YOUNGSTOWN STATE UNIVERSITY

BULLETIN 1970-1971

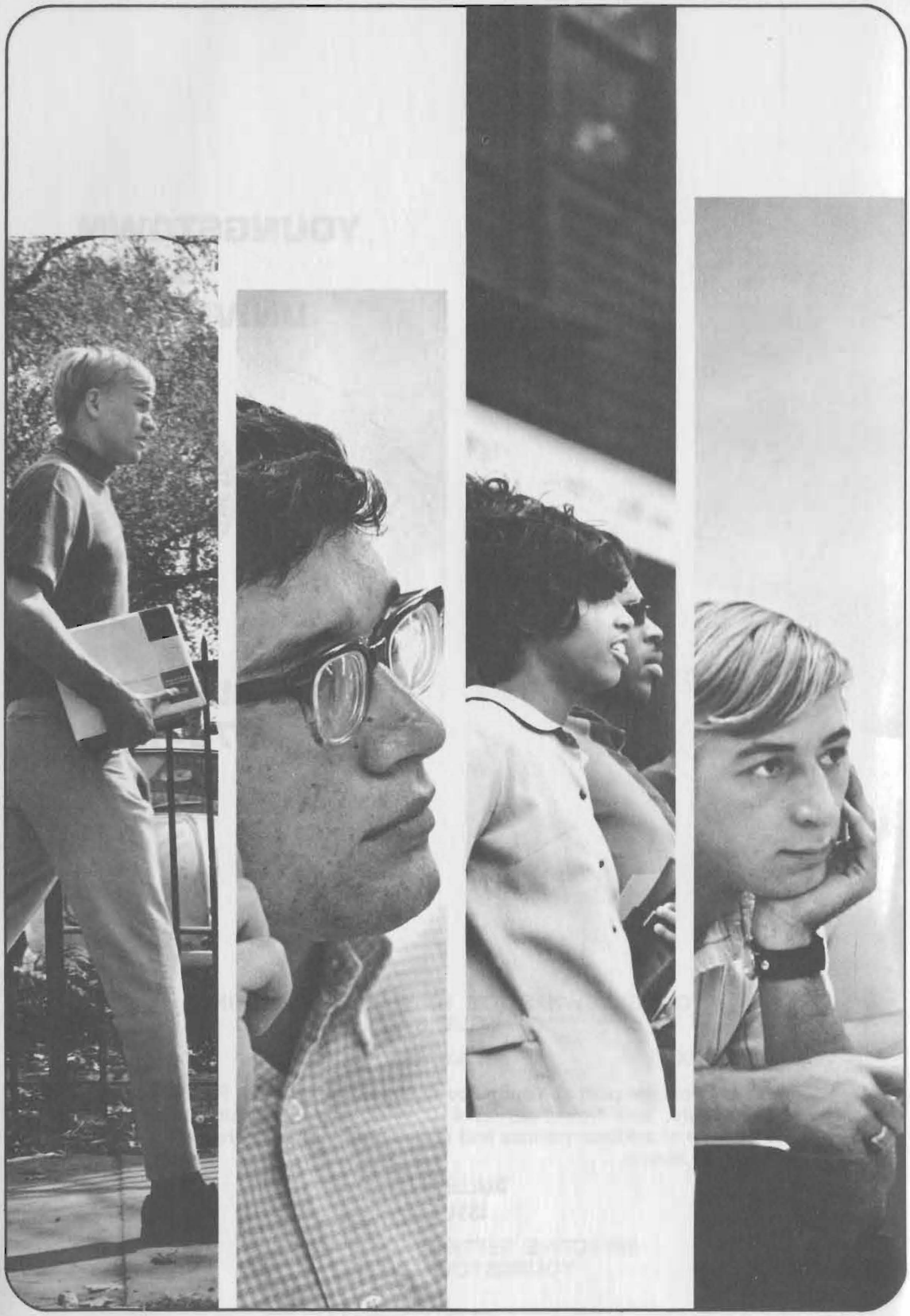
YOUNGSTOWN STATE UNIVERSITY BULLETIN
ISSUE 3

VOLUME XXXIX MAY, 1970 NUMBER 3

Second class postage paid at Youngstown, Ohio. Published in February, April, May, June, July, and November at 410 Wick Avenue, Youngstown, Ohio 44503. Change of address notices and undeliverable copies should be mailed to the address above.

BULLETIN
ISSUE

EFFECTIVE SEPTEMBER 24, 1970
YOUNGSTOWN, OHIO



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ACCREDITATION

Youngstown State University 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 education institution, and by the National Council for Accreditation of Teacher Education. It is on the approved list of the American Medical Association and the American Dental Association. The William Rayen School of Engineering is accredited by the Engineers' Council for Professional Development for its day and evening curriculums for civil, electrical, and mechanical engineering. The Dana School of Music of Youngstown State University is a member of the National Association of Schools of Music.

MEMBERSHIPS

The University is a member of the American Council on Education, the American Association of Colleges for Teacher Education, the Association of American Colleges, and the Association of Urban Universities. It is a corporate member of the American Association of University Women.

DEGREES GRANTED

Youngstown State University grants the degrees of Master of Arts (M.A.), Master of Science (M.S.), Master of Science in Education (M.S. in Ed.), Master of Science in Engineering (M.S. in E.), and Master of Music (M.M.), Bachelor of Arts (A.B.), Bachelor of Engineering (B.E.), Bachelor of Music (Mus. B.), Bachelor of Science (B.S.), Bachelor of Science in Business Administration (B.S. in B.A.), Bachelor of Science in Education (B.S. in Ed.), Associate in Arts (A.A.), Associate in Applied Business (A.A.B.), and Associate in Applied Science (A.A.S.).

THE ACADEMIC CALENDAR 1970-1971

FALL QUARTER 1970		
September 4	Friday 2000	Last day to apply for admission or readmission for fall quarter
September 17	Thursday 0800 to 1900	Changes of Registration
September 21	Monday 0800 to 1900	Orientation - Late and Final Registration
September 24	Thursday 0800	Classes Begin
September 30	Wednesday 2000	Last day to enroll in a class
November 4	Wednesday 2000	Last day for withdrawing with a W
November 25	Wednesday 2200	Thanksgiving Vacation Begins
November 30	Monday 0800	Thanksgiving Vacation Ends
December 7	Monday 0800	Final Examinations Begin
December 11	Friday 2000	Last day to apply for admission or readmission for winter quarter
December 12	Saturday 1330	Final Examinations End
WINTER QUARTER 1971		
January 4	Monday 0800 to 1900	Orientation - Late and Final Registration
January 4	Monday 1700	Classes Begin
January 9	Saturday 1200	Last day to enroll in a class
February 13	Saturday 1200	Last day for withdrawing with a W
March 5	Friday 2000	Last day to apply for admission or readmission for spring quarter
March 15	Monday 1700	Final Examinations Begin
March 20	Saturday 1330	Final Examinations End
SPRING QUARTER 1971		
March 29	Monday 0800 to 1900	Orientation - Late and Final Registration
March 29	Monday 1700	Classes Begin
April 3	Saturday 1200	Last day to enroll in a class
May 8	Saturday 1200	Last day for withdrawing with a W
May 28	Friday 2000	Last day to apply for admission or readmission for summer quarter
May 31	Monday	Legal Holiday - No Classes
June 7	Monday 1700	Final Examinations Begin
June 12	Saturday 1330	Final Examinations End
June 16	Wednesday 2000	Spring Commencement
SUMMER QUARTER 1971		
June 15	Tuesday 0800 to 1900	Orientation - Late and Final Registration
June 17	Thursday 0800	Classes Begin — Summer Quarter and First Term
June 23	Wednesday 1700	Last day to enroll in a class — First Term
June 23	Wednesday 1700	Last day to enroll in a class — Summer Quarter
July 5	Monday	Legal Holiday - No Classes
July 7	Wednesday 2000	Last day for withdrawing with a W — First Term
July 24	Saturday 1330	First Term Ends (Final Exams during Periods)
July 26	Monday 0800	Second Term Begins
July 28	Wednesday 2000	Last day for withdrawing with a W — Summer Quarter
July 30	Friday 1700	Last day to enroll in a class — Second Term
August 14	Saturday 1200	Last Day for withdrawing with a W—Second Term
August 26	Thursday 0800	Final Examinations Begin — Summer Quarter
September 1	Wednesday 2200	Final Examinations End — Summer Quarter
September 1	Wednesday 2200	Second Term Ends (Final Exams during Periods)
September 1	Wednesday	Summer Commencement

GENERAL INFORMATION

GENERAL INFORMATION

OBJECTIVES

It is the aim of Youngstown State University to make higher education available to all high school graduates. Those with superior high school records are admitted without restriction while those with less satisfactory records may be admitted on condition that they carry the reduced academic schedule prescribed by the University. The University recognizes that such a broad admission policy carries with it the obligation to provide disciplines of established collegiate standards.

The University seeks to develop in the student the qualities of intellectual and emotional maturity necessary to produce graduates who are economically self-sufficient, socially valuable, and culturally and spiritually mature.

The University strives to maintain educational policies which are conducive to the presentation of the varied social, political, economic, and cultural ideas relevant to an understanding of contemporary existence.

The University endeavors to serve its community and the nation by being continually alert to the needs of a dynamic society and by providing curriculums to meet those needs without sacrificing the values of a long tradition of liberal education.

EQUAL EDUCATIONAL OPPORTUNITY

Youngstown State University is in full accord with both federal and state laws prohibiting discriminatory practices with respect to equal opportunity because of race, color, religion, national origin, or ancestry. This applies to employment as well as all operational aspects of the University involving students, faculty, and other employees.

HISTORICAL SKETCH

Youngstown State 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 liberal arts classes were offered, in the evening, for the first time. In 1927 the College of Arts and Sciences, offering daytime classes for the first time, was established. 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 the Dana School of Music of the College in 1941. In 1946, the engineering department, organized several years before, became the William Rayen School of Engineering; two years later the business administration department became the School of Business Administration; and 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. The University joined the Ohio system of higher education in September, 1967, and was renamed Youngstown State University.

The Graduate School and the Technical and Community College were established during the spring of 1968.

THE GENERAL PROGRAM OF THE UNIVERSITY

Youngstown State University is a coeducational, non-sectarian, and nonprofit 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 of military service.

The University has seven 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
- The William Rayen School of Engineering
- The Dana School of Music
- The Graduate School
- The Technical and Community College

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 1:40 p.m. on Saturday. The main academic year is from late September into June, in three 11-week quarters. During the summer quarter, courses are offered both for the full 11 weeks and for half sessions of five and one-half weeks each. Courses are arranged so that a student may begin his studies in any quarter.

THE GRADUATE SCHOOL

The Graduate School offers programs in Engish and history leading to the Master of Arts degree; programs in chemistry, biology, and mathematics leading to the Master of Science degree; programs in music education, sacred music, applied music, theory and composition, musicology, and woodwind or brass specialization leading to the Master of Music degree; programs in civil, electrical, mechanical, and metallurgical engineering leading to the Master of Science in Engineering degree; and Master Teacher (Elementary and Secondary), Principalship (Elementary and Secondary), School Guidance and Counseling, and Special Education (Slow Learners) programs leading to the Master of Science in Education degree.

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 cooperation with the School of Education it prepares teachers for secondary schools, and some of its other curriculums qualify the student to enter several technical or professional fields upon graduation. It provides the arts and sciences courses in the curriculums of the schools of Business Administration, Education, Engineering, and Music, and the Technical and Community College, including the science courses in the engineering curriculum.

Courses taken primarily in the College of Arts and Sciences lead to one of three degrees: Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Education, the last granted by the School of Education. The major subject may be anthropology, art, biology, chemistry, classical studies, dramatics, earth science, economics, English, food and nutrition (dietetics), French, geography, geology, German, health and physical education (or either separately), history, home economics, Italian, Latin, mathematics, medical technology, metallurgy, music, philosophy, physics, political science, psychology, Russian, religious studies, 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), ancient Greek, Hebrew, journalism, military science, and nursing.

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 industrial or public accounting, advertising, and public relations, commercial art, financial management, general business, industrial management, retail or industrial merchandising, public administration, transportation management, and secretarial studies.

THE SCHOOL OF EDUCATION

The School of Education offers courses leading to the Bachelor of Science in Education degree. It also cooperates 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 the Dana School of Music for the Bachelor of Music degree with the major in public school music. The departments of the school are foundations of education, elementary education, secondary education, and special education.

THE WILLIAM RAYEN SCHOOL OF ENGINEERING

The William Rayen School of Engineering offers complete courses in chemical, civil, electrical, industrial, mechanical, and metallurgical engineering. All lead to the degree of Bachelor of Engineering.

THE DANA SCHOOL OF MUSIC

The Dana School of Music offers complete courses preparing for public school music teaching, sacred music, musical composition, private teaching, and concert performances. 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 and 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.

THE TECHNICAL AND COMMUNITY COLLEGE

The Technical and Community College offers two-year programs in associate in arts leading to the degree of Associate in Arts; two-year programs in accounting technology, advertising technology, business administration technology, commercial art technology, general administration technology, merchandising technology, public administration technology, secretarial studies, and transportation management technology leading to the degree of Associate in Applied Business; and two-year programs in civil engineering technology, computer technology, electrical engineering technology, food service technology, mechanical engineering technology, metallurgical engineering technology, nursing, and police science technology leading to the degree of Associate in Applied Science.

Courses are offered leading to the Bachelor's Degree with majors in business education, corrections, law enforcement administration, and secretarial studies.

Continuing Education programs including conferences, institutes, seminars, workshops, and a variety of noncredit courses are offered to meet the needs of the area.

CAMPUS DEVELOPMENT

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 Jones Hall 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; in 1959 the Science Building; in 1962 Central Hall Annex, housing the Bookstore; in 1966 the Kilcawley Student Center; in 1967 the Ward Beecher Science Hall; and the Engineering Science Building in 1968.

In addition to the 20 major buildings already in use on the campus, the University is currently engaged in a six-year multi-million dollar campus development program. The 87-acre campus will include a health and physical education building with an indoor Olympic-size swimming pool, a large Library addition, an addition to the existing Student Center, a music and fine arts building, a Technical and Community College building, classroom buildings, and other related structures.

BUILDINGS AND OTHER FACILITIES

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 building of the Dana School of Music is on Wick Avenue while the Dana Recital Hall is on Spring Street and the Dana Studio on Bryson Street. A new building to house the School of Engineering was ready for occupancy in the fall of 1967 and is in the block bounded by Lincoln Avenue and Bryson, Arlington, and Elm streets. On Wick Avenue, opposite the Dana School of Music, are *Pollock House*, used in part by the College of Arts and Sciences, and *Ford Hall*. The Arts and Sciences Office Building is on the east side of Wick Avenue across from the Butler Institute of American Art.

THE CENTRAL CAMPUS

The most prominent of the central group is the *Howard W. Jones Hall*, 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. In addition to University administrative offices and the auditorium, it contains classrooms and some of the departmental offices of the College of Arts and Sciences.

The buildings close to Jones Hall supplement the classroom, laboratory, and office space in the central area and augment the facilities of the Music School. Immediately northeast of Jones Hall is *East Hall*. North of Jones Hall, between West Hall and East Hall, stands *Central Hall*, a large frame structure; on the first floor are classrooms, and on the second floor are the Health Center and music facilities, including an auditorium.

Just north of Central Hall and attached to it is the Bookstore. The building is of pink brick with stone trim, in keeping with the Library and Science buildings.

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 State University. The hall is an enlargement of a much smaller unit originally contained in Jones Hall, 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 facilities for concerts, operas, plays, lectures, and assemblies.

THE UNIVERSITY LIBRARY

The Youngstown State University Library is in the center of campus, and all departments are served in this centralized facility. At present it contains more than 210,000 volumes and 2,600 periodical subscriptions, as well as microfilms, microcards, and recordings. The library is constantly growing to serve the need for materials for in-

struction, recreation, cultural advancement, and research.

The library has open stacks with study carrels alternating with each row of book stacks, which permit the student to study in the area of the subject being pursued. Built-in display cases in the halls provide places for exhibitions of various kinds, and the Purnell Room on the third floor is a browsing and smoking room. Coin-operated book copying machines are on each floor and there are booths for typewriters and adding machines.

While the book collection covers all academic fields, it is strong in metallurgy and chemistry. Outstanding also are the collection of books on names, on criminology and Judaica. An organization called the Friends of Youngstown State University Library has been responsible for a large portion of recent library expansion.

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 WARD BEECHER SCIENCE HALL

The Science building, housing the science departments and laboratories of the College of Arts and Sciences, is located at 505 Bryson Street. The four-story building was constructed in 1958 with an addition completed in 1966. It was built at a cost of over $3,000,000, with funds contributed by Mahoning Valley Industries and Mr. Ward Beecher, for whom the building was named. The building contains many lecture rooms, special laboratories, including two atomic laboratories and a reactor room equipped by the Atomic Energy Commission. Included in the new addition is a well-equipped and modern planetarium.

FORD HALL

Ford Hall 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 the Dana School of Music, form the University's north campus. In it are classrooms, the offices of the Department of Psychology, the Testing Office, and the Counseling Center.

POLLOCK HOUSE

Pollock House, across from the Dana School of Music, provides a pleasant and convenient 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 classrooms and the offices of the Military Science Department, but the spacious parlors, dining rooms, and kitchen are available to campus groups for specific events.

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 Department of Art and Department of Home Economics of the College of Arts and Sciences.

RAYEN HALL

Rayen Hall, 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 moved to larger headquarters, the building was made available to Youngstown State University. Until the winter quarter of 1968 it

housed the William Rayen School of Engineering; it is now utilized for general University classes. It houses the departments of Business Education and Secretarial Studies and Nursing, and is also used for general University classes.

THE SCHOOL OF EDUCATION BUILDING

The School of Education building, formerly the Elm Street School, is a modern brick building with 18 classrooms, offices for administrative personnel, a gymnasium, showers, and other facilities. The building is being used by the School of Education, the women's division of the Health and Physical Education Department, and the Geography Department. Built in 1951, it was purchased from the Youngstown Board of Education in September 1965, and remodeled to meet the needs of the University at a cost of $800,000 including the remodeling.

THE KILCAWLEY STUDENT CENTER AND DORMITORY

The first building constructed as part of the University's Campus Development Plan was the Kilcawley Student Center. The Center includes a dining room, lounges, and classrooms. The first floor of its dormitory wing houses student offices and meeting rooms. A gift of $300,000 had been made to the Center by the William H. and Mattie M. Kilcawley Foundation, to which gifts from industry and from alumni and student funds were added.

THE EXECUTIVE OFFICES

The Executive Offices of Youngstown State University are located directly south of the Butler Institute of American Art on Wick Avenue in a home formerly used as a residence by the President of the University. The recently remodeled facility now accommodates the President of the University, Vice President for Academic Affairs, Vice President for Administrative Affairs, Director of Institutional Research, and the Director of University Relations and their staffs.

ENGINEERING SCIENCE BUILDING

The newest addition to Youngstown State University's physical plant is the $5,000,000 Engineering Science Building, located directly west of the Ward Beecher Science Hall. An L-shaped structure containing some 171,000 square feet of floor space, it houses the William Rayen School of Engineering, the Mathematics Department, the Computer Center, and parts of the Technical and Community College including the Dean's Office.

ARTS AND SCIENCES OFFICE BUILDING

This building, at 521 Wick Avenue, houses the offices of seven departments — Economics, English, History, Philosophy and Religious Studies, Political Science, Sociology and Anthropology, and Speech and Dramatics; the deans of the College of Arts and Sciences and the Graduate School; and the studios of WYSU, the University's FM stereo radio station.

ALUMNI OFFICE

An up-to-date record of the more than 16,500 graduates is maintained by the Alumni Office. As far as possible, the graduate's record shows his place of employment, the type of work he is doing, and the advanced degrees he has earned, in addition to other information.

The Alumni Office is located in the Kilcawley Student Center.

THE ALUMNI ASSOCIATION

The Youngstown State University Alumni Association is the official organization of the institution's alumni. Membership in it is extended to all graduates of the Youngstown State University and its predecessors and to all former students.

LABORATORIES

Biology, chemistry, geology, and physics laboratories are in the Ward Beecher Science Hall; the language laboratory is in Jones Hall. The engineering laboratories are described in the 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 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 geology* laboratories are equipped to familiarize the student with common rocks, minerals, and fossils. Aerial photographs and topographic and geologic maps are utilized in the study of landforms and geologic structures of various localities.

The *mineralogy-petrology* laboratory is reserved for juniors and seniors who are pursuing advanced studies of the chemical and optical properties of minerals and rocks.

The *language* laboratories are equipped with a console and 56 booths, each containing a tape deck. Several programs may be sent out simultaneously to the booths from the console's two tape decks and record player. Responses may be monitored and recorded at the console. Students may borrow tapes from the tape library to play at the booths for listen, listen-respond, or listen-record-playback practice. Tapes containing drill material coordinated with the text books are available, as well as other drill and cultural material.

The *general physics* laboratories are fully equipped for college-level experiments. The equipment consists of a few pieces of many types of apparatus rather than of many pieces of a few types. Such a distribution makes possible a year-to-year flexibility in the program for freshman and sophomore physics students. The experimental work in the general physics laboratories is designed to reinforce the classroom emphasis on the concepts, ideas and laws of physics.

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

PHYSICAL EDUCATION FACILITIES

The first floor of the School of Education Building provides offices, classrooms, activity areas, and locker and shower facilities 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; 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, the Austintown Fitch High School gymnasium; Stambaugh Field, the gift of Mr. Arnold Stambaugh, for practice; municipal tennis courts; and the Logan Driving Range.

THE BOOKSTORE

The Youngstown State University Bookstore, centrally located on campus, sells all required texts, materials, and supplies. In addition, because of their value as collateral reading, the

Bookstore stocks in limited quantities a wide selection of standard works in inexpensive editions. Should a selection not be available, the Bookstore will order it upon a suitable down payment. There are other stores in the Youngstown area servicing the University that will add variety to available material. While the Youngstown State University Bookstore does not attempt to compete with these stores, it does carry a selection of personalized soft goods and specialty items. The aims of the Youngstown State University Bookstore are predicated on service to the students and faculty.

PARKING AREAS

Parking facilities for students include a large lot on the east side of Wick Avenue between Lincoln Avenue and Spring Street; a lot on Spring Street east of Wick Avenue, behind Ford Hall; one on Bryson Street; and another lot on Lincoln Avenue. Faculty members use two lots in the central area, one north of the Library, one on Elm Street, one at Arlington and Elm streets, and lots at Rayen Hall and the Arts and Sciences Office building.

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. 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 Episcopal Church, First Christian Church, Newman Center and First Presbyterian Church. Reciprocal agreements for the use of certain equipment are in effect with the Public Library.

Youngstown State 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 carry forward the program of the University.

STUDENT PERSONNEL SERVICES

OFFICE OF THE DEAN OF STUDENT AFFAIRS

The basic responsibility of the Dean of Student Affairs is to provide leadership in all areas of the University which influence the welfare of the student. Specifically, he is charged with the administration and coordination of student personnel services in all divisions of the University.

Included in these services are educational, vocational, and pesronal counseling programs; standardized testing programs and services; advisement of fraternities and sororities; student housing; placement service; coordination of social, recreational, and cultural extra-curricular activities; scheduling of University facilities requested by student organizations; and maintenance of the University social calendar. Other offices involved in providing these services and directly responsible to the Dean of Student Affairs include the Deans of Men and Women, Director of Student Activities, University Counseling Center, International Student Office, Housing Office, and Kilcawley Student Center.

Under the Youngstown State University Student Disciplinary Code, the Dean of Student Affairs is charged

with primary responsibility for student conduct and discipline at the University.

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 located in Jones Hall.

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 events by the Coordination and Calendar Committee is centered in this office.

Information on housing for women students is available in this office.

OFFICE OF THE DEAN OF MEN

The Dean of Men is responsible for the welfare of the men students of the University. He assists the Director of Admissions in the selection of students, coordinates high school-college relations, and works with the Office of University Relations on University-community affairs. His office is located in Jones Hall.

COUNSELING, GUIDANCE, AND TESTING

The Youngstown State University Counseling Center provides professional counseling service to any student concerned with adapting to college life, academic progress or directions, or personal problems ranging from such matters as career choice to deeper psychological discomfort.

The Counseling Center administers the American College Test (ACT), the Graduate Record Examination, the Miller Analogies Test, the Law School Admission Test, and the Admission Test for Graduate Study in Business. Information regarding other national examinations is available.

In conjunction with the faculty, the Counseling Center also supervises the administration of "make-up" examinations.

The Counseling Center staff includes several counseling psychologists and a testing director. All are experienced professionals who specialize in working with college students.

Counseling services are free to all students of the University. Fees, however, are associated with the testing programs.

No information is released to officers of the administration, to faculty members, to parents, or to outside agencies without the student's explicit authorization, except when there is a clear and immediate threat to the life or welfare of the student himself or the community at large. Information obtained in the course of counseling remains confidential and in no way reflects upon the student's academic record.

HEALTH SERVICE

To promote and maintain good health, the University requires that each new applicant provide the University with the results of a physical examination recorded on the *Youngstown State University Physical Examination Form* which will be given to the student when he has been accepted 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 Admissions Office. No student who is required to take the examination will be authorized to register until the Admissions Office has received the completed form.

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

The *Health Service Office* is on the

second floor of Central Hall. A registered nurse is on duty when classes are in session and can alwaye be located through the University switchboard operator. The Office is maintained for the purpose of providing students with emergency care. The cost of continued treatment is paid for by the student. Any injury occurring on campus should be reported to the Health Service within twenty-four hours.

Group insurance to cover hospital and/or surgical care (Blue Cross and Blue Shield) 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 Bursar's Office.

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

PLACEMENT SERVICE

With the co-operation of the Ohio State Employment Service, the University maintains a full-time placement office. The services of this office are available to all graduating students and alumni seeking permanent employment. Credentials service is provided to certified teachers applying for positions with schools, colleges, or universities.

The Placement Service also assists students who wish to find part-time employment while enrolled in the University. The central location of the University makes it possible for many students to earn all or part of their expenses by working in nearby stores and industrial plants.

The Placement Service offices are located on the second floor of East Hall. Music students and alumni of the Dana School of Music should also note the placement information in the School of Music section of this bulletin.

RELIGIOUS AFFAIRS

A full-time Protestant chaplain, supported by the Council of Churches of Youngstown and vicinity, is available on campus. The Roman Catholic Diocese of Youngstown provides a Newman Center and chaplain located just off the campus. The services of a Jewish rabbi and two Orthodox chaplains are also available to students of the University.

The Young Men's Christian Association, the Young Women's Christian Association, and many churches are within easy walking distance of the University.

STUDENT HOUSING

The University regards students behavior on campus as its concern, and expects all students to conduct themselves in public as responsible adults in order to preserve and promote the good repute of the institution. Students who do not observe University regulations are subject to discipline or dismissal.

Although admission to the University does not obligate the University to secure living accommodations for the student, the University will assist the student in finding a satisfactory place to live. In accordance with the basic principles of the University concerning human rights, no campus or off-campus housing facility that discriminates on the basis of race, color, or creed will be recommended to students.

All students must file a housing card at the time tuition is paid, indicating that definite housing arrangements have been made. For students not living at home or with relatives, housing should be from the approved list. It is the responsibility of all students to notify the Registrar's Office when their address is changed.

ON-CAMPUS STUDENT HOUSING

The University has limited residence

hall facilities and at the present time accommodations are for men only.

Residence hall accommodations include room and food service on a contract basis for the quarter(s) requested. For charges see *Fees and Expenses.*

Further information and applications can be obtained by writing to the Residence Hall Manager, Kilcawley Student Center.

OFF-CAMPUS HOUSING FOR MEN

The University provides a list of approved off-campus housing. This housing has been inspected and has met the minimum University standards. The University does not place students in off-campus houses; therefore, personal arrangements must be made for these facilities. Only those facilities that appear on the University's approved housing list are recommended. For further information, contact the Housing Office.

OFF-CAMPUS HOUSING FOR WOMEN

Women students not living at home must have their housing arrangements approved by the Dean of Women. There are several privately operated residence hall facilities in the immediate University area which have been approved for women student occupancy. Information concerning these and other off-campus housing is available by contacting the Dean of Women's Office.

FOOD SERVICE

Any student not residing in a University Residence Hall may purchase a meal ticket for any given quarter. Arrangements for this are made through the office of the Residence Hall Manager, Kilcawley Student Center.

The cafeteria in the Kilcawley Student Center also serves meals and light lunches a la carte.

LOCKERS

The University provides lockers for full-time students, without charge beyond a small sum to cover clerical costs. For this handling charge 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 the locker. The University assumes no responsibility for personal property left in a locker at any time.

STUDENT ACTIVITIES

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

Every student organization, whether social, professional, or general, must be chartered by Student Government and must have at least one faculty advisor, appointed by and responsible to the President of the University. Student organizations are required to comply with University rules and regulations.

Youngstown State University students may participate in frequent social activities. Through the dances and receptions sponsored by Student Government, 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 a large cafeteria and student lounge, as well as student offices and meeting rooms, are housed in the new

Kilcawley Student Center. 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.

HONOR POINT SYSTEM

The Honor Point System recognizes achievement in extracurricular activities and scholarship. Each year five graduates having the most points receive YSU 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. The point schedule for extracurricular activities is available at the office of the Dean of Women. 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 extra-curricular points.

STUDENT GOVERNMENT

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

Student Government exercises 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 Government is a portion of the General Fee included in students' billing. The funds from this fee allocated to Student Government activities is administered by the Student Government Budget Committee. The faculty-student committee determines financial policies and approves the budgets, which are proposed by the Student Government treasurer and recommended to the committee by Student Government.

Operating budget allocation funds for student art shows, debates, dramatic productions, intramural sports, music organizations, and student radio programs, are administered by the groups to whom the funds are allocated. Student Government allocates and administers the funds for Student Government expenses, such as the "Student Handbook," student body social functions, Deans' Loan Funds, cheerleaders, Honors Day and special projects recommended and approved by members of Student Government.

STUDENT PUBLICATIONS

All student publications of the University are under the supervision of the Faculty-Student Publications Committee.

The *Student Handbook* is published each fall through the office of the Dean of Student Affairs.

