electronics.* The application of electronic devices to industrial controls. Regulators for speed, voltage, temperature, welding; induction heating; rectifiers; servomechanisms; dynamics of closed-loop and other systems. Prereq.: Engineering 411 and 411L, 416 and 416L. *3 h. c.*

421. *Servomechanism.* The characteristics of closed loop automatic control systems, system behavior from classical and La-Place transform methods: stability, compensation methods, components for use in servo systems, and analog computers. Prereq.: Engineering 414 and 415, and Mathematics 309. *3 h. c.*

421L. *Servomechanism Laboratory.* Three hours of laboratory a week; taken concurrently with Engineering 421. Fee: $10.00. *1 h. c.*

430. *Concrete Construction.* The properties of concrete; the design and construction of concrete walls, slabs, girders, beams, and columns. Prereq.: Engineering 330. *3 h. c.*

430L. *Concrete Construction Laboratory.* Laboratory demonstrations of mixing concrete, measuring of slump, compressive and tensile strengths and modulus of elasticity. Design projects on chosen topics. Must be taken concurrently with Engineering 430. Fee: $10.00. *1 h. c.*

432. *Water Supply.* Public and industrial water supply systems and methods of purification; construction and operation of distribution systems. Prereq.: Chemistry 109-110 or 111-112. Prerequisite or concurrent, Engineering 328. *3 h. c.*

433. *Indeterminate Structures.* Analysis of statically indeterminate structures: elastic arches, closed rings, rigid frames, continuous beams. Prereq.: Engineering 330, 331, and 430. *3 h. c.*

433L. *Indeterminate Structures Laboratory.* Demonstrations of use of SR-4 gages on continuous beams, frames and trusses to find stress. Design and analysis projects on chosen topics. Must be taken concurrently with Engineering 433. *1 h. c.*

434. *Soil Mechanics.* The mechanical properties of soils, soil classification; capillarity and permeability, stresses and strains, consolidation, shear; stability of footings, retaining walls, cuts, and embankments. Prereq.: Mathematics 309 and Engineering 325. *3 h. c.*

434L. *Soil Mechanics Laboratory.* Principles of testing applied to soil. Soil laboratory procedure; water content; field density of a cohesive soil; specific gravity; sieve analysis; Atterburg limits; optimum moisture content for maximum compaction; permeability — falling head, and unconfined compressive strength—Cohesive soils. Taken concurrently with Engineering 434. Fee: $10.00. *1 h. c.*

435. *Sewage Systems Design.* Design of sewers, storm drains, and appurtenances; principles of design and operation of sewage treatment and waste disposal plants. Prereq.: Engineering 333. *3 h. c.*

437. *Seminar.* Reports on library studies and research on special topics selected with the advice and approval of the faculty. Review of recent publications in the field of civil engineering. Discussions of civil engineering problems. Prereq.: Engineering 326 and 328. *2 h. c.*

438. *Civil Engineering Surveying.* A continuation of Engineering 130 and 230 with emphasis on instruments and methods for large surveys, operations, procedures for precise control, photogrammetry, and assembling essential field data preliminary to the design and construction of engineering projects. Prereq.: Engineering 130 and 230. *3 h. c.*

440. *Advanced Concrete Design.* Analysis of continuous concrete structures and applications of principles to design. Analysis and design of prestressed concrete members. Prereq.: Engineering 430. *3 h. c.*

441. *Computer Techniques.* Principles and uses of computing machines to solve engineering problems. Analysis, development, and programming of data and interpretation of solutions. Prerequisite or concurrent: Engineering 326 and Mathematics 309. *3 h. c.*

453, 454. *Advanced Metallography.* Group work in the techniques of selecting, processing, sectioning, grinding, polishing, etching, and photomicrography of metallographic specimens. Correlation of physical properties and micro-structure of ferrous and nonferrous metals and alloy specimens and

preparation of project reports, including photomicrographic illustrations. Projects cover heat-treatment of cast, forged, hot-rolled, extruded, and coldworked steels and commercial alloys of copper, aluminum, nickel, zinc, tin, and other metals. One hour of lecture and four hours of laboratory a week. Prereq.: Engineering 351, 352, and 351L, 352L. Fee: $10.00 each semester. *3 + 3 h. c.*

455. *Ferrous Production Metallurgy.* Study of the raw materials required for the production of iron and steel. Ore concentration, by-products, oven, blast furnaces, Bessemer processes, open hearth, and refractories. Prereq.: Engineering 251 and 252. *3 h. c.*

456. *Nonferrous Production Metallurgy.* The production of nonferrous metals, including cadmium, chromium, copper, aluminum, gold, silver, tin, and zinc. Types of ores, types of blast furnace melting, converters; continuous decantation and cyanide processes. Prereq.: Engineering 251 and 252. *3 h. c.*

457. *X-ray Metallography.* Lectures, problems and laboratory demonstrations in the application of X-radiography, X-ray diffraction and X-ray spectroscopy to the non-destructive internal inspection, crystallographic analysis and spectrographic analysis of the metals and their alloys as they are affected by casting, mechanical working, heat treatment, etc. Two hours of lecture and two hours of laboratory work per week. Prereq.: Engineering 453, 454. *3 h. c.*

461. *Production Planning and Control.* The fundmentals and techniques of planning and control required in the co-ordination of products engineering, production engineering, quality control, material control, expediting, purchasing, scheduling, and dispatching. Applications to seasonal and non-seasonal business. Economic lot size calculations and formulas. Plant capacity and plant layout; material handling. Prereq.: Engineering 366, 367. *3 h. c.*

465. *Methods Engineering I.* Fundamentals and elements of motion study, construction and use of process charts and operation analysis, work simplification and standardization, characteristics of motions, and basic divisions of accomplishment. Visits to local plants are arranged. Prereq.: Mathematics 340. *2 h. c.*

466. *Methods Engineering II.* Tools and methods of time study, practice in making time-study observations, determination of constants and variables, leveling for efforts and skill allowances for delays and fatigue, construction and use of formula standards. Time studies are made of actual plant operations. Prereq.: Engineering 465. *2 h. c.*

470. *Advanced Machine Design.* Welded and riveted connections, lubrication, ball and journal bearings, and gears. Prereq.: Engineering 371 and 371L. *2 h. c.*

470L. *Advanced Machine Design Laboratory.* One or two practical design problems involving all of the material covered in Engineering 371 and 470. Taken concurrently with Engineering 470. *1 h. c.*

471. *Refrigeration and Air Conditioning.* Application of thermodynamic theory to refrigeration and air conditioning in relation to heating and ventilating problems and materials processing. Humidification and dehumidification, and air tempering systems in relation to human habitation and processes. Prereq.: Engineering 317, 317L, and 343. *3 h. c.*

472. *Principles of Nuclear Reactors.* Basic engineering science of the nuclear fission process applied to the generation of power. The course serves as background material for work in various phases of nuclear engineering: the chain reaction; vocabulary of nuclear reactions; multiplication, slowdown and diffusion of neutrons; shielding; kinetics; criticality; and theory of reactor control. Prereq.: Physics 426 and Mathematics 310. *3 h. c.*

475. *Internal Combustion Engines.* Thermodynamic analysis of internal combustion engine cycles; fuels; combustion; carburetion, cooling, lubrication, and effect of supercharging on engine performance. Prereq.: Engineering 317 and 317L and 343. *3 h. c.*

475L. *Internal Combustion Engines Laboratory.* Two hours a week; taken concurrently with Engineering 475. Fee: $10.00. *1 h. c.*

476. *Mechanical Vibrations.* The causes, effects, and control of vibration in machine elements and foundations. Vibrations with and without damping. Vibration of systems with several degrees of freedom. Vibration isolation and absorption, with the application of modern methods in this field. Prereq.: Mathematics 310, Engineering 325, 327 and 327L. *3 h. c.*

477. *Compressible Fluid Flow.* One dimensional applications of gas dynamics, isentropic, diabatic Fanno, and variable-area flows, and wave phenomena. Prereq.: Engineering 317 and 317L, 328 and 328L, and Mathematics 309. *3 h. c.*

478. *Heat Transfer.* The fundamentals of heat transfer by conduction, convection, and radiation, followed by the investment of combinations of these modes of energy transfer. Prereq.: Mathematics 310, Engineering 317 and 317L. *3 h. c.*

480. *Unit Design.* The development and study of apparatus to carry out laboratory-proved reactions. Prereq.: junior or senior standing, with major in chemical engineering, chemistry, or physics, and permission of the chairman of the Department of Chemical Engineering. Fee: $10.00. Identical with Chemistry 430. *Hours and credit to be arranged.*

Dana School of Music

GENERAL INFORMATION

FACULTY

Kenneth R. Kitchen, *Dean*	Music Literature and History, Voice
Mark C. Dolliver, Jr., *Assistant Dean*	Woodwind Instruments and Methods, Conducting, Choir
Theodore Baar	Violoncello, String Bass, Piano
Samuel P. Badal	Sacred Music, Madrigals, Organ
Oliver P. Cash	Vocal Methods
Norman Chapman	Piano
Fanny Cleve	Voice and Opera Workshop
Nellie G. Dehnbostel	Theory, Ear-training
Mary E. Fankhauser	Piano
James R. Fitzer	Clarinet
Lois M. Hopkins	French Horn
Harry Joyce	Clarinet
John Krueger	Trombone
Tomme Krueger	Music Education
Jean Meranto	Piano
Leah M. McIlroy	Music Education, Voice
Alvin Myerovich	Violin, Viola, String Methods, Orchestra
Jay R. Raven	Oboe, Bassoon, Flute, Woodwind Ensemble
Elmer P. White	Band, Trumpet
Myron J. Wisler	Percussion Instruments and Methods
Robert Witt	Composition, Theory, Piano

ORGANIZATION AND PURPOSES

Dana School of Music of Youngstown University began in 1869 as Dana's Musical Institute in Warren, Ohio. It was merged with Youngstown College in 1941. The former Charles S. Thomas mansion, a block north of the main campus, became its home and remains its principal building. Dana School of Music is a member of the National Association of Schools of Music.

The school offers instruction for both professional and avocational needs. Moreover, since a program of general education is available in the College of Arts and Sciences, the student who has studied voice or an instrument while in high school may continue his music study, whatever his purpose, without overlooking the broader aspects of his education.

The School of Music offers courses leading to the degree of Bachelor of Music, with the major in piano, organ, voice, any standard string or wind instrument, percussion, theory, composition, sacred music, or music education. It also provides the courses for the major in the history and literature of music for the degree of Bachelor of Arts.

With the co-operation of the School of Education, the music education department prepares students for certification as music teachers in public schools, and also provides the music courses needed for the general elementary teaching certificate. Music education students have ample opportunity for practice teaching, since close co-operation is maintained between the University and the public schools of Youngstown and vicinity.

Credit in music is allowed in varying amounts toward the other degrees granted by Youngstown University.

FACILITIES

Buildings

The school's main building, at 616 Wick Avenue, contains the administrative offices, thirteen studios, four classrooms, four soundproof record-playing rooms, and the record library. The Dana Annex, directly behind the main music building, contains twenty soundproof practice rooms and a pipe organ practice room. In the second story of Central Hall, on the main campus, are two studios, a soundproof rehearsal and recital hall seating three hundred, and the instrumental and choral libraries. Frequent use is made of the C. J. Strouss Memorial Auditorium for concerts and recitals.

Equipment

Equipment includes fifteen grand pianos and twenty-seven uprights, three practice organs, and band and orchestra instruments. The famous 4-manual Moeller organ of the Trinity Methodist Church is available for teaching, and for practice by students preparing for their senior recitals.

Libraries

The library of band, orchestral, and choral music is extensive, and is representative of musical periods from the Renaissance to the present. The large music section of the University Library contains books and music for study by students in music literature, music education, and theory classes. The record library, located in the Dana School for easy access for class work and for use by the students in the several listening rooms, is representative of the complete field of music history and literature. The School of Music invites students of other schools of the University to make use of the listening opportunities available.

Scholarships and Loans

The School of Music has at its disposal a number of scholarships, which are awarded, after competitive auditions, on the basis of talent, intelligence, and need. Applications should be directed to the Dean of Dana School of Music. See the section on Scholarships and Loans.

Placement Service

Through its many alumni, the school can give its graduates considerable assistance in finding professional positions. Its contacts extend through forty-two states, and each year requests for graduates are received from all branches of the profession.

ACTIVITIES

Musical Activities

Dana School of Music supplements the concerts of the Monday Musical Club and the Youngstown Philharmonic Orchestra with a series of lecture-recitals by outstanding artists, composers, and musicologists. In addition, the faculty presents a series of complimentary programs for the general public.

Student recitals afford additional training through experience in public performance. Besides graduation recitals, usually given in the C. J. Strouss Memorial Auditorium, there are informal student recitals every Tuesday and Thursday at 11 a. m. in Central Hall. Attendance at recitals is obligatory for music students. Additional hours of credit in the applied field may be required for non-attendance.

The University bands are an integral part of campus life and are open to all students in the University. The *Marching Band* functions during the football season and is open to all who can qualify. For the *Concert Band*, which presents programs of various types of band music, members are selected through auditions. The *Laboratory Band* provides additional training for those who need it to qualify for the Concert Band and enables music education students to gain practical experience on their minor instruments.

The *Symphony Orchestra* provides opportunity for musical growth and development in its presentations of symphonic works. It possesses an adequate library of symphonic and chamber music. It is open to all students in the University who can qualify. The *Laboratory Orchestra* affords further training for those who need it to qualify for the Symphony Orchestra and enables music education students to gain practical experience in performance on their minor instruments.

The *A Cappella Choir* offers, to all University students who can qualify, the opportunity to participate in unaccompanied singing of sacred and secular compositions from all periods of musical history, including the contemporary.

The *Madrigal Singers* are a group of sixteen selected voices from the School of Music. The group studies and sings *a cappella* compositions of the English madrigal school, modern arrangements of folk tunes, and suitable contemporary works.

The *String Quartet*, *String Ensemble*, and the *Brass* and *Woodwind Ensembles* are likewise restricted to students of the School of Music.

Opera is a tradition in Youngstown University. Besides programs of short operas and scenes from operas there is an annual major production of a work from standard opera repertory. Most members of the casts are students of the School of Music, but qualified students in the University may audition for the cast, the opera chorus, or the opera orchestra.

Professional Fraternities

Alpha Nu Chapter of Sigma Alpha Iota, an honorary professional music sorority, and Delta Eta Chapter of Phi Mu Alpha Sinfonia, an honorary professional music fraternity for men, are chartered to Dana School of Music.

Other Student Activities

Students of the School of Music may take part in other Youngstown University activities on an equal basis with other students. These activities are described in the section on Student Activities. The Youngstown Chapter of Composers, Authors, and Artists of America is also open to University students.

The Alumni Association

Dana School of Music has a large and active Alumni Association, formed many years ago during the school's independent existence. The organization is the means of a continuing relationship between the school and its graduates, and its services are continually increasing. See also the section on the general Alumni Association.

TUITION AND FEES

All tuition charges and fees are explained in detail in the general section on Fees and Expenses.

Full-Time Students*

The rates for full-time music students are stated and explained on page 53. The semester charge of $327.00** includes tuition fees for both applied music and other courses to the extent stated. In applied music it provides for two half-hour private lessons a week in the major subject, one half-hour private lesson a week in the minor subject, and use of practice rooms. To this sum are added any course-fees or other special fees applicable during a particular semester.

Additional applied music lessons, or any courses in excess of a total of 15 semester hours, are payable at the pertinent rates as stated on page 53.

Part-Time Students

A part-time student for the degree of Bachelor of Music is charged for applied music at the rates listed below under "Tuition Rates for Applied Music," and, for any other course he takes, at the ordinary rates for part-time students.

Special Students in Applied Music

A student from another unit of the University who studies applied music pays at the rates listed below under "Tuition Rates for Applied Music." These charges are in addition to the regular tuition and are payable under the same conditions as all other University fees. (Such a student must first see the dean of the School of Music for assignment to a teacher.)

*A full-time music student is one enrolled in Dana School of Music and carrying 12 or more semester hours, incuding applied music courses, but exclusive of music ensemble courses.

**This charge is $341.50 if the student takes one of his applied music lessons each week from an artist-teacher, and $356.00 if he takes two such lessons a week.

Private Students in Applied Music

A student from outside the University studying with any of the School of Music faculty pays at the rates listed below under "Tuition Rates for Applied Music." The following policies prevail:

Arrangements for lessons and for assignment to teachers must first be made at the office of the dean of Dana School of Music.

Payment must be made either in advance for the complete term (semester or summer session), or under an installment contract arranged through the business office (see pages 56-57). All payments are made to the cashier in the Main Building. In case of official withdrawal during a term, fees paid in advance will be refunded according to the number of lessons taken during that term. No student may enroll for a new term until all his previous lessons have been paid for.

No private student may enroll for less than a full term. Lessons may be taken on a weekly basis only. Lessons missed (with satisfactory excuse) must be made up by the end of the term. No lessons will be carried over from one term to another.

Tuition Rates for Applied Music

The following rates apply to part-time students in applied music. The special Applied Music Charge for full-time students is stated on page 53.

For one semester of seventeen weeks:	One half-hour lesson a week	Two half-hour lessons a week
Regular instruction rate	$59.50	$119.00
Artist-teacher rates:		
For part-time or special University students	68.00	136.00
For private (non-University) students	85.00	170.00

Special Fees

1. *Piano Practice Fee.* The fee for piano practice is $5.00 a semester for a major and $2.00 a semester for a minor.

2. *Organ Practice Fee.* The charge for practice on the University pipe organ is $40.00 a semester for a major (10 hours of practice a week) or $20.00 a semester for a minor (5 hours of practice a week).

3. *Instrument Rental Fee.* The School of Music has instruments which may be rented for a fee of $5.00 a semester for each instrument. The student will receive the instrument in playing condition: thereafter he must supply his own strings, reeds, etc.; he is responsible for the care and safekeeping of the instrument, and he must return it at the end of the semester (or earlier if he withdraws from the University) in as good condition as when he received it.

4. *Student Recital Fee.* Any student or combination of students giving a senior recital or similar public recital using University facilities pays a fee of $15 for each recital to cover the necessary expenses. (This does not apply to organized University ensembles.)

5. *Theory Placement Examination Fee.* A fee of $5.00 is charged for the placement examination in the theory of music, usually taken before entrance.

ADMISSION

Application and Examinations

An applicant for admission to Dana School of Music must satisfy the general requirements for admission to the University (pages 36-38). His application for admission to the School of Music should be submitted to the dean of the school (from whose office application forms are obtainable) by August 1 for the fall semester or January 1 for the spring semester.

Every freshman takes a placement examination to determine his proficiency in applied music. These examinations are usually given one week before the opening of a semester.

A placement examination in music theory will be given to all entering freshmen to determine whether they must supplement Music 103-104, Music Theory I, with Music 101, Basic Music.

The entering student must give considerable thought to the branch of applied music in which he will specialize, as a change of curriculum later on is likely to delay his graduation.

Admission to Courses for the Degree of Bachelor of Music

Scholastic Requirements

The applicant's high school courses should include the preparatory courses specified below under Requirements for Degrees.

Musical Proficiency

It is expected that the applicant will have developed a certain proficiency in one or more branches of applied music before entering the University, as he must meet certain standards in technique and repertory. His qualifications are determined by the placement tests mentioned above; and the student not qualifying for the first regular course in his major branch of applied music takes additional preparatory work until he is ready to undertake the regular courses.

The student wishing to specialize in music theory or in composition, or to prepare for advanced study after graduation from the University, should present evidence of his ability to handle the materials of music. This ability may be determined in part by placement tests. If he wishes to place the major emphasis on composition, he must present original compositions as evidence of creative talent.

Admission from Other Institutions

The general policy is stated on page 37. Advanced standing in applied music and in aural and written theory is granted tentatively and must be validated by examinations or by completion of more advanced courses in Dana School of Music.

Special Students

The general policy is stated on page 37. Accordingly, the School of Music provides training for mature students who wish to improve their playing ability or to study music for cultural purposes, but who for technical reasons cannot enter the degree courses. Private lessons on all instruments and in voice are available to such students.

Requirements for the Degree

Bachelor of Music

It is the student's responsibility to see that he satisfies all the graduation requirements for the degree he seeks. For the Bachelor of Music degree, these consist of:

1. The pre-college or preparatory study, of two kinds:

a. Academic. The specified courses are listed below; for further information see pages 40-41. These courses are normally taken in high school; those lacking may be made up before the junior year in the University.

b. Musical. As explained above, an entrant lacking suitable proficiency must develop it after entrance before he can undertake the required college-level music courses.

2. The courses and other requirements to be completed in the University. These comprise:

a. The *general* requirements for graduation from the University, explained on pages 38-39 and 41-42 and recapitulated below.

b. Requirements peculiar to the Bachelor of Music *degree*, which are stated below.

c. Requirements for the major and minor fields and for any other purposes, such as teaching certification.

Most curriculums leading to this degree require from 138 to 147 semester hours of credit and are designed to be completed in four academic years.* A student may finish any curriculum in less than the usual time if he can carry heavier loads successfully.** A student planning to take summer courses should consult his adviser.

R. O. T. C. students are allowed certain modifications of the requirements, as explained on page 43.

*The one exception is the five-year combination curriculum for the vocal and instrumental music education major, requiring 165 semester hours.

**This plan is not encouraged if the student intends to hold a strenuous or time-consuming outside job regularly while enrolled in classes.

1. Pre-college

a. Academic

Subject	*High school units*
English	3
A foreign language†	2
United States history and civics	1
Mathematics	1
Science	1
Others	8

b. Musical

Proficiency adequate for undertaking college-level music courses.

2. In the University

a. General

Other than courses (see pages 38-39, 41):

Upper Division status (including completion of any specified preparatory courses lacking at time of entrance).
Major and minor requirements.
Course-level requirements.
Grade-average requirement.
Residence requirement.
Application for graduation.

Basic courses:	*Credit hours*
Communication 105-106-107, Basic Course I-II-III	9
Health and Physical Education 109M or 109W, Health Education	2
Health and Physical Education activity courses	2
Orientation 100, Freshman Orientation	1

Area courses:

Religion: a course in the Department of Philosophy and Religion, or Humanities 401 or 402 — 3

Science: see the degree requirements below.

Social Studies:

Social Science 101 and 102, Introduction to the Social Sciences	6
History 201 and 202, The United States	6
	29

b. For the Degree

Non-professional in purpose:

Science — 6

Physics 101, Fundamentals of Physics (first semester), and Physics 208, Sound.

Psychology 201, General Psychology — 3

Professional in purpose:

Music 103-104, Theory I	8
Music 203-204, Theory II	8
Music 219-210, Conducting	2
Music 301-302, Sight Singing and Ear-training I	2
Music 305-306, History of Music	4

†French, German, or Italian will be the most advantageous for the student intending to major in voice.

Music 307-308, Survey of Music Literature	4
Music 335-336, Counterpoint I-II	6
Music ensembles	12
Physics 208, Sound (counted above as science)	
Recital	1
	48

The general and degree course-requirements total 77 semester hours.

c. Major, Minor, and Other Course-Requirements

A student must have grades of C or better in all courses taken in the major and minor fields. Courses in which the student receives a D or F must be repeated. For details, see the complete year-by-year curriculums a few pages further on.

For Two Majors, in Music and in Music Education

A student wishing to complete a major in an instrument or in voice, theory, composition, or sacred music, and also a major in music education, may do so by satisfying all the requirements of (a) one of the first four curriculums given below, and (b) one of the music education curriculums. Such a combined program of study may be arranged in consultation with the dean of Dana School of Music.

Requirements for the Degree

Bachelor of Arts

with Major in the History and Literature of Music

For the degree of Bachelor of Arts with the major in the history and literature of music, only the courses for the major are taken in Dana School of Music. The rest are taken in the College of Arts and Sciences, and the other requirements for the degree will be found, accordingly, on pages 59-61.

The music study for this degree is regarded as purely cultural and non-professional, and includes no courses in music education. The major consists of 47 semester hours, as follows:

*Course 203-204 in voice or an instrument	4 hours
**Music 103-104, Theory I	8 hours
Music 203-204, Theory II	8 hours
Music 305-306, History of Music	4 hours
Music 307-308, Survey of Music Literature	4 hours
Music 327-328, Form and Analysis	4 hours
Music 335, Counterpoint I, or 336, Counterpoint II	3 hours
Music 427-428, Symphonic Literature	4 hours
Music Ensembles	2 hours
†Physics 101, Fundamentals of Physics (First Semester)	3 hours
†Physics 208, Sound	3 hours

*If the student demonstrates that he has already attained this level of proficiency, he may substitute other music courses, according to his choice and his qualifications.

**Prerequisite: grade of C or better in Music 101-102, or passing grade in placement examination in theory.

†By taking Physics 101-102 and 101L-102L (totaling eight credit hours) the student may meet the laboratory science requirement for the Bachelor of Arts degree. Physics 208 will then fulfill the remaining three hours of the science requirement.

Curriculums

The student not qualifying for a 101 or 103 applied music course (whichever his curriculum requires) takes the relevant course 100 until his deficiency is overcome.

The student who can meet the applied music proficiency requirements of his curriculum without taking the courses designed to develop that proficiency, may earn in other applied music courses as many hours of credit as he would in the courses not taken.

Instrument Major

Curriculums for the Degree of Bachelor of Music with Major in Instrument, Voice, Theory, Composition, or Sacred Music

Designed for the student primarily interested in performance and/or in teaching (other than in public schools). Piano, if not the major, is desirable as the minor. This curriculum totals 138 hours.

First Year	Hrs.
Major instrument 101-102	6
Minor instrument 105-106	2
Mus. 103-104 Theory I	8
Music ensembles	2
Comm. 105-106 Basic Course I-II	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Major instrument 201-202	6
Minor instrument 205-206	2
Mus. 203-204 Theory II	8
Music ensembles	2
Comm. 107 Basic Course III	3
Hist. 201 & 202 The United States	6
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	37

Third Year	Hrs.
Major instrument 301-302	6
Minor instrument 305-306	2
Mus. 219-220. Conducting	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 307-308 Survey of Music Literature	4
Mus. 327-328 Form and Analysis	4
Mus. 335-336 Counterpoint I & II	6
Music ensembles	2
Elective	3
	35

Fourth Year	Hrs.
Major instrument 401-402	6
Minor instrument 405-406	2
Mus. 333-334 Instrumental Conducting and Score-Reading	2
Mus. 401-402 Sight Singing and Ear-Training II	2
Mus. 409-410 Orchestration and Band arranging	4
Mus. 421-422 Composition I	4
Mus. 427-428 Symphonic Literature	4
Music ensembles	2
Recital	1
Philosophy and Religion elective, or Humanities 401 or 402	3
Elective	2
	32

Voice Major

Designed for the student primarily interested in performance and/or in teaching (other than in public schools). Piano is required as the minor.