The *Neon,* the University yearbook; the *Jambar,* a bi-weekly newspaper; and *The Penguin Review,* a literary magazine, are published by student staffs, whose principal members may be nominated by the outgoing editors but must be approved by the Publications Committee. The *Neon* and *Jambar* are supported by the *Neon* fund, 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. Thus they serve as laboratories for journalism classes, with credit in limited amounts given for work on the publications. There are stipends for the editor and business manager of the *Neon;* for the editor-in-chief, managing editors and business manager of the *Jambar;* and for the editor and business manager of the *Penguin Review.*

The *Jambar* is a member of the Ohio College Newspaper Association and the Associated Collegiate Press. The Associated Collegiate Press, in its All-American newspaper critical service has awarded the *Jambar* First Class Honor Rating on content, style, make-up, typography, sports writing, and general quality. The Ohio College Newspaper Association has consistently selected the *Jambar* as one of the state's best bi-weekly newspapers.

The Penguin Review is a semi-annual journal published by the students of the University for the encouragement of creative writing. It prints short stories, poetry, and essays written by students, alumni, and faculty members.

DEBATE AND OTHER FORENSIC ACTIVITIES

The forensic activities at the University include debate, extemporaneous speaking, oratory, discussion, and interpretative reading. The main emphasis is on debate with the debate team participating in about 150 rounds of debate on various college and university campuses throughout the U.S. These include the University of Michigan, Notre Dame University, University of Pittsburgh, Ohio University, and Ohio State University. Campus activities sponsored by the forensic group include the Youngstown High School Cross-Examination Debate Tournament and Reader's Theater.

The Debate Society is open to University students who show ability and willingness to work. Pi Kappa Delta is the national honorary fraternity for the forensic participants who achieve distinction in forensics.

DRAMATICS

All students at the University are invited to participate in the production of plays. The University Theatre presents one major production each quarter during the academic year. Each production is under the supervision of the faculty of the University Theatre and is financially supported by the Student Council. At the present time, no admission is charged to students, faculty, or public. Recent productions have been *Blood Wedding, Summer and Smoke, Bald Soprano, The Lesson, The Knack,* and *Waiting For Godot.*

The University Theatre also sponsors a series of one-act plays which are supported with federal funds by the Ohio State Department of Mental Health and Correction. The plays deal with the understanding of social and mental problems. Between 50 and 60 performances are given during the academic year before various clubs and organizations in the area.

At the present time, the Department of Speech and Dramatics is involved in the planning of a new University Theatre and experimental theatre which will be located in the new fine arts complex.

The University Theatre is a member of Alpha Psi Omega, the national dramatics fraternity. Membership in the local chapter is by points earned from participation in various dramatics activities and is usually not open to students until their junior or senior year.

The University Theatre is also a group member of the American Educational Theatre Association, the American National Theatre and Academy, and the United States Institute of Theatre Technology.

MUSICAL ORGANIZATIONS

Several campus musical organizations are open to all students of the University. For 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 State University art students. The work is displayed at the Institute for about a month in the early spring, with awards from various donors, including a $100 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; and the department periodically exhibits students' work in the departmental gallery.

RADIO PROGRAMS

The University owns and operates a 22,500-watt stereo FM radio station with a range of approximately 55 miles. The station operates at 88.5 megahertz and broadcasts twelve hours a day, providing more than 2,000,000 people in Northeastern Ohio and Western Pennsylvania with fine arts programming. WYSU studios are housed in the Arts and Sciences Office Building. The primary purpose of the station is to serve the cultural and educational interests and needs of the area by providing an alternative listening service, emphasizing serious music and intellectually stimulating public affairs programming not otherwise provided by commercial stations in the area. The core of the station is a full-time professional staff, but the station does employ part-time students who have the qualifications and competence to meet professional broadcasting standards.

ATHLETICS

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, football, golf, handball, softball, tennis, table tennis, and volleyball. 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 State 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 State University. Intercollegiate competition is provided in football, basketball, baseball, tennis, swimming, golf, and rifle.

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

RIFLE TEAM

The Youngstown State 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. Interested students should apply to the Department of Military Science.

UNIVERSITY-RECOGNIZED STUDENT ORGANIZATIONS

Youngstown State University has over 100 student organizations established on its campus. They are chartered by Student Council and supervised by faculty advisors.

HONORARY SOCIETIES

Alpha Delta Sigma is a national honorary advertising fraternity.

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 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 basis:

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.

He shall be in the upper five 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.

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.)

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 year preceding the completion of his work.

Kappa Delta Pi is an honorary 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.

Omicron Delta Epilson is a national honorary society for economics majors.

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

Sigma Tau is a national honorary fraternity for engineering students.

The University Hill Chapter of the Future Secretaries Association is an honorary organization for secretarial majors. It is sponsored by the National Secretaries Association.

The Youngstown State 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.

PROFESSIONAL ORGANIZATIONS

Alpha Delta Sigma is a national professional advertising fraternity.

Alpha Kappa Psi is a national business administration fraternity.

Composers, Authors, and Artists of America is a national organization to promote creative work in literature, art, and music among its members.

Delta Nu Alpha is a national professional transportation fraternity for students in the School of Business Administration.

Lambda Tau is a national organization for students in medical technology.

The Junior Reserve Officers' Association promotes interest in the advanced R.O.T.C. course and an awareness of the role of the citizen-reservist. Membership is open to all R.O.T.C. cadets except freshmen.

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 State University.

The National Society of Scabbard and Blade is an honorary military science organization. Membership is by invitation and is restricted to cadets enrolled in the advanced R.O.T.C. course. The society, believing that military service is an obligation of citizenship, has as its purposes the development of the essential qualities that make for good and efficient officers and the dissemination of intelligent information concerning the military requirements of our country. Company B, 15th Regiment, is established at Youngstown State University.

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

Sigma Alpha Iota International Professional Music Fraternity for Women, Alpha Nu chapter, is open to students of the Dana School of Music.

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

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

The Youngstown State University Chapter of the American Society of Civil Engineers encourages the development of a professional consciousness and individual ideas through an association with active leaders in civil engineering.

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

The Youngstown State University Society of Chemical Engineers seeks to promote more active cooperation among chemical engineering students, to improve scholarship, and to encourage professional development.

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

The Youngstown State 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.

RELIGIOUS ORGANIZATIONS

Inter-Varsity Christian Fellowship
Newman Club
Jewish Student Fellowship
Orthodox Christian Fellowship
United Campus Christian Fellowship

GOVERNMENTAL ORGANIZATIONS

Student Government
Student Council
Dean's Council, the William Rayen School of Engineering
Inter-Fraternity Council
Panhellenic Council

SOCIAL FRATERNITIES

Alpha Phi Delta
Delta Chi
Delta Sigma Phi
Kappa Alpha Psi
Kappa Sigma
Phi Kappa Tau
Phi Sigma Kappa
Sigma Alpha Epsilon
Sigma Alpha Mu

Sigma Beta Phi
Sigma Phi Epsilon
Sigma Pi
Sigma Tau Gamma
Tau Kappa Epsilon
Theta Chi
Theta Xi
Zeta Beta Tau

SOCIAL SORORITIES

Alpha Kappa Alpha
Alpha Omicron Pi
Alpha Sigma Tau
Delta Zeta
Delta Chi Epsilon
Delta Sigma Theta
Delta Tau Alpha
Phi Mu
Sigma Sigma Sigma
Zeta Tau Alpha

SERVICE ORGANIZATIONS

Alpha Phi Omega*
Circle K*
Gamma Sigma Sigma**

OTHER STUDENT ORGANIZATIONS

Arab Student Organization
Art Club
Community of Concern
Debating Society
French Club
History Club
Italian Club
International Students
Little Sisters of Alpha Phi Delta
Little Sisters of the Laurel
Little Sisters of Minerva
Little Sisters of Theta Chi
Los Buenos Vencinos
Order of Diana
Physical Education Majors Club
Rifle Club
Sisters of the Golden Heart
Sisters of the Triple T
Penguin Ski Club
Student Education Association
Youngstown State University Chapter of the N.A.A.C.P.
Youngstown State University Chess Club
Youngstown State University Geological Society
Youngstown State University Mathematics Club
Youngstown State University Student Nurses Association

*Men Only
**Women Only

INTER-FRATERNITY COUNCIL and PANHELLENIC COUNCIL

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

Panhellenic Council is made up of two representatives from each active 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

The winners of the following awards are announced at the Honors Day exercise, or at the end of the academic year:

The YSU Pin. Youngstown State University annually awards five pins to those graduating students who have the largest number of honor points in scholastic and extracurricular activities.

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: $100.

The Henry A. Roemer Awards for Men. Five awards of $100 each are made annually as follows: for scholarship in chemistry; for scholarship in mechanical engineering; for scholarship in metallurgical engineering; for scholarship and for leadership and sportsmanship in athletics; and to the outstanding scholar in the graduating class. The award is named for its donor, Henry A. Roemer, Consultant, Sharon Steel Corporation.

The Distinguished Military Graduate Honor Award. Each year the President of Youngstown State 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 Alpha Tau Gamma Fraternity Award. The Alpha Tau Gamma honorary accounting fraternity gives an annual award to the member of the fraternity who has contributed the most to the University through a combination of academic proficiency and extracurricular activities.

The American Chemical Society Student Affiliates Award. The Youngstown State University Chapter of Student Affiliates of the American Chemical Society annually presents a copy of Van Nostrand's *Chemists' Dictionary* or another suitable book to a graduating senior. The recipient must be an active member of the Chapter, must have the highest cumulative point average in chemistry and chemical engineering courses numbered 600 or higher, and must have been a full-time student at Youngstown State University for at least three consecutive years.

The American Institute of Chemists Award. A medal and 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 American Institute of Electrical Engineers, Sharon Section, Award in Electrical Engineering. The American Institute of Electrical Engineers, Sharon Section, grants an annual award to the outstanding graduate in electrical engineering.

The American Institute of Industrial Engineers Award in Industrial Engineering. The American Institute of Industrial Engineers gives an award to the graduating industrial engineering student of Youngstown State 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 American Production and Inventory Control Society Award. The American Production and Inventory Control Society annually awards a bookshelf of books on production and inventory control to the graduating senior in the School of Business Administration majoring in management and with the highest point average in management.

The American Society of Civil Engineers, Youngstown Branch, Award in Civil Engineering. The American Society of Civil Engineers, Youngstown Branch, grants an annual award to the outstanding graduate in civil 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.

The Art Club Award. The Art Club of Youngstown State University offers a prize of $25 in any medium at the annual Youngstown State University Art Exhibition.

The Bronze Medal. The Bronze Medal of the American Association of Teachers of Spanish and Portuguese is given to the best student in two or more years of Spanish by Los Buenos Vecinos, the Youngstown State University Spanish Club.

Los Buenos Vecinos Art Award. Los Buenos Vecinos, the Youngstown State University Spanish club, gives a prize of $10 for the best drawing shown at the annual Youngstown State University Art Exhibition.

The Frieda F. Chapman Award. The William Holmes McGuffey Chapter of the National Student Education Association annually presents an award to a senior who gives evidence of becoming an outstanding elementary school teacher.

The Chemical Rubber Company Award in Chemistry. The Chemical Rubber Company provides an award for superior achievement in freshman chemistry.

The City Office and Art Company Awards. The City Office and Art Company gives three $10 purchase awards for outstanding works shown at the annual Youngstown State University Art Exhibition.

The Classical Society Latin Prize. The Classical Society of Youngstown State University offers a prize for the best work in the Intermediate Latin course.

The Clothes Tree Art Award. The Clothes Tree, Inc., annually awards a prize for meritorious work in any art medium.

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 five academic years. The award is made in honor of the memory of Louis A. Deesz, the first Dean of the William Rayen School of Engineering.

The Evangelos Meshel Memorial Award in Greek. The family of Evangelos Meshel offers 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 in elementary Greek, the award may be given for excellence in advanced Greek.

The Victor George Art Award. The Victor George Academy gives an annual award for meritorious work in any art medium.

The Inter-Fraternity Council Scholarship Award. The Inter-Fraternity Council annually awards a plaque to the fraternity with the highest aggregate point index, based on the academic work of the previous fall quarter. The award is presented at the Greek Sing at Stambaugh Auditorium.

The McKelvey Award in Retail Merchandising. The G. M. McKelvey Company gives an annual award to the graduate in retail merchandising with the highest point average in all courses taken by the student, with consideration given to his achievements in any merchandising firm. Candidates are recommended by the faculty of the Department of Merchandising; final choice is made by the Chairman of the Department of Merchandising and the Dean of the School of Business Administration.

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

The Omicron Lambda Honorary Biology Fraternity Award for Scholarship. Omicron Lambda Fraternity gives an

annual cash award to the outstanding sophomore biology student.

The Panhellenic Council Award. A silver tray is awarded yearly by Panhellenic Council to the sorority that has the highest aggregate point index, based on the academic work of the previous year. The award is presented at the Greek Sing held at Stambaugh Auditorium.

The Roberts Deliberating Club Award in Social Sciences. The Roberts Deliberating Club of Youngstown annually awards $100 to the graduating student ranking highest in the social sciences.

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 Student Council Purchase Prize. Youngstown State University Student Council offers a purchase prize of $100 to the winner in any medium at the annual Youngstown State University Art Exhibition.

The Von Steuben Medal. The Von Steuben Society of America annually awards a silver medal to a German major who has excelled in his study of the German language and literature.

The Peter I. Wenzen Award. The Youngstown State University Geological Society and friends give an annual cash award in honor of Mr. Peter I. Wenzen. The recipient is a junior or senior majoring in geology who is in need of financial assistance.

The George M. Wilcox Award. The William Holmes McGuffey Chapter of the National Student Education Association annually presents an award to a senior who gives evidence of becoming an outstanding high school teacher.

The Wolves Club Awards in Latin. The Wolves Club, Den No. 6 of Youngstown, annually offers two awards for meritorious work in Latin on the Upper Division level.

The Yo-Tub Men's Fraternity Prize. The Yo-Tub Men's Fraternity gives an annual award of $200 to a deserving son or daughter of an employee of the Youngstown Sheet and Tube Company.

The following awards are given to students enrolled in the R.O.T.C. program and are announced at the Honors Day exercise or at the end of the academic year:

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 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), in military science, and in personal qualifications, and who has completed one full year of the R.O.T.C. course at Youngstown State University.

The Corps of Cadets Awards. Medals are awarded annually by the Chairman of the Department of Military Science to R.O.T.C. cadets as follows: a medal is awarded to each member of the Corps of Cadets squad most proficient in squad drill; and medals are awarded to the first-year, the second-year, and the third-year military science student who is most proficient in individual drill, school of the soldier, and personal appearance.

The Department of Army 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 State University who is judged the outstanding student in his class in military science.

The Lieutenant Colonel Eugene Lash Award. The Commanding Officer, 2nd A.W. Battalion S.P., 137th Artillery, Ohio National Guard, annually awards a medal to the Youngstown State 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 State University campus.

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 training at Youngstown State University the qualities of leadership; and 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 training at Youngstown State 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 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), in military science, and in leadership and character; and to the cadet who completes the advanced course with the most outstanding excellence in all academic subjects (exclusive of military), in military science, and in leadership and character. The names of the recipients are inscribed on a plaque presented to Youngstown State University by the donor. No student may receive either award unless he has completed one full year of the R.O.T.C. course at Youngstown State University.

FINANCIAL AIDS

The University has a comprehensive program of financial assistance developed to aid primarily the promising students who lack the necessary funds for a college education, but also to recognize students of academic excellence. This program includes four basic types of financial aid: (1) loans, (2) grants-in-aid, (3) scholarships, and (4) part-time on-campus employment. The program is under the supervision of the Director of Student Financial Aids. Inquiries concerning any of the types of financial aid should be addressed to the Office of Student Financial Aids located in East Hall.

Aid is generally awarded for an academic year beginning with the fall quarter. Entering freshmen and enrolled students should make application for financial assistance for the coming academic year by April 1.

To assure equality in the distribution of financial assistance awards based upon estabished financial need, the University utilizes the need analysis services of the American College Testing Program and the College Scholarship Service. Each applicant for financial assistance should therefore submit by April 1 a "Family Financial Statement" to the American College Testing Program or a "Parents' Confidential Statement" to the College Scholarship Service, or if the student is completely independent of parental support, a "Student's Confidential Statement" to the College Scholarship Service. These forms are available in high school offices and from the University's Office of Student Financial Aids.

LOANS

Loans are repayable awards to students with amounts determined by financial need.

Loans are based on a consideration of (1) financial need, (2) ability to make creditable academic record, and (3) character.

The University participates in the federal National Defense Student Loan, Nursing Student Loan, and Law Enforcement Student Loan programs.

The YSU Student Loan Fund makes funds, not to exceed university fees for one quarter, available for not more than 90 days, if justified by emergency conditions.

Additional limited student loan funds administered by the Youngstown Educational Foundation are as follows:

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.

The William H. Dana Scholarship Loan Fund. This fund was established by the Alumni of the Dana School of Music as a memorial to the school's founder. Loans are limited to students enrolled in the Dana School of Music.

The Clara Hincy Fund. The will of Clara Pearl Hincy in 1962 provided approximately $20,000 to be used to make loans to deserving, talented students in the Dana School of Music for the purpose of paying fees in that school.

The Paul E. Shields Scholarship Loan Fund. This fund, established in 1961, is available to mathematics and engineering students of junior or senior rank who have maintained a 3.25 average in these disciplines.

The K. B. MacDonald-MacKenzie Muffler Memorial Fund. This fund, established in 1968, is available for short term loans to needy students.

Applications for loans from these funds should be made to the University Office of Student Financial Aids.

GRANTS-IN-AID

Grants-in-aid are monetary gifts to students, usually in combination with another type of financial aid, especially loans, with the amount determined by financial need.

Grants-in-aid are also based on (1) ability to make a creditable, though not necessarily an outstanding academic record, and (2) character.

Youngstown State University participates in the U.S. Office of Education's Educational Opportunity Grant Program, which makes funds available to students of exceptional financial need who without this money would be unable to attend college. These grants range from $200 to $1,000, depending upon family income, but may not exceed 50% of the total financial assistance the student receives.

Similar to the Educational Opportunity Grant Program is the Nursing Scholarship Program making funds available to nursing students of exceptional financial need.

Law Enforcement Student Grants are available for full-time employees of publicly funded law enforcement agencies who are enrolled in programs leading to a degree in an area related to law enforcement.

The University also administers Ohio Instructional Grants. These are State of Ohio awards to Ohio undergraduate students having need of substantial financial assistance to meet educational costs. Amounts of grants to eligible YSU students vary from $50 to $300 depending upon family income and number of dependent children in the family. Application to the Student Financial Aids Office of the University is required to receive these benefits.

SCHOLARSHIPS

Scholarships are gift awards to students of outstanding academic qualifications with the amount often dependent upon financial need.

Scholarships for entering freshmen are awarded on the basis of (1) high school record, (2) recommendation of high school administrators, and (3) score on a standard college entrance test. The basis of awards to enrolled students are (1) university record, (2) character, and (3) financial need.

Scholarship funds have been created for Youngstown State University students by individuals, corporations, clubs, religious and fraternal organizations, and friends of the University. Many of these funds are administered by the Youngstown Educational Foundation. This makes it possible for the Foundation to provide funding for several hundred scholarship awards each year.

Sponsored scholarships with the qualifications required of their recipients are listed below. An applicant for a scholarship award is automatically considered for each scholarship for which he qualifies and need not designate the specific award(s) being sought.

ALCOA Foundation Scholarship. This $750 scholarship is awarded annually by the ALCOA Foundation to a junior or senior in mechanical engineering. Selection of recipient is made by the chairman of the Department of Mechanical Engineering in coordination with the Director of Financial Aids, and is based upon financial need and academic excellence.

The American Association of University Women, Youngstown Branch, Scholarships. A scholarship grant of $200, 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.

The American Business Women's Scholarship. This scholarship, instituted in 1957, is provided by the Youngstown Chapter of the American Business Women's Association. It is awarded to a woman in the field of Business Administration.

American Paper Products Company Scholarship Plan. These four-year scholarships were established by the American Paper Products Company to aid their employees or employees' dependents securing educations at YSU. One full-time scholarship for $500 is awarded annually to an entering freshman who is a three-year employee or a son or daughter of a three-year employee, retiree, or former employee who became deceased while associated with the firm. It is renewable for up to four academic years provided the student fulfills the requirements which govern the scholarship. In addition, one or more part-time scholarships may be awarded each academic year to entering freshmen, entering transfer students, or students already attending YSU.

The American Society of Women Accountants. This scholarship, established in 1963, is awarded to a woman majoring in accounting or secretarial accounting.

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

The CIO Local No. 1331 Scholarship. This scholarship of $500, established in 1961, is awarded to a son or daughter of a member of CIO Local No. 1331 at the Republic Steel Corporation.

Copperweld Steel Company's Warren Employees' Trust Scholarship. This scholarship was established by the employees of the Copperweld Steel Company in Warren, Ohio to aid deserving and able employees of Copperweld Steel Company, or their dependents, to

secure a college education. The number of awards and the amount of each award is dependent upon available funds, number of employees of the company applying for an award, and each applicant's financial need and academic promise.

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' sister and is for a woman graduate of Fitch High School chosen similarly.

The General Extrusion, Inc. Scholarship. This $500 scholarship was established to aid deserving and able employees of General Extrusion, Inc. or their dependents to secure an education at YSU. It is awarded annually to an entering freshman who is a three-year employee with the company, or a dependent of a three-year employee, retiree, or former employee who became deceased while still associated with the firm. It is renewable for up to four academic years provided the student maintains the scholarship level and fulfills the requirements which govern the scholarship.

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.

The Junior Civic League Scholarships. These scholarships, established in 1961, are awarded to worthy students by the Junior Civic League of Youngstown.

The Koppers Company Scholarship. The scholarship was established in 1962 by the Koppers Company of Pittsburgh. It is awarded to a deserving student, preferably an upperclassman in chemical engineering.

The Ohio Masonic Lodge Scholarship. This scholarship of $400 was established in 1963 by the Grand Lodge of Masons of Ohio and is awarded to a worthy student.

The Dean Robert L. Miller Scholarship. This annual scholarship was established in 1966 by Alpha Tau Gamma Honorary Accounting Fraternity of the Youngstown State University for students in the field of accounting. Students eligible for this award must be upperclassmen having acceptable scholastic standing and needing financial assistance. Recipients are selected by the Dean of the School of Business Administration.

The National Electrical Contractors Association (Penn-Ohio Chapter) Scholarship. Established in 1969, this scholarship is awarded to a student of the engineering technology program who is interested in a career in the electrical construction industry. The award provides tuition and fees up to $1,650 and is made to a resident of Columbiana, Mahoning, or Trumbull counties in Ohio; or Lawrence or Mercer counties in Pennsylvania. It also offers part-time employment in an electrical contractor's office. The Penn-Ohio Chapter makes applications available at their Youngstown office and selects the award recipients.

Postal Church Service, Inc. Scholarship Plan. These four-year scholarships were established by Postal Church Service, Inc. to aid their employees or employees' dependents se-

curing educations at YSU. One full-time scholarship for $500 is awarded annually to an entering freshman who is a three-year employee or a son or daughter of a three-year employee, retiree, or former employee who became deceased while associated with the firm. It is renewable for up to four academic years provided the student fulfills the requirements which govern the scholarship. In addition, one or more part-time scholarships may be awarded each academic year to entering freshmen, entering transfer students, or students already attending YSU.

Army R.O.T.C. Four-Year Scholarships. These scholarships, established by the Department of the Army in 1965, pay for tuition, books, and other administrative fees. In addition, the recipients receive a subsistence allowance of $50 a month. High school seniors are eligible to apply. Selection is made by the Department of the Army.

Army R.O.T.C. Two-Year Scholarships. These scholarships are the same as the Army R.O.T.C. Four-Year Scholarships, except that their duration is for two years and that an applicant must be a sophomore enrolled in the second year of the four-year R.O.T.C. program to apply.

The Dora Schwebel Scholarship. This scholarship was established in 1968 by the family of Mrs. Dora Schwebel as a memorial to her. Students in the School of Education who desire to study to prepare to teach the mentally retarded and are agreeable to teaching in the Mahoning County School for the Retarded may apply. This scholarship is awarded to a student needing financial assistance and is renewable for up to a total of four years subject to good academic progress, continuing financial need, and the availability of funds.

The Sigma Alpha Iota Scholarship. The local alumni chapter of Sigma Alpha Iota Professional Music Fraternity for Women offers a $200 scholarship to a member of Alpha Nu, the local undergraduate chapter of the sorority. The recipient is chosen on the basis of musical ability, academic performance, financial need, and contribution to the fraternity.

The Louis and Julia Spitzer Memorial Scholarships. These scholarships of $300, established in 1961, are awarded to assist students of the Jewish faith who are attending the University.

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 Yo-Mah-O Chapter, National Secretaries Association Scholarship. This scholarship of $600 ($300 for each of two years) is provided by the Youngstown Chapter of the National Secretaries Association (International). It is awarded to a woman interested in completing the two-year secretarial course and qualifying for the title of Associate in Business Administration.

The Youngstown Area Board of Realtors Scholarship. This $450 scholarship is awarded annually by the Youngstown Area Board of Realtors to a junior or senior in the School of Business Administration. Applicants should have a 3.0 or higher grade average and an established need for financial assistance. Priority is given to students desiring careers as realtors.

The Youngstown Association of Purchasing Agents Scholarship. This annual award is made by the Youngstown Association of Purchasing Agents to a student majoring in industrial merchandising. Selection of recipient is based upon financial need and academic excellence.

The Youngstown Sheet and Tube Company Scholarships. These scholar-

ships were established in 1951 by the Youngstown Sheet and Tube Company. Two types of scholarships are awarded: four-year scholarships for dependents of company employees that provide tuition and fees for full-time students, and one-year renewable scholarships for company employees that provide tuition and fees for part-time students. Further details are available from the Youngstown Sheet and Tube Company. Applications are submitted to the company.

THE YOUNGSTOWN EDUCATIONAL FOUNDATION SCHOLARSHIPS

These scholarships vary in amount according to established need and academic ability. The maximum amount normally does not exceed tuition and fees for three quarters of the academic year.

Applications are made to the University Office of Student Financial Aids. Selection is made by representatives of the University and the Foundation.

In addition to the awards made in the name of the Youngstown Educational Foundation, they control funds for the following scholarships:

The LaRue R. Boals Scholarship. This scholarship, established in 1961, provides for a scholarship of $250 to be awarded annually to a worthy student of the Dana School of Music.

The Colonel Lloyd Booth Scholarship. This scholarship was established in 1965 by the Mahoning Chapter Reserve Officers' Association as a memorial to Colonel Lloyd Booth. It pays for the military science tuition during the recipient's junior year in the advanced course. Selection is based on the student's academic and military record, and on his need. Awards are made to juniors.

The Bucheit Scholarship. This scholarship of $500 was established in 1963 by The Joseph Bucheit and Sons Company. It is awarded annually to a student in civil engineering whose parent is employed by this company.

The Chrysler Corporation Fund. This fund of $2,500 provides scholarship aid to juniors and seniors in the School of Business Administration who are academically promising and who are in need of financial assistance.

The William F. Courtney Scholarships. These scholarships, established in 1959, are awarded to Catholic students who will teach in the Catholic Diocese school system.

The Dow Chemical Company Outstanding Junior Awards. The Dow Chemical Company annually awards $400 to an outstanding junior in each of the Departments of Chemical Engineering and Mechanical Engineering. The recommendations of the outstanding students are made by the academic departments.

The Hilda George Hanna Scholarship. This scholarship, established in 1964, provides income from $5,000 to be awarded annually to a woman who is a full-time student in the secretarial department.

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 William Jenkins Award. This award, made possible by a bequest of Alice W. Bergman, consists of the income from 100 shares of capital stock of the Peoples Bank of Youngstown and is available to a deserving male student of the University.

The Edwin Lovell Scholarships. These scholarships, established in 1958, are usually in the amount of tuition and fees for the academic year. In number they have varied from 1 to 3, according to qualifications of applicants.

The William F. Maag, Jr., Scholarship. This scholarship was established in 1947 in honor of Mr. William F. Maag, Jr., by his friends. The revenue from invested capital pays $330 for one year to an upperclassman.

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 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 woman, 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. The scholarships were established in 1957.

The Joseph Potochny Scholarship. This scholarship, made possible by a bequest of Mr. Joseph Potochny in 1963, is awarded to a needy and deserving student of Ukrainian background.

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 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 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 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 was established in 1954.

The Grace M. and Blanche F. Vail Scholarship. This scholarship is awarded annually to a student 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 Sally Watson Scholarship. This scholarship was established in 1969 by friends of the late Sally Watson. Income from the fund provides a scholarship to a worthy student in any school or college of the University.

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

EMPLOYMENT

Part-time jobs are available for students to help pay educational costs.

Students may obtain part-time employment both on campus and in Youngstown and surrounding communities. The University Office of Student Financial Aids can arrange frequently for on-campus employment in such places as the cafeteria, residence hall, offices, library, and building and grounds maintenance. Off-campus employment can be arranged frequently by the YSU Placement Office of the State Employment Service located in East Hall.

GRADUATE SCHOLARSHIPS

The Graduate School of Youngstown State University makes available a certain number of assistantships and scholarships each year for graduate students enrolled in specific master's degree programs. For information on these appointments, consult the Graduate School Catalog or the office of the Dean of the Graduate School.

Many graduate scholarships, fellowships, and assistantships are available at other institutions. A file of these is maintained in the Graduate Dean's office and in the office of the Dean of Women. Current notices are posted on the scholarship bulletin board adjacent to the latter office and on departmental bulletin boards. Five of the more widely known graduate scholarships are described below:

Fulbright Scholarships. United States government scholarships for foreign study are available for graduate study abroad. Applications may be obtained from the Fulbright advisor, Prof. W. L. Miner.

Danforth Graduate Fellowships. These are available to male college seniors or recent graduates preparing to teach or do administrative work on the college level.

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 26 years of age.

The Cecil Rhodes Scholarships. Men students of Youngstown State 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.

The Woodrow Wilson Fellowship Awards. About a thousand of these are awarded yearly for graduate study, principally in the humanities and social sciences, to students who plan to become college teachers. Each appointee receives a liberal stipend and fees. Candidates must be nominated by a faculty member. Further information may be obtained from the campus representative, Dean K. W. Dykema.

GENERAL REQUIREMENTS AND REGULATIONS

GENERAL REQUIREMENTS AND REGULATIONS

ADMISSION REQUIREMENTS

Youngstown State University admits as many qualified students as its facilities permit. All prospective students are required to submit an application for admission to the Admissions Office by the following closing dates:

QUARTER	CLOSING DATE FOR APPLICATION	CLASSES BEGIN
Fall 1970	September 4, 1970	September 24, 1970
Winter 1971	December 11, 1970	January 4, 1971
Spring 1971	March 5, 1971	March 29, 1971
Summer 1971	May 28, 1971	June 17, 1971

Medical Report

Prospective students who are applying for admission to the University for the first time and who have been accepted are required to have a medical examination. A form will be supplied for this purpose. The form is to be completed by a qualified physician and returned to the Admissions Office as soon as possible. Accepted applicants must provide the medical report before they receive authorization to register.