This curriculum appears to total 144 credit hours instead of 138 because it lists 18 hours in foreign languages. Actually 12 hours are enough if the student has two units of high school French, German, or Italian (both units in the same language). If he does not, he takes all 18 hours in the University, but receives no course-credit for the first six unless he has two high school units of some other foreign language, in which case he should consult the dean of the Music School at the time he enters.

First Year	Hrs.
Major: Voice 101-102	6
Minor: Piano 105-106	2
Mus. 103-104 Theory I	8
Music ensembles	2
Comm. 105-106 Basic Course I-II	6
*Italian 101-102 Elementary Italian	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Major: Voice 201-202	6
Minor: Piano 205-206	2
Mus. 203-204 Theory II	8
Music ensembles	2
Comm. 107 Basic Course III	3
*French 101-102 Elementary French	6
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	37

Third Year	Hrs.
Major: Voice 301-302	6
Minor: Piano 305-306	2
Mus. 219-220 Conducting	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 307-308 Survey of Music Literature	4
Music ensembles	2
*German 101-102 Elementary German	6
Hist. 201 & 202 The United States	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
	36

Fourth Year	Hrs.
Major: Voice 401-402	6
Minor: Piano 405-406	2
Mus. 305-306 History of Music	4
Mus. 327-328 Form and Analysis	4
Mus. 331-332 Choral Conducting	2
Mus. 335-336 Counterpoint I-II	6
Mus. 401-402 Sight Singing and Ear-Training II	2
Music ensembles	2
Recital	1
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives	5
	37

Composition Major

The composition curriculum totals 147 semester hours.

First Year	Hrs.
Major instrument or Voice	4
Piano 105-106 (if not major)	2
Minor—Strings	2
Mus. 103-104 Theory I	8
Mus. 113-114 Composition A	4
Music ensembles	2
Comm. 105-106 Basic Course I-II	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	38

Second Year	Hrs.
Major instrument or Voice	4
Piano 205-206 (if not major)	2
Minor—Woodwinds	2
Mus. 203-204 Theory II	8
Mus. 213-214 Composition B	4
Music ensembles	2
Comm. 107 Basic Course III	3
Hist. 201 & 202 The United States	6
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
H. & P. E. activity courses	1
	38

Third Year	Hrs.
Major instrument or Voice	4
Piano 305-306 (if not major)	2
Minor—brass	2
Mus. 219-220 Conducting	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 313-314 Composition C	4
Mus. 327-328 Form & Analysis	4
Mus. 335-336 Counterpoint I-II	6
Music ensembles	2
Psych. 201 General Psychology	3
	35

Fourth Year	Hrs.
Major instrument or Voice	4
Piano 405-406 (if not major)	2
Minor—Percussion	2
Mus. 307-308 Survey of Music Literature	4
Mus. 331-332 Choral Conducting and Score-Reading	2
Mus. 333-334 Instrumental Conducting & Score-Reading	2
Mus. 401-402 Sight Singing and Ear-Training II	2
Mus. 409-410 Orchestration & Band Arranging	4
Mus. 413-414 Composition D	4
Mus. 427-428 Symphonic Literature	4
Music ensembles	2
Recital	1
Philosophy and Religion elective, or Humanities 401 or 402	3
	36

*May be omitted if the student has two high school units in the language.

Sacred Music Major

Designed for the voice or organ major wishing to specialize in sacred music with a view to becoming a minister of music and/or preparing for advanced study and specialization at the graduation level. This curriculum totals 140 hours.

First Year	Hrs.
Major: Organ or Voice 101-102	6
Minor: Organ, Piano or Voice 105-106	2
Mus. 103-104 Theory I	8
Music ensembles	2
Comm. 105-106 Basic Course I-II	6
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	34

Second Year	Hrs.
Major: Organ or Voice 201-202	6
Minor: Organ, Piano, or Voice 205-206	2
Mus. 203-204 Theory II	8
Music ensembles	2
Comm. 107 Basic Course III	3
Hist. 201 & 202 The United States	6
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
H. & P. E. activity courses	1
	37

Third Year	Hrs.
Major: Organ or Voice 301-302	6
Minor: Organ, Piano, or Voice 305-306	2
Mus. 219-220 Conducting	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 307-308 Survey of Music Literature	4
Mus. 335-336 Counterpoint I-II	6
Mus. 361 Hymnology	2
Mus. 362 Gregorian Chant	2
Mus. 363-364 Junior and Senior Choir Methods	4
Music ensembles	2
	36

Fourth Year	Hrs.
Major: Organ or Voice 401-402	6
Minor: Organ, Piano, or Voice 405-406	2
Mus. 327-328 Form and Analysis	4
Mus. 331-332 Choral Conducting	2
Mus. 401-402 Sight Singing and Ear-Training II	2
Mus. 429 Canon and Fugue	2
Mus. 461 History of Sacred Music	2
Mus. 463-464 Choral Literature	4
Music ensembles	2
Recital	1
Philosophy and Religion elective, or Humanities 401 or 402	3
*Elective	3
	33

*Music 465 required of organ majors.

Curriculums for the Degree of Bachelor of Music with Major in Music Education

Some of the following curriculums lead to the special certificate to teach music in the public schools of Ohio. The certification requirements of the various states differ greatly, and if a student wishes to be certified in another state, it is his responsibility to bear in mind the requirements of that state in his choice of courses. Courses satisfying such requirements usually give credit toward the degree, but some additional courses may be found necessary.

Every student majoring in music education may complete one applied-music major of 16 semester hours (courses 103-104, 203-204, 303-304, and 403-404 in any one instrument or in voice). For required applied-music minor courses, see the curriculums below.

All music education majors are expected to demonstrate piano facility as follows:

1. Ability to sight-read songs of the type found in school song books.
2. Ability to harmonize at sight, improvise simple piano accompaniments, and transpose songs and harmonizations to other keys.

"The Marriage of Figaro"

"Cosi Fan Tutti"

"Der Freischutz"

3. Ability to sight-read fairly fluently simple accompaniments for instrument or voice and simple piano compositions of the type used for school rhythmics activities.

The music education student majoring in a string, wind, or percussion instrument must take the functional piano courses (Piano 111-112 and 211-212).

In order to foster a broad understanding of the total music program, it is required that all music education majors participate in music ensembles to the extent indicated:

Marching Band	1½ semester hours
Laboratory Ensemble	2 semester hours
Choir or Madrigals	1½ semester hours
Other ensembles (large or small)	6 semester hours

Wind instrument and percussion majors should include some work in both band and orchestra.

Music Education Major: Vocal

For certification purposes this curriculum is called "vocal" regardless of whether the applied major is in voice or piano. This curriculum does not meet the present requirements for the special Provisional Certificate in Ohio. It totals 139 semester hours.

First Year	Hrs.
Applied major: Voice or Piano 103-104	4
Applied minor: Piano or Voice 105-106	2
Mus. 103-104 Theory I	8
Music ensembles	3
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	35

Second Year	Hrs.
Applied major: Voice or Piano 203-204	4
Applied minor: Piano or Voice 205-206	2
Mus. 203-204 Theory II	8
Mus. 219-220 Conducting	2
Mus. 311-312 Class Voice Methods	2
Music ensembles	3
Comm. 107 Basic Course III	3
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
H. & P. E. activity courses	1
	37

Third Year	Hrs.
Applied major: Voice or Piano 303-304	4
Applied minor: Piano or Voice 305-306	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 307-308 Survey of Music Literature	4
Mus. 323 Music in the First Six Grades	3
Mus. 324 Junior and Senior High School Methods	3
Mus. 331-332 Choral Conducting	2
Music ensembles	3
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Hist. 201 & 202 The United States	6
	38

Fourth Year	Hrs.
Applied major: Voice or Piano 403-404	4
Applied minor: Piano or Voice 405-406	2
Mus. 335-336 Counterpoint I-II	6
Mus. 409-410 Orchestration and Band Arranging	4
Music ensembles	3
Recital	1
Educ. 404 Student Teaching: High School	6
Philosophy and Religion elective, or Humanities 401 or 402	3
	29

Music Education Major: Instrumental

The minor courses in applied music are stated below the curriculum. This curriculum does not meet the present requirements for the special Provisional Certificate in Ohio. It totals 144 semester hours.

First Year	Hrs.
Applied major 103-104	4
Applied minor	2
Mus. 103-104 Theory I	8
Music ensembles	3
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	35

Second Year	Hrs.
Applied major 203-204	4
Applied minor	2
Mus. 203-204 Theory II	8
Mus. 219-220 Conducting	2
Mus. 225-226 Woodwind Methods	2
Music ensembles	3
Comm. 107 Basic Course III	3
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
H. & P. E. activity courses	1
	37

Third Year	Hrs.
Applied major 303-304	4
Applied minors	3
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 307-308 Survey of Music Literature	4
Mus. 318 Percussion Methods	1
Mus. 329-330 Brass Methods	2
Mus. 333-334 Instrumental Conducting	2
Music ensembles	3
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Hist. 201 & 202 The United States	6
	36

Fourth Year	Hrs.
Applied major 403-404	4
Applied minors	3
Mus. 325-326 String Methods	2
Mus. 335-336 Counterpoint I-II	6
Mus. 409-410 Orchestration and Band Arranging	4
Mus. 417 Instrumental Problems	2
Mus. 419 Band Organization	2
Music ensembles	3
Recital	1
Educ. 404 Student Teaching: High School	6
Philosophy and Religion elective, or Humanities 401 or 402	3
	36

The minor applied-music courses for the curriculum above must total at least 10 semester hours, as follows:

1. If the major instrument is piano, the minors must consist of one semester hour each in clarinet, trumpet, violin, cello, percussion, and voice, and four semester hours in any instruments or voice.

2. If the major instrument is a string, wind, or percussion instrument, the minors must be four semester hours of functional piano and one semester hour each in voice, clarinet, trumpet, violin, cello, and percussion. If one of the latter five instruments is the major instrument, another semester hour must be completed, in any instrument other than the major one, or in voice, in order to have a total of 10 semester hours in minors.

These requirements can be altered if the student has already achieved any of the necessary proficiencies.

Music Education Major: General

This curriculum meets the requirements for the special Provisional Certificate in Ohio. It totals 154 hours.

First Year	Hrs.
Applied major 103-104	4
Applied minor	3
Mus. 103-104 Theory I	8
Mus. 318 Percussion Methods	1
Music ensembles	3
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	37

Second Year	Hrs.
Applied major 203-204	4
Applied minor	3
Mus. 203-204 Theory II	8
Mus. 219-220 Conducting	2
Mus. 225-226 Woodwind Methods	2
Mus. 311-312 Class Voice Methods	2
Music ensembles	3
Comm. 107 Basic Course III	3
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
H. & P. E. activity courses	1
	40

Third Year	Hrs.
Applied major 303-304	4
Applied minor	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 323 Music in the First Six Grades	3
Mus. 324 Junior and Senior High School Methods	3
Mus. 325-326 String Methods	2
Mus. 329-330 Brass Methods	2
Mus. 331-332 Choral Conducting	2
Mus. 333-334 Instrumental Conducting	2
Music ensembles	4
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
Hist. 201 & 202 The United States	6
	41

Fourth Year	Hrs.
Applied major 403-404	4
Applied minor	2
Mus. 307-308 Survey of Music Literature	4
Mus. 335-336 Counterpoint I-II	6
Mus. 409-410 Orchestration and Band Arranging	4
Mus. 417 Instrumental Problems	2
Mus. 419 Band Organization	2
Music ensembles	2
Recital	1
Educ. 404 Student Teaching: High School	6
Philosophy and Religion elective, or Humanities 401 or 402	3
	36

In order to complete the above curriculum in four years, the student will need to attend summer school in addition to the regular sessions.

Music Education Major: Vocal and Instrumental

This is a five-year curriculum totalling 164 semester hours. It may be completed in four years and five summers by starting with a summer session. The minor applied-music courses are the same as for the instrumental curriculum above.

First Year	Hrs.
Applied major 103-104	4
Applied minor 105-106	2
Mus. 103-104 Theory I	8
Music ensembles	3
Comm. 105-106 Basic Course I-II	6
Educ. 101 Introduction to Education	2
Soc. Sci. 101 & 102 Introduction to the Social Sciences I & II	6
H. & P. E. 109M or 109W Health Education	2
H. & P. E. activity courses	1
Orientation 100	1
	35

Second Year	Hrs.
Applied major 203-204	4
Applied minor 205-206	2
Mus. 203-204 Theory II	8
Mus. 225-226 Woodwind Methods	2
Music ensembles	3
Comm. 107 Basic Course III	3
Physics 101 Fundamentals of Physics	3
Physics 208 Sound	3
Psych. 201 General Psychology	3
Psych. 202 Psychology of Education	3
H. & P. E. activity courses	1
	35

Third Year	Hrs.
Applied major 303-304	4
Applied minor	2
Mus. 219-220 Conducting	2
Mus. 301-302 Sight Singing and Ear-Training I	2
Mus. 305-306 History of Music	4
Mus. 307-308 Survey of Music Literature	4
Mus. 311-312 Class Voice Methods	2
Mus. 318 Percussion Methods	1
Music ensembles	2
Hist. 201 & 202 The United States	6
	29

Fourth Year	Hrs.
Applied major 403-404	4
Applied minor	2
Mus. 323 Music in the First Six Grades	3
Mus. 324 Junior and Senior High School Methods	3
Mus. 325-326 String Methods	2
Mus. 329-330 Brass Methods	2
Mus. 331-332 Choral Conducting	2
Mus. 401-402 Sight Singing and Ear-Training II	2
Mus. 409-410 Orchestration and Band Arranging	4
Music ensembles	2
Recital	1
Educ. 301 Principles of Teaching	3
Educ. 304 Classroom Management	2
	32

Fifth Year	Hrs.
Applied minor 105-106	2
Applied minor	2
Mus. 333-334 Instrumental Conducting	2
Mus. 335-336 Counterpoint I-II	6
Mus. 417 Instrumental Problems	2
Mus. 419 Band Organization	2
Music ensembles	3
Educ. 404 Student Teaching: High School	6
Philosophy and Religion elective, or Humanities 401 or 402	3
Electives	6
	33

COURSES OF INSTRUCTION*

Applied Music

Students desiring credit must enroll for not less than one semester.

Advanced standing in applied music is granted tentatively after a placement examination given by members of the faculty. Final classification is made at the end of the first semester of residence study.

Instruction is in two half-hour lessons a week in major courses, and in one half-hour lesson a week in minor courses.

A student may transfer from a minor course to a major course if he has the approval of the faculty concerned. He is then assigned an appropriate major course number on the basis of his proficiency and repertory.

Proficiency examinations in applied music are given at the end of each semester. Promotion to the next applied course depends upon quality of performance and quantity of repertory.

No credit will be given in an applied music course if the student misses more than three lessons, if a minor, or six lessons, if a major. In case of prolonged illness, the lessons may be made up at the discretion of the instructor.

As far as teaching staff and practice rooms are available, enrollments in applied music will be accepted in the following order:

*It is important that the student familiarize himself with the course-numbering system and its significance. It is explained in the College of Arts and Sciences section, on page 63.

1. Full-time music majors
2. Other students in the University
3. Private students

A student's choice of instructor will be respected as far as possible, but final assignment rests with the Dean of the School of Music.

Ensembles

There is no tuition charge for any ensemble course. Several ensemble courses are open to all students of the University who are qualified for them. However, the awarding of credit for any ensemble course presupposes satisfactory participation. One hour of Marching Band credit may be substituted for one hour of the general requirement in physical activity courses.

Any ensemble course may be repeated any number of semesters, on the approval of the Dean of the School of Music.

A Cappella Choir. Open to any University student who can qualify. *1 h. c. each semester*

Concert Band. Open to any student in the University who can qualify. *½ or 1 h. c. each semester*

Laboratory Band. Designed to give music education students practical experience in performance on their minor instruments and acquaint them with materials suitable for use in public school teaching, and to provide additional training for any students who need it to qualify for the Concert Band or the Marching Band. *½ h. c. each semester.*

Laboratory Orchestra. Designed to give music education students practical experience in performance on their minor instruments and acquaint them with material suitable for use in public school teaching, and to provide additional training for any students who need it to qualify for the Symphony Orchestra. *½ h. c. each semester.*

Marching Band. Open to any University student who can play an instrument. Functions only during the football season. Three hours a week. One hour of Marching Band credit may be applied toward the health and physical education activity requirement. *½ h. c. each semester.*

Marching Band Workshop. Lectures, demonstrations and practice in precision drill, block formation, street parade and phalanx drill. Rehearsal techniques, discipline and instrumentation are studied. Offered only in the summer session. *1 h. c.*

Opera Workshop. Study of selected masterworks. Assignment and preparation of roles both musically and dramatically, costuming, preparation of scenery, and selection, organization, and training of chorus and orchestra, entailing ten to twelve hours a week of preparation and culminating in public performance. Open to all University students. *1 h. c. each semester.*

Symphony Orchestra. Open to any student in the University who can qualify. *1 h. c. each semester.*

Percussion Ensemble. Various procedures involved in comprehending and executing advanced solo and orchestral literature indigenous to the percussionist's art. The course also will provide an organization whose prime function will be that of performing more complex percussion literature than is usually encountered in the music major's normal standard repertoire. Prereq.: Upper Division status. *½ h. c. each semester.*

String Ensemble. Open to any University student who can qualify. *½ h. c. each semester.*

Woodwind Ensemble. Limited to students of the School of Music. *½ h. c. each semester.*

Brass Ensemble. Limited to students of the School of Music. *½ h. c. each semester.*

String Quartet. Limited to selected students of the School of Music. ½ *h. c. each semester.*

Madrigal Singers. Limited to selected students of the School of Music. ½ *h. c. each semester.*

Note: Wind instrument majors should have both band and orchestra ensemble credits.

Piano

All piano majors are required to play for at least one vocal, wind, or string student each semester in recital and in lessons. A grade will be submitted to the chairman of the piano department indicating the degree of proficiency achieved in accompanying song, chamber and sonata literature. This grade will be given by the studio teacher under whose guidance the student works and will be an integral part of the student's semester grade. Punctuality, regular attendance and the degree of co-operation in a joint musical effort will be criteria for the studio grade.

The following repertoire list shows the minimum level for each year. A more comprehensive list, graded according to its usage in the School of Music, may be obtained from the piano department. Teachers may substitute works of equal difficulty. The second-year repertoire level for the major in music education is equivalent to the first-year piano repertoire; this sequence is continued throughout.

At least twelve pieces or movements must be completed each year; six must be memorized for the piano major; at least nine, four of which must be memorized, must be completed each year for the major in music education. These must be played at an artistic and technical level satisfactory to an examining board. The number of hours of daily preparation in practice plays an important part in the grade. The Baroque or pre-Baroque, Classic, Romantic, and Modern periods must be represented each year.

The entrance requirements for the piano major are as follows: The student should have acquired the basic principles of correct touch and technique. He should play all major and minor scales correctly in moderate tempi, and broken chords in octave position in all keys. He should have studied standard etudes, such as Czerny, Op. 229; Heller, Op. 47 and 46; Bach, *Two-Part Inventions* and *Little Preludes;* easy sonatas of Haydn, Mozart, and Beethoven; and Classic, Romantic, and Modern compositions of similar grade and difficulty. A very high artistic and technical level must be demonstrated before the student may advance into upper division work.

The student is examined each year in the following areas: all major and minor scales must be played in the first two years at a tempo of m. m. 96, and in the last two years at a tempo of m.m. 132. Triad, dominant seventh, and diminished seventh arpeggios are to be played in all positions, in the first two years at a tempo of m. m. 84 and in the last two years at a tempo of m. m. 96. Four Czerny exercises are studied each year, from Op. 229 for the first two years and from Op. 740 for the last two years. The examination includes sight reading, transposition, and harmonization of simple melodies.

The music education major must satisfy the following requirements before he is permitted to begin his student teaching assignment:

1. Play with reasonable facility and at the correct tempo, the best known selections from the standard community song collections.
2. Be able to play voice parts from typical choral collections used in junior high school.
3. Be able to supply simple chordal harmonization to songs for elementary school use.
4. Be able to provide an accompaniment to elementary school songs.

100. For those who do not qualify for Piano 101 or 103. This course may be repeated. *1 h. c.*

Major Courses

101-102. Bach, *Two-Part Inventions* from No. 2, 5, or 7; Scarlatti, sonatinas, or Bach, *Well-Tempered Klavier;* Bach, *Three-Part Inventions* such as No. 1, 5, or 7; Mozart or Haydn sonatas; Beethoven sonatas such as Op. 49, No. 1, or Op. 79, No. 2; Romantic compositions such as Bartok's "Petite Suite." *3 +3 h. c.*

201-202. Bach, *French Suites* complete, such as *Suite No. 1 in A minor* or *Suite No. 2 in E-flat;* Bach, *Well-Tempered Klavier,* Book No. 2, 5, or 21; Beethoven or Mozart sonatas such as Op. 41, No. 1 in C, or *Sonata after the Serenade* in G; Romantic compositions such as Brahms' *Two Sarabandes;* Modern compositions such as Prokofieff's *Four Pieces.* *3 + 3 h. c.*

301-302. Bach, *Partita* or *English Suite* such as No. 3 in A minor or No. 5 in G minor; Bach, *Well-Tempered Klavier,* such as No. 12 or 15 from the second book or No. 2, 5, 6, or 22 from the first book; Beethoven sonatas such as Op. 10, No. 1 and 3; Op. 2, No. 3; Op. 26, or Op. 27, No. 2; a concerto which is to be completed in the senior year; Chopin compositions such as Etudes, Op. 25, No. 1 or 2; Ravel or Debussy compositions such as *Estampes;* modern compositions. *3 + 3 h. c.*

401-402. Bach, *Partita* or *English Suite;* Beethoven sonatas such as Op. 2, No. 2; Op. 10, No. 2; Op. 22; Op. 31; No. 2 and No. 3; or Op. 110; a Bach work such as *Capriccio* in E major or *Toccata* in F-sharp minor; a concerto; Romantic compositions such as Chopin, *Scherzi* or *Ballades;* compositions by modern composers such as Bartok, *Suite, Op. 4.* The student must prepare a recital program of serious content and difficulty, ranging from classic to modern music; he must also prepare a major piano concerto for performance with orchestra. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104.	See Piano 101-102.	*2 + 2 h. c.*
203-204.	See Piano 201-202.	*2 + 2 h. c.*
303-304.	See Piano 301-302.	*2 + 2 h. c.*
403-404.	See Piano 401-402.	*2 + 2 h. c.*

Minor Courses

a. For students with some previous training:

105-106. Pieces such as Bilbro, *First Melody Book;* Burrows, *The Adult Explorer;* Kabalevsky, *24 Little Pieces;* Siegmeister, *Folkways;* Tansman, *Pour Les Enfants,* four books; selections from *Early Keyboard Music.* Technical work is given each semester. *1 + 1 h. c.*

205-206. *Bach-Carrol,* Vol. I; Hanon; *Czerny-Germer,* Vol. I, Part 1; Burgmüller, Op. 100. *1 + 1 h. c.*

305-306. Sonatinas by Clementi, Kuhеau, and others; pieces such as Bach, *Two-Part Inventions,* No. 1, *Three Minuets, Twelve Little Preludes;* Beethoven, *Six Minuets, Six Easy Variations on a Swiss Tune,* and *Sonata,* Op. 49, No. 2. *1 + 1 h. c.*

405-406. This is comprised of similar material on a more difficult level.

b. For students with no previous training:

111-112. Designed to prepare the student to sight read simple accompaniments, harmonize single melodies, and transpose material of the sort found in school song books. The student is given a list of requirements during the first semester. *1 + 1 h. c.*

211-212. Continuation of Piano 111-112. *1 + 1 h. c.*

Organ

100. Intended for those who do not qualify for Organ 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Schneider-Warren, *Studies;* Buck, *Pedal Phrasing Studies;* preparatory manual exercises. Bach: choral preludes for manuals; trios for manuals and pedals; chorale and preludes from *Das Orgelbuechlein;* Variation II from *Sei Gegrusset* (Book V, ed. Peters); short preludes and fugues; *Canzona Fugue in B minor* (Corelli); *Prelude and Fugue in E Minor* (Lesser, ed. Schirmer). Also modern compositions. *3 + 3 h. c.*

201-202. Continuation of Schneider and Buck studies; Neilson, *Pedal Studies.* Bach: *Fantaisie and Fugue in C Minor* (Book III, ed. Schirmer); *Fugue in G Minor* (Book II, ed. Schirmer); *Prelude and Fugue in A Major; Prelude in C Minor* (Book III, ed. Schirmer); *First Sonata; Prelude in F Minor;* chorale preludes. Mendelssohn: *Second Sonata.* Pieces by the old masters from *Historical Series* (Vol. I, ed. Bonnet). Modern compositions by American, French, English, or German composers. *3 + 3 h. c.*

301-302. Bach: chorale preludes; *Prelude and Fugue in E Minor* (Wedge); *Prelude and Fugue in A Minor* (Book IV, ed. Schirmer); *Second Sonata; Toccata and Fugue in D Minor* and *Toccata in D Minor* (Dorian); *Prelude and Fugue in G Major.* Franck: *Cantabile; Prelude, Fugue, and Variation; Pastorale; Piece Héroique.* Mendelssohn: *Third Sonata.* Modern compositions. *3 + 3 h. c.*

401-402. Bach: *Third Sonata;* chorale preludes; *Fantaisie and Fugue in G Minor; Toccata, Adagio, and Fugue in C Major; Prelude and Fugue in E Flat* ("St. Ann's"); *Passacaglia and Fugue in C Minor; Prelude and Fugue in B Minor.* Franck: *Chorale in A Minor.* Mendelsshon: *First Sonata, Sixth Sonata.* Vierne: selected movements from the six symphonies. Widor: *Sixth Symphony.* Sowerby: *Suite, Symphony in G Minor.* Roger-Ducasse: *Pastorale.* Bennett: *Sonata in G;* shorter compositions suitable for recitals. Concerto for organ and orchestra. Public recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104.	See Organ 101-102.	*2 + 2 h. c.*
203-204.	See Organ 201-202.	*2 + 2 h. c.*
303-304.	See Organ 301-302.	*2 + 2 h. c.*
403-404.	See Organ 401-402.	*2 + 2 h. c.*