Application Fees

All applicants are required to pay an application or a readmission fee. These fees are not refundable under any circumstances. (See *Fees and Expenses* in this section.)

Student Resident Status

Residence, for tuition purposes, will be determined at the time of admission or readmission by the Director of Admissions, on the basis of the guidelines shown below and information supplied on the "Application for Admission" form.

The resident or nonresident status of a student will generally remain the same throughout his attendance at the University although such status may be reviewed at any time.

If there should be any doubt on the part of the student regarding the appropriate classification, it should immediately be brought to the attention of the Director of Admissions for a review. Any student who registers improperly with respect to residence, will be required to pay the nonresident tuition surcharge. Retroactive refunds and charges may be made to any student improperly classified.

Resident Status Appeals

Appeal for a change in classification should be made in writing to the Director of Admissions, who may require the student to complete a form "Application for Nonresident Fee Exemption" available from that office. The Director's written decision will be sent to the student, who may appeal his classification in a personal interview with the Director of Admissions.

He also may request the Director of Admissions to arrange an appearance before the Residence Classification Board. Appearances before the Residence Classification Board generally will be held within two weeks of the request, if possible. The Residence Classification Board is the formal appeal authority in such matters and its decision is final.

Guidelines

In making a determination of Ohio residency, the following guidelines will be observed by the University officials: (These guidelines have been recommended by the Ohio Board of Regents and adopted by the Youngstown State University Board of Trustees. They are subject to change by the University at

any time. Any subsequent changes to these guidelines will supersede those shown in this catalog.)

1. A minor student under 21 years of age is considered to be an Ohio resident if his parents or his legal guardian have resided in Ohio for 12 consecutive months or more immediately preceding enrollment, or if they reside in Ohio and at least one parent or legal guardian is gainfully employed on a full-time basis in Ohio.

2. An adult student over 21 years of age is considered to be an Ohio resident if he has resided in the state for 12 consecutive months or more immediately preceding enrollment; or if he is gainfully employed on a full-time basis and is residing in Ohio, and is pursuing a part-time program of instruction, and if there is reason to believe that he did not enter Ohio primarily in order to enroll in an Ohio institution of higher education. Teachers taking up residency in Ohio preparatory to teaching in Ohio schools and colleges shall be considered residents of the state for purposes of enrollment during the summer term immediately preceding the beginning of employment under their contract of professional service.

3. An emancipated minor under 21 years of age may be considered as an adult student in determining residency, provided such minor presents satisfactory evidence that his parents, if living, or guardians have not contributed to his support during the preceding 12 months and do not claim him as a dependent for Federal government income tax purposes.

4. A student who enters the State of Ohio from another state for the primary purpose of enrolling in an Ohio institution of higher education shall be considered to be a nonresident student, and shall continue to be considered a nonresident student during the period of continuous enrollment as a full-time student in an Ohio institution of higher education.

5. A student classified as a nonresident student may be reclassified as a resident of Ohio for higher education subsidy purposes if: a.) the parents of a student under 21 years of age take up residence in Ohio and one of the parents is gainfully employed on a full-time basis in Ohio; b.) the student over 21 years of age presents a clear and convincing evidence to an administrative officer or administrative panel of the institution and there is a finding of exceptional circumstances justifying a change in classification because of having established a separate residence in Ohio for 12 months or more preceding the request for reclassification and because of having made definite commitments to enter into gainful employment in Ohio upon completion of a degree program.

6. The residence status of a married woman student shall be that which would apply to her husband if he were to seek enrollment, except that a woman classified as an Ohio resident immediately prior to her marriage shall continue to be classified as an Ohio student during her continuous enrollment in an Ohio institution of higher education and during her continuous residence in Ohio.

7. Persons in military service who entered such service as residents of Ohio and their dependents shall be considered residents of Ohio if they provide proof of continued Ohio domicile and of continued voting eligibility in Ohio. Persons in military service and their dependents shall be considered residents of Ohio during the period of active duty assignment and actual residence in Ohio.

8. Alien students admitted to the United States on student visas or other temporary visas shall be classified as nonresident students. Aliens holding immigrant visas may establish Ohio

residency in the same manner as citizens of the United States.

9. A student classified as an Ohio resident shall be considered to have lost his status after he or, in the case of a minor, his parents or legal guardian move their domicile to another state.

NEW FRESHMAN APPLICANTS

To be admitted, applicants must have graduated from high school or passed the test of General Educational Development. The open door policy of the University does not assure admission of an individual to a particular course or program. Some applicants may be requested to enroll in special courses for correction of scholastic deficiencies. Those who have not completed one or more of the pre-college courses required by the various schools or colleges within the University may be admitted with the understanding that these courses will be completed as soon as possible and not later than the end of the sophomore year.

G.E.D.

Applicants who did not graduate from high school will be considered for admission if they have passed the high school-level General Educational Development test.

Guidance and Counseling Tests

All new freshmen are required to take the American College Test (ACT) as soon as possible.* Applicants who have been accepted must take the test before registration is permitted. Failure to take the test will result in postponing registration to a later quarter.

High School Transcripts

Applicants must arrange to have their high school send the Admissions Office a record of all work completed. Partial transcripts will be given consideration for early decisions. If the applicant's record clearly indicates satisfactory completion, he will be notified of his acceptance before high school graduation. Final transcripts on all early decision applicants must be received by the Admissions Office before registration will be permitted.

Ohio Residents

Unrestricted Admission - An Ohio resident must have graduated from high school and be ranked in the upper two-thirds of the class at graduation. Applicants who receive an ACT composite score of 18 or higher may be considered for unrestricted admission.

Restricted or Deferred Admission - An Ohio resident in the lower third of the class at graduation may be required to enroll in a restricted or limited program, or be deferred to a later quarter, as determined by the Admissions Office.

Out-of-State Residents

Residents from out of the State of Ohio must be ranked in the upper two-thirds of their class at graduation. Applicants who rank in the lower third of their high school class at graduation will not be admitted.

TRANSFER AND POST-GRADUATE APPLICANTS

An applicant who has been enrolled in another college or university and has been registered for at least one course, is classified as a transfer applicant. This classification includes post-graduate applicants from other institutions seeking additional undergraduate course work. Between-term transfers are not permitted unless all final and complete records are in the Admissions Office at least two weeks before the quarter begins.

Transcripts

All transfer applicants are required to have a copy of their high school and a copy of any and all undergraduate

* 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.

transcripts sent directly from the institutions attended to the Youngstown State University Admissions Office.

Transfer Student Reference Form

In addition to acceptable academic standing, all transfer applicants must submit evidence of satisfactory social conduct at any and all colleges or universities previously attended. Evidence should be requested from the office of student personnel of previously attended institutions on a form which may be obtained from the Admissions Office.

Ohio Residents

Applicants who are residents of Ohio and in good standing at the last institution attended with an accumulated point average of 2.0 or better (on a 4.0 system) on all courses taken at other colleges or universities, are usually admitted without restriction. (The requirement for the School of Education is 2.5.) Those with less than a 2.0 or on probation may be considered for transfer on probation if their overall academic achievements, including high school grades and test scores, indicate potential success. Applicants suspended or dismissed from other institutions are not eligible for consideration until at least two (2) quarters following the term in which the suspension occurred. Applicants who attend any institution during a suspension period will not receive credit for such work completed during the suspension period.

Out-of-State Residents

Applicants who are nonresidents of Ohio must be in good standing at the last institution attended and have at least a 2.0 accumulated point average (on a 4.0 system), to be considered for admission.

Transfer Credit

Transfer credit is usually given for course work taken at an accredited college or university provided that a grade of *C* or better is earned and that the course is applicable to the student's degree program at this University. If the student wishes to receive his degree from Youngstown State University he will be required to complete the last 45 quarter hours at this University.

Transfer From A Community College

Applicants wishing to transfer from a community or junior college are considered on the same basis as other transfer applicants.

Transfer of credit from a community or junior college which is not yet fully accredited by one of the regional accrediting agencies will be on a provisional basis. Official validation of credit will not occur until the satisfactory completion of one year at this University.

TRANSIENT APPLICANTS

A student pursuing a degree at another institution may ordinarily take one quarter of course work upon making application for admission to the University. In addition to the application for admission, he must obtain from the Admissions Office, a Transient Authorization Form. This form must be partially completed by the applicant and the remainder by the registrar of the institution he is attending. The form is to be returned by that registrar to the Admissions Office of Youngstown State University. Only students in good academic standing may be permitted to enter as transients.

Transient students who wish to remain at Youngstown State University for more than one quarter of course work must make such a request to the Admissions Office and must meet the same requirements and provide the same records required of transfer applicants.

FORMER STUDENT APPLICANTS

All students who have interrupted their attendance at Youngstown State University for longer than one quarter

must make application for readmission and pay a $5.00 readmission fee.

Suspended Students - In addition to the application form, a former student who was academically suspended is required to be reinstated by the dean of the school from which he was suspended, or, in the event he wishes to change schools, by the dean of the school he wishes to enter. Reinstatement procedures may vary from school to school; for details consult either the Admissions Office or the appropriate dean's office.

GRADUATE APPLICANTS

Application for admission to the University for graduate study is made directly to the Dean of the Graduate School. (For details, consult the Graduate School Catalog or the Office of the Dean of the Graduate School.)

FOREIGN STUDENT APPLICANTS

Residents of foreign countries who wish to enter the University must apply at least six months in advance of the quarter they wish to attend. Upon request for an application by a resident of a foreign country, the applicant will receive a handbook for international students which provides detailed information regarding requirements and procedures.

SPECIAL, NON-DEGREE APPLICANTS

An applicant who does not intend to work for a degree may be considered for admission if he can present evidence of ability to do University-level work. An applicant admitted as a Special Student can take only a limited amount of course work. Course work completed as a Special Student is usually taken without University credit.

VETERANS

Successful completion of courses taken through the United States Armed Forces Institute as well as certain formal service school courses may be considered for transfer toward the student's degree program. United States Armed Forces Institute courses must be evidenced by an official transcript and service school courses by providing certification of in-service training on DD Form 295 — Application for the Evaluation of Educational Experiences During Military Service.

Veterans who have completed at least one full year of active military service may receive up to six quarter hours of credit for the University's Health and Physical Education requirement. A copy of the applicant's DD Form 214 — Armed Forces of the United States Report of Transfer or Discharge must be supplied to the Admissions Office in order to validate such credit.

CORRESPONDENCE COURSES

The University does not offer correspondence courses. The University will accept a limited amount of correspondence work taken in connection with an accredited college or university provided that a grade of *C* or better is earned and the course is applicable to the student's degree program.

ADVANCED PLACEMENT FOR HIGH SCHOOL COURSES

The University recognizes the work taken under the Advanced Placement program of the Educational Testing Service. A student who has satisfactorily completed an Advanced Placement program in high school and has taken the Advanced Placement test administered by the Educational Testing Service may receive college credit and /or placement, as his test results merit. A student receiving a score of 3 or better may be granted from 4 to 12 quarter hours of credit for each test taken as determined by the individual department responsible for the respective test program.

GUIDANCE EXAMINATIONS

Prospective freshmen may take general intelligence and vocational interest examinations for guidance purposes. Those who wish to do so should make arrangements with the University's Counseling Center.

GRADUATE CREDIT FOR UNDERGRADUATES

An undergraduate student who has senior standing and a cumulative grade point average of 2.7 or above, and who does not require a full schedule to complete his baccalaureate degree requirements at Youngstown State University, may enroll in 900-level courses for graduate credit, provided such enrollment does not cause his total schedule for the quarter to exceed 16 quarter hours. Before registering for the courses the student must have the approval of his advisor, the instructor of each course in which he wishes to enroll, and the Dean of the Graduate School. The credit earned cannot be counted toward fulfillment of the requirements for a bachelor's degree, and may not be used for graduate credit at Youngstown State University until the student is admitted to the Graduate School and the credit is accepted by the department in which the student continues his graduate work. The amount of such credit that will be acceptable at Youngstown State University is 15 hours.

Permission to undergraduates to enroll in graduate courses for undergraduate credit will be granted only to students with proven exceptional academic ability; such permission will be based on a petition prepared by the student's major department containing a statement of criteria used to determine "exceptional" and approved by the department offering the course and the Dean of the Graduate School.

GENERAL REQUIREMENTS FOR GRADUATION

Every student is entitled to one copy of the University Catalog at the time of his entrance. This shall be a guide to his graduation requirements with certain exceptions which are to be interpreted by his department chairman and/or the dean of the school from which he expects to graduate. (See statements later in this section under *Majors and Minors.)*

A general requirement is one that must normally be met by all students.

CONDENSED TABLE OF COURSES REQUIRED FOR GRADUATION INCLUDING SPECIFIED PREPARATORY UNITS

All graduates of accredited Ohio high schools are eligible for admission to Youngstown State University. If they lack pre-college units, these may be completed after admission to the University, as explained in the notes.

	A.B.*‡	B.S.*‡	B.S. in Ed.*	B.S. in B.A.*‡	B.E.*	Mus.B.*	A.A.* A.A.B.* A.A.S.*
PRE-COLLEGE[1]	(These figures mean high school units.)						
English	3	3	3	3	3	3	3
A foreign language[2]	2	2[3]	—	—	—	—	—
U.S. history and civics	1	1	1	1	1	1	1
Algebra[4]	1—2[5]	1—2[5]	—	1—2	2[5]	—	—
Geometry[4]	1—2[5]	1—2[5]	—	0—1	1	—	—
Biology, chemistry, or physics[4]	1	1	—	—	1[6]	—	—
Any mathematics[4]	—	—	1	—	—	1	1[10]
Any science or additional mathematics[4]	—	—	1	1	—	—	—
Any Science[4]	—	—	—	—	—	1	—
Total of above units	9 or 10	9 or 10	6	6—8	8	6	5
Other subjects[7]	8—10	8—10	10	8—10	8[8]	10[9]	11
Total high school units	16	16	16	16	16	16	16
IN THE UNIVERSITY	GENERAL						
Basic	(These figures mean quarter hours of credit.)						
Communication	12	12	12	12	12	12	8
Health and physical education	6	6	6	6	6	6	3†
Area							
Humanities	10	10	10[11]	10	10	10	—▲
Social studies	20	20	20	20	20	20	9
Science mathematics	16	Included in the major	16[13]	16[13]	Included in the major	16	5▲
FOR THE DEGREE[12]							
Foreign language[14]	8 or 20	8 or 20	—	—	—	—[15]	—
Other courses[16]	112 or 100	138 or 126	133	130	164	139	—▲
Total credit hours[17]	186	186	186—202	186	214	205	96▲[18]

NOTES

* The full names of the degrees are as follows: A.B., Bachelor of Arts; B.S., Bachelor of Science; B.S. in Ed., Bachelor of Science in Education; B.S. in B.A., Bachelor of Science in Business Administration; B.E., Bachelor of Engineering; Mus.B., Bachelor of Music; A.A., Associate in Arts; A.A.B., Associate in Applied Business; A.A.S., Associate in Applied Science.

‡ For students whose mathematics requirement is Mathematics 531, Mathematics of Business, the high school requirement is one unit of algebra. For students whose mathematics requirements are Mathematics 542, Special Topics of Algebra, and Mathematics 550, Introduction to Calculus, the high school requirements are two units of algebra and one unit of geometry.

† H. & P.E. 509.

▲ See curriculums in the Technical and Community College section.

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 Committee on Proficiency in a Foreign Language.

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.

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 and Astronomy Department without University course-credit, or he may make it up in any other way acceptable to the department concerned.

5 One unit is enough except for a major in chemistry, earth science, engineering, mathematics, or physics, for a major in pre-medical or allied sciences, or for a minor in mathematics or physics. Such fields require Mathematics 551, the prerequisite for which is two units of high school algebra, a unit of geometry, and a half-unit of trigonometry.

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 In addition to these units the applicant is expected to have developed a certain proficiency in one or more branches of applied music. See the Dana School of Music section.

10 For the A.A.S., the desired mathematics courses are algebra and geometry and a unit of science. The preferred sciences for nursing students are biology and chemistry.

11 Students working toward a high school teaching certificate must take 9 hours in the Philosophy and Religious Studies Department or a total of 9 quarter hours in philosophy or fine or applied arts.

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

13 Candidates for the B.S. in Ed. in elementary education are required to take 12 hours of science (physical and biological), plus 5 hours of mathematics: this is the minimum set by the State Department of Education. Candidates for the B.S. in B.A. take Mathematics 531, or 542, or Merchandising 621, as specified by the various curriculums.

14 If this requirement is met with a language not previously studied, 20 quarter hours are needed. For Latin and Greek 18 quarter hours are required. Students entering with two units of Latin or Greek may satisfy the requirement by taking 9 quarter hours at the intermediate level.

15 For voice majors 27 hours are required. Part of this requirement may be met by 2 units of high school study in one of the following languages: French, Italian, or German. In this case 18 hours are required (nine hours in each of the two languages not previously studied).

16 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.

17 For the B.S. in B.A. this total is a few hours higher in some fields of specialization; for example, accounting, financial management, industrial management, and public administration total 202 each; general administration, commercial art, and transportation management total 194 each. For the Mus.B. the total varies from 204 for the theory and composition major to 214 for the voice major. For the B.S. in Ed. the total may be reduced to 187 quarter hours if the student is exempted from taking Education 502.

18 The exact number of hours varies for the various two-year programs as shown in the specific curriculums.

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

Application. A formal application for graduation must be filed with the dean of the school in which the student is enrolled by Saturday noon of the first complete week of the quarter in which the student intends to graduate. This form may be secured in the office of the dean of the appropriate school or the office of the Registrar. If the student does not graduate at the commencement exercise for which he has filed a formal application, he must reactivate his application. The student must file the "Intention to Graduate" form after the completion of 165 quarter hours. (See *Special Fees* further on in this section.)

Residence. The last 45 quarter hours leading to the degree must be completed at Youngstown State University. (In the pre-forestry, pre-law, and pre-medical curriculums, however, which allow the student to earn his final credit hours *in absentia,* the last 45 quarter hours prior to the transfer must be spent at Youngstown State University.) Any modification of this requirement must be approved by the Vice President for Academic Affairs.

Grades. The point index must be not less than 2.00 (see *The Point Index and Scholastic Standing,* further on in this section) at the time candidacy is approved and at the time the degree is granted.

For an associate degree, the requirements of each curriculum as

shown in the Technical and Community College must be fulfilled.

For a bachelor's degree, the following requirements must be also 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 (see *Candidacy for a Degree,* further on in this section). 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 *Condensed Table of Courses Required for Graduation* 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 candidate for every other degree the University offers.*

Course Levels. At least 90 quarter hours must be completed in courses numbered 600 or higher; at least 60 of these 90 hours must be in courses numbered 700 or higher.

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

A departmental major consists of at least 45 quarter 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 70 quarter hours with grades of *C* or better. (See *Social Science Combined Major.)*

A minor consists of at least 21 quarter hours with grades of *C* or better in a department other than that of the major.

The chairman of the department the student is majoring in determines the course requirements for both the major and the minor or minors; both must meet with his approval. He may require the student to do more, but not less, than the minimums stated above. (The student might also want to consult with an advisor from the department he is minoring in.)

Departments may require all senior majors to take the Graduate Record Examination, and the score on the examination may be one factor in determining whether or not the student has completed the requirements for his major. (See *Special Fees,* at the end of this section.)

As soon as a student has decided on his major, he should consult the chairman of the department in which his major study will be done. While no student is compelled to declare his major before he files an "Intention to Graduate" form, 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.

BACCALAUREATE DEGREE REQUIREMENTS

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 Chairman of the Department of English 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 quarter of his required course in Communication or its equivalent.

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

This requirement is normally met by taking Communication 525-526-527, totaling twelve quarter hours. Information on policy and procedure for exemption from all or part of the Communication requirement is available from the English office. Students exempted from one or more of the Communication courses complete their 12 hours by taking courses in the humanities area. A student who has had part or all of some other "freshman English" course, either at this institution or elsewhere, should consult the Chairman of the Department of English before registering at Youngstown State University.

Health and Physical Education. Each candidate must normally have six quarter hours of credit in health and physical education. Usually this consists of three hours of health education (Health and Physical Education 509M, 509W or 509C), and three one-quarter-hour physical activity courses. The candidate who completes the two-year course in Military Science needs only three quarter hours of Health and Physical Education 509M (see *Modifications for R.O.T.C. Students,* further on in this section). 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 and Physical Education.

GENERAL COURSE REQUIREMENTS: AREA

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

Humanities. The candidate must have completed 10 quarter hours in any of the following: Literature courses in English or Humanities (600-level or above); courses in a literature in a foreign language (700-level or above); course work in the Department of Philosophy and Religious Studies; or history and/or appreciation courses in the Department of Art, of Speech and Dramatics, or of the Dana School of Music. Candidates for Ohio high school certificates must have specific course work in philosophy and/or fine arts as specified in the School of Education section.

Social Studies. The candidate must have completed 20 quarter hours of course work in two or more of the following departments; Economics, Geography, History, Political Science (including the Social Science sequence courses), Psychology and Sociology. Elementary Education majors must take additional course work as specified in the School of Education section.

Science/Mathematics. The minimum requirement in this area for all baccalaureate degrees is 16 quarter hours. Candidates for the B.S. and B.E. degrees will far exceed this total in completing their majors, minors, and required courses. Candidates for the A.B., B.S. in Ed., B.S. in B.A., and Mus. B. must meet the requirement by taking:

a. 16 credits in two to four science (astronomy, biology, chemistry, geology, physics) areas, laboratory or non-laboratory.

b. 12 credits in two or three of the science areas, laboratory or non-laboratory, and 4 credits of mathematics.

c. 12 credits of one laboratory science and an option of 4 credits of mathematics or 4 credits of additional science in any of the science areas, laboratory or non-laboratory.

Elementary education majors must take additional course work as specified in the School of Education section.

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 de-

gree, 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.) and Bachelor of Science (B.S.) are stated in the College of Arts and Sciences section.

Those for the Bachelor of Science in Education degree are stated 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.

Those for the associate degrees are in the Technical and Community College section.

ASSOCIATE DEGREE REQUIREMENTS:

For these requirements, which differ substantially from those for the baccalaureate degrees, see the curriculums in the Technical and Community College section.

MODIFICATIONS FOR R.O.T.C. STUDENTS

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

a. Students completing Military Science 501, 502, and 503, may omit three quarter hours in health and physical education ACTIVITY courses. Such students may also omit three quarter hours in the social studies area requirement.

b. Students completing Military Science 701, 702, 703, 704 and 801, 802, 803 and working toward any degree may omit four additional quarter hours in the social studies area requirement (except as a prerequisite to other courses) and three other quarter hours to be determined in consultation with their advisor. For the degrees of Bachelor of Arts, Bachelor of Science in Business Administration, and Bachelor of Science in Education, the course thus omitted may be five quarter hours of science.

Unless specifically provided for above, no course required for the degree sought may be waived. Additional credits for military science courses may be applied in the same way that credits for other elective courses are applied.

REQUIREMENTS FOR A SECOND BACCALAUREATE DEGREE

A student who has a degree from Youngstown State University and desires a second degree must earn 27 quarter 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 State University must complete a minimum of 45 quarter 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 appropriate undergraduate school of this University as early as possible. Such special needs can usually be met within the degree requirements of Youngstown State University, but the proper

selection of courses may have to begin in the freshman year.

COMMENCEMENT EXERCISES

There are two graduation ceremonies each year: Spring Commencement, in June, at the end of the third quarter of the academic year, and Summer Commencement, at the end of the summer session. A student who completes the requirements for a degree at the end of the first or second quarter receives his diploma in June and is present, if at all possible, at Spring Commencement as a member of the graduating class.

GENERAL REGULATIONS

SCHEDULING OF COURSES: ADVISEMENT

A student already attending the University makes out his schedule of courses for the next quarter in consultation with a faculty advisor who must sign the student's schedule, 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 reenter, gets instructions for scheduling and advisement from the Registrar's Office.

The student planning his program should understand that some courses are not offered every term. Those offered in a particular quarter 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 its 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 himself.* He will do well to read the statements under *Candidacy for a Degree,* further on in this section.

THE CLASS HOUR, QUARTER HOUR, and QUARTER HOUR OF CREDIT

The *class hour** is a weekly 50-minute class period and is the basic unit of instruction. The term *quarter hour** signifies one class hour a week carried for one 11-week quarter (or the equivalent in a summer term). *A quarter hour of credit** is the amount of credit given for one quarter hour successfully completed. *Each* quarter hour of credit represents *three hours of study and instruction* every week through the quarter.

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* quarter 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, writing, thinking, 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.

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.

* Often called simply "credit hour;" the expression sometimes means "quarter hour of credit" and sometimes merely "quarter hour."

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

Accordingly, the student carrying a 16-hour schedule, for example, should count on devoting an average of 48 hours a week (exclusive of time spent in extracurricular activities, commuting, eating, etc.) to it. 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 quarter constitute the *load* that he carries for that quarter. The load is measured in quarter hours. The size of the load a student is permitted to carry depends on the degree he is seeking (and hence on the curriculum he is following) and to some extent on his grade average, as follows:

a. A student following 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 quarter hours with his advisor's approval, which ordinarily is given.

2. No student may carry more than 18 quarter hours, and no student whose point index is below 3.0 may carry more than 16 quarter hours, unless his written request to do so is approved by his advisor and by the dean of his school.

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

4. Any student may, with his advisor's approval, carry a course in military science in addition to the quarter load allowed him according to the preceding regulations.

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.

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 is limited to seniors.

2. A brief description of the extra work must be given by the teacher.

3. Such extra work is done only under the supervision of a full-time teacher.

4. The extra credit may not exceed one hour for each course or one course each quarter.

5. An application form must include the signatures of the teacher and the department chairman, and receive the approval of the dean of the appropriate school.

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 fees for the course, as well as any other applicable fees, and it is counted in his load. A student who has registered for a course for credit may not change his status to that of auditor after six weeks of a regular quarter or three weeks of a split summer session have elapsed. (An auditor is not to be confused with a special student; see *Special Students,* at the beginning of this section.)

REGISTRATION

Every student registers in person for the work of each session on or before

a final registration date. One who has begun his registration before the deadline may complete it late, but must pay a late fee. There is no reduction of tuition or other fees because of late entrance into courses.

No student may enter a course after the seventh calendar day of the quarter or after the fifth calendar day of a split summer term.

ORIENTATION
NEW AND TRANSFER STUDENTS

A brief orientation period designed to assist the new student in becoming acquainted with Youngstown State University and its student services is conducted in conjunction with registration. This session is normally held before students schedule their classes.

CHANGE OF REGISTRATION

A student wishing to alter his schedule after registration must fill out a Change of Registration form, have it signed by his advisor, and present it along with a properly completed Change of Registration Scan Sheet to the Bursar's Office. A mark of *F* 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 quarter hours in courses that give credit toward graduation.

CLASS RANK

All students working for any undergraduate degree conferred by this University are ranked as freshmen until they have completed 48 quarter hours, as sophomores until they have completed 96 quarter hours, as juniors until they have completed 144 quarter hours, and as seniors thereafter.

UPPER AND LOWER DIVISIONS

Courses numbered from 500 to 599 are designed for the freshman level; from 600 to 699, the sophomore; from 700 to 799, the junior; and from 800 to 899, the senior. The freshman and sophomore levels constitute the Lower Division, and the junior and senior levels the Upper Division.

No freshmen may take an Upper Division course (except in a foreign language) without the approval of the Vice President for Academic Affairs unless it is prescribed in a curriculum.

GRADING SYSTEM

The final grade for a course completed may be A, B, C, D, or F.

Teachers assign grades on the basis of achievement in the subject matter of the course and in accordance with accepted professional standards for that subject. The grade earned by a student thus represents the quality of his work and is not based merely on completion within the class.

The grade of *A* represents exceptional work in which the student shows that he has firmly grasped and achieved the objectives of the course.

The grade of *B* indicates very good work, considerable grasp of the essentials of the course, and some insight into its finer points.

The grade of *C* indicates good work and a usable grasp of the essentials of the course.

The grade of *D* indicates a definite but not necessarily coherent knowledge of the essentials of the course.

The grade of *F* indicates that the student has not achieved even a minimum grasp of the essentials of the course. This grade can also result from dropping a course without officially withdrawing from it (see *Withdrawals and Refunds,* further on in this section), or from cheating or dishonesty of any kind in a course (see *Academic Honesty,* below).

The grade of *I* may be given to a student who has been doing satisfactory work in a course but who, for reasons beyond his control and deemed justifiable by the teacher, has not completed all requirements for a course when grades were submitted. A written explanation of the reason for the *I* must be forwarded to the Records Office for inclusion in the student's permanent record, with copies to the student, department chairman, and dean of the appropriate school. The *I* may be used only for a student *whose previous work in that course has been satisfactory,* and only for reasons beyond that student's control. In no case may an *I* be used to allow a deficient student extra time to avoid failing the course.

Department chairmen are granted authority to convert grades of *I* into final grades in cases where teachers may have severed connections with the University or have become incapacitated before accomplishing conversion of the grade. The former *E* grade has now been discontinued.

A progress grade, *PR,* is given only at the end of the first and second quarters of certain approved courses with hyphenated numbers in which one project occupies the major work of three quarters, so that no judgment can be made at the end of the first and second quarters. This grade is changed at the end of the third quarter. It has no effect on the point average.

Aud signifies that the student has attended the class as an auditor. This mark may be given only to a student who has begun a course as an auditor or who has changed his status to that of auditor before six weeks of a regular quarter or three weeks of a split summer session have elapsed.

W represents withdrawals properly processed during the first six weeks of any quarter (or first three weeks of either split summer session). A withdrawal made after the three-to-six week period will be recorded as an F unless the withdrawal was the result of circumstances over which the student had no control, as shown by evidence presented by the student in a petition to the appropriate dean. Any grade of F assigned because of absence may be reviewed upon petition to the appropriate dean.

Where withdrawals change the status of a student (full-time to part-time), the student immediately forfeits any privileges contingent upon full-time status, and all interested parties which legally require it will be notified (draft boards, scholarship or loan-supporting agencies, etc.)

The distribution of achievement, and therefore of grades, in a large unselected group of students generally follows the normal frequency curve, in which 5% to 10% are A's, 20% to 25% B's, 40% C's, 20% to 25% D's, and 5% to 10% F's. However, since it is likely that substantial variation from the normal distribution will occur in individual classes, the teacher does not use the "curve" as a standard to be imposed, but only as a model against which he may compare each particular class, using his own judgment on the basis of professional standards.