Minor Courses

105-106. See Piano 105-106. *1 + 1 h. c.*
205-206. See Piano 205-206. *1 + 1 h. c.*
305-306. See Piano 305-306. *1 + 1 h. c.*
405-406. See Piano 405-406. *1 + 1 h. c.*

Voice

100. For those who do not qualify for Voice 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Classification of the voice, vocalizations for tone production, and simple songs in English and Italian classics. Songs from Volumes I and II of *Italian Anthology* (Schirmer edition); two easy oratorio and operatic arias. A selected list of songs by American composers. Prerequisite or concurrent: Italian 101-102. *3 + 3 h. c.*

201-202. Continuation of technical studies for the development of the individual voice. Additional songs from Volumes I and II, *Italian Anthology*. Additional songs in English; songs in French by Debussy, Faure, Lalo, Duparc; two operatic and oratorio arias. A selected list of songs by American composers. Prerequisite or concurrent: French 101-102. *3 + 3 h. c.*

301-302. Advanced literature and technique. Songs in German by Schubert, Brahms, Wolf, Strauss; additional songs in French by Chausson, Saint-Saens, Debussy; Italian songs by Respighi, Donaudy, Sibella; two operatic and three oratorio arias; additional songs by American composers. Prerequisite or concurrent: German 101-102. *3 + 3 h. c.*

401-402. Advanced literature and technique. Additional songs from a selected list of twentieth-century French, German, Italian, Russian, English, and American composers. Six additional opera and oratorio arias. Preparation of the public recital and of one or more programs from the repertoire of the previous courses. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Voice 101-102. *2 + 2 h. c.*
203-204. See Voice 201-202. *2 + 2 h. c.*
303-304. See Voice 301-302. *2 + 2 h. c.*
403-404. See Voice 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Classification of the voice; breath control; technical exercises and appropriate song material. Amount of repertoire decided by voice faculty. Open to students with no previous training. *1 + 1 h. c.*

205-206. Advanced vocal technique and literature suited to the individual voice. Standard oratorio arias. Songs in foreign languages, at the discretion of the instructor. Amount of repertoire decided by voice faculty. *1 + 1 h. c.*

305-306. For those who can qualify. *1 + 1 h. c.*
405-406. For those who can qualify. *1 + 1 h. c.*

Violin

100. For those who do not qualify for Violin 101 or 103. The Course may be repeated. *1 h. c.*

Major Courses

101-102. Kreutzer, *Studies*, to No. 32. Concertos by Vivaldi, Nardini, Rode, deBeriot. Sonatas by Corelli, Veracini, Leclair. Technical material including Sevcik, Op. 8 and 9, Schradier, Casorti. Not fewer than six short compositions suitable for recital repertoire. Major and minor scales and arpeggios in three octaves, using fundamental strokes. *3 + 3 h. c.*

201-202. Kreutzer concluded; Fiorillo, Rovelli. Concertos by Bach, Viotti, Kreutzer, deBeriot. Sonatas by Tartini, Mozart, Handel. Not fewer than six compositions added to repertoire. Scales and arpeggios in three octaves continued with secondary strokes. Technical materials of 101-102 continued. *3 + 3 h. c.*

301-302. Rode, *Studies*. Concertos by Mozart, Bruch, Vieuxtemps. Sonatas by Beethoven, Bach. Not fewer than six compositions added to repertoire. Scales in double stops in all keys. Technical material from Sevcik, Op. 4, Part 4; Schradier, Book II. *3 + 3 h. c.*

401-402. Advanced studies from Wieniawski; Dont, Op. 35; Gavinies and Paganini concertos. Wieniawski, Saint-Saens, Mendelssohn, Lalo, Beethoven, etc. Completion of repertoire requirement; senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104.	See Violin 101-102.	*2 + 2 h. c.*
203-204.	See Violin 201-202.	*2 + 2 h. c.*
303-304.	See Violin 301-302.	*2 + 2 h. c.*
403-404.	See Violin 401-402.	*2 + 2 h. c.*

Minor Courses

105-106. Fundamentals in correct posture and positions of the left hand and of the bow arm. Yost's *Violin Method* supplemented by Riegger's *Exercises*. Studies by Wohlfahrt and Rodin and easy first-position pieces. Scales and arpeggios in keys of not more than four accidentals. *1 + 1 h. c.*

205-206. Beginning of position studies. Maia Bang, Book III. Hans Sitt, Op. 32, Books II and III. Kayser, Op. 20, pieces in first three positions. Not fewer than six compositions by Seitz and Rieding. *1 + 1 h. c.*

305-306. Position studies continued. Maia Bang, Book IV. Schubert sonatinas. Mazas, *Special Studies*. Accozay and Hollander concertos. Easy double stops and scales. Scales and arpeggios in five positions. Not fewer than six new recital pieces. *1 + 1 h. c.*

405-406. Continued study of positions. Maia Bang, Book V. Studies by Mazas and Dont; beginning of Kreutzer. *Allegro Brillante* by Tenhave, concerto by Hollander, sonatas by Handel. Scales in three octaves. *1 + 1 h. c.*

Viola

100. For those who do not qualify for Viola 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Studies by Mazas, Kreutzer, Sitt, Schradier technic. Sonatas by Handel, repertoire material; not fewer than six scales. Scales and arpeggios in three octaves. *3 + 3 h. c.*

201-202. Studies by Kreutzer and Fiorillo. Sonatas by Vivaldi and Marcello. Scales and arpeggios continued. Six recital pieces. *3 + 3 h. c.*

301-302. Studies by Rode, Campagnoli, and Bruni. Concertos by Stamitz and Mozart. Scales in double stops. Six recital pieces. *3 + 3 h. c.*

401-402. Studies by Gavinies and Dolesji; sonatas by Bowen, Bach, and others. Scales and arpeggios continued. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Viola 101-102. *2 + 2 h. c.*
203-204. See Viola 201-202. *2 + 2 h. c.*
303-304. See Viola 301-302. *2 + 2 h. c.*
403-404. See Viola 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Fundamentals of left and right hand technics. Reading facility in alto clef is developed. Studies by Hofmann. Scales in the first position. Easy pieces. *1 + 1 h. c.*

205-206. Development of left hand facility. Beginning of lower positions. Studies by Kayser. Scales in positions. Pieces in positions. *1 + 1 h. c.*

305-306. First five positions. Studies by Mazas and Dont. Schubert sonatina. Seventeenth- and eighteenth-century sonatas. Six recital pieces. Scales in three octaves. Easy double stops. *1 + 1 h. c.*

405-406. Higher positions. Mazas, Kreutzer. Pieces by Nardini, Sitt, and others. Scales in three octaves. *1 + 1 h. c.*

Cello

100. Intended for those who do not qualify for Cello 101 or 103. This course may be repeated. *1 h. c.*

Major Courses

101-102. Studies from Dotzauer, Op. 35, and Duport. Scales and arpeggios in three octaves. Solos such as Bach, *Suite No. 1*, and Goltermann, *Concerto No. 4*. *3 + 3 h. c.*

201-202. Scales and arpeggios in four octaves. Franchomme studies. Repertoire to include Romberg, *Concerto No. 2*; Bach, *Suite No. 2* or *No. 3*; and Beethoven, *Sonata, Op. 69, in A Major*. *3 + 3 h. c.*

301-302. Scales in octaves, thirds, sixths. Popper, *Studies*. Concert pieces to include Breval, *Sonata in G Major*, or Eccles, *Sonata in G Minor*, and concertos by Boccherini and Lalo. *3 + 3 h. c.*

401-402. All scales in octaves, thirds, sixths, and tenths. Piatti, *Studies*, and Servais, *Caprices*. Repertoire such as Reger, *Solo Suite No. 2*, and Haydn or Dvorak concerto. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Cello 101-102. *2 + 2 h. c.*
203-204. See Cello 201-202. *2 + 2 h. c.*
303-304. See Cello 301-302. *2 + 2 h. c.*
403-404. See Cello 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Kummer, *Method*, and Schroeder, *Studies*. Scales and solos in first position. *1 + 1 h. c.*

205-206. Schroeder, *Studies*. Scales. Klengel, *Concerto in C Major*; Marcello, *Sonata in F Major*. *1 + 1 h. c.*

305-306. Schroeder, *Studies*. Scales. Loeillet, *Sonata in G Major*; Goltermann, *Concerto No. 4*. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

String Bass

100. For those who do not qualify for String Bass 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Simandl, *30 Etudes*. Major and minor scales in two octaves. Solos such as Anderson, *Sonatina*, and Chapini, *Fantaisie Concertante*. Bach, *Minuet and Gavotte*; Vivaldi, *Intermezzo*. *3 + 3 h. c.*

201-202. Hrabe, *Studies*. Repertoire, such as Cappuzzi, *Concerto*; sonatas by Galliard and Loeillet; Ratez, *Six Characteristic Pieces*, Op. 46. *3 + 3 h. c.*

301-302. Bille, *Method*, Part II, Books 4 and 5. Concert pieces to include sonatas by Eccles, Antoniotti, and D'Andrieu. *3 + 3 h. c.*

401-402. Kreutzer, *Studies*. Reynolds, *Orchestra Studies*; Strauss, *Orchestra Studies*. Solos to include Koussevitzky concerto or Dragonetti concerto. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See String Bass 101-102. *2 + 2 h. c.*

203-204. See String Bass 201-202. *2 + 2 h. c.*

303-304. See String Bass 301-302. *2 + 2 h. c.*

403-404. See String Bass 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Simandl, *Method*, Part I. Scales. *1 + 1 h. c.*

205-206. Simandl, *Method*, Part II. Bach, *Minuet and Gavotte*; Vivaldi, *Intermezzo*. *1 + 1 h. c.*

305-306. Simandl, *30 Etudes*. Anderson, *Sonatina*. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

Flute

100 To be elected by students who do not qualify for Flute 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Studies and solos such as Altes, *Method*, Book II; Kuhlau, *Duets*, Op. 10; Barrerre, *The Flautist's Formulae*; Boehm, *24 Caprice Etudes*, Op. 26; Bach-Barrerre, *Arioso*; Handel, sonatas; Pessard, *Bolero*. *3 + 3 h. c.*

201-202. Studies and solos such as Altes, *Method*, Book III; Anderson, *Etudes*, Op. 33, Op. 21; Kuhlau, *Duets*, Op. 81; Moyse, *24 Petits*

Duos Mélodiques; Bach, *Sonata No. 2;* Rogers, *Soliloquy;* Gluck, scene from *Orpheus;* Briccialdi, *Il Vento.* *3 + 3 h. c.*

301-302. Studies and solos such as Schindler, *Bach Studies;* Anderson, *Etudes,* Op. 30, Op. 15; Kuhlau, *Duets,* Op. 102; orchestral studies; Bach, *B Minor Suite;* Boccherini, *Concerto in D Major,* Op. 27; Mozart, concertos; Telleman, *Suite in A Minor.* *3 + 3 h. c.*

401-402. Jeanjean, *16 Studies in the Modern Style;* Moyse, *48 Virtuoso Studies;* orchestral studies; special work on piccolo; Bach, *Sonatas No. 1* and *No. 4 in A Minor Unaccompanied;* Ibert, *Piece;* Griffes, *Poem.* Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Flute 101-102. *2 + 2 h. c.*

203-204. See Flute 201-202. *2 + 2 h. c.*

303-304. See Flute 301-302. *2 + 2 h. c.*

403-404. See Flute 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Altes, *Method,* Book I; Moyse, *The Beginning Flutist;* Magnani, *Clouds and the Moon;* Loeillet solos. *1 + 1 h. c.*

205-206. Altes, *Method,* Book II; Boehm, *24 Caprice Etudes;* Mozart-Barrere, *Minuette in D Major;* Bach, *Polonaise* and *Badinage* from *B Minor Suite.* *1 + 1 h. c.*

305-306. Studies and solos of the level indicated for Flute 101-102. *1 + 1 h. c.*

405-406. Studies and solos of the level indicated for Flute 201-202. *1 + 1 h. c.*

Clarinet

100. To be elected by those who do not qualify for Clarinet 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Studies and solos such as Klose, *Method,* Book II; Rose, *40 Etudes,* Books I and II; Langenus, *Method,* Book III; Von Weber, *Concertino* and *Concerto in F Minor;* Jeanjean, *Clair Matin;* Mozart, *Concerto.* *3 + 3 h. c.*

201-202. Studies and solos such as Rose, *32 Etudes;* Baermann, *Method,* Book IV; Perier, *Etudes de Genres et Interprétation,* Book I; Marty, *First Fantasy;* Lefevre, *Fantaisie Caprice;* Haln, *Sarabande et Themes Varies.* *3 + 3 h. c.*

301-302. Studies and solos such as Rose, *20 Grand Studies;* Baermann, *Method,* Book V; Cavalini, *30 Caprices;* Perier, *20 Sonata Studies;* orchestral studies; Rabaud, *Solo de Concours;* Gaubert, *Fantaisie;* Stravinsky, *Three Pieces;* Schumann, *Phantasiestuecke.* *3 + 3 h. c.*

401-402. Studies and solos such as Stark, *24 Grand Studies;* Jeanjean, *18 Etudes;* Jeanjean, *16 Modern Etudes;* orchestral studies; Widor, *Introduction and Ronde;* Debussy, *Premiere Rhapsodie;* Brahms, sonatas; Milhaud, *Concerto.* Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Clarinet 101-102. 2 + 2 h. c.
203-204. See Clarinet 201-202. 2 + 2 h. c.
303-304. See Clarinet 301-302. 2 + 2 h. c.
403-404. See Clarinet 401-402. 2 + 2 h. c.

Minor Courses

105-106. Klose, *Method*, Book I; Perier, *Le Débutant Clarinettiste, 20 Etudes Melodiques et Faciles;* Gretchaninoff, *Suite Miniature;* Petit, *Piece de Concours.* 1 + 1 h. c.

205-206. Perier, *20 Etudes Faciles et Progressives;* Rose, *40 Etudes,* Book I; Langenus, *Scale Studies;* Debussy, *First Arabesque for Clarinet;* Avon, *Fantaisie de Concours.* 1 + 1 h. c.

305-306. Studies and solos of the level indicated for Clarinet 101-102. 1 + 1 h. c.

405-406. Studies and solos of the level indicated for Clarinet 201-202. 1 + 1 h. c.

Oboe

100. For those who do not qualify for Oboe 101 or 103. This course may be repeated. 1 h. c.

Major Courses

101-102. Studies and solos such as Ferling, *48 Etudes;* Sellner, *Etudes for Oboe,* Book II; Handel, *Concerto in G Minor;* Labate, *Villanella;* Schumann, *Three Romances for Oboe.* 3 + 3 h. c.

201-202. Studies and solos such as Labate, *16 Exercises;* Capelle, *20 Grand Etudes,* Book I; Cimarosa, *Concerto;* Nielson, *Romance;* Foret, *Sonata in G Major;* Ropartz, *Pastorale and Dance.* 3 + 3 h. c.

301-302. Studies and solos such as Andraud, *Vade-Mecum* (etudes and orchestral studies); Bleuzet, *The Technique of the Oboe,* Book II; Loyon, *32 Modern Etudes;* Saint-Saens, *Sonata;* Hindemith, *Sonata;* Palidilhe, *Concertante.* Work on English horn begun. 3 + 3 h. c.

401-402. Continued study of English horn. Studies and solos such as Andraud, *Vade-Mecum;* Gillet, *Advanced Studies;* Jeanjean, *Remembrances;* Rivier, *Improvisation and Finale;* Dallier, *Fantaisie Caprice;* Piston, *Suite.* Senior recital. 3 + 3 h. c.

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Oboe 101-102. 2 + 2 h. c.
203-204. See Oboe 201-202. 2 + 2 h. c.
303-304. See Oboe 301-302. 2 + 2 h. c.
403-404. See Oboe 401-402. 2 + 2 h. c.

Minor Courses

105-106. Studies and solos such as Andraud, *Method* (1949); Niemann-Labate, *Oboe Method;* Bakaleinikoff, *Elegy;* Templeton, *Siciliana;* J. Wagner, *Three Pastorales.* 1 + 1 h. c.

205-206. Studies and solos such as Gekeler, *Method,* Book II; Verroust, *24 Etudes,* Op. 65, Books I, II; Pares, *Daily Technical Studies;* Klemcke, *Pastorale;* Handel, *Sonata in C Minor;* Gliere, *Chanson;* Bach-Gillet, *Three Little Pieces.* 1 + 1 h. c.

305-306. Studies and solos of the level indicated for Oboe 101-102. *1 + 1 h. c.*

405-406. Studies and solos of the level indicated for Oboe 201-202. *1 + 1 h. c.*

Bassoon

100. For those who do not qualify for Bassoon 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Studies and solos such as Weissenborn, *Duets;* Oubradous, *Enseignement Complete du Basson,* Book I; Jancourt, *Reverie;* Foret, *Three Pieces;* Mozart, *First Concerto.* *3 + 3 h. c.*

201-202. Studies and solos such as Milde, Book II; Oubradous, *Enseignement Complete du Basson,* Book II; orchestral studies; Hindemith, *Sonata;* Handel, *Concerto in C Minor;* Jeanjean, *Capriccioso.* *3 + 3 h. c.*

301-302. Studies and solos such as Bozza, *Daily Studies;* Oubradous, *Enseignement Complete du Basson,* Book III; orchestral studies; Saint-Saens, *Sonata;* Grovlez, *Sicilienne* and *Allegro Giocoso;* Jancourt, *Cantilene;* Bruns, *Concerto.* *3 + 3 h. c.*

401-402. Studies and solos such as Giampieri, *Daily Studies;* Orefice, *Bravura Studies;* orchestral studies: Pierne, *Prelude de Concert;* Bozza, *Concerto,* Op. 49; Bozza, *Fantaisie;* Jeanjean, *Prelude and Scherzo.* Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Bassoon 101-102. *2 + 2 h. c.*

203-204. See Bassoon 201-202. *2 + 2 h. c.*

303-304. See Bassoon 301-302. *2 + 2 h. c.*

403-404. See Bassoon 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Studies and solos such as Weissenborn, Op. 8, Book I; Jancourt, *Studies,* Book I; Isaak, *Jolly Dutchman;* Ziesi, *Souvenir.* *1 + 1 h. c.*

205-206. Studies and solos such as Weissenborn, Op. 8, Books I and II; Jancourt, *Studies,* Books I and II; Bakaleinikoff, *Ballad;* Weissenborn, *Capriccio.* *1 + 1 h. c.*

305-306. Studies and solos of the level indicated for Bassoon 101-102. *1 + 1 h. c.*

405-406. Studies and solos of the level indicated for Bassoon 201-202. *1 + 1 h. c.*

Trumpet

100. To be elected by those who do not qualify for Trumpet 101 or 103. This course may be repeated. *1 h. c.*

Major Courses

101-102. The development of a daily practice routine suitable to the individual, for the purpose of acquiring a correct and lasting command of fundamental skills such as tone production, embouchure, breath control, flexibility, and legato and staccato articulations, using Arban's *Method* for

cornet, *Etudes* by Hering, *Daily Drills and Studies* by Schlossberg. Major and minor scales and chords, introduction to transposition, sight reading, and the study of cantabile solos such as the *Lieder* of Schubert, Brahms, Schumann, and other solos of grade III difficulty. *3 + 3 h. c.*

201-202. Concentration upon basic techniques: slurs, scales, chords, intervals, and single, double, and triple articulations in major and minor keys, using Arban, *Method;* Schlossberg, *Daily Drills and Studies;* Clark, *Studies;* Brandt, *Orchestral Studies;* Sachse, *Transposition Studies.* Cantabile solos, and other solos of grade III and IV difficulty. *3 + 3 h. c.*

301-302. Continuation of technical studies: Arban, *Method;* Schlossberg, *Studies;* Paudert, *Studies;* Brandt, *Orchestral Studies;* Petit, *Studies;* Sachse, *Transposition Studies.* Sight reading. Solos of grade IV and V difficulty by Fitzgerald, Vidal, Barat, Goeyens, Deboeck, Busser, and others. *3 + 3 h. c.*

401-402. Advanced studies by Clark, Peitzsch, Laurent, Petit, Charlier; Sachse, *Transposition Studies;* sight reading. Solos of grade V and VI difficulty. Concertos by Haydn, Vidal, Williams, Brandt, Delcroix. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Trumpet 101-102. *2 + 2 h. c.*
203-204. See Trumpet 201-202. *2 + 2 h. c.*
303-304. See Trumpet 301-302. *2 + 2 h. c.*
403-404. See Trumpet 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Introduction to problems of brass instrument playing, stressing formation of embouchure, attack and release, breath control, tone quality, flexibility, legato and staccato articulation. Elementary exercises showing these skills in the Edwards-Hovey *Method,* Arban's *Method,* or equivalent studies. Introduction to scales. Selected cantabile solos. Open to students without previous training. *1 + 1 h. c.*

205-206. Continued stress on fundamentals of grade I with extension of range. Scale studies to include all major and minor keys. Selected cantabile solos. Material stressing these skills in World's *Method for Cornet,* Hering's *Studies,* or equivalent. *1 + 1 h. c.*

305-306. Extension of range, using scale studies in major and minor keys and broken chords. Flexibility studies as in Schlossberg's *Daily Drills.* Additional progress in World's *Method for Cornet,* Hering's *Studies,* or equivalent studies. Selected cantabile solos. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

French Horn

100. For those who do not qualify for French Horn 101 and 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Development of the fundamental skills, such as tone production, embouchure, breath control, and legato and staccato articulations, using Franz, Kopprasch, Alphonse, Michiels. Major and minor scales and chords; transposition, sight reading. Cantabile solos, and other solos of grade III difficulty. *3 + 3 h. c.*

201-202. Studies by Franz, Kopprasch, Alphonse, Pottag. Slurs, scales, chords, intervals, legato and staccato articulations in major and minor

keys. Transposition and sight reading. Cantabile solos, and other grade III and IV solos. *3 + 3 h. c.*

301-302. Continuation of technical studies, using Alphonse, Pottag, Gallay. Transposition and sight reading. Solos of grade IV difficulty. *3 + 3 h. c.*

401-402. Advanced studies, including studies by Pottag, Gallay, Alphonse. Transposition and sight reading. Grade V and VI solos. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See French Horn 101-102. *2 + 2 h. c.*
203-204. See French Horn 201-202. *2 + 2 h. c.*
303-304. See French Horn 301-302. *2 + 2 h. c.*
403-404. See French Horn 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Special studies for development of embouchure, breath control, articulation, flexibility, tone control. Pottag-Hovey, *Method for French Horn;* Horner, *Primary Studies.* Introduction to scales. Selected cantabile solos. *1 + 1 h. c.*

205-206. Horner, *Studies.* Continued stress upon fundamentals of grade I. Scale studies in major and minor keys. Extension of range. Selected cantabile solos. *1 + 1 h. c.*

305-306. Extension of range, using scale studies in major and minor keys and broken chords. Flexibility studies as in Schlossberg's *Daily Drills.* Additional progress in World's *Method for Cornet,* Hering's *Studies,* or equivalent studies. Selected cantabile solos. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

Trombone

100. To be elected by those who do not qualify for Trombone 101 or 103. This course may be repeated. *1 h. c.*

Major Courses

101-102. The development of a daily practice routine to enable the individual to acquire the fundamental skills, such as tone production, embouchure, breath control, flexibility, and legato and staccato articulations. Major and minor scales and chords; introduction to transposition; sight reading. Materials include Mueller, Rochut, Dieppo, Mantia. Cantabile solos, and other solos of grade III and IV difficulty. *3 + 3 h. c.*

201-202. Continuation of basic technical studies. Slurs, scales, chords, intervals; single, double, and triple articulations in major and minor keys, transposition, and sight reading, using Mueller, Rochut, Dieppo, Mantia. Cantabile solos, and other grade III and IV solos. *3 + 3 h. c.*

301-302. Studies from Mueller, Rochut, Blume, Kopprasch. Transposition and sight reading. Grade IV and V solos. *3 + 3 h. c.*

401-402. Advanced studies by Mueller, Voboran, Rochut, Blazevitch. Transposition and sight reading. Solos of grade V and VI difficulty. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Trombone 101-102. *2 + 2 h. c.*
203-204. See Trombone 201-202. *2 + 2 h. c.*
303-304. See Trombone 301-302. *2 + 2 h. c.*
403-404. See Trombone 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Studies to develop embouchure, attack, release, breath control, tone quality, flexibility, knowledge of positions. Studies by Cimera-Hovey, Endressen. Selected cantabile solos. *1 + 1 h. c.*

205-206. Continuation of development of skills stressed in grade I. Scale studies, stressing legato and staccato articulation. Extension of range. Studies by Mueller, Cimera. Study of cantabile solos for development of legato-cantabile style. *1 + 1 h. c.*

305-306. Extension of range, using scale studies in major and minor keys and broken chords. Flexibility studies as in Schlossberg's *Daily Drills*. Additional progress in World's *Method for Cornet*, Hering's *Studies*, or equivalent studies. Selected cantabile solos. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

Tuba

100. For those who do not qualify for Tuba 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. The development of the fundamental skills, such as tone production, embouchure, breath control, flexibility, and legato and staccato articulations. Major and minor scales and chords. Sight reading. Material includes studies by Bell, Eby, Arban. Cantabile solos, and other solos of grade III difficulty. *3 + 3 h. c.*

201-202. Studies by Arban, Eby, Blazevitch. Slurs, scales, chords, intervals, and legato and staccato articulations in major and minor keys. Sight reading. Study of orchestral and band works. Cantabile solos, and other solos of grade III and IV difficulty. *3 + 3 h. c.*

301-302. Continuation of technical studies, material by Arban, Eby, Blazevitch. Sight reading. Study of orchestral and band works. Solos of grade IV and V difficulty. *3 + 3 h. c.*

401-402. Continuation of technical studies. Study of band and orchestral works. Sight reading. Solos of grade V and VI difficulty. Senior recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Tuba 101-102. *2 + 2 h. c.*
203-204. See Tuba 201-202. *2 + 2 h. c.*
303-304. See Tuba 301-302. *2 + 2 h. c.*
403-404. See Tuba 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Introduction to fundamental skills, such as tone production, development of embouchure, attack and release, breath control, tone quality, flexibility. Introduction to scales. Studies by Eby, Arban, Bell. Cantabile solos. *1 + 1 h. c.*

205-206. Continuation of development of skills stressed in grade I. Scale and chord studies. Extension of range. Studies by Eby, Arban, Bell. Cantabile solos. *1 + 1 h. c.*