Teachers may use plus and minus modifications of the grades but they are not recorded or used in calculating the point index.

ACADEMIC HONESTY

The qualities of intellectual and spiritual maturity necessary to graduates who are to prove socially valuable in their communities cannot be reconciled with academic dishonesty. To maintain high scholastic standards and to insure each student the right to get an honorable and rewarding education, the Faculty-Student Discipline Committee attempts to discourage cheating and plagiarizing by imposing penalties if either one occurs.

Though teachers are responsible for

taking all reasonable precautions to prevent cheating and plagiarizing, students share a joint responsibility for maintaining honorable conditions and should report any dishonorable conduct to the teacher and/or Committee.

The teacher may fail any student for cheating in his course. The teacher files a report on such action with the Committee, so that the offense becomes a matter of record in the Committee files. The student may appeal the matter to the Committee if he wants to.

Certain offenses, however, may warrant action beyond receiving an *F* in the course. Such offenses as the following are grounds for expulsion.

1. Using a textbook or crib notes to cheat during an examination.

2. Possessing an examination without the teacher's knowledge or authority.

3. Plagiarizing in any way.

4. Defacing library books or damaging any other University property.

Procedure for reporting, investigating, and handling such violations is prescribed by the Faculty-Student Discipline Committee and available in the office of the Vice President for Academic Affairs of the University.

Further details concerning such violations are given in the *Student Handbook.*

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 quarter hour it represents, as follows: *A*, 4 points; *B*, 3 points; *C*, 2 points; *D*, 1 point; *F*, 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* in any course, no points. To find the point index, the total number of points earned is divided by the number of quarter hours for which final grades have been given. Thus a student who attempts 16 quarter hours and earns 40 points has a point index of 2.50. The grades of *Aud*, *PR*, and *W*, 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*, further on in this section.)

GRADE REQUIREMENTS AND PROBATION

To indicate to a student what academic situation his point average places him in, four categories of academic status have been established: good standing, warning, probation, and suspension. The last three categories are intended as extended opportunities to permit a student ultimately to achieve graduation, not as punishments. Suspension, which means an unspecified period of separation from the University, assumes the possibility of a greater maturity which will increase the student's judgment and responsibility, qualities which should improve his capacity for academic achievement.

Recognizing that the transition from high school to college may be a difficult one, the college has set the minimum levels of academic achievement during the student's first two years somewhat below what will be required of him in order to graduate. The point averages required are as follows:

Cr. Hrs.	*GPA*
1-14	1.4
15-29	1.5
30-44	1.6
45-59	1.7

60-74	1.8
75-89	1.9
90+	2.0

A student who falls below the specified average for the number of hours he has passed will be warned that he has dropped below the minimum grade for good standing. If by the end of the following quarter he has failed to bring his average up to the minimum, he will be put on probation. If at the end of the probationary quarter he has failed to bring his average up to the minimum, he will be suspended; however, if he makes substantial improvement during a probationary quarter and averages at least 2.25 for that quarter, he will be continued on probation even though his cumulative average does not reach the minimum.

Transfer students admitted in good standing or on probation must meet those point average requirements indicated for their total hours including transfer hours accepted by the University.

A student seeking admission to the School of Education (at the beginning of his junior year) must have a point index of 2.50 or better; see the School of Education section.

GRADE REPORTS

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

THE DEAN'S LIST

The Dean's List for each quarter is made up of undergraduates who earn a quality point average of 3.4 in that quarter. It is not made up for the summer session.

CLASS HONORS

Class Honors are determined through a formula applied to the accumulated point averages based on the most recently completed quarter. The number of Honors recipients approximates the top one percent of the total enrollment of each class in each unit of the University, but it may slightly exceed this figure because of ties. Both full-time and part-time students are included, but only students who were on the Dean's List for the most recently completed quarter and who have not yet taken a degree are eligible. A person may receive such honors only once at each class rank.

Class Honors certificates are awarded annually at the Honors Day exercise.

HONORS DAY

The Honors Day exercise recognizes those students who have distinguished themselves academically. Class Honors certificates are given at this exercise, and some of the awards listed under *Awards and Prizes* in the General Information section are announced.

GRADUATION HONORS

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

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 3.4 are granted their degrees *cum laude.*

Transfer students with 90 quarter hours of credit are eligible for graduation honors, but no transfer work — work taken at any time at an institution other than Youngstown State University — 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

A student must have the teacher's consent in order to take any examination at a time other than the scheduled one. The teacher, 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 teacher. 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 the academic status of a student. Disciplinary action is not shown on a student's academic record. No transcript is issued to a student who has not met all his financial obligations to the University.

If a separate statement of honorable dismissal is needed, the Dean of the appropriate school 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 fees are due as indicated in the University calendar, published in the Bulletin, "Schedule of Classes." A student is not officially enrolled and may not attend classes until he has completed his registration by paying his fees. Before seeking admission to the University, students should have a definite plan and source of income for financing college studies. Students may seek financial aid offered at the University.

A student may not complete registration for a new term until he has paid all of his previous fees. Graduation and transcript of credits will be withheld until the student has met all his financial obligations to the University.

Recipients of financial aid covering all fees must return their award voucher(s) and the payment notice by the due date to be officially enrolled and permitted to attend classes.

For Audited Courses

A student auditing a course or courses pays the regular fees, *plus any other fees that may be applicable.*

Participants in non-credit courses offered as part of the University's Continuing Education program will be charged fees as approved in the specific case.

Special Fees

Application Fee. A fee of $15.00 is charged every new student at the time of his application for admission to the University. This fee is non-refundable and is effective only for the quarter for which the student applies.

Readmission Fee. A fee of $5.00 is charged to those students who apply for readmission after interrupting their courses of study for periods longer than one quarter in any academic year. This fee is charged each time a student wishes to reapply after remaining out of attendance longer than one quarter in any academic year.

STUDENT FEES AND TUITION*

	For students enrolled during Spring Quarter of 1968 Per Quarter	For students enrolled after Summer Quarter of 1968 Per Quarter
FOR FULL-TIME STUDENTS (12-17 quarter hours)		
Instructional Fee	$120.00	$120.00
General Fee	30.00	30.00
Non-Resident Tuition Surcharge	75.00	125.00
Charges per Quarter Hour above 17 hours:		
Instructional Fee	12.00	12.00
Non-Resident Tuition Surcharge	10.00	16.00
FOR PART-TIME STUDENTS (Below 12 quarter hours)		
Instructional Fee per Quarter Hour	12.00	12.00
General Fee	10.00	10.00
Non-Resident Tuition Surcharge per Quarter Hour	10.00	16.00
FOR STUDENTS (FULL-TIME) IN THE DANA SCHOOL OF MUSIC (12-17 quarter hours)		
Instructional Fee	$120.00	$120.00
General Fee	30.00	30.00
Music Fee	75.00	75.00
Non-Resident Tuition Surcharge	75.00	125.00
Charges per Quarter Hour above 17 hours:		
Instructional Fee	12.00	12.00
Non-Resident Tuition Surcharge	10.00	16.00
FOR STUDENTS (PART-TIME) IN THE DANA SCHOOL OF MUSIC (Below 12 quarter hours)		
Instructional Fee per Quarter Hour	12.00	12.00
General Fee	10.00	10.00
Applied Music Fee per Quarter Hour	40.00	40.00
Non-Resident Tuition Surcharge per Quarter Hour	10.00	16.00

* The University reserves the right to change any fee without notice.

Late Payment Fee. A fee of $15.00 will be charged any student who pays his bill after the due date but before the payment cut-off date. Registration is considered complete only at the time of payment. Tuition and fees shall be due and payable in full 10 days prior to the opening of classes or as otherwise shown in the academic calendar of the University.

Late Registration Fee. A fee of $15.00 will be charged any current student who failed to register during the assigned period and registers late with new and former students.

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, or completely withdraws from the University. Appeals will be subject to the supervision of the Finance Committee.

(Note: Changes in registration ne-

cessitating an increase in charges will receive a revised bill showing additional payment to be made within 10 days after the revision. Failure to make the additional payment before the due date on the revision will result in an assessment of an additional $5.00 late fee.)

Registration Withdrawal Fee. A fee of $5.00 is charged when a student withdraws from all his courses prior to the first day of the quarter, or when the terms under Withdrawals and Refunds are waived by the Bursar. A student who registers for a term and does not complete the registration with payment of fees charged, is also charged this fee when he is withdrawn for non-payment 10 days prior to the term.

Reinstatement Fee. A fee of $5.00 is charged anyone readmitted to classes after suspension for financial reasons.

Special Check-Handling Penalty Fee. A fee of $5.00 is charged any student who pays the University with a check that is not accepted by the bank against which it is drawn. A returned check intended for payment of registration fees will, in addition to the returned check fee, draw a late registration fee of $15.00. If these penalties are not paid within four days of notice to the student, he shall be suspended from classes.

Fee for Credit Examination. Fees are charged at the student's regular rate 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. The credit by examination may be granted under special circumstances to students who can demonstrate proficiency in certain subjects. The subjects in which such examinations may be given and the nature of the examinations are to be determined by the departments and divisions concerned and must be approved by the dean of the appropriate school. Registration for credit by examination can be done *only prior to or during the first week of an academic quarter.*

Fee for Proficiency Examination. When a student is given permission to take an examination to demonstrate proficiency in a subject (in a foreign language, for example), he is charged a fee of $10.00 except when he elects to pay the fee for credit by examination and receive course credit for the work covered by the examination.

Fee for Irregular Examination. When a student is given permission to take an examination at a time other than the scheduled one, a fee of $5.00 is charged at the discretion of the dean, except in the case of illness, when the student must present a letter from his physician.

Graduate Record Examination Fee. Three kinds of Graduate Record examinations are administered: a general aptitude test; area tests in social science, humanities, and natural science; and advanced tests in twenty-one fields. Individual departments specify which must be taken. The fee for one is $2.50; for two, $4.50; for three, $6.00.

Graduation Fee. A fee of $20.00 is charged anyone who is to receive a degree. The fee, which includes cap and gown rental, diploma, and which helps to defray the general expense attendant to the commencement exercises, must be paid at the time the official application for graduation is submitted to the Recorder. No reduction in this fee may be made for graduation *in absentia* or for approved use of non-academic apparel.

This fee applies for each degree granted (unless honorary), except that if two degrees are to be conferred at the same commencement, the total fee is $25.00 ($5.00 plus the regular $20.00).

All students shall pay one fee for each degree received. Once a student

has paid the graduation fee for a specific degree he shall not be recharged a graduation fee for that same degree even if several years lapse before the degree is conferred.

Transcript of Credits Fee. A fee of $1.00 is charged for each transcript issued by the University. Payment of this fee must be made at the time of the transcript request.

Student Locker Fee. A fee of $1.00 is charged for use of any locker on campus for all or part of an academic year. All personal property must be removed by the last day of the summer quarter. Locker assignments are made at the Bursar's Office window, Jones Hall, first floor.

Thesis binding fee. A $5.00 fee is charged for each copy bound by the University Library. The fee is the same for personal copies as well as those required by the University. Payment should be made at the Bursar's Office window, Jones Hall first floor.

Identification Card Replacement Fees. A fee of $5.00 is charged for replacement of an I.D. card; this cost includes a current term validation sticker. A fee of $3.00 is charged for replacement of only the current term validation sticker.

Military Equipment Deposit and Fee. Every student taking military science must deposit at the beginning of the academic year a specified amount as shown below, toward coverage of the cost of United States government property assigned him. When he returns all such property at the end of the year or upon withdrawal from the University, he is refunded the total deposit; however, if any of the property is lost or damaged, the cost of such property is deducted or charged to him, depending on the value.

First Year	$10.00
Second Year	$10.00
Third Year	$ 4.00
Fourth Year	$ 4.00

R.O.T.C. Activity Fee. Every student registered for a course in military science is charged $2.00 each quarter as a special activity fee. This fee provides funds for the annual Military Ball; awards and recognition for meritorious service to the R.O.T.C. in athletics and extra-curricular activities; athletic events and contents; and miscellaneous matters pertinent to the function of the R.O.T.C. Cadet Corps. This fee is non-refundable.

General Fee. This fee helps defray the cost of student services and activities such as health services, library, counseling, and a portion of parking lot maintenance which is not covered by the parking fee. It also aids in the support of student associations, student government, lecturers, entertainment, and extracurricular activities. *Beginning with the first day of classes there can be no reduction or proration of this fee.* This fee is not refundable except for administrative reasons.

Residence Hall Fees. Residence Hall accommodations include room and food service on a contract basis for the quarter(s) requested. Charges are $325 a quarter, $925 for a full academic year, and $1,225 for a full academic year and summer quarter. (For further information see *Student Housing on Campus* under the *Services* section.)

Food Service Meal Ticket. Students not residing in a University residence hall may purchase a meal ticket for any given quarter at the cost of $190. This includes three meals a day, seven days a week for the entire eleven-week quarter, except holiday periods. (See food service section under *Services* for further information.

Withdrawals and Refunds. A student may not enroll for less than a full term. If a student withdraws from a course or from the University, he must fill out an official Change of Registration form and present it to the Bursar's Office. Failure to attend class, or merely notifying the teacher, the Registrar, or some other staff member is not an official notice of withdrawal.

If a student is permitted to withdraw from a course or from the University, the account will be revised and charges made according to the following schedule.

Date of Acceptance by Student Accounts Office*	Quarters	Summer Terms 5½ Weeks
1-6 school days**	25%	50%
7-12 school days	50%	100%
13-18 school days	75%	
19th school day	100%	

If a course is cancelled by the University, fees paid will be refunded in full, or in the event of a full scholarship or grant, proper credit will be made to the specified fund. See additional policies and procedures shown below under Exceptions.

Exceptions

A student who withdraws from the University or from a portion of his schedule for reasons beyond his control, such as illness, military service, job transfer, or shift change imposed by his employer, may have his fees revised in proportion to the number of weeks attended. He must withdraw officially and present evidence to validate his change, for example: certificate from his physician giving the date he advised the student to withdraw from classes or reduce his academic load, copies of military active duty orders, or a letter from an employer giving the date working hour changes were imposed and a listing of former and current working hours. Charges will be prorated proportionately to the number of weeks enrolled. All requests for this action must be handled by mail. Correspondence should be addressed to Youngstown State University Finance Committee in care of the Bursar.

COURSE NUMBERING SYSTEM AND ABBREVIATIONS

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

Hyphen. A hyphen between numbers (*e.g.*, 501-502-503) indicates that credit is not given toward graduation for the work of the first and second quarter until the work of the third quarter is completed, except when special permission is granted by the chairman of the department in which the course is given. *The first quarter of such a course is prerequisite to the second and the second quarter prerequisite to the third.*

Comma. Ordinarily, a comma between numbers (*e.g.*, 501, 502, 503) indicates that the course extends throughout the year, but that credit toward graduation is given for one or two quarters. If one quarter of such a course is prerequisite to another, it is so designated.

COURSE NUMBERS

Levels. Courses numbered from 500 to 599 are designed primarily for freshmen; 600 to 699, for sophomores; 700 to 799, for juniors; and 800 to 899, for seniors.

ABBREVIATIONS AND REFERENCE MARKS

The abbreviation of "q.h." at the end of a course description stands for "quarter hours of credit." Thus, credit for a three-quarter course is indicated by the notation 3 + 3 + 3 *q.h.* meaning "three quarter hours of credit each quarter."

The abbreviation *n.c.* means "no credit." Thus, 2 *n.c.* indicates that the course offers no quarter hours of credit but that the course is regarded as two hours for load and billing purposes.

"Prereq." stands for "prerequisite." Though the prerequisite for a course is usually listed in the course description, it may be given in the general information at the beginning of each departmental section.

* Figured from opening date of classes.
** Excludes Sunday, for each specified time period.

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.

COLLEGE OF ARTS AND SCIENCES

Karl Washburn Dykema, Dean

ORGANIZATION AND DEGREES

Two degrees are granted by the College of Arts and Sciences: Bachelor of Arts (A.B.), and Bachelor of Science (B.S.). The departments of this unit are as follows:

Department of Art
Department of Biology
Department of Chemistry
Department of Economics
Department of English
Department of Geography
Department of Geology
Department of Health and Physical Education
Department of History
Department of Home Economics
Department of Mathematics
Department of Military Science
Department of Foreign Languages
Department of Philosophy and Religious Studies
Department of Physics and Astronomy
Department of Political Science
Department of Psychology
Department of Sociology and Anthropology
Department of Speech and Dramatics

Courses are also offered in journalism, nursing, and criminology.

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 (except military science), with French, German, Latin, Russian, and Spanish regarded as separate departments for this purpose. It may be an interdepartmental or combined major in American studies, classical studies, earth science, comprehensive science, the humanities, public relations, or social studies, or one of the combined majors mentioned in the next paragraph. It may be in music, in elementary education, 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, geology, mathematics, and physics. There are special combinations of sciences for pre-medical and allied fields, and other pre-professional purposes. Combinations of science courses and applied science or technological training are offered as majors in food and nutrition, medical technology, and nursing.

Prospective teachers. Prospective elementary or secondary teachers may work toward an A.B., B.S., or B.S. in Ed. degree; the B.S. in Ed. degree will be conferred through the School of Education. Prospective high school teachers major in the Arts and Sciences department of their principal field and are advised by the College of Arts and Sciences except for the requirements for teacher certification, for which advisement is by the School of Education.

The minor or minors for any of these degrees, unless determined by a prescribed curriculum, may be in any department or departments in which it is possible to take 21 quarter hours (except secretarial studies).

REQUIREMENTS FOR THE DEGREES

Bachelor of Arts and Bachelor of Science

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 the *Condensed Table of Courses Required for Graduation,* in the General Requirements and Regulations section, where the explanatory notes should be read carefully.

2. The courses and other requirements to be completed in the University. They are explained in the General Requirements and Regulations section but are recapitulated below.

The curriculums leading to these degrees require a minimum of 186 quarter 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 advisor.

R.O.T.C. students are allowed certain modifications of the requirement, as explained in the General Requirements and Regulations section.

Requirements for the B.S. in Ed. degree are given in the School of Education section.

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

PRE-COLLEGE

SUBJECT	HIGH SCHOOL UNITS A.B.	B.S.
English	3	3
United States history and civics	1	1
A foreign language	2	2
Algebra	1 or 2*	1 or 2*
Geometry	1	1
Any mathematics	—	—
Biology, chemistry, or physics	1	1
Any science subjects or additional mathematics	—	—

IN THE UNIVERSITY

REQUIREMENTS IN ADDITION TO COURSES

	QUARTER HOURS OF CREDIT	
Completion of the minimum number of quarter hours of credit required for graduation	186	186
Upper Division status (including completion of any specified preparatory units lacking at entrance)		
Major and minor requirements		
Course-level requirements		
Point index requirement		
Residence requirement		
Application for graduation		

COURSE REQUIREMENTS (OTHER THAN THE MAJOR AND MINOR)

BASIC COURSES (Same as under General Requirements and Regulations)

Communication 525-526-527 Basic Course I-II-III	12	12
Health and Physical Education 509M or 509W, Health Education	3	3
Health and Physical Education activity courses	3	3

AREA COURSES (Same as under General Requirements and Regulations)

Humanities**	10	10
Social Studies	20	20
Science/Mathematics	16	Included in the major

* One is enough except for a science major needing Mathematics 552, or for a mathematics minor.
** Students working toward a high school teaching certificate must take at least nine quarter hours in the philosophy or fine arts areas, of which at least four must be in the philosophy area.

OTHER COURSES (In addition to General Requirements and Regulations)

	A.B.	B.S.
A foreign language (ancient)	9 or 18	9 or 18
or		
A foreign language (modern)	8 or 20	8 or 20

For the A.B. and B.S. degrees: the requirement is such a knowledge of the foreign language and its literature as required at the completion of the second year of college study or its equivalent. The number of hours a student will need to attain this knowledge depends on his high school language courses and the language that he chooses in college. *See Proficiency in a Foreign Language,* below. For the B.S. degree:

	A.B.	B.S.
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. See also *Proficiency in a Foreign Language*, below.		
Balance required for graduation ..... 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 and which are acceptable toward the degree.	—	—
Teacher-training courses (high school) ..... Education 501, Introduction to Education; 704, Student Teaching Laboratory: High School and Special Field; 706, Principles of Teaching; 708, Educational Sociology; 800, Special Methods; and 842, Supervised Student Teaching: High School and Special Field; and Psychology 709, Educational Psychology. These courses are a degree requirement for B.S. in Ed. students preparing to teach in high school and a certification requirement for A.B. or B.S. students preparing to teach in high school	—	—
	36*	36*

* This includes Education 502.

PROFICIENCY IN A FOREIGN LANGUAGE

The student's proficiency in a foreign language is determined by a faculty committee. This committee has ruled that the only languages which meet degree requirements are those listed in the *Courses of Instruction* section that follows.

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, or in some cases two, of the University intermediate courses in that language; as for which one or two, he should consult the chairman of the Foreign Language Department. A student with two high school units in one language may meet the requirements by taking all the intermediate courses in that language. A student with one or no high school units in a foreign language may meet the requirement by taking both the elementary and intermediate courses in one language, but he receives no University course-credit for the elementary course.*

For the Bachelor of Science degree, the same rules apply, 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 611 and 612 (Scientific German) must pass an examination in scientific German.

The knowledge of the foreign language and its literature 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.**

* A student who has had only one year in high school might go into the second quarter of the elementary course in college, but such a step is usually inadvisable because of the difficulty of picking up the language again after an interruption and because of frequent differences in the order of material and method of approach.

** 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 nine quarter hours by paying the Fee for Credit by Equivalency or Examination (see Special Fees).

Students may enroll (for review purposes, for example) in a foreign language course even if it duplicates a high school course already taken. Ordinarily, however, a student cannot be given credit for a foreign language course that duplicates a high school course unless the high school course was an extra unit beyond the 16 units of entrance credit required for admission to the University. For example, if a student has completed both two years of high school Latin and two years of high school French and has a total of 18 high school units, he may take all of either French 501-502-503 or Latin 501-502-503 for credit; or if he has a total of 17 units, he may take two quarters of either course for credit.

Students desiring to take a proficiency examination must first complete a petition form available in the office of the Department of Foreign Languages.

COURSES OF INSTRUCTION AND CURRICULUMS ‡

AMERICAN STUDIES

Professor W. Miner (supervisor).

The program for the combined major in American studies aims, in general terms, to provide a focus for a liberal education. Thus it can be used for almost any pre-professional training. The values of a good liberal education should be obvious to the individual planning on future graduate work in any of the humanities or the social sciences. The student expecting to enter foreign service will find this program particularly appropriate for his needs.

The major is designed so that the student will be stimulated to comprehend his own culture with realistic understanding and with critical detachment. Therefore, he will study the multiplicity of America, learn its historical roots in Western civilization, and acquire enough knowledge of a culture in a foreign language to make meaningful comparisons.

‡ The student should 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 at the end of the General Requirements and Regulations section.

For the combined major in American studies the following program is to be completed.

A. Required courses:
   1. History 651, 652, and 653.
   2. English 605, 606, and 607.
   3. A foreign "civilization" course (such as French 750).
   4. Geography 718.
   5. American Studies 801-802-803.

B. One course from each of the following numbered groups:
   1. The humanities
      a. An Upper Division American literature course.
      b. English 650, 755 or 756.
      c. Humanities 833, 834 or 835.
      d. Philosophy 713, 714, 715, 749, 811, 812 or 820.
      e. Art 707, 709, 710 or 711.
   2. American history (Upper Division).
   3. Sociology, anthropology, and economics.
      a. Sociology 600, 612, 716, 717, 759, 760 or 787.
      b. Economics 601, 602, 603, 708, 802, 806, 807 or 808.
   4. Political Science: A course in American or comparative government.

C. Four courses from any one of the groups under B, excluding those taken as fulfillments for B.

Upper Division Courses

801-802-803. *Perspectives on America.* A study of the American scene from differing points of view—cultural, political, social, economic. Prereq.: Senior standing. Required of seniors majoring in American studies; open to other seniors with consent of teacher.
3 + 3 + 3 q.h.

ANCIENT LANGUAGES AND LITERATURE

See *Classical Studies and Hebrew.*

ANTHROPOLOGY

See *Sociology and Anthropology.*

ART

Professor Naberezny (chairman); Associate Professor Ives; Assistant Professors Babisch, Bright, Juhasz, Lepore, Lucas, Maddick, Mitchell, and Walusis; Instructor Ulrich.

The Department of Art offers courses which will satisfy major or minor requirements in art for the degrees of Bachelor of Arts and Bachelor of Science in Education.

For the Bachelor of Arts degree, the major in studio arts is a minimum of 69 quarter hours, of which at least 18 are to be in art history. In addition, electives are suggested for students who plan future studies on the graduate level in specialized areas. For the minor in studio arts, the requirement is a minimum of 34 quarter hours, of which at least 6 are to be in art history.

For the Bachelor of Arts degree, the major in art history is a minimum of 45 quarter hours, of which 6 may be in philosophy. The minor in art history requires a minimum of 27 quarter hours, of which 3 may be in philosophy.

Students majoring in art who wish to qualify for the Provisional Special Certificate in art are required a minimum of 79 quarter hours, of which at least 18 are to be in art history. These students, after completing two years of satisfactory study (a point average of 2.50) may apply for admission to the School of Education. (Other requirements for admission are listed under the School of Education section.) NOTE: No minor is required for the Special Certificate.

A student wishing to acquire a teaching field in art which will qualify him for high school teaching only will find a curriculum of courses listed below. Education requirements for this teaching field may be acquired from the School of Education.

Candidates for the Bachelor of Arts degree will find the required art curriculums for a studio art major or minor, an art history major or minor, and a commercial art major listed below.

Candidates for the Bachelor of Science in Education degree will find the required art curriculums for the Provisional Special Certificate in Art Education and the Provisional High School Certificate in Art Education listed below.

BACHELOR OF ARTS CURRICULUMS

See General Requirements at the Beginning of the Arts and Sciences section.

Studio Art

Major: 69 q.h.

Required Courses—Art 510, 511, 513, 514, 600, 601, 602, and at least 46 quarter hours of art electives of which 9 are to be in art history.

Minor: 34 q.h.

Required Courses—Art 510, 511, 601 or 602, and at least 23 hours of art electives of which 6 may be in art history.

Art History

Major: 45 q.h.

Required Courses—Art 513, 514, 600, (Philosophy 710), and 33 quarter hours of art history electives of which 6 may be in philosophy or history.

Minor: 27 q.h.

Required Courses—Art 513, 514, 600, (Philosophy 710), and 15 hours of art history electives.

Commercial Art

Major: 69 q.h.

Required Courses—Art 510, 513, 514, 602, 611, 623, 624, 625, 705, 716, 717, 718, 727, 728, 729, 750, 814 or 815, and 16 hours of art electives.

BACHELOR OF SCIENCE IN EDUCATION CURRICULUMS

See General Requirements at the Beginning of the School of Education section.

Provisional Special Certificate in Art Education

Major: 79 q.h.

Required Courses—Art 510, 511, 513, 514, 600, 601, 602, 611, 606, 623, 730, 718, 722, 723, 724, 725, 716 or 750, 801, 822 or 823, and 20 hours of art electives of which 9 hours are to be in art history. (NOTE: Art 801 must be taken during the senior year.)

Minor: Not Required

Provisional High School Certificate in Art Education

Major: 50 q.h.

Required Courses—Art 510, 511, 513, 514, 601 or 602, 611, 606 or 623, 718, 722, 716 or 750, 724, 725, 730, and 6 or 7 hours of art electives.

Lower Division Courses

510. *Color and Design I.* Two-dimensional experiments with various kinds of materials and media. A study of the formal elements and their present-day relationships. 4 q.h.

511. *Color and Design II.* Three dimensional experiments with various kinds of materials. Utilization of the formal elements in three-dimensional design. Prereq.: Art 510. 4 q.h.

513, 514. *Survey of Art.* Lectures on what constitutes art, the plastic means, the relationship of parts. Attention is given to

historical developments, influences, and experiments. A survey of art from prehistoric periods to the present. 3 + 3 q.h.

600. *Theory of Art.* An examination of the theories and philosophical implications of form in the visual arts with emphasis on contemporary thought. Required of all art and art education majors. Prereq.: Art 513 and 514. 3 q.h.

601. *Drawing.* Experience in drawing from the figure. Attention to the significance of line, the relation of shapes and their organization in established space. Prereq.: Art 510. 3 q.h.

602. *Drawing Techniques.* Academic study of figure and objects. Emphasis on sound fundamentals of figure construction. Prereq.: Art 510. 3 q.h.

606. *Painting I.* Experimenting with old and new techniques in painting. The student is encouraged to see significantly rather than imitatively, and to develop an explorative interest in techniques. Prereq.: Art 601 or 602. 4 q.h.

607. *Introduction to Art, Art Education.* Contemporary trends in all aspects of art; intensification of personal sensitivity to significant qualities common to painting, architectural, clothing, interior design, industrial design, and other types of plastic and pictorial art through the use of museums, lectures, field trips, visual aids, and classroom experiences. Required of all elementary education majors. 2 q.h.

611. *Printmaking I.* Experimenting with all kinds of printing media. Block printing, silk screen techniques, stone, and various metals used for printing. Prereq.: Art 510. 4 q.h.

623. *Advertising Art I.* Practice with all types of lettering and illustration which apply to commercial advertising. Prereq.: Art 510. 3 q.h.

624, 625. *Advertising Art II and III.* Applying lettering, illustrations, and the principles of art to layouts; reproductions of silk screens, lino-cuts, and monoprints; study of current trends. Prereq.: Art 623 is prerequisite to 624 and Art 624 is prerequisite to Art 625. 3 + 3 q.h.

Upper Division Courses

703. *Painting II.* Continuation of individual exploration of techniques and development of personal tendencies. Prereq.: Art 606. 5 q.h.

705. *Advanced Drawing.* Study in composition, space division, the plastic means. Prereq.: Art 601 or 602. 3 q.h.

706. *Renaissance Art.* Review of formalism, mysticism, and classicism; the new humanism from 1400 to 1575. Studying the great artists and their connection with the history and philosophy of the times. 3 q.h.

707. *American Art.* Illustrated lectures on the art forms of America. Major emphasis on pre-Columbian Meso-America. 3 q.h.

708. *Baroque/Rococo Art.* Study of European art from 1575 to 1800; styles and trends developed from the Renaissance. Survey of the academic, eclectic, natural, and classicist movements. 3 q.h.

709, 710, 711. *History and Appreciation of Art and Music.* (General) Illustrated lectures on art and music to develop the cultural growth of the non-art and non-music student. A survey of the art and musical forms, comparisons of compositional styles and discussion of the developments, influences, and experiments of the important periods to date. No prior training in art or music required. Listed also as Music 709, 710, 711. 4 + 4 + 4 q.h.

712. *Medieval Art.* Survey of Early Christian, Byzantine, Romanesque, and Gothic painting, sculpture, and architecture. 3 q.h.

713. *Nineteenth Century European Art.* Survey of the important movements of the nineteenth century with special attention to the artists of neoclassicism, romanticism, realism, and naturalism. 3 q.h.

714. *Ancient Art I.* A survey of the art and architecture of the ancient Near East and especially of Greece into the classical period, with attention to the civilizations in which they were produced. No previous training in art or ancient languages is required. Listed also as Classical Studies 714. 3 q.h.

715. *Ancient Art II.* The art and architecture of classical and Hellenistic Greece and the Roman world, and their relation to the civilizations in which they were produced and to earlier art. No previous training in art or ancient languages is required. Listed also as Classical Studies 715. 3 q.h.

716, 717. *Interior Design.* Study of period furnishings, new designs, and textiles. Application of these and experiences from Art 510 to rooms and other interiors. Prereq.: Art 510. Art 716 is prerequisite to Art 717. 3 + 3 q.h.

718, 719, 720. *Jewelry.* Designing and shaping of various metals. Complete fabrication through hand and casting processes. Prereq.: Art 511. 3 + 3 + 3 q.h.

721. *Printmaking II.* Concentrated experiments with lithographic and serigraphic techniques. Prereq.: Art 611 or permission. 4 q.h.

722. *Arts and Crafts I.* Activities and experiments with various art materials, processes and procedures, and their application in attaining objectives of art education. Organized as a laboratory workshop with opportunity for students to increase their own abilities at expression and creativeness with simple art materials and to understand their use in developing creative and expressive activities with children. Required of all elementary education and art education majors. 3 q.h.

723. *School Arts (Elementary).* Study of the needs of children from kindergarten through grades seven and the means of providing desirable art experiences. Required of all elementary and special art education majors. Prereq.: Art 607 or permission. 2 q.h.

724. *School Arts (Secondary).* Study of the needs of children from grade eight through grade twelve and the means of providing desirable art experiences. Required of all art education majors. Prereq.: Art 723. (Note: the Provisional High School certificate does not require the prerequisite.) 3 q.h.

725, 726. *Ceramics.* Pottery shaping through coiling, slab, pinching, and pottery wheel; mold making and casting; bas-relief. Prereq.: Art 511. Art 725 is prerequisite to 726. 3 + 3 q.h.

727, 728, 729. *Advanced Advertising Art.* Special problems in layout and technique. The study of various media, silk screen, air brush, collage, bookplates, trademarks, containers, illustrations, booklets, and lettering that applies to the commercial field. Prereq.: Art 625. 3 + 3 + 3 q.h.

730. *Sculpture I.* Special problems dealing with form in space. Concentrated experiments with wood, plaster, or stone techniques. Prereq.: Art 511. 4 q.h.

731. *Sculpture II.* Special problems dealing with form in space. Concentrated experiments with metal techniques. Prereq.: Art 511. 5 q.h.

750, 751. *Architectural Design.* Basic drafting room practice; conventional representation, geometric construction, orthographic and oblique projection, sectioning, isometric drawing, and house plans. For the prospective art teacher. Not accepted for credit toward the Bachelor of Engineering degree. Prereq.: Art 511. Note: Art 750 is prerequisite to 751. 3 + 3 q.h.

800. *Studio Problems.* Concentrated experiments with light, movement, two-and three-dimensional disciplines. Prereq.: Art 510, 511, and junior standing. 5 q.h.

801. *Seminar.* Discussions on problems of the prospective teacher which involve plant facilities, tools, and supplies. Planning individual exhibits. For students in art education only. Prereq.: Senior standing. 1 q.h.

803. *Painting III.* Concentration of individual techniques. Prereq.: Art 703. 5 - 10 q.h.

806. *Indian Art.* Survey of the art of India from the Indus Valley to the Mogul invasion; its relation to the philosophies and religions of the country; comparisons of the characteristics of the great periods. 3 q.h.

807. *Chinese/Japanese Art.* Survey of the art of China and Japan from the earliest periods to date, and their relation to the philosophies and religions of those countries. 3 q.h.

810, 811. *Advanced Ceramics.* Continuation of Art 726. Prereq.: Art 726. 3 q.h.

812. *Sculpture III.* Concentrated exploration of techniques developed in Art 730 or 731. Prereq.: Art 731. 5 - 10 q.h.

814. *Twentieth Century Art to 1925.* Survey of important movements in painting, sculpture, and architecture from 1885 to 1925. Study of the artists involved with these movements. 3 q.h.

815. *Twentieth Century Art from 1925.* Survey of important movements in painting, sculpture, and architecture from 1925 to date. Study of the artists involved with these movements. 3 q.h.

821. *Printmaking III.* Concentrated experiments with metal techniques. Prereq.: Art 611 or permission. 5 - 10 q.h.

822. *Puppetry and Stage Construction.* Concentrated exploration of puppetry, stage design and construction, and a survey of the historic development of puppetry. Prereq.: Art 722. 3 q.h.

823. *Fabrics and Weaving.* Concentrated exploration of the techniques of weaving and dyeing with emphasis on the creative application of these techniques. A study of the historical development of the techniques of weaving and dyeing. Prereq.: Art 722 or permission. 3 q.h.

ASTRONOMY

See *Physics and Astronomy.*

BIBLE

See *Philosophy and Religious Studies;* also *Humanities.*

BIOLOGY

Professors Kelley (chairman) and Van Zandt; Associate Professors Beede, Karas, Sobota, Webster, and Worley; Assistant Professors Cannon, Fishbeck, Kreutzer, MacLean,

Moritz, Peterson, Rufh, Schroeder, Sturm, and Toepfer; Instructors Brennan, Chuey, Sebastiani, and Staudt.

Students may obtain a Bachelor of Arts or Bachelor of Science degree in biology, or specific biology courses may be taken to provide general knowledge of this science and its relation to problems of modern man; to train students who intend to teach biological science; and to provide basic facts for students planning to enter professional fields such as medicine, horticulture, nursing, pharmacy, physical therapy, medical technology, and various other paramedical careers.

REQUIREMENTS FOR MAJOR IN BIOLOGY

	Bachelor of Arts	Bachelor of Science
Required courses in Biology	550, 562, 570, 680, 690	550, 562, 570, 680, 690[1]
Upper Division Electives in Biology[2]	25 q.h.	30 q.h.
Chemistry	Organic recommended	515, 516, 517, 719, 720, 721
Physics	1 year recommended	501, 501L, 502, 502L, 503, 503L
Mathematics	Statistics recommended	540, 550
Social Studies	20 q.h.[3]	20 q.h.[3]
Communications	12 q.h.[3]	12 q.h.[3]
Humanities	10 q.h.[3]	10 q.h.[3]
Language	8 q.h.[3]	8 q.h.[3]
Electives[4]		

1 These courses provide a core of subject matter which should be mastered by all biologists but if a student has already completed 506, 507, 508 these may be substituted for 550, 562, and 570. Such a student will be somewhat disadvantaged but should be able to make up deficiencies as he takes Upper Division courses. All biology majors must take 680 and 690.

2 Courses numbered 700 and above in biology sequence as well as Biochemistry, Special Methods in Teaching Science (Education 800) and Physical Anthropology (Sociology 714, 715) count toward Upper Division biology electives.

3 General University requirements, see page ..... for details.

4 Electives of student's choice may be taken from various departments in the University - earth science, psychology and advanced mathematics are recommended.

Lower Division Courses

505. *Biology and Modern Man.* Findings, applications, and thinking of the science of biology as applied to problems today. Primarily for the science requirement; not to be taken by majors or by students needing biology as prerequisite for further course work. 4 q.h.

506, 507, 508. *Principles of Biology.* A laboratory course in general biology designed to provide comprehensive coverage of basic life science for students who require biology for entrance into various specialty schools or as a required subject in related fields. Not for biology majors. (Replaces 500, 501, 502 and is comparable.) 4 + 4 + 4 q.h.

550. *Introduction to Life Science.* Findings and thinking that form basis for modern science of biology. Quantitative procedures of biology will be presented in laboratory and independent work is expected of the student. Intended for biology majors. (Fall) 5 q.h.

551, 552. *Anatomy and Physiology of Man.* Structure and function of the human organism - not for biology majors. Lectures and laboratory. 4 + 4 q.h.

560. *Paramedical Microbiology.* Characteristics, epidemiology, and pathology of virus, rickettsiae, bacteria, and protozoa of medical significance. Not for biology majors. (Each quarter) 5 q.h.

562. *Plant Life.* Structure, reproduction, physiology, and phylogenetic relations of plants. Lectures and laboratories for biology majors only. Prereq.: Biology 550. (Winter) 5 q.h.

570. *Animal Life.* Diversity, phylogeny, and survey of comparative physiology of animals. Intended for biology majors only. Prereq.: Biology 550. (Spring) 5 q.h.

604. *Food Microbiology.* Role of microbes in food preservation, fermentation, spoilage, sanitation, and food poisoning. Prereq.: Home economics major, Biology 508, and general chemistry or permission of instructor. (Winter 1972) 4 q.h.

660. *Economic Botany.* Economic importance, culture, distribution, use, and bi-

ological significance of plants that serve useful purpose for man as food, fiber, wood, drugs, and ornament. (Spring) 3 q.h.

673. *Ornithology.* Distribution, natural history, and economic significance of birds. Lectures, laboratory, and field trips. Prereq.: Biology 508 or Biology 570. (Spring) 2 q.h.

680. *Molecular-Cellular Level of Life.* Chemical-physical functions of cellular structures. Lectures and laboratories. Prereq.: Biology major, Biology 570, general chemistry, or permission of instructor. (Winter) 5 q.h.

690. *Biology of Populations.* Study of structure and function of plant and animal populations. Lectures and laboratory. Prereq.: Biology major, Biology 570 or 508, or permission of instructor. (Fall) 5 q.h.

Upper Division Courses

700. *Non-Vascular Plants.* A phylogenetic survey of the algae, Eumycophyta, Bryophytes, bacteria, and viruses: a study of their classification, morphology, gross cytology, reproduction and life cycles, and some ecological and economic aspects. Two one-hour lectures and two three-hour laboratory periods a week. Prereq.: Biology 508 or 562. (Fall) 5 q.h.

701. *Invertebrate Zoology.* Essentials of structure, function, and classification of invertebrates. Lectures and laboratory. Prereq.: Biology 508 or 570. (Fall, night section will be available) 5 q.h.

702. *Microbiology.* Isolation, cultivation, identification, classification, and laboratory study of microorganisms. Prereq.: Biology 680, general chemistry, or permission of instructor. (Fall) 4 q.h.

708. *Vertebrate Embryology.* Experimental demonstration of embryonic development and organization of vertebrates. Prereq.: Biology 508 or 570. (Fall) 4 q.h.

710. *Mammalian Anatomy.* A composite study of the anatomical systems of mammals, based on the cat. Lectures and laboratory. Prereq.: Consent of instructor. (Spring, night section will be available) 4 q.h.

713. *Vertebrate Histology.* The microscopic anatomy of mammalian tissue. Students will collect tissues, which they will fix, cut, mount, and stain for study. Prereq.: Biology 508 or 570 or permission of instructor. (Winter) 5 q.h.

719. *Plant Taxonomy.* Identification of local vascular plants; experience in the use of both natural and artificial keys, in the laboratory and in the field; and discussions concerning current theories in systematic botany. Lectures will be presented in spring quarter followed by independent laboratory during summer months. Prereq.: Consent of instructor. 5 q.h.

721. *Genetics.* An introduction to classical genetics as revealed by studies in higher plants and animals emphasizing applications to human heredity. Prereq.: Biology 508 or 570. (Winter, day and night classes and spring, day only) 3 q.h.

721L. *Genetic Laboratory.* Individual and group experiments which demonstrate basic concepts of heredity. Taken concurrently with Biology 721. (Fall and winter) 1 q.h.

741. *Parasitology.* Biology of parasitism as well as classification, morphology, bionomics, and control of selected animal parasites of man and his domestic animals. Prereq.: Biology 701 or permission of instructor. (Winter) 4 q.h.

762. *Field Botany.* Identification, ecology, and significance of local plant species. Students will practice using identification keys under field and herbarium conditions. Lectures and laboratory. Prereq.: Junior standing. (Fall, night lectures and Saturday laboratories will be available) 5 q.h.

765. *Comparative Morphology of Vascular Plants.* Structure, reproduction, and phylogenetic relationships of representative vascular plants. Lectures and laboratory. Prereq.: Biology 508 or Biology 562. (Spring, night section will be available) 5 q.h.

770. *Vertebrate Zoology.* Taxonomic presentation of phylum Chordata with emphasis on the relationships and significance of vertebrates. Lectures and laboratory. Prereq.: Biology 508 or Biology 570. (Fall and spring, night section will be available) 3 q.h.

771. *Entomology.* Zoology, structure, development, habits, identification, economic importance, and control of insects. Prereq.: Junior standing. (Spring, day and night lectures) 5 q.h.

772. *Mammalogy.* Taxonomic features, life histories, geographical distribution, and economic significance of class Mammalia. Lecture and laboratory. Prereq.: Biology 770. (Spring) 4 q.h.

775. *Comparative Vertebrate Anatomy.* Comparison of morphology of vertebrates emphasizing evolutionary development of organ systems. Lecture and laboratory. Prereq.: Biology 770 or consent of instructor. (Winter, night section will be available) 5 q.h.

802. *Ecology.* A study of plants and animals in relation to environmental factors affecting their abundance and distribution. Participation in field trips will be required at times other than the scheduled class periods. Prereq.: Consent of instructor. (Fall) 5 q.h.

803. *Aquatic Biology.* The biological, physical, and chemical aspects of aquatic environments emphasizing collection and identification of aquatic organisms. Lectures and Saturday laboratory. Prereq.: Consent of instructor. (Spring) 5 q.h.

821. *Plant Anatomy.* Comparative anatomy and histology of the vascular plants. Lectures and laboratory. Prereq.: Consent of instructor. (Fall 1970) 5 q.h.

822. *Plant Physiology.* Physiochemical nature of life processes of plants. Prereq.: Consent of instructor. 5 q.h.

823. *Advanced Genetics.* Modern concepts of the structure of the gene and the mechanisms of mutation and gene action. Prereq.: Consent of instructor. (Spring 1971) 4 q.h.

824. *Bacterial Physiology.* Physiological processes of the bacteria. Prereq.: Consent of instructor. 3 q.h.

831. *Biological Seminar.* A study of the historical and contemporary literature in biology. Written and oral reports, round-table discussions. Prereq.: Junior standing and consent of instructor. (Every quarter) 2 q.h.

832. *Cytology.* Unique properties of living cells: their ultrastructure, chemical and physical basis, and biological significance; study of metabolic enzyme systems and the biochemical basis of growth, differentiation, and inheritance. Prereq.: Organic Chemistry, junior standing, and consent of instructor. (Winter 1971) 5 q.h.

833. *Introduction to Vertebrate Physiology.* Introduction to basic physical and chemical principles in physiology of nerve conduction, muscle contraction, digestive, respiration, circulation, endocrine systems, and kidney function. Lectures and laboratories. Prereq.: Consent of instructor. (Winter) 5 q.h.

850. *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 of staff. 1 - 4 q.h.

851. *Immunobiology.* Mechanism of immunity and introduction to serological techniques that are routinely applied in clinical microbiology. Prereq.: Consent of instructor. 5 q.h.

853. *Biometry.* Collection and treatment of biological data. Lectures and laboratory. (Fall 1970) 4 q.h.

863. *Growth and Differentiation of Plants.* External and internal factors that affect germination, growth, flowering, and seed development in plants. Lectures and laboratory. Prereq.: Consent of instructor. 5 q.h.

872. *Protozoology.* Morphology, phylogeny, and bionomics of protozoa. Lectures and laboratory. Prereq.: Consent of instructor. 4 q.h.

874. *Helminthology.* Detailed consideration of parasitic helminths including techniques for collecting, killing, staining, and studying parasites. Lectures and laboratories. Prereq.: Consent of instructor. 4 q.h.

BOTANY

See *Biology.*

CHEMISTRY

Professors Rand (chairman) and Cohen; Associate Professors Foldvary, Gebelein, Mahadeviah, Scribner, F. W. Smith, R. K. Smith, Spiegel, Van Norman, von Ostwalden, and Yingst; Assistant Professors Dobbelstein, Fukui, Kolnat, Lateef, Lukin, Mettee, Phillips, Reeder, and Schildcrout.

The Bachelor of Science degree is recommended for those who plan to make a career in Chemistry. The Bachelor of Arts degree is recommended for those who plan to go into a medical or dental field or secondary education. The chemistry courses required for an A.B. degree with a major in chemistry are those listed in the curriculums below. The required courses for a B.S. degree with a major in chemistry are those listed in the B.S. curriculum. Chemistry majors who take Chemistry 501 need 190 q.h. instead of 186 q.h. for graduation.

Lower Division Courses

501. *Survey of Chemistry I.* A one quarter survey designed for those with little or no mathematics or science background. Important principles and modern concepts are discussed and illustrated using examples common to everyday experience. This course may be taken in partial fulfillment of the minimum science requirement for a baccalaureate degree. Chemistry 501 is not intended for chemistry majors. Four hours lecture; no laboratory. Prereq.: None. 4 q.h.

502, 503. **Survey of Chemistry II and III.* A more detailed discussion of important chemical principles. Three hours lecture; three hours laboratory. Prereq.: Chemistry 501, 1 unit of high school algebra or Math 500. 4 + 4 q.h.

515, 516. **General Chemistry.* A course in the fundamental principles and a study of the more important elements and compounds. Three hours lecture and recitation and three

* Must be taken in sequence.

hours of laboratory with discussions. Intended for physical science majors and students in engineering. Prereq.: For Chemistry 515 — 2 units of high school algebra, 1 unit of high school geometry, and 1 unit of high school chemistry; for Chemistry 516 — Chemistry 515 (or Chemistry 502 and 2 units of high school algebra and 1 unit of high school geometry). 4 + 4 q.h.

517. *General Chemistry and Qualitative Analysis.* A continuation of Chemistry 516 and selected work in qualitative analysis which will best serve to demonstrate basic fundamentals. Prereq.: Chemistry 516 (or Chemistry 503 and 2 units of high school algebra and 1 unit of high school geometry). 4 q.h.

603, 604. **Quantitative Analysis.* A study of chemical equilibrium, stoichiometry, theory of errors, volumetric and gravimetric procedures as applied to quantitative determinations. Electroanalytical and colorimetric methods are introduced. The development of technique is emphasized in the laboratory; 3 hours lecture and 6 hours laboratory each week. Prereq.: Chemistry 517. 5 + 5 q.h.

Upper Division Courses

705. *Biochemistry.* Emphasis is placed on the phases of biochemistry of special interest in home economics and dietetics. Credit cannot be received for this course if credit is received for any other biochemistry course. Three lectures and three hours of laboratory with discussions. Prereq.: Chemistry 720. 4 q.h.

706. *Chemical Literature.* Examination of standard reference works and periodicals with written reports based upon technical writing procedures. Prereq.: Chemistry 722, German 611 (may be concurrent). 2 q.h.

709. *Introduction to Polymer Chemistry.* Introduction to polymerization and polymer properties. Prereq.: Chemistry 721 and four quarters of college physics. 3 q.h.

711, 712. **Biochemistry.* An introduction to the chemistry and metabolism of living organisms. Laboratory work is designed to illustrate modern biochemical methods. This course is primarily designed for medical technology and biology majors. Two hours lecture and three hours of laboratory with discussions. Prereq.: Chemistry 603 and 721, Biology 502. 3 + 3 q.h.

719, 720, 721. **Organic Chemistry.* A systematic study of organic compounds, reactions, and theories. The laboratory includes typical preparations and procedures of analysis. Three hours lecture and three hours laboratory. Prereq.: Chemistry 517. 4 + 4 + 4 q.h.

722. *Organic Chemistry.* Additional laboratory preparations and techniques. This course is required for all candidates for the B.S. degree with a major in chemistry. One hour lecture and three hours laboratory. Prereq. or concurrent: Chemistry 721. 2 q.h.

729. *Inorganic Chemistry I.* The fundamental principles underlying the structure and properties of the elements and their compounds. Prereq.: Chemistry 740. 3 q.h.

731. *Nuclear Chemistry and Its Applications.* Nuclear structure and reactions, types of radioactive decay, radiation detection, measurements and techniques in handling radio-active materials. Prereq.: Chemistry 740. 3 q.h.

739, 740, 741. **Physical Chemistry.* Principles and applications of physical chemistry. Three hours lecture and three hours laboratory. Prereq.: Chemistry 603, Physics 601, 602, 603, Mathematics 674 (may be concurrent). 4 + 4 + 4 q.h.

803, 804. **Chemical Instrumentation.* A study of the theoretical foundations of instrumental procedures and the application and use of instruments in analytical work. Chemistry 803: two hours lecture and six hours laboratory. Chemistry 804: two hours lecture and three hours laboratory. Prereq.: Chemistry 604, 741. 4 + 3 q.h.

805. *Applied Spectroscopy.* A study of infrared, ultraviolet, nuclear magnetic resonance, electron spin resonance, mass spectrometry, and methods of current interest as applied to chemical systems. Three hours lecture. Prereq.: Chemistry 741 or permission of instructor. 3 q.h.

813. *Thermodynamics.* Fundamentals of thermodynamics and the application of these fundamentals to ideal and real chemical systems. Also, an introduction to statistical thermodynamics. Four hours lecture. Prereq.: Chemistry 741 or senior standing in physics. 4 q.h.

821. *Intermediate Organic Chemistry.* An introduction to advanced study in organic reactions and theories. Three lectures a week. Prereq.: Chemistry 722 and 741. 3 q.h.

822. *Organic Analysis.* Qualitative and functional group analysis of organic compounds. Laboratory exercises and discussion of underlying principles. One hour lecture and six hours laboratory with discussions. Prereq.: Chemistry 722. 3 q.h.

823. *Organic Synthesis.* Preparations of

* Must be taken in sequence.

organic compounds and applicable instrumental techniques. One hour lecture and six hours laboratory with discussions. Prereq.: Chemistry 722. 3 q.h.

829, 830. *Inorganic Chemistry II and III.* II) Current interpretations of the chemistry of nonmetals and pre-transition metals. III) Transition metals and coordination compounds. Need not be taken in sequence. Prereq.: Chemistry 729, 741. 2 + 2 q.h.

831. *Inorganic Chemistry Laboratory.* The preparation of typical inorganic compounds and their characterization. Six hours of laboratory with discussions. Prereq.: Chemistry 729 and 741. 2 q.h.

836. *Chemical Bonding and Structure.* Applications of various bonding theories to molecular structure. Three hours lecture. Prereq.: Chemistry 741. 3 q.h.

841, 842, 843. **Principles of Biochemistry.* The study of chemical structures, functions, and transformations which occur within living cells. Topics include the chemistry and metabolism of carbohydrates, lipids, proteins, nucleic acids, enzymes, hormones, biochemical genetics, and metabolic control mechanisms. Prereq.: Chemistry 721 and 741; Biology 502. 3 + 3 + 3 q.h.

845, 846. *Biochemical Techniques.* Laboratory course designed to illustrate modern biochemical methods such as chromatography, electrophoresis, spectrophotometry, enzyme kinetics and isotopic tracer techniques. Need not be taken in sequence. Prereq. or concurrent: Chemistry 841. 2 + 2 q.h.

850. *Senior Research.* When possible, each student works on a different phase of a group problem. May be taken three quarters. Prereq.: Three years of college chemistry, including Chemistry 741.
2 or 3 q.h. each quarter

852. *Chemistry Seminar.* Reports and discussions of research studies and problems. May be repeated. 1 q.h. each quarter

All students majoring in chemistry will be assigned a faculty advisor by the Department. The advisor will discuss the overall curriculum necessary for a degree in chemistry and will assist the student in the preparation of a suitable course sequence.

For the degree of Bachelor of Science with a major in metallurgy, a mimeographed curriculum is available in the Chemistry Department office.

For the degree of Bachelor of Science with a major in medical technology, a mimeographed curriculum is available in the Chemistry Department office. Advisement is provided by the Medical and Paramedical Committee members of the Chemistry Department.

* Must be taken in sequence.

Recommended curriculum leading to a B.S. degree with a major in chemistry.

YEAR	COURSE	QUARTER HOURS OF CREDIT			TOTAL q.h.
First	Chemistry 515, 516, 517	4	4	4	
	Communication 525-526-527	4	4	4	
	Mathematics 571, 572	5	4	--	
	Physics 510	--	--	4	
	German 501, 502, 503 (see note 1)	4	4	4	
		17	16	16	49
Second	Chemistry 719, 720, 721	4	4	4	
	Chemistry 603, 604	--	5	5	
	Physics 601, 601L, 602, 602L, 603, 603L	4	4	4	
	Mathematics 673, 674	5	4	--	
	Electives (see note 2)	3	--	3	
		16	17	16	49
Third	Chemistry 722	2	--	--	
	Chemistry 729	--	--	3	
	Chemistry 739, 740, 741	4	4	4	
	German 611, 612 (see note 1)	4	4	--	
	Health & Physical Education 509C	--	--	3	
	Health & Physical Education Activity	1	1	1	
	Electives (see note 2)	3	6	3	
		14	15	14	43

Fourth	Chemistry 803, 804	4	3	--	
	Chemistry 829 or 830	--	2	--	
	Electives (see note 2)	11	10	15	
		15	15	15	45

Note 1: German is the required language for this curriculum, but the amount needed and the specific courses to be taken depend on the high school preparation. See the requirement in the College of Arts and Sciences for a foreign language.

Note 2: These electives must include at least 3 q.h. of chemistry laboratory, of which no more than 1 q.h. may be Senior Research (Chem. 850). Three additional quarter hours of these electives must be either in 800-level chemistry or in Upper Division mathematics or physics. In addition, the electives must satisfy the general University requirements for Upper Division credit, the social studies, the humanities, and a minor.

Recommended curriculum leading to an A.B. degree with a major in chemistry, meeting requirements for certification for high school teaching in chemistry and physics.

YEAR	COURSE	QUARTER HOURS OF CREDIT			TOTAL q.h.
First	Chemistry 515, 516, 517	4	4	4	
	Communication 525-526-527	4	4	4	
	Mathematics 571, 572	5	4	--	
	Physics 510	--	--	4	
	Electives (see note below)	4	4	4	
		17	16	16	49
Second	Chemistry 603, 604	--	5	5	
	Mathematics 673, 674	5	4	--	
	Physics 601, 601L, 602, 602L, 603, 603L	4	4	4	
	Education 501	--	--	3	
	Health & Physical Education 509C	3	--	--	
	Health & Physical Education Activity	1	1	1	
	Psychology 601	--	--	4	
	Electives (see note below)	3	3	--	
		16	17	17	50
Third	Chemistry 719, 720, 721	4	4	4	
	Chemistry 739, 740, 741	4	4	4	
	Education 704, 706, 708	3	3	3	
	Psychology 709	3	--	--	
	Electives (see note below)	--	4	3	
		14	15	14	43
Fourth	Chemistry 729	--	--	3	
	Education 800	3	--	--	
	Education 842	--	15	--	
	Electives (see note below)	11	--	12	
		14	15	15	44

NOTE: (a) The electives must satisfy the University requirements for Upper Division credit, the social studies, and the humanities, as well as the requirement in the College of Arts and Sciences of a foreign language.
(b) Education 502 may also be required.
(c) If 9 hours of these electives are in mathematics, the student will qualify for Ohio certification in mathematics.

Recommended curriculum leading to an A.B. degree with a major in chemistry, meeting recommendations for preparation for the medically-related professional schools.

YEAR	COURSE	QUARTER HOURS OF CREDIT			TOTAL q.h.
First	Chemistry 515, 516, 517	4	4	4	
	Communication 525-526-527	4	4	4	
	Mathematics 571, 572	5	4	--	
	Physics 510	--	--	4	
	Biology 506, 507, 508	4	4	4	
		17	16	16	49

Second	Chemistry 603, 604	--	5	5	
	Mathematics 673, 674	5	4	--	
	Physics 601, 601L, 602, 602L, 603, 603L	4	4	4	
	Biology 770	3	--	--	
	Health & Physical Education 509C	--	--	3	
	Electives (see note below)	3	3	3	
		15	16	15	 46
Third	Chemistry 719, 720, 721	4	4	4	
	Biology 775	--	5	--	
	Health & Physical Education Activity	1	1	1	
	Electives (see note below)	10	6	10	
		15	16	15	 46
Fourth	Chemistry 739, 740, 741	4	4	4	
	Chemistry 729	--	--	3	
	Biology 721, 721L	--	4	--	
	Biology 708	4	--	--	
	Electives (see note below)	7	6	9	
		15	14	16	 45

NOTE: The electives, in addition to satisfying the general University requirements with respect to Upper Division credit, the social studies, and the humanities, must fulfill the foreign language requirement in the College of Arts and Sciences.

CLASSICAL STUDIES*

Associate Professor Ives (supervisor); Assistant Professor Veccia.

Classical Studies courses, besides meeting the needs of certain majors and prospective Latin teachers, are intended to complement or supplement study in various other liberal arts subjects, satisfy certain pre-professional students' needs, and offer students in all fields opportunities to increase their acquaintance with important phases of Western culture and their significant products.

Courses in Latin are designed not only for Latin majors but also for majors in English, history, and the Romance languages who discover the desirability of knowing some Latin, or knowing more of it, and for pre-law, pre-medicine, and pre-seminary students. In addition, Latin 601, 602, and 603 provide for students whose entrance language was Latin the most expeditious means of completing the foreign language proficiency requirement.

Courses in ancient Greek primarily provide knowledge of the language of the people with whose curiosity, originality, and transmutations of older cultures Western civilization began; but attention is also given to matters which make them useful to Latin majors, pre-seminary students, pre-medicine students, and students with linguistic interests, as well as to those interested in still other aspects of Western culture and its origins.

Other Classical Studies courses seek, without requiring a knowledge of ancient languages, to inform the student on important aspects of Greek and Roman culture, introduce him to some of its influential products, and stimulate him through analysis and discussion of these. The courses are designed to meet the needs of the general student and to supplement work in Latin, ancient Greek, and such fields as English, history, political science, philosophy, and art.