305-306. Extension of range, using scale studies in major and minor keys and broken chords. Flexibility studies as in Schlossberg's *Daily Drills*. Additional progress in World's *Method for Cornet*, Hering's *Studies*, or equivalent studies. Selected cantabile solos. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

Percussion

100. To be elected by those who do not qualify for Percussion 101 or 103. The course may be repeated. *1 h. c.*

Major Courses

101-102. Snare drum: review and/or complete twenty-six rudiments. Stone, *Stick Control;* Wilcoxon, *Modern Methods*. Studies for independence of hands. Gardner, *Progressive Studies*, Book III; Moeller, *Rudimental Drumming*. Relaxation. Bass drum, cymbals, and accessories. —Mallet instruments, including bells, xylophone, marimbas, and vibraharp: malleting, roll, scales, arpeggios. Peterson, *Rubank Elementary Method;* graded violin, saxophone, and clarinet exercises. *3 + 3 h. c.*

201-202. Snare drum: Moeller, *Rudimental Solos;* Wilcoxon, *Rudimental Swing*. Foot studies for bass drum. Gardner, *Post-graduate Studies;* Rale and Morales, *Latin-American and Afro-Cuban Rhythms*. —Mallet instruments: keyboard harmony, phrasing, expression; solos and excerpts from standard compositions; Peterson, *Three- and Four-mallet Playing*. —Tympani: position, mechanics, attack, single strokes, tuning; ear-training exercises; Gardner, Sietz, and Cross methods. *3 + 3 h. c.*

301-302. Snare drum: Moeller, Wilcoxon, and Bellson methods. —Mallet instruments: solos for two, three, and four mallets. —Tympani: advanced studies; technical problems, cross-sticking, fast tone changes. Excerpts from classic and modern compositions. Use of pedal, pedal effects, glissandi. Gardner, Sietz, Cross, and Zettleman methods. *3 + 3 h. c.*

401-402. Snare drum: hand and foot independence studies; rudimental solos. —Mallet instruments: Musser transcriptions of Chopin; Musser, *Masterworks for Vibraharp*. Modern solos by Norvo and others. —Tympani: modern arrangements, concertos, and solos by Stock, Berlioz, Stiegler, and others. Recital. *3 + 3 h. c.*

Major Courses for Music Education

The following courses differ only in degree from those listed above. A high standard of proficiency is insisted upon, and a recital is required.

103-104. See Percussion 101-102. *2 + 2 h. c.*

203-204. See Percussion 201-202. *2 + 2 h. c.*

303-304. See Percussion 301-302. *2 + 2 h. c.*

403-404. See Percussion 401-402. *2 + 2 h. c.*

Minor Courses

105-106. Snare drum: position, mechanics of playing, muscular action, method of attack, relaxation. Rudiments, including single stroke roll, double-stroke roll, five-, seven-, and nine-stroke rolls, flams, three- and four-stroke ruffs. Primary exercises. Harr, Books I and II. Gardner, *Progressive Studies*, Book I. *1 + 1 h. c.*

205-206. Snare drum: rudiments, including flam taps, flam accents, flamacues, single, double, and triple paradiddles, half-drags, single drags. Exercises. Harr, Book II. Gardner, *Progressive Studies*, Book II. *1 + 1 h. c.*

305-306. Snare drum: Stone, *Stick Control;* Wilcoxon, *Modern Methods;* Gardner, *Progressive Studies,* Book III. —Mallet-played instruments (bells, xylophone, marimba, vibraharp): malleting, roll scales, arpeggios. Exercises; Peterson, *Rubank Elementary Method.* Graded violin, saxophone, and clarinet exercises. *1 + 1 h. c.*

405-406. For those who can qualify. *1 + 1 h. c.*

Theory and Composition

101-102. *Basic Music I-II.* A comprehensive introduction to the theoretical factors of music. Designed to supplement Music 103. Required of all students not passing a theory entrance examination. *2 + 2 h. c.*

103-104. *Theory I.* A unified course of study consisting of part-writing, ear-training, sight singing, and keyboard harmony, using simple chord construction. Formal and harmonic analysis of simple compositions. Meets five hours a week. Prereq.: Passing grade in theory entrance examination, or supplemented by Basic Music 1. *4 + 4 h. c.*

113-114. *Composition A.* Extensive analysis of melodic construction in music from the Baroque to contemporary periods; two and three part work based on the *Inventions and Suites* of Bach, sonatas by Haydn and Mozart, selected works of Schubert, Schumann, and Chopin. Also pieces by Bartok, Hindemith, and other modern masters; original composition in song forms and sectional forms including the simple rondo and sonatina forms. *2 + 2 h. c.*

203-204. *Theory II.* The study of more complex chord construction, modulations, and analysis of compositions in smaller forms. Ear-training, sight singing, keyboard harmony correlated with theory training. Meets five hours a week. Prereq.: Music 103-104 with grade of C or better. *4 + 4 h. c.*

213-214. *Composition B.* Studies in progressively larger forms such as larger rondo and sonata-allegro forms. Technics of modern harmony are introduced, following the practice of such composers as Stravinsky, Milhaud, Copland, Bartok, and others. The student composes for voice, and for groups of two and three instruments, with and without piano. Prereq.: Music 113-114. *2 + 2 h. c.*

301-302. *Sight Singing and Ear-Training I.* Two-part sight-singing exercises on modal basis; three-part exercises for soprano, alto, and baritone. Melodic dictation: difficult diatonic skips and chromatic tones in both major and minor keys and in treble, bass, tenor, and alto clefs. Rhythmic dictation: phrase, irregular phrase, period form, major and minor keys, bass and treble clefs, and two-part exercises using the bass and treble clefs, and two-part exercises using the bass and treble clefs combined, with time and key signatures indicated by the student. Intervals: quality, consecutive intervals in bass and treble clefs, major and minor keys with chromatic tones, two-part intervals combining bass and treble clefs. Chords: quality; chord

313-314. *Composition C.* Analysis and composition for more extensive media such as choral and chamber music. Prereq.: Music 213-214. *2 + 2 h. c.*

progressions introducing all the diatonic seventh chords and chromatic triads in addition to the chords already studied. Two recitations a week. *1 + 1 h. c.*

327-328. *Form and Analysis.* A study of musical form, beginning with the phrase and continuing through the song form to the rondo forms and sonata allegro. *2 + 2 h. c.*

335-336. *Counterpoint I-II.* A study of the medieval modes and vocal polyphony, with emphasis on the works of Palestrina and other sixteenth century composers. Some work in eighteenth century counterpoint. *3 + 3 h. c.*

401-402. *Sight Singing and Ear-Training II.* Three- and four-part sight-singing exercises for soprano, alto, tenor, and bass voices. Melodic dictation of maximum difficulty in all clefs and keys. Rhythmic dictation: phrase, irregular phrase, and period form exercises in two parts using bass and treble clefs combined, with time and key signatures indicated by the student. Intervals of maximum difficulty introducing modulation to nearly-related and remote keys. Chord progressions using all the diatonic and chromatic chords with modulations to nearly-related and remote keys. Two recitations a week. *1 + 1 h. c.*

409-410. *Orchestration and Band Arranging.* A study of the instruments of the modern orchestra and symphonic band, their tone color, individually and in combination. Writing and arranging for them singly, in groups, and in full score. *2 + 2 h. c.*

413-414. *Composition D.* Preparation of a large work in several movements of piano, for another instrument and piano, or for string quartet. These works are included in the senior recital, which are of one hour duration. Prereq.: Music 313-314. *2 + 2 h. c.*

421-422. *Composition I.* Composition in two and three-part forms and other compositions of small scope, such as variation and sonatina. Works will be composed for piano alone, and in combination with other instruments or voice. *2 + 2 h. c.*

429. *Canon and Fugue.* Double counterpoint: instrumental and vocal canon. Analysis of the fugues in Bach's *Well-Tempered Clavichord.* Writing of two-, three-, or four part fugues. Prereq.: Music 336. *2 h. c.*

430. *Modern Harmony.* A study of harmonic trends in modern music, including polytonality, atonality, and other elements. Prereq.: senior standing, with major in music. *2 h. c.*

431-432. *Composition II.* Writing in larger forms, such as sonata-allegro and rondo. *2 + 2 h. c.*

433-434. *Pedagogy of Theory.* The methods, materials, and special problems in the teaching of theory. *2 + 2 h. c.*

Music History and Literature

305-306. *History of Music.* A study of music from earliest times to the present, with special reference to the relation of the history of music to that of the other arts and to the political and religious history of the corresponding period. *2 + 2 h. c.*

307-308. *Survey of Music Literature.* A psychological and aesthetic approach to listening to music, with discussion of the problems of listening. The first semester includes a study of the elements of music and the fundamental principles of analysis. The second semester deals with form, from the simpler *da capo* to the larger and more complex forms. Lectures, outside reading, scores, and representative recordings. *2 + 2 h. c.*

309-310. *History and Appreciation of Art and Music: General.* Identical with Art 309-310. *3 + 3 h. c.*

427-428. *Symphonic Literature.* The historical development of the symphony from its beginning to the present. Symphonic poems, suites, overtures, and miscellaneous compositions for the modern orchestra. *2 + 2 h. c.*

Sacred Music

361. *Hymnology.* The history of the hymn and hymn tune; types of hymns and their uses; analysis and interpretation of hymns; evaluation of standard hymnals. *2 h. c.*

362. *Gregorian Chant.* The practical and artistic aspects of Gregorian chant in general choir work, the fundamentals of Gregorian rhythm, and authentic and plagal modes and notation. *2 h. c.*

363-364. *Junior and Senior Choir Methods.* Organization, methods, child psychology, the child voice, and materials suitable for choirs. The second semester deals with the organization and motivation of the volunteer choir; achieving balance, blend, intonation; interpretation of choral literature, program building, and methods; psychology in rehearsal. *2 + 2 h. c.*

461. *History of Sacred Music.* The development of great religious music from earliest times to the present, with a study of the Jewish and Christian liturgies and their music, and the Church Year. *2 h. c.*

463-464. *Choral Literature.* The study and interpretation of the standard oratorios, with emphasis on solos, choruses, and accompaniment. A practical course for the singer, organist, and choirmaster. Representative oratorios covered are from the Baroque, Classic, Romantic, and Modern periods. *2 + 2 h. c.*

465. *Service-Playing and Extemporization.* The fundamentals of improvisation, modulation, and transposition. Service-playing of hymns, anthems, and solos. *2 h. c.*

Conducting

219-220. *Conducting.* A practical course in conducting that stresses baton technique, interpretation, and leadership. Works used as interpretative studies are chorals, anthems, part-songs, opera, and symphony. Meets two hours a week. *1 + 1 h. c.*

331-332. *Choral Conducting and Score-Reading.* The organization and conducting of choral groups. Practical work with chorus. Practice in score-reading. Prereq.: Music 219-220. *1 + 1 h. c.*

333-334. *Instrumental Conducting and Score-Reading.* The organization and conducting of instrumental groups. Practical work with orchestra and band. Practice in score-reading. Prereq.: Music 219-220. *1 + 1 h. c.*

Music Education

121. *Introduction to Music, For Elementary Teachers.* Fundamental knowledge of the problems of notation and development of skill in sight singing and ear-training. *2 h. c.*

221. *Music Literature and Appreciation, For Elementary Teachers.* A general orientation course to meet the needs of the classroom teacher and the average music lover, with emphasis on the human values of music and its relationship to art, literature, geography, history, and other curricular interests. Prereq.: Music 121. *2 h. c.*

225-226. *Woodwind Methods.* Each student selects a woodwind instrument, which he learns to play as well as possible during the time allotted. As soon as enough progress has been made in playing the instrument chosen, other instruments of the woodwind group may be selected and studied. The problems underlying the teaching of these instruments are kept constantly before the class. Meets two hours a week. *1 + 1 h. c.*

311-312. *Class Voice Methods.* Fundamentals of correct voice production. Methods of conducting voice classes, glee clubs, and choirs, with a survey and evaluation of materials. Meets two hours a week. *1 + 1 h. c.*

318. *Percussion Methods.* Like Music 225-226, but for percussion instruments. Meets two hours a week. *1 h. c.*

321. *Music Education for Elementary Teachers.* A study of the child voice and its care. Rote songs, materials for rhythmic expression and listening, and the teaching skills and methods which the classroom teacher needs in order to work effectively under supervision. Prereq.: Music 221. *2 h. c.*

323. *Music in the First Six Grades.* General methods of teaching public school music in the first six grades. A study of rote songs and rhythmic and tonal problems, and analysis of student vocal problems in successive years, with demonstration of methods used in elementary grades. *3 h. c.*

324. *Junior and Senior High School Methods.* Classification, problems, materials, methods, organization, and management. Prereq.: Music 311-312. *3 h. c.*

325-326. *String Methods.* Like Music 225-226, but for string instruments. Meets two hours a week. *1 + 1 h. c.*

329-330. *Brass Methods.* Like Music 225-226, but for brass instruments. Meets two hours a week. *1 + 1 h. c.*

417. *Instrumental Problems.* Methods of organizing and conducting instrumental classes, bands, and orchestras in the public schools, with a survey of materials. *2 h. c.*

419. *Band Organization, Drum Majoring and Field Technique.* Organizing and conducting concert and military bands. Materials, seating plans, marching formations, balanced instrumentation, preparation for rehearsals, and problems of conducting. Opportunity for study and practical experience in drum majoring, with emphasis on military baton signals, field techniques, and drum figures. *2 h. c.*

HONORS AND AWARDS
for 1958-1959

YU Pins

Janice Georges
Joan R. Melek
Renny J. Domini
Dale E. Cunningham
Gerard F. Repasky
Alan K. Hegedus

The Youngstown Vindicator Awards

For the best all-around student:
Alan K. Hegedus

For scholarship in the humanities:
Leslie S. Domonkos, Jr.