Majors are offered in Latin and in Classical Studies. The requirements for the Latin major are stated elsewhere with the Latin course descriptions. The combined major in Classical Studies consists of 70 quarter hours chosen from Classical Studies courses (including ancient Greek and Latin) and from certain courses in other departments; the student should consult the Supervisor of Classical Studies before undertaking this major. Classical Studies 631, 714, 715, 830, and 831 may be counted toward the 10-hour general requirement in the humanities area. Classical Studies 714, 715, 830, and 831 may also be counted toward the teacher certification requirement in philosophy and/or fine arts.

GREEK (ANCIENT)

For the numbers and descriptions of ancient Greek courses, see *Greek*, further on in the College of Arts and Sciences section.

* The former Department of Classical Studies is now the Office of Classical Studies, a section of the Department of Foreign Languages.

LATIN

For the numbers and descriptions of Latin courses, their prerequisites and the requirements for the Latin major, see *Latin,* further on in the College of Arts and Sciences section.

CLASSICAL STUDIES

The following courses require no knowledge of Greek or Latin.

Lower Division Course

631. *Mythology in Literature.* An introductory study of myths, chiefly classical, with some attention to their origins and cultural significance, and of literary works, both classical and modern, in which these myths are used. Prereq.: Communication 527 or equivalent, with grade of C. Listed also as Humanities 631. 3 q.h.

Upper Division Courses

714. *Ancient Art I.* A survey of the art and architecture of the ancient Near East and especially of Greece into the classical period, with attention to the civilizations in which they were produced. No previous training in art or ancient languages is required. Listed also as Art 714. 3 q.h.

715. *Ancient Art II.* The art and architecture of classical and Hellenistic Greece and the Roman world, and their relation to the civilizations in which they were produced and to earlier art. No previous training in art or ancient languages is required. Listed also as Art 715. 3 q.h.

752. *History of Ancient Greece.* Identical with History 752. Prereq.: History 651, or consent of teacher. 3 q.h.

753. *History of Ancient Rome.* Identical with History 753. Prereq.: History 651, or consent of teacher. 3 q.h.

830. *Older Classics A: Ancient Drama and Poetry.* Extensive readings in English from most or all of the following (and perhaps others): Aeschylus, Sophocles, Euripides, Aristophanes, The Old Testament, Aristotle's *Poetics,* Menander, Plautus, Terence, Horace's *Art of Poetry,* Seneca. Prereq.: Communication 527 or equivalent, with grade of C, and junior or senior standing. Listed also as Humanities 830. 4 q.h.

831. *Older Classics B: Ancient Prose and Poetry.* Extensive readings in English from most or all of the following (and perhaps others): The Old Testament, Homer, Herodotus, Thucydides, Plato, Aristotle, Lucretius, Cicero, Virgil. Prereq.: Communication 527 or equivalent, with grade of C, and junior or senior standing. Listed also as Humanities 831. 4 q.h.

COMMUNICATION

See *English.*

CRIMINOLOGY

See *Department of Criminal Justice,* Technical and Community College section.

DRAMATICS

See *Speech and Dramatics.*

EARTH SCIENCE

Assistant Professor E. Harris, Jr. (supervisor).

The combined major in earth science is designed to meet the needs of students desiring a broad background in earth science. The major also provides the necessary background for a teaching field in earth science.*

* Interested students should consult with the Geology Department chairman.

Courses for Earth Science Major

Astronomy

503 Descriptive Astronomy .....(4)
608 General II .....(3)

Chemistry

501 Survey of Chemistry I .....(4)
502 Survey of Chemistry II .....(4)
(or)
515 General Chemistry .....(4)
516 General Chemistry .....(4)

Geography

502 Principles .....(5)
625 General Meteorology .....(3)

Geology

505 Principles of Physical Geology ..(4)
506 Principles of Historical Geology..(4)
507 Principles of Geology Laboratory.(4)
604 Megascopic Petrography .....(6)
701 Geomorphology .....(6)
705 Principles of Paleontology .....(6)
804 Ground Water .....(5)
(or)
704 Structural Geology .....(5)

Mathematics

502 Algebra II .....(5)
503 Trigonometry .....(3)

Physics

501 Fundamentals of Physics .....(4)
502 Fundamentals of Physics .....(3)

ECONOMICS

Professors Hahn, Kermani, and Stocks; Associate Professors Mackall (chairman), Mehar, and Niemi; Assistant Professors Bee, Koss, Liu, Milley, Ronaghy, and Smythe; Instructor Jakobs.

A major in economics consists of 48 quarter hours. Required courses are 601, 602, 603; 704, 705, 706; 710, 711, 712, 713.

Two of the following courses may be applied toward a major in economics: History 714, 715, 716, 783, 784, 785, and Merchandising 624. The major is designed to prepare students for research and statistical work in business and government service; to provide a background for careers in business or government; and for graduate study leading to careers in law, journalism, government and international affairs, teaching, industrial relations, and business economics.

Lower Division Courses

601. *Principles of Economics I.* An introduction to basic principles of economics and American capitalism, including national income accounts, analytical tools of employment theory, and fiscal policy. 3 q.h.

602. *Principles of Economics II.* Money, monetary policy, and economic growth. A survey of current domestic economic problems. International economics. Prereq.: 601. 3 q.h.

603. *Principles of Economics III.* The market structure of American capitalism; economics of the firm—price and output determination; and resources allocation—pricing and employment of resources. Prereq.: 602. 3 q.h.

Upper Division Courses

701. *Money and Banking.* Organization and operation of commercial banking in the United States; central banking under the Federal Reserve System; basic monetary theory. Prereq.: Economics 601-602-603. 3 q.h.

702. *Public Finance.* The development and present status of public finance; federal, state, and local expenditures and taxation; theories of tax incidence, axioms of taxation, theories in justification of taxation and government spending; tax reform. Prereq.: Economics 601-602-603. 3 q.h.

703. *Monetary and Fiscal Policy.* Study of the techniques of monetary and fiscal policy with emphasis on their role as determinants of the level of national income. Prereq.: 701-702. 3 q.h.

704. *Economics and Social Statistics I.* Probability theory with emphasis upon uncertainty in estimating parameters and testing hypotheses. The evaluation of single samples for purposes of estimating and testing. Prereq.: Sophomore standing. 4 q.h.

705. *Economics and Social Statistics II.* Continuation of estimating and testing with emphasis on small sampling techniques. Correlation, regression, index numbers, time series with estimating and testing techniques used where applicable. Prereq.: Economics 704. 3 q.h.

706. *Economics and Social Statistics III.* Various sample methods as applied to business and economic purposes in estimating and testing. Introduction to analysis of variance, chi-square, etc. Prereq.: Economics 705. 3 q.h.

707. *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. Prereq.: Junior or senior standing. Not for economics and School of Business majors. 4 q.h.

708. *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. Special emphasis is given to price theory and growth, as applied to industries. Prereq.: Economics 603. 3 q.h.

709. *Mathematical Economics.* A course designed to give students of economics a mathematical background with special emphasis on the theory of functions of real variables, and presentation of the fundamentals of differential and integral calculus as applicable to the macro- and micro-economic theory. Prereq.: Economics 603. 4 q.h.

710. *Intermediate Micro-economic Theory I.* A systematic analysis of the theory of demand and the theory of the firms: production input and output choices, and some basic concepts of linear programming. Prereq.: Economics 603 and 709 or Mathematics 550. 3 q.h.

711. *Intermediate Micro-economic Theory II.* A continuation of the analysis of the theory of the firm: competitive pricing; monopoly pricing; pricing in imperfect competition; and the theory of rent, profits, interest, and wages. Prereq.: Economics 710. 3 q.h.

712. *Intermediate Macro-economics I.* A study of the construction of national income and production accounts and the basic determinants of income, output, and employment. Prereq.: Economics 603 and 709 or Mathematics 550. 3 q.h.

713. *Intermediate Macro-economics II.* Determination of the level of employment, interest and money through the classical versus Keynesian aggregative economics. Role of money, wages, and prices in the theory of employment. Macro model building. Prereq.: Economics 712. 3 q.h.

787. *Population Movements.* Trends in world population in their relation to history,

migration, and urbanization. Human demography and ecology: various measurements of the size, density, and distribution of population as well as their economic and social environments. 4 q.h.

802. *Comparative Economic Systems.* A comparative study of American capitalism, Russian communism, British socialism, with consideration of the theory of the corporate state. Prereq.: Economics 603. 4 q.h.

803. *Business and Government.* An analysis of the influence of the common law and the development, the growth, and the present status of competition, imperfect competition, and monopoly in the American economy. Prereq.: Economics 603. 4 q.h.

804. *The Economics of Central Planning.* History and development of centrally planned type economies as a substitute for decentralized market systems; theories of central planning; their analysis and evaluation; central planning and its operation in a selected command type economy such as the Soviet Union, Red China, Yugoslavia. The above analysis will be made in reference to a particular command type economy which will be selected in advance as the topic for the quarter. Prereq.: Economics 603 or permission of instructor. 4 q.h.

805. *Business Cycles and Economic Growth.* Study of the nature, causes, and measurements of economic fluctuation. Cycle theories with special emphasis on the multiplier-accelerator models, growth models of Harrod and Domar variety and the use of difference and differential equations to study the generation of business cycles as a part of the growth process. Prereq.: Economics 713 or consent of the instructor. 4 q.h.

806. *History of Economic Thought I.* Ancient beginnings, the Middle Ages, Mercantilism, the Physiocrats, the forerunners of Adam Smith, Adam Smith, early socialist thought. Prereq.: Economics 603. 3 q.h.

807. *History of Economic Thought II.* Utilitarianism. English Classical school and dissenters, Ricardian socialist, Continental developments, Say, Romantics school, Karl Marx, Older Historical school, forerunners and outburst of Marginalism. Prereq.: Economics 603. 3 q.h.

808. *History of Economic Thought III.* General equilibrium, second generation of Marginalists. Younger Historical school, development of indifference curve analysis, institutional economics, business cycle theories, Swedish monetary school, Keynes and "new economics", Revisionism, theoretical feasibility in a social economy, welfare economics. Prereq.: Economics 603. 3 q.h.

810. *Business Economics.* An application of economic analysis to the solution of business problems. A combination of text and case materials. Emphasis upon executive decisions for the allocation of resources. 4 q.h.

811. *Theory of International Trade.* Theory of international specialization, world trade and development; commercial policies and international economic relations; some references to the international balance of payments (with emphasis on current accounts), exchange rates, and payment mechanism. Prereq.: Economics 603. 3 q.h.

812. *International Finance and Capital Movements.* Theories of international values, mechanism of adjustment of international balances; theories of foreign exchange and capital movements; theories concerning interrelation between price level, balance of payments, and capital movements; international aspects of monetary and banking theory. Prereq.: Economics 603. 3 q.h.

813. *Economic Development.* Theories of economic growth as applied to developing economies; study and analysis of the nature of, the obstacles to, and the future possibilities for accelerated economic growth in underdeveloped nations; the economic effects of international movements of capital and intergovernmental economic assistance. Prereq.: Economics 812 or consent of instructor. 3 q.h.

820. *Regional Economic Analysis.* A study of the forces that promote or deter the growth of a region and the techniques available for measuring and projecting regional development. Major emphasis is placed upon inter- and intra-regional migration patterns, economic base analysis, shift and share measurement, regional income estimation, input-output techniques, local multipliers and cyclical behavior, and the role of economic and social overhead capital in regional growth. Prereq.: Economics 601-602-603. 4 q.h.

821. *Location Theory.* An analysis of the economic considerations which do much to explain the locational patterns of individual business firms within regions of the U.S. and of the forces promoting agglomeration of firms. Stress is placed upon the relative importance of material and human resource inputs, the market for outputs, and the quantity and quality of economic and social overhead capital in attracting different types of firms to a region. In addition, the concepts of external and internal economies of scale, intermunicipal cost precipitation, and external costs and benefits are explored in order to approximate the optimum spatial extent for the provision of public goods and services. Prereq.: Economics 820. 4 q.h.

822. *Seminar in Regional and Urban Economics.* Selected readings in the study of

the growth of regions in the U.S. Topics discussed include the theory and strategy of regional growth, cost-benefit analysis as a tool for regional public investment decision making; determinants of the demand for and supply of transportation facilities; and problems in the finance of urban and regional public goods and services. Prereq.: Economics 821. 4 q.h.

831. *Labor Markets.* Economic theory and analysis of labor as an input in the resource market; principles, labor problems, public policy; theories of the development of the labor movement; economic objectives of trade unions, problems in public control. Prereq.: Economics 603. 4 q.h.

833. *Collective Bargaining and Arbitration.* Marginal productivity theory as a restraint in labor negotiations; theory and practice of collective bargaining; bilateral monopoly, countervailing power, and third party involvement; Macro-economic implications of bilateral conflict resolutions, analysis of government wage-price guidelines and control. Prereq.: Economics 603. 4 q.h.

835. *Labor Legislation.* Development of labor law in the U.S.; analysis and economic implications of the effects of the common law, legislative enactments, judicial decisions, and administrative rulings on labor management relations, public policy, and problems of implementation. Prereq.: Economics 603. 4 q.h.

ENGLISH

Professors Pfau (chairman), K. Dykema, Hankey, T. Miner, and W. Miner; Associate Professors M. V. Hare, R. Hare, Ives, Kelty, Secrist, and Solimine; Assistant Professors Alderman, C. Baird, L. Baird, W. Baker, Budge, Conroy, DeJovine, Einstein, C. Gay, T. Gay, Henke, Knapp, Krynicky, G. Murphy, L. Rosenthal, W. Schultz, Sniderman, Thompson, and Wilkinson; Instructors Brothers, K. Crites, M. Curran, S. Curran, A. Rowe, R. Rowe, Schafer, Shale, and van Gorder.

English majors are expected to complete 45 hours including at least five hours in American literature, 18 hours in English literature, English 755 and 756, and a course in advanced composition. In addition, all English majors must show evidence of having completed a satisfactory term paper in an Upper Division English course. English 525-526-527 (Communication I-II-III) does not count toward a major in English.

Students who plan to teach high school English should major in English, unless they intend English to be a second teaching field, in which case they should complete 31 hours in English, distributed as follows: six hours in American literature; nine hours in English literature including the study of poetry and prose; a course in advanced composition; English 755 and 756; and three hours in some other English course.

Credit in English will be given for Humanities 631, Mythology in Literature; Humanities 830, Older Classics A; Humanities 831, Older Classics B; Humanities 832, Older Classics C; Humanities 833, Modern Classics I; Humanities 834, Modern Classics II; and Humanities 835, Modern Classics III.

English 525-526-527 is required of all University students with the exception of students in two-year degree programs.

English 527 is prerequisite to all other English courses. One literature course from the offerings in English or Humanities that satisfies the graduation requirement in Humanities is normally a prerequisite to other courses in literature and to advanced writing courses. Under special circumstances, however, the department chairman may grant permission to enter Upper Division courses without the prerequisite.

Foreign students whose first language is not English may get credit towards graduation for English and Communication courses in which their teacher feels that the general objectives of the courses have been achieved, even though the student's written English may not be entirely satisfactory in the mechanics of written expression. However, this credit will be entered on the student's permanent record without the usual letter grade, with an indication that credit has been allowed and with a reference to a notation on his final transcript which will make clear the reasons for the exception.

Non-Credit Course

510. *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 a week. A student may repeat the course as many times as necessary to achieve a satisfactory rating. The course carries no credit toward graduation but upon recommendation of the teacher, a student who gets a grade of Satisfactory may be permitted to enroll in English 526 without having taken English 525. Students taking this course will have six hours added to their degree requirement. 6 q.h.

Lower Division Courses

525-526-527. *Communication I-II-III.* This course attempts to improve the effective-

ness of the student's writing and speech, 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 English 527 is required for graduation; no D grade is given in English 527. *Does not count toward a major in English.* (For certification, graduation, and transfer purposes, this course may be interpreted as nine hours of composition and three hours of speech.) A statement on policy and procedure for exemption from all or part of the Communication requirement is available from the English office. 4 + 4 + 4 q.h.

505H-506H-507H. *Communication Honors I-II-III.* An honors course for selected students, emphasizing wide reading and independent research. A satisfactory grade (A or B) in English 507H will be regarded as fulfillment of the University requirement in Communication. Students may be transferred from regular Communication sections to Honors sections with the recommendation of the teacher and the approval of the Communication Honors coordinator. *Does not count toward a major in English.* 3 + 3 + 3 q.h.

608. *Children's Literature.* A study of the development of children's literature, giving the prospective elementary teacher some ways of judging books and some insights into the problems of making literature a meaningful experience for children. Required of all elementary education candidates. *Does not satisfy the graduation requirement in Humanities; does not count toward a major in English.* Prereq.: English 527 or its equivalent. 4 q.h.

609. *Introduction to Literature.* A non-technical, non-historical course in which important works of English and American literature are read and discussed critically for increased enjoyment and understanding. Prereq.: English 527 or its equivalent. 5 q.h.

610. *World Literature.* A non-technical, non-historical course in which important works in translation are read and discussed critically for increased enjoyment and understanding. Prereq.: English 527 or its equivalent. 5 q.h.

611. *Survey of English Literature I.* Major works in poetry and prose from the beginnings of English literature through the eighteenth century. Prereq.: English 527 or its equivalent. 5 q.h.

612. *Survey of English Literature II.* Major works of poetry and prose from the Romantic period to the present. Prereq.: English 527 or its equivalent. 5 q.h.

613. *Survey of American Literature I.* Major works of poetry and prose from the Colonial times through the Civil War. Prereq.: English 527 or its equivalent. 5 q.h.

614. *Survey of American Literature II.* Major works of poetry and prose from the Civil War to the present. Prereq.: English 527 or its equivalent. 5 q.h.

615-616. *Oral Interpretation.* Identical with Speech and Dramatics 615-616. 3 + 3 q.h.

650. *The American Language.* A study of contemporary pronunciation, grammar, and usage, including a brief survey of the earlier development of the English language. *Not for English majors, who take English 755 and 756.* Prereq.: English 527 or its equivalent. 5 q.h.

Upper Division Courses

Prerequisite to the following courses, unless otherwise stated: One literature course from the offerings in English or humanities that satisfies the graduation requirement in humanities, or consent of the department chairman.

705L, 706L, 707L. *Journalism Workshop.* Application through student publications of the principles of English 715, 716. Students register for 3 hours unless specially authorized. Each course may be repeated once. Prereq. or concurrent: English 715 or consent of the teacher. 3-6, 3-6, 3-6 q.h.

715. *Journalism I.* News reporting and writing. The news room in newspaper production. Prereq.: English 527 or its equivalent. 4 q.h.

716. *Journalism II.* Feature writing, copy editing and make-up. Prereq.: English 715, its equivalent, or consent of the teacher. 4 q.h.

740. *Expository Writing.* A course in advanced composition, designed to strengthen proficiency in writing expository prose, with emphasis on analysis of style, development of ideas, and clarity of thought and expression. Offered especially for those who plan to teach English. 4 q.h.

743, 744, 745. *Creative Writing.* Courses in advanced composition for mature students, providing opportunity to develop creative ability. English 743 offered in fall quarter, 744 in winter quarter, 745 in spring quarter. 3 + 3 + 3 q.h.

750. *Language and Culture.* Identical with Linguistics 750. Prereq.: English 527 or its equivalent. 4 q.h.

754. *Phonology.* Identical with Linguistics 754. Prereq.: English 527 or its equivalent. 4 q.h.

755. *Principles of Linguistic Study.* Survey of elements of linguistic structure, methods of analysis and description, theoretical models, and the role of language in human affairs. Prereq.: English 527 or its equivalent. 5 q.h.

756. *History and Structure of English.* Survey of the historical development of English language structure and its social context from its origins to the present. Prereq.: English 755. 5 q.h.

760, 761, 762. *Shakespeare.* A study of the development of Shakespeare's dramatic art. English 760: early comedies and tragedies, histories through *Henry V;* 761: *Julius Caesar,* romantic comedies, *Hamlet,* and problem comedies; 762: major tragedies (excluding *Hamlet*) and late romances. 3 + 3 + 3 q.h.

770. *Major American Authors.* Intensive reading of several American writers. Writers considered vary, but are announced each time the course is offered. For example, the approach might be through transcendentalism, the democratic traditions, realism, or naturalism. 5 q.h.

775. *The American Novel.* The history and development of the novel in the United States during the nineteenth and twentieth centuries. 5 q.h.

776. *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. 5 q.h.

777, 778. *The English Novel.* The history and development of the novel in England. English 777: the beginnings of the novel through Jane Austen. English 778: Sir Walter Scott through Thomas Hardy. 5 + 5 q.h.

815. *American Periodicals.* The origins and development of the American periodical press, with emphasis on its contributions to American literature. 4 q.h.

855. *Semantics.* Identical with Linguistics 855. Prereq.: English 650 or 755. 4 q.h.

859. *Selected Topics in Linguistics.* A study in depth of a concept or problem in linguistics. The topic is announced each time the course is offered. May be repeated once. Prereq.: English 755 or consent of the teacher. 3 - 5 q.h.

860. *Chaucer.* Reading of Chaucer's principal works, with some study of his immediate predecessors and contemporaries. 5 q.h.

863. *English Drama to 1642.* The history of the drama in England from the beginnings to the closing of the theaters in 1642, with emphasis on Elizabethan and Jacobean drama, excluding Shakespeare. 5 q.h.

864. *Modern Drama.* English, Irish, and (in translation) continental drama from Ibsen to the present. 5 q.h.

865. *American Drama.* The emphasis is mainly on the drama since 1915. 5 q.h.

868. *Modern American and British Poetry.* An intensive study of poetry in English published since 1890. 5 q.h.

871. *The Black Man in American Literature.* Literature by and about the Black Man in America. 5 q.h.

880. *Medieval Comparative Literature.* A study of Early English literature and other medieval European works before 1500, in translation, including the *Volsungasaga,* the *Nibelungenlied,* and the *Chanson de Roland.* 4 q.h.

881. *The Sixteenth Century.* Important non-dramatic works in prose and poetry of the English Renaissance with emphasis on Spenser and his contemporaries. 5 q.h.

882. *The Seventeenth Century.* Important non-dramatic works in prose and poetry, excluding Milton, with emphasis on Bacon, Donne, Jonson, Browne and Taylor. 4 q.h.

883. *Milton.* A study of Milton's minor poems, *Paradise Lost, Samson Agonistes,* and selections from his prose, in their historical context. 3 q.h.

884. *The Restoration and Early Eighteenth Century.* Important works in poetry and prose, including the drama but not the novel, from 1660 to 1740, with emphasis on Dryden, Congreve, Pope and Swift. 4 q.h.

886. *The Later Eighteenth Century.* Important works in poetry and prose, including the drama but not the novel, from 1740 to the end of the eighteenth century, with emphasis on Johnson, Sheridan, Cowper, Burns and Blake. 4 q.h.

887. *The Romantic Period.* Important works in prose and poetry from 1789 to 1832 with emphasis on the poetry of Blake, Wordsworth, Coleridge, Shelley, Keats, and Byron. 4 q.h.

891. *The Victorian Period.* Important works in poetry and prose, excluding the novel, from 1832 to 1900, with emphasis on Carlyle, Ruskin, Tennyson, Browning, Arnold and Newman. 5 q.h.

895. *Twentieth-Century British Literature.* A study of major literary trends since 1900, with emphasis on the novel and shorter prose works. 4 q.h.

899. *Selected Topics in Literary Study.* A study in depth of a specific topic in English or American literature or in literary theory. The topic is announced each time the course is offered. May be repeated once. Prereq.: English major with junior or senior standing or consent of the department chairman. 3 - 5 q.h.

FOREIGN LANGUAGES

Professor C. Dykema; Associate Professors Ward (chairman), Alberti, Garcia, Ives, and Metzger; Assistant Professors Barna-Gulanich, Killough, Linkhorn, Loud, and Veccia; Instructor Rigo.

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

FORESTRY

See *Pre-Forestry.*

FRENCH

A major in French consists of 45 quarter hours above the elementary level, of which 24 quarter hours must be in literature.

Unless otherwise stated, the prerequisite for any Upper Division course is French 602, or four years of high school French, or consent of the department chairman.

Lower Division Courses

501-502-503. *Elementary French.* Fundamental principles of grammar taught through oral and written exercises and the reading of simple prose. The stress in this course is on the aural-oral facility. No credit can be given for this course if the student has been given entrance credit for two years of high school French. Five class meetings. 4-4-4 q.h.

601. *Intermediate French.* Grammar reviewed through oral and written exercises. Reading of modern prose and poetry. Five class meetings. Prereq.: C or better in French 503 or in second-year high school. 4 q.h.

602. *Intermediate French.* Continuation of French 601. Five class meetings. Prereq.: 601 or equivalent. 4 q.h.

Upper Division Courses

701. *Survey of French Literature.* Middle ages to 1700. 3 q.h.

702. *Survey of French Literature.* 1700 to 1850. 3 q.h.

703. *Survey of French Literature.* 1850 to present. 3 q.h.

750. *French Civilization.* A study of the geography, history, traditions, and culture of France. 5 q.h.

760. *Applied French Phonetics.* A study of phonetics for application to individual pronunciation problems; intensive drill, conversation. 3 q.h.

761. *Conversational French.* Facility in oral expression developed through exercises on and discussions of assigned topics and through prepared and extemporaneous situational dialogs and plays. 5 q.h.

770. *French Composition.* Skill in writing developed through directed composition, starting at the intermediate level. 3 q.h.

771-772. *Advanced French Grammar.* A review in depth of French grammar through analysis of the stylistic devices of literary works, and through exercises, translation, and original composition. Prereq.: 770 or equivalent. 3 + 3 q.h.

773. *Explication de Texte.* Detailed oral examination of poetry and prose to develop skills in perceptive analysis of literature. 5 q.h.

774. *Advanced French Composition.* A course designed to develop skills in free composition on assigned topics. Prereq.: 772 or equivalent. 5 q.h.

801. *Rabelais, Montaigne, Baroque Period of 17th Century Literature.* Prereq.: 701 or consent of instructor. 3 q.h.

802. *Corneille, Age of Louis XIV, I.* Prereq.: 701 or consent of instructor. 3 q.h.

803. *Age of Louis XIV, II.* Prereq.: 701 or consent of instructor. 3 q.h.

811. *Montesquieu and Other Writers of First Half of Century Excluding Voltaire and Rousseau.* Prereq.: 702 or consent of instructor. 3 q.h.

812. *Voltaire and Rousseau.* Prereq.: 702 or consent of instructor. 3 q.h.

813. *Diderot and Other Writers of Second Half of Century.* Prereq.: 702 or consent of instructor. 3 q.h.

821. *Precursors of Romanticism, and Romanticism.* Prereq.: 702 or consent of instructor. 3 q.h.

822. *Realism; Post-Romantic Poets Through Baudelaire.* Prereq.: 702 or consent of instructor. 3 q.h.

823. *Naturalism; Parnasse; Symbolism.* Prereq.: 703 or consent of instructor. 3 q.h.

831. *France; Proust; 20th Century Poetry.* Prereq.: 703 or consent of instructor. 3 q.h.

832. *20th Century Novels After Proust.* Prereq.: 703 or consent of instructor. 3 q.h.

833. *20th Century Theatre.* Prereq.: 703 or consent of instructor. 3 q.h.

862. *History of the French Language.* The evolution of Latin to Modern French from the standpoint of phonetics, morphology, syntax, and vocabulary. 3 q.h.

865-866. *Comparative Romance Linguistics.* First course: The phonology and vocabulary of the chief Romance dialects. Second course: Morphology and syntax. 3 + 3 q.h.

870, 871, 872. *Special Reading and Research.* Directed study on a central theme or

thesis in French language or literature terminating in an examination, research paper, or both. Prereq.: Permission of the department head and the voluntary agreement of the instructor. 1-5, 1-5, 1-5 q.h.

873, 874, 875. *Seminar in French Language or Literature.* A seminar in problems in French language or literature. Prereq.: Senior standing or permission of the instructor. 3, 3, 3 q.h.

876. *Study Abroad.* See the department chairman for details. Prereq.: Prior permission from the department chairman and major advisor. 1-15 q.h.

GEOGRAPHY

Associate Professors Klasovsky (chairman) and Laitman; Assistant Professors Anton, Manton, and Matzye; Instructor Vechiarella.

A major in geography consists of a minimum of 45 quarter hours, of which at least 30 quarter hours must be earned in Upper Division courses.

SUGGESTED ELECTIVES: Science requirement should be met by Geology 501 and 502; Economics 704, 705, and 706 are strongly recommended; other acceptable upper level electives are dependent upon the student's area of interest.

Lower Division Courses

502. *Principles of Geography.* A study of causal relationships between life activities and their physical surroundings. 5 q.h.

519. *Economic Geography.* Geographical study of the world distribution of economic activity, including an introduction to location theory. 5 q.h.

600. *Introduction to World Culture Geography.* An introductory study of the elements of the cultural setting: their nature, distribution, land use, sequent occupance, and settlement patterns, and their significance in relation to each other and to the environment. Prereq.: Geography 502 or consent of teacher. 3 q.h.

603. *Conservation of Natural Resources.* Conservation of soil, water, plant, animal, mineral, and recreational resources; general principles of conservation as they apply to the U.S.A. 3 q.h.

604. *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 continents. Prereq.: Geography 502 or equivalent. Offered in the fall quarter. 3 q.h.

625. *General Meteorology.* An introductory course dealing with cloud types, pressure, temperature, humidity, precipitations, atmospheric composition and circulation, types of stability, air mass analysis, and surface map analysis. Prereq.: Sophomore standing. 3 q.h.

Upper Division Courses

701. *Geomorphology.* Identical with Geology 701. Prereq.: Geology 502 or consent of teacher. 6 q.h.

703. *Physiography of the United States.* Identical with Geology 703. Prereq.: Geology 602. 6 q.h.

710. *Regional Geography of Middle America and the Caribbean.* A regional approach to the economic and cultural backgrounds of Latin American from the Rio Grande to the continent of South America, stressing the operation of geographic principles in development and behavior. Prereq.: Junior standing and 18 hours of social studies or equivalent. 3 q.h.

711. *Regional Geography of South America.* A regional approach to the economic and cultural backgrounds of the countries of South America, stressing the operation of geographic principles in their development and behavior. Prereq.: Junior standing and Geog. 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

712. *Regional Geography of Africa, South of the Sahara.* Resources, political affiliations and stages of economic development of Africa, South of the Sahara Desert. Prereq.: Junior standing and Geog. 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

713. *Regional Geography of North Africa and the Middle East.* Resources, political affiliations and stages of economic development of North Africa and Middle Eastern political units. Prereq.: Junior standing and Geog. 502 or 519 or junior standing and 18 hours of social studies or equivalent. 3 q.h.

714. *Regional Geography of Eastern Asia.* A regional approach to the economic and cultural background of the countries of Eastern Asia, with emphasis on China, Japan, and Korea. Prereq.: Junior standing and Geog. 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

715. *Regional Geography of Southeast Asia.* A regional approach to the economic and cultural backgrounds of the political units of southeast Asia, emphasis on India, Pakistan, and the countries to the east. Prereq.: Junior standing and Geog. 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

716. *Geography of Western Europe.* Geographic factors in the economic, social, and

political progress of the nations of Western Europe. Major problems of the countries of Western Europe in light of their geographic backgrounds. Prereq.: Junior standing and Geog. 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

717. *Geography of Eastern Europe.* Geographic factors in the economic, social, political progress of the nations of Eastern Europe. Major problems of the countries of Eastern Europe in light of their geographic backgrounds. Prereq.: Junior standing and Geography 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

718. *Geography of Anglo-America.* The physical background of the English-speaking parts of North America and its relation to their economies and cultures. The physiographic regions: the types of climate and their factors; natural vegetation, soils; the historical geography; the geographical regions. Prereq.: Junior standing and Geography 502 or 519, or junior standing and 18 hours of social studies or equivalent. 5 q.h.

719. *Geography of the Soviet Union.* The major regional divisions of the Soviet Union. The resource base in relation to the economic and political aims of the Soviet state. Prereq.: Junior standing and Geography 502 or 519, or junior standing and 18 hours of social studies or equivalent. 3 q.h.

800. *European Area Study.* A course in the geography and in the history of Western Europe, with special emphasis on urban and cultural development. The class is made up of about 30 members supervised by the Geography and History faculty, and tours cities in Austria, Belgium, France, Germany, Italy, The Netherlands, Switzerland, and the United Kingdom. The course is designed to provide maximum opportunities for meeting the people of Europe to develop an understanding of its various regions and urban areas, and to permit more valid interpretations of its current political, economic, and cultural state. The course grade is based upon a term paper which must be submitted within 60 days after the end of the course. 9 q.h.

Junior or senior standing in one of the social sciences, or the consent of the Geography Department chairman is a prerequisite for any of the following courses.

802. *Historical Geography of Anglo-America.* A study of the settlement and sequence occupance of Anglo-America, with emphasis on the physical, climatic, and cultural influence. Prereq.: Senior standing in one of the social sciences, or senior standing and the consent of the Geography Department chairman. 3 q.h.

803. *Urban Geography.* Origin and growth of cities. Structure and function of urban centers, their area and expansion and intertrade center relations, each examined in terms of city planning. Prereq.: Senior standing in one of the social sciences, or senior standing and the consent of the Geography Department chairman. 3 q.h.

804. *Political Geography.* Geographical characteristics of nation states. Geographic factors in the evolution, structure, and function of states. Relation of geopolitics to political geography. Prereq.: Senior standing in one of the social sciences, or senior standing and the consent of the Geography Department chairman. 3 q.h.

805. *Geography of Environmental Planning.* A review of the totality of factors influencing changes in our physical and cultural environment. Particular stress will be placed on the causes and effects of air, water, and land pollution as part of a region or countrywide system. Problems will be identified and proposed solutions reviewed. Specific investigation will be made of regions as well as the interrelationship between regions themselves. These factors will be examined in context of the spatial distribution of economic and social activities. 3 q.h.

GEOLOGY

Assistant Professors C. E. Harris (chairman), Abram, A. Harris, Khawaja, and Singler.

The major in geology provides the student with a background for professional work in geology, for teaching geology, for graduate work in geology, and for work in related fields.

Students interested in majoring in geology should consult with the Geology Department chairman.

Lower Division Courses

505. *Physical Geology.* A study of the various physical and chemical processes acting on and within the earth and their products. Credit for this course may be applied towards the University science requirements. Four hours of lecture per week. 4 q.h.

506. *Historical Geology.* A chronological study of the physical and biological development of the earth as determined by the rock and fossil record. Credit for this course may be applied towards the University science requirements. Four hours of lecture per week. Prereq.: Geology 505. 4 q.h.

507. *Geology Laboratory.* A combined lecture and laboratory involving the elementary identification of fossils, rocks, and minerals and the use of topographic and geologic maps plus assigned outside work on geologic techniques. Credit for this course may be

applied towards the University science requirements. Four hours of laboratory and two hours of lecture per week. Prereq.: Geology 505 and 506. 4 q.h.

601. *Economic Geology.* A study of the origin, mode of occurence, and major mining areas of important mineral resources. Five one-hour lectures a week. Not considered a laboratory science course. Geology majors or minors must take Geology 805 (1 q.h.) concurrently with Geology 601. Prereq.: Geology 505. 5 q.h.

604. *Megascopic Petrography.* A study of igneous, sedimentary, and metamorphic rocks based on their megascopic characteristics. Attention is given to classification, modes of occurence, and constituent minerals. Five hours of lecture and four hours of laboratory work a week. Prereq.: C or better in Geology 507. 6 q.h.

Upper Division Courses

701. *Geomorphology.* A detailed study of the various landforms and their origins. The laboratory session consists of the utilization of aerial photographs and topographic maps in recognizing and interpreting landforms. Five hours of lecture and four hours of laboratory work a week. Prereq.: Geology 507. 6 q.h.

702. *Glacial Geology.* A study of the glacial succession in North America during the Pleistocene Epoch. Emphasis is on the origin, movement, transposition by and deposits of glaciers. Field trips are mandatory. Five hours of lecture per week. Prereq.: Geology 505. 5 q.h.

703. *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. Five hours of lecture and four hours of laboratory a week. Prereq.: Geology 701. 6 q.h.

704. *Structural Geology.* A study of the principles of rock deformation, its causes and effects, and methods of determination of geologic structure in the field. Original and secondary features of sedimentary, igneous, and metamorphic rocks are studied in detail. Five hours of lecture a week. Prereq.: Geology 507 or consent of instructor. 5 q.h.

705. *Principles of Paleontology.* A study of fossil invertebrates, including their origin, classification, and significance. All phyla are studied in their relative biologic order. Five hours of lecture and four hours of laboratory work a week. Prereq.: Geology 507 or consent of instructor. 6 q.h.

801. *Mineralogy.* A study of the elements of crystallography, physical and chemical properties, occurence and use of the more common minerals. Qualitative analysis of minerals using the blow-pipe, borax bead tests, and flame tests are utilized. Five hours of lecture and four hours of laboratory work a week. Prereq.: Geology 507, Chemistry 515. 6 q.h.

802. *Stratigraphy.* A study of the formation, sequence, and correlation of the stratified rocks. Five hours of lecture a week. Prereq.: Geology 507. 5 q.h.

803. *Optical Mineralogy.* The theory and use of the polarizing microscope and its application to the study of crystalline materials. Five hours of lecture and four hours of laboratory work per week. Prereq.: Geology 801. 6 q.h.

804. *Ground Water.* A study of the geologic and hydrologic factors controlling the occurence and behavior of water beneath the earth's surface. Five hours of lecture per week. Prereq.: Geology 507. 5 q.h.

805. *Special Problems in Geology.* A study in depth of specific problems in one of the branches of geology. The problem will depend upon the student's interest, qualifications and equipment available. Prereq.: Consent of the Geology Department chairman and the instructor. May be repeated once. 1 to 5 q.h.

806. *Introduction to X-Ray Diffraction.* An introduction to the theory of x-ray diffraction and spectroscopy with respect to crystalline substances and the use and application of the Debye-Scherrer powder camera, the back reflection single crystal Laue camera, x-ray diffraction, x-ray spectroscopy (fluorescence) in the determination of the crystalline structure, composition and identification of minerals, inorganic and organic materials. Two hours of lecture and three hours of laboratory work per week. Prereq.: Geology 801 or consent of the Geology Department chairman. 3 q.h.

GERMAN

A major in German consists of 45 quarter hours above the elementary level, of which at least 24 must be in literature including German 820. German 770 or 771 and German 866 or 867-868 are required of German majors.

Lower Division Courses

501-502-503. *Elementary German.* Fundamental principles of grammar taught through oral and written exercises and the reading of simple prose. The stress in this course is on the aural-oral facility. No credit can be given for this course if the student has been

given entrance credit for two years of high school German. Five class meetings. 4—4—4 q.h.

601. *Intermediate German.* Elementary composition and conversation 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. Five class meetings. Prereq.: C or better in German 503 or high school equivalent. 4 q.h.

602. *Intermediate German.* A continuation of German 601. Five class meetings. Prereq.: German 601 or equivalent. 4 q.h.

611, 612. *Scientific German.* A basic course designed to develop expeditiously an ability to read scientific literature in German. Five class meetings. Prereq.: C or better in German 503 or in second-year high school German and one year of a laboratory science or equivalent. 4, 4 q.h.

Upper Division Courses

701, 702, 703. *Survey of German Literature.* An introduction to the study of German literature intended to acquaint the student with the main works and writers and the principal literary tendencies and movements. First quarter: from the beginnings to 1700. Second quarter: from 1700 through Romanticism. Third quarter: from Young Germany to the present. Prereq.: German 602 or equivalent. 3 + 3 + 3 q.h.

712. *German Civilization.* A study of the geography, history, and traditions of Germany. Prereq.: German 602 or equivalent. 3 q.h.

760, 761, 762. *Conversational German.* Conducted entirely in German, this course stresses pronunciation, vocabulary, and speech patterns, and gives the student an opportunity to express himself orally in German through a variety of techniques. Prereq.: German 602 or equivalent. 3, 3, 3 q.h.

770. *German Grammar and Composition.* Advanced study of German grammar, sentence structure, idioms, and the writing of simple prose. Prereq.: German 602 or equivalent. 5 q.h.

771. *Advanced German Composition.* Advanced training in written self-expression. Original compositions in German and class discussions. Prereq.: German 770 or permission of the instructor. 3 q.h.

800. *Early German Literature.* Intensive study of important German works from the eighth century through the seventeenth century with emphasis on the medieval *Bluetezeit.* Prereq.: German 701 or permission of the instructor. 3 q.h.

811, 812. *Eighteenth Century German Literature.* Intensive study of the Storm and Stress movement and Classicism including the works of Goethe, Schiller, and Lessing. Prereq.: German 702 or permission of the instructor. 3, 3 q.h.

820. *Goethe's Faust.* Study of the Faust legend and its influence on Goethe's masterpiece. An intensive criticism of both parts of Goethe's work is presented to the student. Prereq.: German 811 or 812 or permission of the instructor. 5 q.h.

821, 822, 823. *Nineteenth Century German Literature.* Intensive study of important German writers and their works from Romanticism through Realism. Prereq.: German 703 or permission of the instructor. 3, 3, 3 q.h.

831, 832, 833. *Recent German Literature.* Intensive study of significant German writers and their works from Naturalism to the present. Prereq.: German 703 or permission of the instructor. 3, 3, 3 q.h.

866. *History of the German Language.* Prereq.: German 602 or equivalent. 3 q.h.

867, 868. *Germanic Linguistics.* An introduction to the history and comparative study of the Germanic languages, with particular attention to the West Germanic literature languages: German, Dutch, and English. Prereq.: German 602 or equivalent. 3 + 3 q.h.

870, 871, 872. *Special Reading and Research.* Directed study on a central theme or thesis in German language or literature terminating in an examination, research paper, or both. Prereq.: Permission of the department head and the voluntary agreement of the instructor. 1-5, 1-5, 1-5 q.h.

873, 874, 875. *Seminar in German Language or literature.* A seminar in problems in German language or literature. Prereq.: Senior standing or permission of the instructor. 3, 3, 3 q.h.

876. *Study Abroad.* See the department chairman for details. Prereq.: Prior permission from the department chairman and major advisor. 1-15 q.h.

GREEK (ANCIENT)

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 or in Humanities. The Supervisor of Classical Studies should be consulted. For courses pertaining to ancient Greece that require no knowledge of its language, see *Classical Studies.*

Lower Division Courses

501-502-503. *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. Offered in the fall of even-numbered years. 3 + 3 + 3 q.h.

601. *Intermediate Greek I.* Reading in one or more authors, preceded or accompanied by review of elementary Greek if needed. Offered in the fall of odd-numbered years. Prereq.: Greek 503 or equivalent, or consent of Supervisor of Classical Studies. 3 q.h.

602, 603. *Intermediate Greek II and III.* Continuation of Greek 601, normally in the winter and spring quarters. Prereq.: Greek 601 or consent of the Supervisor of Classical Studies. 3 + 3 q.h.

Upper Division Courses

The following courses can be given on request by arrangement with the Supervisor of Classical Studies.

701. *Advanced Readings.* Reading in one or more major Greek writers, selected with consideration of the students' interests. Prereq.: Greek 603 or equivalent, and consent of the Supervisor of Classical Studies. 3 q.h.

702, 703. *Advanced Reading.* Like Greek 701, either as a continuation of it or as separate courses in other authors. Prereq.: Greek 603 or equivalent, or consent of the Supervisor of Classical Studies. 3 + 3 q.h.

HEALTH AND PHYSICAL EDUCATION

Associate Professors Ringer, (chairman), Beede, Carson, and Philipp; Assistant Professors Barret, Connelly, Kocinski, Laborde, Liptak, Robinette, and Rosselli; Instructors Dove, Johnson, Ramsey, Reilly, Wedekind, Wilkerson, and Zboray.

The Health and Physical Education Department seeks to make a contribution to the objectives of Youngstown State University by providing for the physical health and well being of the student through increasing motor efficiency, developing appropriate values and attitudes, and providing opportunities for social adjustment.

I. Required Courses

Every student seeking a degree from Youngstown State University must earn a minimum of six quarter hours of credit in Health and Physical Education. Of these, three quarter hours are in Health 509C; the other three, normally, are in physical activity courses, each providing one quarter hour of credit. The three quarter hours in physical activity are waived for R.O.T.C. students who have completed Military Science 501, 502, 503, and 601, 602, 603. Students who have had one or more years of continuous military service must consult with the Chairman of the Department of Health and Physical Education.

Members of the varsity baseball, basketball, football, golf, swimming, tennis, and rifle squads may receive physical activity credit through such participation.

The form of activity is chosen by the student. Activity courses may be taken separately or coeducationally as designated: M for men only, W for women only, C for men and women. Women students purchase the required uniform through the women's section of the department. Men students purchase the required uniform through the men's section of the department. Most of the other equipment for 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 with his teacher before buying new equipment.

Courses Meeting the General Requirement

509C. *Health Education.* Personal health, mother and child care, and good community living, including a study of such common disorders as heart disease, cancer, tuberculosis, and other communicable diseases and their control. 3 q.h.

613C. *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. 3 q.h.

614C. *Foundations of Physical Education.* The meaning and objectives of physical education. Analyzing fitness and activity problems so that the learner may have a more general knowledge and understanding about physical fitness in our day-to-day living. 3 q.h.

Activity Courses

500W. *Physical Activity: Field Hockey.* Techniques and rules of field hockey. Basic activity program. 1 q.h.

501W. *Physical Activity: Soccer.* Techniques and rules of soccer. Basic activity program. 1 q.h.

502W. *Physical Activity: Volleyball.* Techniques and rules of volleyball. Basic activity program. 1 q.h.

502C. *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 consent of department chairman. 1 q.h.

503W. *Physical Activity: Basketball.* Techniques and rules of basketball. Basic activity program. 1 q.h.

504W. *Physical Activity: Softball.* Techniques and rules of softball. Basic activity program. 1 q.h.

516M. *Varsity Football.* Course requirements are met by participating for a season as a member of the intercollegiate football squad. 1 q.h.

517M. *Varsity Basketball.* Course requirements are met by participating for a season as a member of the intercollegiate basketball squad. 1 q.h.

518M. *Varsity Baseball.* Course requirements are met by participating for a season as a member of the intercollegiate baseball squad. 1 q.h.

519M. *Varsity Track and Field.* Course requirements are met by participating for a season as a member of the intercollegiate track squad. 1 q.h.

520M. *Varsity Golf.* Course requirements are met by participating for a season as a member of the intercollegiate golf squad. 1 q.h.

520W. *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 consent of the department chairman. 1 q.h.

521M. *Varsity Tennis.* Course requirements are met by participating for a season as a member of the intercollegiate tennis squad. 1 q.h.

522M. *Varsity Swimming I.* Course requirements are met by participating for a season as a member of the intercollegiate swimming squad. 1 q.h.

523M. *Varsity Rifle.* Course requirements are met by participating for a season as a member of the intercollegiate rifle squad. R.O.T.C. detachment. 1 q.h.

525M. *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. 1 q.h.

526M. *Beginning Wrestling.* Elements of wrestling, for Health and Physical Education majors or minors. 1 q.h.

530W. *Archery.* Techniques of target archery. Consideration is also given to the selection, care, and repair of equipment. 1 q.h.

530C. *Archery.* Techniques of target archery. Consideration is also given to the selection, care and repair of equipment. 1 q.h.

531W. *Badminton.* The skills, mechanics, and rules of badminton. 1 q.h.

531C. *Badminton.* The skills, mechanics, and rules of badminton. 1 q.h.

532W. *Beginning Badminton and Archery.* The beginning skills and rules of badminton and target archery. 1 q.h.

532C. *Beginning Badminton and Archery.* The beginning skills and rules of badminton and of target archery. 1 q.h.

533W. *Beginning Bowling.* Fundamentals of bowling, including equipment selection, use of the straight ball delivery, and scoring. For the inexperienced bowler. 1 q.h.

533C. *Beginning Bowling.* Fundamentals of bowling, including equipment selection, use of the straight ball delivery, and scoring. For the inexperienced bowler. 1 q.h.

534C. *Beginning Fencing.* Fundamentals of foil fencing. Basic techniques of attack and parry, and elements of bouting and officiating. 1 q.h.

535C. *Intermediate Fencing.* To present the basic fundamentals of offense and defense and to develop an understanding of the simple direct and indirect attacks to various areas of the body. 1 q.h.

536M. *Beginning Gymnastics.* Beginning skills in basic tumbling, floor exercises, parallel bars, horizontal bar, side horse, vaulting, trampoline, and rings. 1 q.h.

536W. *Beginning Gymnastics.* Beginning skills in basic tumbling, floor exercises, balance beam, uneven parallel bars, vaulting, and trampoline. 1 q.h.

537W. *Beginning Tennis.* The skills, mechanics, and rules of tennis with emphasis on the doubles game. 1 q.h.

537C. *Beginning Tennis.* The skills, mechanics, and rules of tennis, with emphasis on the doubles game. 1 q.h.

538C. *Intermediate Tennis.* Intermediate to advanced skills and techniques of tennis with emphasis on strategy of game play. Prereq.: Beginning Tennis or equivalent. 1 q.h.

539C. *Intermediate Bowling.* Refinement of bowling skills and use of the hook delivery. Includes tournament planning, team strategy, and competition. 1 q.h.

540C. *Golf.* Fundamentals for beginning and intermediate golfers. 1 q.h.

543W. *Intermediate Gymnastics.* Intermediate skills, compulsory routines, and optional routines. Prereq.: Health and Physical Education 536W or consent of teacher. 1 q.h.

545M. *Beginning Swimming.* Adjustment to the water: fundamental skills; elementary back-stroke and front-crawl; elementary water safety. Open only to non-swimmers. 1 q.h.

545W. *Beginning Swimming.* Adjustment to the water, fundamental skills, elementary backstroke, side stroke, front crawl, and elementary water safety. For non-swimmers. 1 q.h.

546M. *Intermediate Swimming I.* Proper form of elementary back-stroke, breast-stroke, side-stroke, back-crawl, and front-crawl; elementary diving, with an introduction to the balance of the nine basic styles of swimming including inverted breast stroke, overarm side stroke, single trudgeon stroke, and trudgeon crawl. Form, endurance, and personal safety are emphasized. Prereq.: Health and Physical Education 545M. 1 q.h.

546W. *Intermediate Swimming I.* Proper form of the elementary back-stroke, side-stroke, breast-stroke, back-crawl and front-crawl, elementary diving, and personal safety. Prereq.: Health and Physical Education 545W or the equivalent. 1 q.h.

547M. *Intermediate Swimming II.* A review and continuation of Intermediate Swimming I, with additional consideration of the proper form of the nine basic swimming styles: emphasis on surface diving, treading water, turning and diving from the one-meter board; further emphasis on endurance and personal safety. Prereq.: Health and Physical Education 546M. 1 q.h.

547W. *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 546W, or the equivalent. 1 q.h.

548M. *Advanced Swimming.* Continuing the nine basic styles of swimming, with emphasis on form and perfection of each stroke, and a consideration of plain and fancy diving and swimming, including personal safety. Prereq.: Health and Physical Education 547M, or the equivalent. 1 q.h.

548W. *Advanced Swimming.* Synchronized swimming and elements of plain and fancy diving, including the competitive aspects of swimming and diving. Prereq.: Health and Physical Education 547W, or the equivalent. 1 q.h.

553C. *Beginning Social Dance.* Designed for the student with no experience in ballroom dance. Emphasis is on basic steps in the fox trot, waltz, tango, and rhumba. Popular dance steps are also included. 1 q.h.

555W. *Folk and Square Dance I.* European folk dances and American square and couple dances. Stress is placed on the schottische, waltz, polka, and two-step. 1 q.h.

555C. *Folk and Square Dance I.* European folk dances and American square and couple dances. Stress is placed on the schottische, waltz, polka, and two-step. 1 q.h.

556W. *Folk and Square Dance II.* A continuation of Health and Physical Education 555W. Folk dances of the intermediate and advanced levels are emphasized. Prereq.: Health and Physical Education 555W, or consent of teacher. 1 q.h.

556C. *Folk and Square Dance II.* A continuation of Health and Physical Education 555C. Folk dances of the intermediate and advanced levels are emphasized. Prereq.: Health and Physical Education 555C, or consent of teacher. 1 q.h.

557W. *Beginning Tap Dance.* Basic tap technique for the beginner. 1 q.h.

557C. *Beginning Tap Dance.* Basic tap technique for the beginner. 1 q.h.

559W. *Beginning Modern Dance.* Fundamental movement techniques, elements of rhythmic and musical patterns. Basic composition. 1 q.h.

560W. *Intermediate Modern Dance.* A continuation of Health and Physical Education 559W. Consideration is given to problems in composition. Prereq.: Health and Physical Education 559W, or consent of teacher. 1 q.h.

560C. *Intermediate Modern Dance.* A continuation of Health Education and Physical Education 559W. Consideration is given to problems in composition. Prereq.: Health and Physical Education 559W, or consent of teacher. 1 q.h.

650C. *Life Saving Methods.* Techniques of life-saving with American Red Cross methods as the basis of instruction. Upon satisfactory completion, Red Cross Senior Life Saving certification is granted. Prereq.: Consent of instructor. 3 q.h.

660M. *Skin and Scuba Diving.* Basic skin diving, using mask, fins, and snorkel. Scuba includes using tank and regulator, with emphasis on diving physics, diving physiology, planning, rescue, first aid, and safety skills. Skin and Scuba certification is granted upon successful completion of the course. Four class hours a week. Prereq.: Health and Physical Education 650M, or current certification as senior lifesaver. 3 q.h.

750C. *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. 3 q.h.

II. Professional Courses

Youngstown State University is fully approved by the Ohio State Department of Education for the preparation of health and physical education teachers for public schools. The degree of Bachelor of Science in Education with a major in health and physical education leads to either an Ohio State High School, or Special, Provisional Certificate.

Students interested in majoring in health and physical education should consult with the Health and Physical Education Department chairman.

600C. *Introduction and History of Health, Physical Education, and Recreation.* A content survey of the areas of health, physical education, and recreation. Introduction to professional preparation. Prereq.: Departmental Advisement. 3 q.h.

601C. *Safety and First Aid.* Accident prevention and first aid procedures, especially for injuries and illness common in the school, home, and community. Emphasis is on injuries common in physical activities. The American Red Cross Manual is followed. Standard, advanced, and instructor's certification are granted upon satisfactory completion. Prereq.: Approval of Health and Physical Education Department. 2 q.h.

602C. *Prevention and Care of Athletic Injuries.* Practical and theoretical aspects of treatment of athletic injuries in an athletic program; supples, training table, therapeutic equipment and techniques in conditioning, taping, and bandaging. Prereq.: Approval of Health and Physical Education Department. 3 q.h.

703C. *Principles of Health and Physical Education.* The historical development of and the biological, sociological, psychological, and educational principles related to the field of health education and physical education. Prereq.: Junior standing. 4 q.h.

706C. *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. 5 q.h.

707C. *Community Health Agencies.* The administrative interrelationships of special agencies dealing with community health. Prereq.: Health and Physical Education 706C. 4 q.h.

709M. *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. 3 q.h.

711M-712M-713M. *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 standing. 3 + 3 + 3 q.h.

711W-712W-713W. *Teaching of Individual and Dual Sports.* Methods of playing and teaching various individual and dual sports, including tennis, golf, badminton, bowling, fencing tactics, free exercise, stunts, tumbling, apparatus activities, archery, and recreational games. Prereq.: Sophomore rank. 3 + 3 + 3 q.h.

719C. *Methods in Teaching Rhythmic Activities I.* Rhythm and movement fundamentals; methods and materials of teaching folk, square, and social dance. Prereq.: Health and Physical Education 712M or 712W. 4 q.h.

721C. *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 509. 3 q.h.

722C. *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. 3 q.h.

769M. *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, out-door cooking, study of wildlife, fishing, and fire prevention and control, as well as selection and preparation of camp sites. Prereq.: Consent of teacher. 3-6 q.h.

770M. *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.: Consent of teacher. 3-6 q.h.

770W. *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 consent of teacher. 3-6 q.h.

771M. *Practice of Camp Counseling.* Application of camp leadership skills is emphasized. Supervised counseling experience is afforded the student through cooperation with nearby camps. Prereq.: Health and Physical Education 770M and consent of instructor. 3-9 q.h.

771W. *Practice of Camp Counseling.* Application of camp leadership skills is emphasized. Supervised counseling experience is afforded the student through cooperation with nearby camps. Prereq.: Health and Physical Education 770W and consent of teacher. 3-9 q.h.

803M. *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 703C. 5 q.h.

803W. *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 703C. 5 q.h.

804C. *Playgrounds: Organization and Administration.* Study and practice of techniques involved in the organization and administration of playgrounds. Prereq.: Junior standing. 5 q.h.

805C. *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. 5 q.h.

807M. *Teaching and Coaching of Football.* Prereq.: Health and Physical Education 712M. 3 q.h.

808M. *Teaching and Coaching of Basketball.* Prereq.: Health and Physical Education 712M. 3 q.h.

809M. *Teaching and Coaching of Baseball.* Prereq.: Health and Physical Education 712M. 3 q.h.

810. *Teaching and Coaching of Track and Field.* Prereq.: Health and Physical Education 712M. 3 q.h.

811W-812W-813W. *Teaching of Team Sports.* The theory and practice of teaching field hockey, soccer, volleyball, basketball, softball, and track and field. Prereq.: Health and Physical Education 500W. 3 + 3 + 3 q.h.

815C. *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 706C. 6 q.h.

817C. *Kinesiology and Applied Anatomy.* Muscular structure and function in relation to physical movement; analysis of fundamental movements. Prereq.: Biology 551-552. 3 q.h.

818C. *Remedial and Corrective Physical Education.* The organization of physical education activities selected to meet the individual needs of the atypical student. Consideration of such atypical conditions as posture, cardiac, and foot defects, dysmenorrhea, post-operative cases, certain orthopedic conditions, defects of sight and hearing, and mental handicaps. Evaluation of therapeutic exercises and activities. Prereq.: Health and Physical Education 817C. 3 q.h.

820W. *Methods of Teaching Rhythmic Activities II.* Methods and materials of teaching modern dance. Prereq.: Health and Physical Education 719C. 4 q.h.

821C. *Physiology of Exercise.* Designed to establish a sound basis of physiological principles on the various systems and organs of the body during muscular activity. Requirement: Undergraduate-Graduate Program. Prereq.: Biology 551-552. 4 q.h.

822C. *Tests and Measurements.* A study of the various tests in the field of health and physical education, including uses and interpretation of elementary statistical techniques. Requirement: Undergraduate-Graduate Program. Prereq.: Senior standing. 5 q.h.

825C. *Seminar in Physical Education.* Study of special problems pertinent to physical education. Prereq.: Senior standing. 3 q.h.

826C. *Seminar in Health Education.* Study of special problems pertinent to health education. Prereq.: Senior standing. 3 q.h.

827M. *Seminar in Athletics.* Study of special problems pertaining to athletics. Prereq.: Senior standing. 3 q.h.

828C. *Normal and Physical Diagnosis.* 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 818C. 3 q.h.

835M-836M-837M-838M. *Techniques of Officiating.* Qualification of officials; techniques of officiating; interpretation of rules and opportunity to qualify for such ratings as are possible in the sport activities offered. Emphasis will be on football, basketball, baseball, and track. Prereq.: Junior standing and consent of department chairman. 2 + 2 + 2 + 2 q.h.

835W-836W-838W. *Techniques of Officiating.* The theory and practice of officiating in field hockey, soccer, volleyball, basketball, softball, and track and field. 2 + 2 + 2 q.h.

865C. *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 a week. 5 q.h.

866C. *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 a week, to provide for adequate field observation and training in recognition of communicable diseases and problems. 3 q.h.

870W. *Seminar in Camp Administration.* Study of special problems pertinent to camp administration. Prereq.: Senior standing. 3 q.h.

HEBREW

Lower Division Courses

501-502-503. *Elementary Hebrew.* Fundamental principles of grammar and reading of simple prose in preparation for reading narrative portions of the first books of the Old Testament. Introduction to elementary conversational Hebrew. No credit can be given for this course if the student has been given entrance credit for two years of high school Hebrew. Five class meetings. 4 q.h.

601, 602. *Hebrew.* Reading of selections from the Book of Genesis. Acquisition of a sufficient vocabulary for simple conversation in Hebrew. Five class meetings. Prereq.: Hebrew 503 or equivalent with a grade of C or better. 4, 4 q.h.

HISTORY

Professors D. Behen, Roberts, Skardon, and Slavin; Associate Professors Blue, Domonkos, and Huang; Assistant Professors Earnhart (acting chairman), Beelen, Berger, Capeci, Darling, Friedman, Jenkins, Kulchycky, May, Ronda, Satre, and A. Smith.