For scholarship in English:
Mary Jane Hodor

For scholarship in the social science sequence:
Ronald B. Perrin

The Clarence P. Gould Society Honors

For the recognition of outstanding students in the liberal arts and sciences.

Leslie S. Domonkos, Jr.
Janice Georges
Mary Jane Hodor
Ann C. Hudak
Joseph Mass
Patricia Ann Muretic
Frank S. So
Veronica T. Swider
Wilbur Zedaker

The University Seminar Honors

(not given)

The Henry Roemer Prizes for Men

For scholarship: LeRoy Case
In chemistry: James S. Criscione
In mechanical engineering: David Yeager
In metallurgical engineering: Kenneth E. Barnes
For scholarship and for leadership and sportsmanship in athletics: David Kimmel

The Greek Prize

Mary Jane Hodor

The Chi Omega Alumnae Award

(in social studies)
Sally Avery

The Roberts Deliberating Club Award in the Social Sciences

Frank S. So

The Omicron Lambda Honorary Biology Fraternity Award for Scholarship

Janice Georges

The Scudder Award
(in chemistry)
John C. Getson

The Bronze Medal in Chemistry
William S. Symbolik

The Student Council Purchase Award
(in art)
Elaine Juhasz

The City Office and Art Company Awards
(in art)
Jan Burgermyer Sandra Stephen
Kay Mortenson

The Los Buenos Vecinos Award
(in art)
Richard Dubiel

The Youngstown University Art Club Award
(in art)
J. Royce Burgermyer

The Sigma Kappa Phi Fraternity Scholastic Award
(in business administration)
Robert C. Berman

The Accounting Prize
(given by the National Association of Accountants)
Robert C. Berman

The Louis A. Deesz Memorial Award
(given by the
Mahoning Valley Chapter of the Ohio Society of Professional Engineers)
LeRoy Case

The American Institute of Electrical Engineers, Sharon Section,
Award in Electrical Engineering
Dwight Lewis

The American Society of Mechanical Engineers,
Youngstown Section, Award in Mechanical Engineering
(including the Henrik Ovesen awards)
LeRoy Case

The American Institute of Industrial Engineers
Award in Industrial Engineering
Albert Smrek

The Rose Rigelhaupt Memorial Award
(in law)
Jacob M. Abramovitz

The Grace Prentice Maiden Award
(in law)
Morton H. Sands

The Nathan Hale Chapter, Sons of the American Revolution, Awards

Advanced course:
Cadet William C. Raub

Basic Course:
Cadet Larry A. Schuller

The Mahoning Chapter, Reserve Officers Association, R. O. T. C. Honor Awards

Advanced course:
Cadet Raymond C. Biles
Cadet Paul J. Kovach

Basic Course:
Cadet Harry J. Millard

The Association of the United States Army Medal
Cadet Samuel J. LaLama, Jr.

The Lieutenant Colonel Eugene Lash Award
Cadet George R. Stowe, Jr.

The Corps of Cadets Awards
Outstanding squad leaders:
Cadet Harry J. Millard
Cadet Thomas Williams
Outstanding freshmen:
Cadet John E. Heinl
Cadet Larry D. Tackitt

The Armed Forces Communication and Electronics Association Award
Cadet John A. Vojtko

The Society of American Military Engineers Award
(not given)

The Distinguished Military Graduate Honor Awards
Cadet John T. Abdoo
Cadet Raymond G. Biles
Cadet Dale E. Cunningham
Cadet Renny J. Domini
Cadet John J. Gillespie
Cadet John A. Voytko, Jr.

The Superior Cadet Ribbon Awards

First year: Cadet Rudolph A. Schlais, Jr.
Second year: Cadet David A. Colson
Third year: Cadet Robert L. Hunter
Fourth year: Cadet Robert G. Martin

The Professor of Military Science and Tactics Trophy
For Summer Camp
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B. S. in Ed., Ohio University; M. A., Ohio State University. Graduate study: Columbia University. Retired 1957.

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Mus. B., Mus. M., Mus. D., Dana's Musical Institute. Retired 1949.

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B. S., University of Chicago. Graduate study: Columbia University. Pupil of Arthur Dow and Walter Sargent. Director of Art, The Butler Art Institute, 1919-1952. Retired 1952.

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A. B., Ph. D., Johns Hopkins University; LL. D., Washington College. Retired 1957.

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A. B., Indiana University; M. A., New York University, LL. B., University of Louisville. Graduate study: University of Chicago. Retired 1953.

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B. S. in E. E., B. S. in F. P. E., Illinois Institute of Technology. Graduate study: University of Pittsburgh. Registered Professional Engineer.

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Cincinnati Conservatory of Music; Cleveland Institute of Music.

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A. B., Mount Union College; M. A., University of Pittsburgh. Graduate study: University of Pittsburgh.

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B. B. A., Western Reserve University. Graduate study: Western Reserve University. Certified Public Acountant.

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*With Youngstown University, September, 1960.

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A. B., Brown University; M. S. in Ed., Westminster College.

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B. S. in B. A., Youngstown University. Certified Public Accountant.

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B. S. in Ed., Youngstown University. Graduate study: John Herron Art School; Fletcher Farm School of Crafts.

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PAUL B. BIEN, Ph. D. *Associate Professor of Chemistry*
B. S., Shanghai Baptist College; Ph. B., M. S., Ph. D., Brown University.

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Reife-Zeugnis, Staatsakademie (Musik), Vienna. Other study: Mozarteum, Salzburg. Pupil of Filip Forstén and Lilly Lehman. Sang leading roles with the Opera Houses at Strasbourg, Darmstadt, Cologne, Leipzig, with the Berlin Folk Opera, and with the Vienna, Berlin, and Dresden State Operas.

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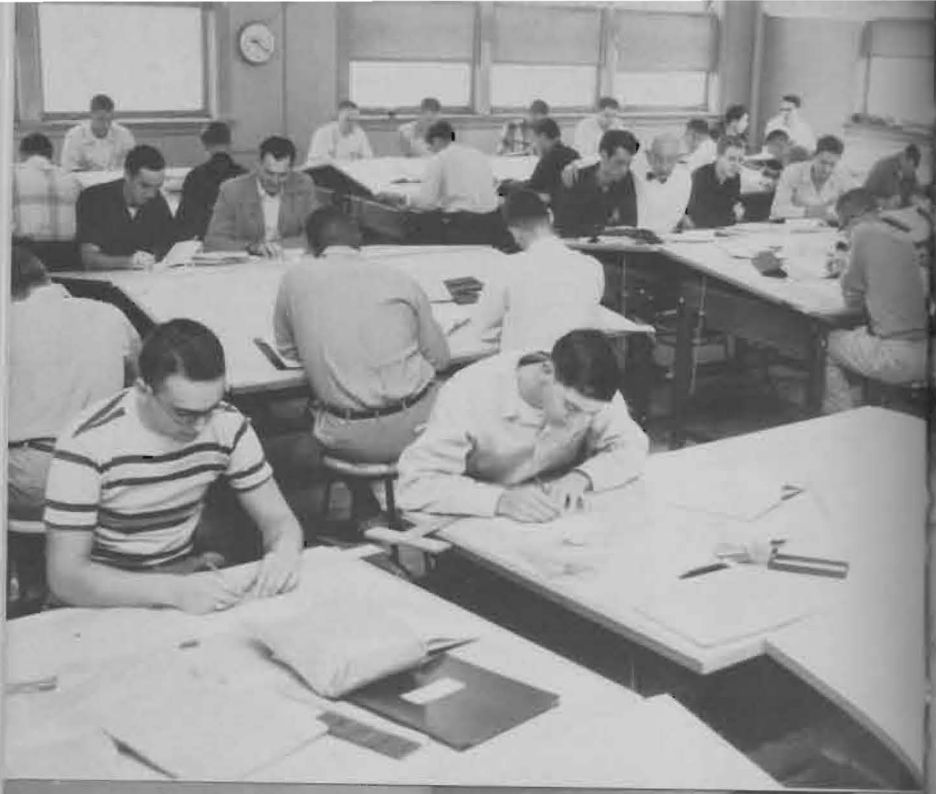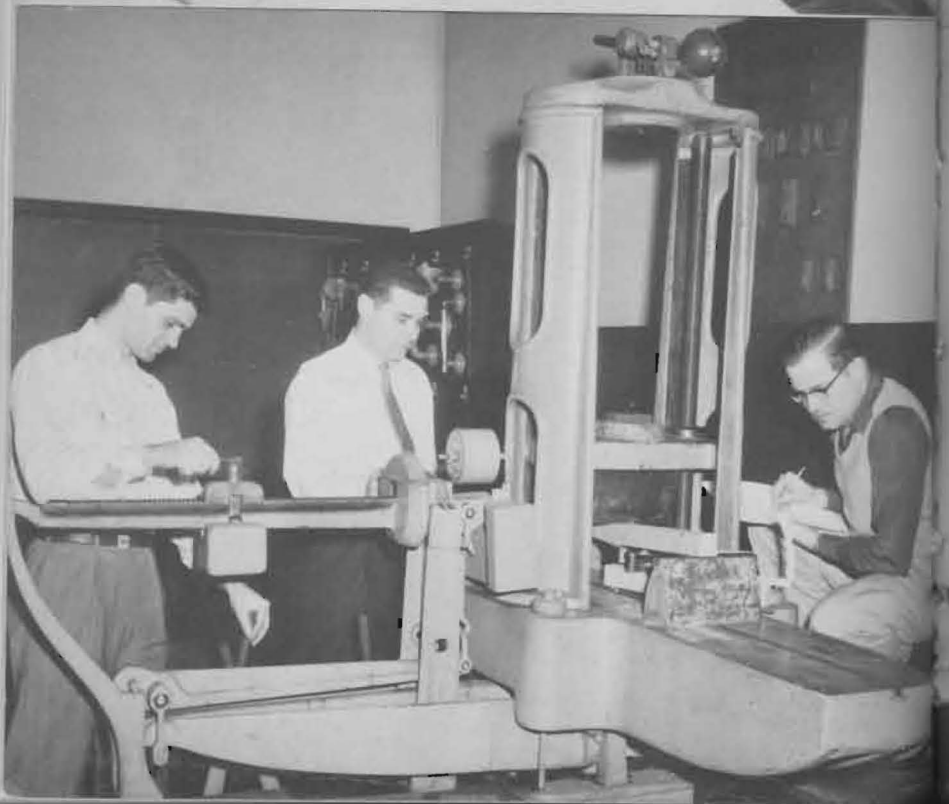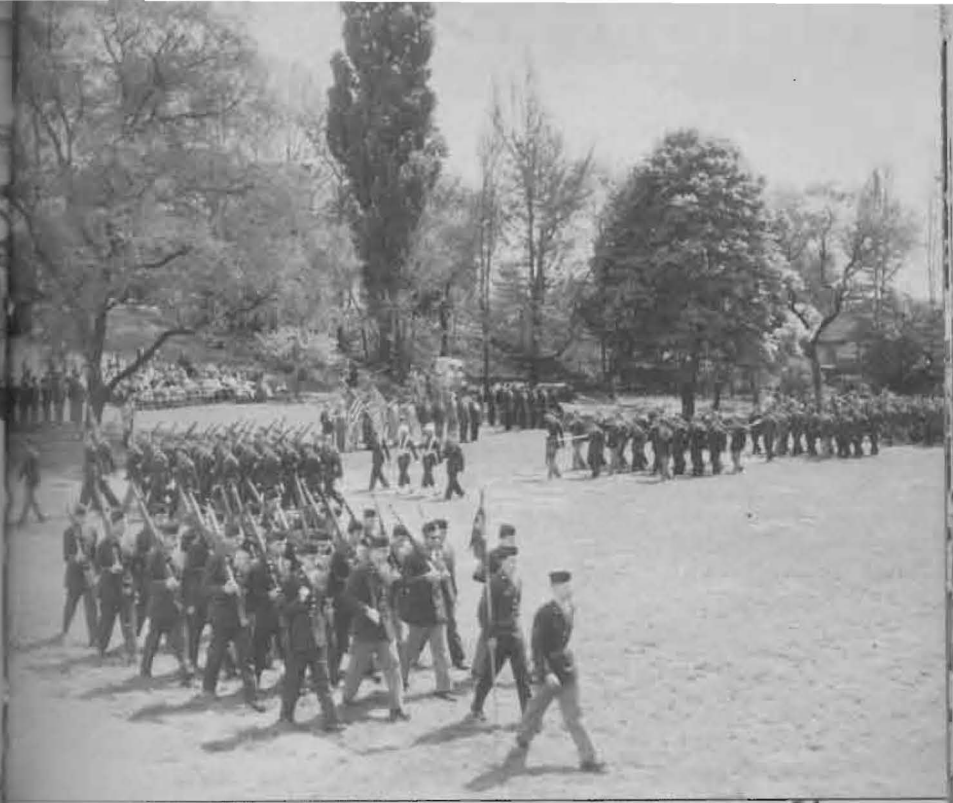
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