The student majoring in history must complete, in addition to the general University requirements (see Requirements for the Degree, at the beginning of the College of Arts & Sciences), a minimum of 45 quarter hours and must complete the following group in the Department of History.

Group A—History 605, 606, 655, 656.

Group B—Select three courses from the following courses: 701, 702, 704, 706, 708, 710, 712, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 730, 731, 732, 733, 736, 738, 739, 741, 742, 744, 745, 746, 747, 749, 801.

Group C—Select three courses from the following courses: 735, 750, 751, 752, 753, 754, 755, 758, 759, 760, 761, 765, 766, 767, 768, 769, 780, 781, 782, 783, 784, 785, 786, 789, 790, 791, 792, 793, 795, 851.

Group D—Select three courses from the following courses: 611, 661, 662, 771, 773, 774, 775, 777, 778, 779, 787, 788, 796, 797, 798, 799, 811, 812, 813.

Students transferring 30 or more quarter hours in history to YSU from another institution must take at least five courses in Groups B, C, or D to obtain a major in history for graduation.

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, in the General Requirements and Regulations section); when there is need, students majoring in history should include in their programs advanced composition courses and courses in speech.

Lower Division Courses

600. *American History.* Identical with Military Science 600. 3 q.h.

605, 606. *History of the United States I, II.* A general survey of the political, social, and economic development of the United States to 1877 and from 1877 to the present. 5 + 4 q.h.

611. *Latin America.* A general course which surveys Latin America from its beginnings to the present. Emphasis is upon late 19th and 20th century developments. 5 q.h.

655, 656. *History of Western Civilization I, II.* The development of Western culture from its earliest appearance in the Near East to the Treaty of Westphalia and from the middle of the seventeenth century to the present, with emphasis on Europe. 5 + 4 q.h.

661. *Middle Eastern Civilization.* A survey of North Africa, the Middle East, and the Indian sub-continent from ancient times to the present with special emphasis upon nationalist movements in these regions in the past two centuries. 5 q.h.

662. *History of Asian Civilization.* A history of institutions and cultures of East and South Asia from Ancient times to the beginning of Western influences. Emphasis on traditional civilizations of China and Japan. 5 q.h.

Upper Division Courses

701. *Colonial America.* The settlement and development of colonial America to the middle of the eighteenth century. Prereq.: 605, 606. 3 q.h.

702. *The Revolution and the Constitution.* A survey of the colonial background, the causes and events of the Revolution, and the formation of the new Republic under the Constitution. Prereq.: 605, 606. 3 q.h.

704. *Federal Period.* An intensive study of the United States from the establishment of the national government to the rise of Jacksonian democracy. Prereq.: 605, 606. 3 q.h.

706. *Middle Period of American History.* An intensive study of the United States from the Jacksonian era to the eve of the Civil War. Prereq.: 605, 606. 3 q.h.

708. *The Civil War and Reconstruction.* An intensive study of military aspects: problems of the Confederacy; the political, social, and economic effects of the War on American society; and problems of reconstruction in both the North and the South. Prereq.: History 605, 606. 3 q.h.

710. *Emergence of Modern America.* Economic, social, political, and cultural history of the United States from Reconstruction to the Peace of Versailles, having as its major theme the transformation from a rural to an urban nation, and from a hemispheric to a world power. Prereq.: 605, 606. 3 q.h.

712. *Recent America.* The United States in modern times. The course is primarily concerned with domestic issues and emphasizes historical interpretation. Prereq.: 605, 606. 3 q.h.

714, 715, 716. *Economic History of the United States I, II, III.* An historical examination of the economy of the United States from the colonial to the modern period. Special emphasis is placed on such areas as agriculture, manufacturing, transportation and commerce, money and banking, and business and labor organizations. Prereq.: 605, 606. 3 + 3 + 3 q.h.

717, 718, 719. *Constitutional History of the United States, I, II, III.* The development of the American constitutional system from its English backgrounds to the contemporary era. Treatment emphasizes the formation, amendment, and interpretation of the Constitution of the United States. Prereq.: History 605, 606. 3 + 3 + 3 q.h.

720, 721, 722. *Social and Cultural History of the United States, I, II, III.* An examination of the social and cultural development of the United States with emphasis on the relationship between ideas and society. Attention is given to such areas as immigration, religion, education, family and social structure, painting, architecture, literature, and music. Prereq.: 605, 606. 3 + 3 + 3 q.h.

723, 724. *History of Ideas in America, I, II.* An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas. Prereq.: 605, 606. 3 + 3 q.h.

730, 731. *Black Man in American History.* An historical study of the Black Man's role in, and contributions to, the political, social, and economic development of the American society from the colonial period to the present. Prereq.: 605, 606. 4 + 4 q.h.

732, 733. *The West in American History, I, II.* A study of the advancing frontier in the United States and its effect on the political, economic, and social conditions of the country as a whole. Prereq.: 605, 606. 3 + 3 q.h.

735. *Urban History.* A survey of the history of cities in Western Europe and the United States to 1860. Prereq.: 605, 606. 3 q.h.

736. *Urban History of the United States.* The history of cities in the United States from 1860 to the present. Prereq.: History 735. 3 q.h.

738, 739. *The South in American History, I, II.* The course begins with the late colonial period, when settlers were pushing across the Appalachians and continues through the Reconstruction Period into the twentieth century. Special attention is given to local institutions, culture, economic, ideology, sectional politics, agriculture, and racial difficulties. Prereq.: 605, 606. 3 + 3 q.h.

741, 742. *Diplomatic History of the United States, I, II.* A study of the development, trends, and problems of the foreign relations of the United States. Prereq.: 605, 606. 3 + 3 q.h.

744. *The History of American Business.* A study of American business and its historical setting from the colonial period to the present, with emphasis on the interaction of economic and political factors. Prereq.: History 605, 606 or the equivalent, and junior standing. 3 q.h.

745. *Readings in American History to 1865.* An intensive study of the more important general works, monographs, and biographies dealing with the major problems in the United States history from colonial times to the Civil War. Prereq.: 18 hours of history or consent of teacher. 4 q.h.

746. *Readings in American History from 1865 to the Present.* An intensive study of the more important works, monographs, and biographies dealing with the major problems in United States history from the Civil War to the present. Prereq.: 18 hours of history or the consent of teacher. 4 q.h.

747. *History of the United States and Pennsylvania.* The history of the State of Pennsylvania with emphasis on its position in general American history. Prereq.: 605, 606. Open for those needing credit for Pennsylvania teaching certificate. 3 q.h.

749. *Philosophy of History.* The same as Philosophy 749. 4 q.h.

750. *North Africa in Modern Times.* An historical survey of Morocco, Algeria, Tunisia, and Libya from 1830 to the present. Prereq.: History 661. 4 q.h.

751. *Byzantine History.* A survey of the development of the Byzantine state from the reign of Constantine to the fall of Constantinople in 1453. Prereq.: History 655. 3 q.h.

752. *History of Ancient Greece.* The development of the Greek World from earliest times to the end of the Helenistic Age. Prereq.: History 655. 3 q.h.

753. *History of Rome.* The rise of the Roman state from earliest times to the end of the Principate. Prereq.: History 655. 3 q.h.

754. *Early Middle Ages.* History of Western Europe from the decline of Rome to the tenth century. Prereq.: History 655. 3 q.h.

755. *Late Middle Ages.* History of Western Europe from the tenth century to the Waning of the Middle Ages. Prereq.: History 655. 3 q.h.

758. *Renaissance Europe.* A survey of the major cultural, political, social, and economic development of Europe from the end of the Middle Ages into the sixteenth century. Prereq.: History 655. 3 q.h.

759. *The Reformation Era.* The history of Europe from the Lutheran Revolt to the Peace of Westphalia in 1648. Prereq.: History 655. 3 q.h.

760. *From Westphalia (1648) to the French Revolution.* Europe from the peace of Westphalia (1648) to the outbreak of the French Revolution (1789). The emphasis is on the age of Louis XIV and the Old Regime in France. Prereq.: History 656. 3 q.h.

761. *French Revolution & Napoleon.* The French Revolution and Napoleon Bonaparte, 1789-1815. Deals with a variety of Parisian revolutions, rise of political clubs, bourgeois and sans-culotte, rise and fall of Napoleon. Prereq.: History 656. 3 q.h.

765. *Europe from the Congress of Vienna to the Franco-Prussian War (1815-71).* Such movements as nationalism, the impact of the Industrial Revolution, Marxism, growth of democracy, liberalism and conservatism, Romanticism and realism, reform and revolution, from the main themes of this period. Prereq.: History 656. 3 q.h.

766. *Europe from the Franco-Prussian War to World War I.* Europe from the establishment of the German Empire to the outbreak of World War I. Imperialism, socialism, the new science, constitutional developments, social and political reforms, economic growth, diplomatic alignments are principal topics of this period. Prereq.: History 656. 3 q.h.

767. *Europe from World War I to the Present.* Europe from the first World War (1914) to the Present. The impact of the Russian Revolution, the rise of modern totalitarianism, problems of the western states, economic crisis and recovery, political and diplomatic relations form the basic themes of this course. Prereq.: 656. 3 q.h.

768, 769. *History of Germany I, II.* The struggle for supremacy in Germany; the Prussianization of Germany; Weimar and Hitler. Emphasis on the relationship of domestic to foreign policy, civil to military power, and political institutions to social developments. Prereq.: History 656. 4 + 4 q.h.

771. *History of China to 1912.* History of China through the end of the Dynastic Era, with emphasis on the late 19th century developments and their implications. Prereq.: History 662. 3 q.h.

773. *History of Japan and Korea to 1895.* History of the early development of Japan and Korea, with an examination of the modernization movement in Japan. Prereq.: History 662. 3 q.h.

774. *History of the Far East in Modern Times.* Political, economic, social and intellectual development in China and Japan during the 20th century and their respective roles in contemporary Asia. Prereq.: History 622. 3 q.h.

775. *History of South and Southeast Asia in the 19th & 20th Century.* A history of the

indigenous cultures, colonial background and developments in the 19th and 20th century. Prereq.: History 662. 3 q.h.

777, 778. *History of the Russian Empire, I, II.* A detailed study of the history of the Russian Empire from the establishment of the Romanov dynasty to the dissolution of the Empire. Prereq.: History 655, 656. 3 + 3 q.h.

779. *History of the Soviet Union.* A study of the history of the territories under the Bolshevik regime from the proclamation of the Bolshevik state to the present time. Prereq.: History 656. 3 q.h.

780, 781. *History of Eastern Europe I, II.* A study of eastern Europe from the beginnings of civilization to the present. Varying fortunes of the Finnish, Lithuanian, Ukrainian, Polish, Slovak, Russian, and North-Caucasian nations are examined closely against the background of the other Slav, Balto-Lithuanian, Finno-Ugrian, and Caucasian nations. Prereq.: History 655, 656. 3 + 3 q.h.

782. *History of the Balkans.* History of South-Eastern Europe from the 4th century to the present, with particular attention to Bulgaria, Serbia, Rumania, Croatia, and Greece, within South-Eastern Europe. Prereq.: History 655, 656. 3 q.h.

783, 784, 785. *Economic History of Europe I, II, III.* Rural and town economy in the Middle Ages; the transition to capitalism; development of modern industrial society. Prereq.: History 655, 656. 3 + 3 + 3 q.h.

786. *Expansion of Europe to 1815.* Lectures and readings on the economic development of Europe after 1300, the oceanic discoveries, the colonial system of the European countries, the influence of European expansion of non-European peoples, and the theories of the mercantilists. Prereq.: 9 hours of history or consent of teacher. 3 q.h.

787, 788. *History of Population Movements I, II.* Trends in world population in their relation to history, migration, and urbanization. Human demography and ecology: Various measurements of the size, density, and distribution of population as well as their economic and social environments. Prereq.: Junior standing (listed also as Economics 787 and Sociology 787). 4 + 3 q.h.

789, 790, 791. *English History I, II, III.* 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. Prereq.: History 655, 656. 3 + 3 + 3 q.h.

792, 793. *British Empire and Commonwealth I, II.* A study of the development of the British Empire from 1783 stressing India, Africa, Australia, and Canada. Movements emphasized are the development of colonial institutions, the formation of British colonial policy, the growth of colonial nationalism, the evolution of the Commonwealth. Prereq.: History 655, 656. 3 + 3 q.h.

795. *Historical Origins of Spanish Culture.* A survey of the development of the Western Mediterranean from early times, emphasizing the emergence of a true Spanish culture and its rise to dominance in the sixteenth and seventeenth centuries. Prereq.: History 655. 3 q.h.

796. *The Ancient Near East.* A study of civilizations in Mesopotamia and Egypt from the fourth millennium B.C. to the Graeco-Persian Wars. Special emphasis is placed upon literary materials from Sumer, Babylon, and Egypt. Prereq.: History 661. 4 q.h.

797. *Early Islamic Civilization.* The Middle East from the Jahiliyah Period to the Mongol Invasions, with special emphasis upon the religious reformation of Muhammad and Islamic culture under the Abbasids. Prereq.: History 661. 4 q.h.

798. *The Ottoman Empire.* History of the Middle East from the rise of the Ottomans in the 14th century to the Young Turk Revolution in 1908-9. Prereq.: History 661. 4 q.h.

799. *The Middle East in Modern Times.* An intensive study of this region since World War I. Special emphasis upon the clash of Arab nationalism, Zionism, oil diplomacy, and colonialism. Prereq.: History 661. 4 q.h.

801. *Select Problems in American History.* A study in depth of specific problems in American history in such special areas as economics, political theory, and cultural and intellectual history. May be repeated. Prereq.: Consent of teacher. 4 q.h.

811. *Mexico and the Caribbean.* Emphasis is upon Mexico, Colombia, Venezuela, and the Central American republics. Special consideration is given to 20th century Mexico. Prereq.: Consent of teacher. 4 q.h.

812. *History of South America.* The Spanish American republics and Brazil are considered. Prereq.: Consent of teacher. 4 q.h.

813. *History of Latin America.* Survey of Latin American-U.S. relations from the founding of the New World to the present with greatest emphasis placed upon the 20th century. Previous study of Latin America is recommended. Prereq.: Consent of teacher. 4 q.h.

850. *European Area Study.* A course in Western European history and geography with emphasis on intellectual and artistic develop-

ment. The class is made up of about 30 members supervised by the History and Geography faculty, and tours cities in Austria, Belgium, France, Germany, Italy, the Netherlands, Switzerland, and the United Kingdom. The course is designed to provide maximum opportunity to develop an understanding for the history, geography, and culture of the Western European area. The course grade is based upon a term paper which must be submitted within 60 days after the end of the course. Prereq.: Junior standing. 9 q.h.

851. *Select Problems in European History.* A study in depth of specific problems in European history in such special areas as economics, political theory, and cultural and intellectual history. May be repeated. Prereq.: Consent of teacher. 4 q.h.

HOME ECONOMICS

Associate Professor McMillan; Assistant Professor Feldmiller (chairman).

The Department of Home Economics offers opportunities both for the student who wishes a general knowledge of the field and for the student who wishes to prepare for a profession.

To meet the requirements for a Bachelor of Arts degree with the major in home economics, the student must meet the general requirements for that degree and must complete the following courses:

Biology 551, 552, 604.
Chemistry 501, 502, 503.
Home Economics 501, 501L, 503, 601, 602, 604, 701, 705, 706, 707, 712, 713, 714, 802, 803, 850.

For those who want to teach 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 students, in addition to the general requirements for that degree, must complete the following courses:

Biology 551, 552, 604.
Chemistry 501, 502, 503.
Home Economics 501, 501L, 503, 601, 602, 604, 701, 705, 706, 707, 712, 713, 714, 800, 802, 803, 850.

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 the student interested in dietetics and nutrition, courses are offered leading to the degree of Bachelor of Science with the major in home economics. For this purpose the student, besides meeting all general requirements for the Bachelor of Science degree, must complete the following courses:

Biology 551, 552, 604.
Chemistry 501, 502, 503, 719, 720, 705.
Home Economics 501, 501L, 601, 602, 709, 710, 711, 714, 807, 808, 809, 810, 811, 850.

Lower Division Courses

501. *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. 3 q.h.

501L. *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 501. 1 q.h.

503. *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. Three one-hour discussion and two two-hour laboratory periods a week. 5 q.h.

601. *Principles of Food Preparation.* The basic principles and comparative methods in the preparation of commonly used foods. Two one-hour lectures, two two-hour laboratory periods and one discussion period a week. Prereq.: Home Economics 501 and 501L. 5 q.h.

602. *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 601. 3 q.h.

604. *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. Two one-hour lectures and two two-hour laboratory periods a week. Prereq.: Home Economics 503. 4 q.h.

Upper Division Courses

701. *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 two two-hour laboratory periods a week. Prereq.: Home Economics 503. 4 q.h.

702. *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. Two one-hour lecture and two two-hour laboratory periods a week. Prereq.: Home Economics 604 and 701. 5 q.h.

703. *Tailoring.* A study of the fundamental techniques involved in the construction of tailored coats and suits. One hour lecture and two two-hour laboratory periods a week. Prereq.: Home Economics 604 and 701. 4 q.h.

705. *Child Psychology.* Identical with Psychology 705 except for the addition of directed observation. Home Economics 706 taken concurrently. 4 q.h.

706. *Child Development Laboratory.* Observation in a nursery school and conferences with the Home Economics departmental staff; taken concurrently with Home Economics 705. 2 q.h.

707. *Psychology of Marriage and Family Relations.* Identical with Psychology 707. 3 q.h.

709. *Nutrition and Diet in Disease I.* 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, 552, Chemistry 720, and Home Economics 602. 3 q.h.

710. *Nutrition and Diet in Disease II.* Continuation of Home Economics 709 with application to choice of foods. Prereq.: Home Economics 709. 3 q.h.

711. *Nutrition and Diet in Disease III.* The modifications and adaptions of normal diets to meet the special nutritional needs in abnormal conditions where choice of food is of particular importance. Prereq.: Home Economics 710. 3 q.h.

712. *Housing: Furnishings and Equipment I.* 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 faculty. 3 q.h.

713. *Housing: Furnishings and Equipment II.* Consideration of needs and resources in arrangement of furnishings and equipment with emphasis on home lighting. Two one-hour lectures and one two-hour laboratory period a week. Prereq.: Consent of faculty. 3 q.h.

714. *Housing: Furnishings and Equipment III.* 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 faculty. 3 q.h.

800. *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 706 and 15 hours of credit in home economics. 3 q.h.

802. *Home Management I.* Study of the home, its functions and operation, and resources available. Two one-hour lectures, one two-hour laboratory period a week. Prereq.: Home Economics 714. 3 q.h.

803. *Home Management II.* Study of the home, its functions and operation, and resources recognized by the family. Two one-hour lectures, one two-hour laboratory period a week. Prereq.: Home Economics 802. 3 q.h.

807. *Institutional Equipment.* The selection of equipment for institutional food service with consideration of need, quality, cost, and trends in the market. Prereq.: Junior or senior standing with interest in dietetics or nutrition. 3 q.h.

808. *Institutional Marketing.* The selection and purchase of food for institutional food service with consideration of quality, quantity, cost and market practices. Prereq.: Junior or senior standing with interest in dietetics or nutrition. 3 q.h.

809. *Institutional Management.* The principles of business organization and management as applied to problems of institutional food service. Three lecture hours a week. 3 q.h.

810. *Experimental Cookery.* Application of scientific principles and experimental procedures to cooking processes. 2 two-hour laboratory periods a week. Prereq.: Chemistry 720 and Home Economics 602. 3 q.h.

811. *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. 5 q.h.

850. *Seminar in Home Economics.* Required of all seniors majoring in home economics. Prereq.: Senior standing and consent of faculty. 2 q.h.

HUMANITIES

Associate Professor Ives; English Department Staff.

The material of the six 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 631, 830, or 831 is acceptable toward a major in Latin at the discretion of the Chairman of the Department of Foreign Languages. They may also be counted toward the philosophy/fine arts requirement for teacher certification.

At the discretion of the department chairman or supervisor concerned, limited credit in a Humanities 800-level course may be applied toward a major in history, philosophy, political science, or sociology, or the combined major in social studies. Should such a student be also majoring in English, he may apply the balance of the credit toward his English major.

A prerequisite for any Humanities course is English 527 (Communication III), or its equivalent.

Lower Division Courses

631. *Mythology in Literature.* An introductory study of myths, chiefly classical, with some attention to their origins and cultural significance and of literary works, both classical and modern, in which myths are used. Listed also as Classical Studies 631. 3 q.h.

Upper Division Courses

830. *Older Classics A: Ancient Drama and Poetry.* Extensive readings in English from most or all of the following (and perhaps others): Aeschylus, Sophocles, Euripides, Aristophanes, The Old Testament, Aristotle's *Poetics*, Menander, Plautus, Terence, Horace's *Art of Poetry*, Seneca. Prereq.: Junior or senior standing. Listed also as Classical Studies 830. 4 q.h.

831. *Older Classics B: Ancient Prose and Poetry.* Extensive readings in English from most or all of the following (and perhaps others): The Old Testament, Homer, Herodotus, Thucydides, Plato, Aristotle, Lucretius, Cicero, Virgil. Prereq.: Junior or senior standing. Listed also as Classical Studies 831. 4 q.h.

832. *Older Classics C: Medieval and Renaissance Works.* Extensive readings in English from most or all of the following (and perhaps others): The New Testament, Augustine, Dante, Boccaccio, Petrarch, Pico della Mirandola, Chaucer, Machiavelli, Erasmus, More, Rabelais, Montaigne, Cervantes, and perhaps others. Prereq.: Junior or senior standing. 4 q.h.

833. *Modern Classics I.* Extensive readings in English from most or all of the following (and perhaps others): Shakespeare, Calderon, Descartes, Milton, Moliere, Racine, Spinoza, Locke, Pope, Fielding. Prereq.: Junior or senior standing. 3 q.h.

834. *Modern Classics II.* Extensive readings in English from most or all of the following (and perhaps others): Rousseau, Lessing, Voltaire, Adam Smith, Gibbon, Goethe, Balzac, Mill, Thackeray, Meredith, Dostoevsky. Prereq.: Junior or senior standing. 3 q.h.

835. *Modern Classics III.* Extensive readings in English from most or all of the following (and perhaps others): Tolstoy, Ibsen, Henry Adams, Hardy, William James, Shaw, Joyce, Thomas Mann, Proust. Prereq.: Junior or senior standing. 3 q.h.

Combined Major in Humanities

The requirements for the combined major in Humanities are available at the office of the Department of English.

ITALIAN

A major in Italian consists of 45 quarter hours above the elementary level. For a combined major in humanities, see *Humanities*.

Lower Division Courses

501-502-503. *Elementary Italian.* Fundamental principles of grammar taught through oral and written exercises and the reading of simple prose. The stress in this course is on the aural-oral facility. No credit can be given for this course if the student has been given entrance credit for two years of high school Italian. Five class meetings. 4 + 4 + 4 q.h.

601. *Intermediate Italian.* Grammar reviewed through oral and written exercises. Reading of modern Italian prose and poetry. Five class meetings. Prereq.: C or better in Italian 503 or in second year high school Italian. 4 q.h.

602. *Intermediate Italian.* A continuation of Italian 601. Five class meetings. Prereq.: Italian 601 or equivalent. 4 q.h.

Upper Division Courses

701, 702, 703. *Survey of Italian Literature.* A survey of Italian literature from the Middle Ages to the present. Prereq.: Italian 602 or equivalent. 3, 3, 3 q.h.

715, 716, 717. *Conversational Italian.* Fa-

cility in oral expression developed through exercises and discussions of assigned topics and through prepared and extemporaneous situational dialogues. Prereq.: Italian 602 or equivalent. 3, 3, 3 q.h.

718. *Italian Grammar and Composition.* A study in depth of the most difficult points of Italian grammar through analysis of modern texts and elementary composition. Prereq.: Italian 602 or equivalent. 5 q.h.

719. *Advanced Italian Composition.* Skill in writing, developed through directed composition. Prereq.: Italian 718 or permission of the instructor. 3 q.h.

801. *Italian Literature of the Fourteenth Century.* Literature of Dante, Petrarca, and Boccaccio. Prereq.: Italian 701 or consent of the instructor. 3 q.h.

802. *Italian Renaissance.* Special attention given to Ariosto, Machiavelli, and Tasso. Prereq.: Italian 701 or consent of the instructor. 3 q.h.

803. *Italian Neoclassicism.* A study of the works of Parini, Alfieri, and Goldoni. Prereq.: Italian 702 or consent of the instructor. 3 q.h.

811. *Italian Romanticism.* A study of the Italian literature of the nineteenth century with particular attention to the poetical world of Foscolo and Leopardi. Prereq.: Italian 703 or consent of the instructor. 3 q.h.

812. *The Italian Novel of the Nineteenth Century.* A study of the evolution of the novel with special attention to Alessandro Manzoni. Prereq.: Italian 703 or consent of the instructor. 3 q.h.

813. *Literature of New Italy.* A study of the Italian literature of the last thirty years of the nineteenth century with particular attention to the poetical world of Giosue Carducci. Prereq.: Italian 703 or consent of the instructor. 3 q.h.

821. *Italian Literature of the First 40 Years of the Twentieth Century.* A study of the major literary movements and political developments from the turn of the century through the Fascist State. Particular attention is given to G. D'Annunzio. Prereq.: Italian 813 or consent of the instructor. 3 q.h.

822. *Regional Italian Literature.* A study of Naturalism and Verism with particular attention given to G. Verga. Prereq.: Italian 813 or consent of the instructor. 3 q.h.

823. *Recent Italian Literature.* A study of the Italian literature of the last three decades. Prereq.: Italian 703 or consent of the instructor. 3 q.h.

864. *History of the Italian Language.* The evolution of Latin to Modern Italian from the standpoint of phonetics, morphology, syntax, and vocabulary. Prereq.: Italian 602 or equivalent. 3 q.h.

865, 866. *Comparative Romance Linguistics.* First course: The phonology and vocabulary of the chief Romance dialects. Second course: Morphology and syntax. Same as French and Spanish 865, 866. 3 + 3 q.h.

870, 871, 872. *Special Reading and Research.* Directed study on a central theme or thesis in Italian language or literature terminating in an examination, research paper, or both. Prereq.: Permission from the department head and the voluntary agreement of the instructor. 1-5, 1-5, 1-5 q.h.

873, 874, 875. *Seminar in Italian Language or Literature.* A seminar in problems in Italian literature or language. Prereq.: Senior standing or permission of the instructor. 3, 3, 3 q.h.

876. *Study Abroad.* See the department chairman for details. Prereq.: Prior permission from the department head and major advisor. 1-15 q.h.

JOURNALISM

See *English*. Besides a major in English, the student of journalism should get a broad education in the liberal arts with emphasis on the social sciences and the humanities.

LATIN

A major in Latin consists of 27 hours of Latin on the Upper Division level, including Latin 804, plus 18 hours of Latin, ancient Greek, and/or other courses acceptable in relevance and level to the Supervisor of Classical Studies. The inclusion of at least 9 hours of ancient Greek is strongly recommended.

Students who plan to teach high school Latin must complete 27 hours of Latin beyond elementary Latin, or 18 hours beyond intermediate Latin, and must include Latin 804 and 809.

Freshmen may enter 700-level Latin courses if they can satisfy the prerequisite stated below for Upper Division Latin courses.

A student who wishes to complete a foreign language proficiency requirement in Latin, or to complete the prerequisite for 700-level Latin courses, proceeds as follows:

If he has had less than the first two years of high school Latin, he takes Latin 501-502-503 and 601, 602, and 603.

If he has successfully completed second-year high school Latin, but no more, he takes Latin 601, 602, and 603. (He should read carefully the course description of Latin 601.)

If he has successfully completed third-year high school Latin, but no more, he takes any two quarters of the Intermediate Latin course (Latin 601, 602, 603), if his purpose is only to satisfy a foreign language proficiency requirement. Otherwise he should first consult the Supervisor of Classical Studies.

The student should read carefully what is said under *Proficiency in a Foreign Language,* near the beginning of the College of Arts and Sciences section. In cases of uncertainty or of unusual qualifications, the Supervisor of Classical Studies should be consulted.

A student with any thought of a major or even a teaching minor in Latin should see the Supervisor of Classical Studies upon entering the University, or as soon as possible thereafter. Delay in this may mean difficulty in completing the necessary courses within the desired time.

Lower Division Courses

501, 502, 503. *Elementary Latin, I, II, III.* Essentials of Latin grammar and some reading of connected prose. Designed for prelaw students and majors in English and modern languages as well as for students planning to continue work in Latin. No credit can be given for this course if the student has been given entrance credit for two years of high school Latin; but see *Proficiency in a Foreign Language,* near the beginning of the College of Arts and Sciences section. Offered in the fall of odd-numbered years. 3 + 3 + 3 q.h.

601. *Intermediate Latin I.* A rapid review and expansion of elementary Latin grammar, with simple prose exercises, accompanied or followed by careful reading of miscellaneous selections. The student, especially if he had his elementary Latin in high school, is advised to review his Latin before beginning this course, or to allow himself time to review it intensively during the early weeks of the course. Prereq.: grade of C or better in Latin 503 or in the second semester of second-year high school Latin, or the consent of the Supervisor of Classical Studies. Offered every fall. 3 q.h.

602. *Intermediate Latin II.* Reading of selections from Cicero and possibly other writers. Prereq.: Latin 601, or third-year high school Latin, or consent of Supervisor of Classical Studies. Offered every winter. 3 q.h.

603. *Intermediate Latin III.* Introduction to Latin poetry. Reading of selections from Catullus, Ovid, and other poets. Prereq.: Latin 601, or 602, or consent of Supervisor of Classical Studies. Offered every spring. 3 q.h.

Upper Division Courses

The prerequisite for any 700-level Latin course is Latin 603 (or in certain cases 602, with Supervisor's approval), or fourth-year high school Latin, or the consent of the Supervisor of Classical Studies. The prerequisite for any 800-level course is at least one 700-level Latin course and the consent of the Supervisor of Classical Studies.

701. *Cicero I.* Selections from the *Letters;* limited composition based on review of case usage and the less complex mood and tense uses. 3 q.h.

702. *Pliny II.* Selections from the *Letters;* composition based on review of the more complex mood and tense uses. 3 q.h.

703. *Horace's "Odes".* Readings of selected odes. 3 q.h.

704. *Pliny I.* Selections from the *Letters;* limited composition based on review of case usage and the less complex mood and tense uses. 3 q.h.

705. *Cicero II.* Reading of the *De Senectute* or a comparable work, with composition based on review of more complex mood and tense uses. 3 q.h.

706. *Ovid.* Selections, mostly from the *Metamorphoses.* 3 q.h.

801. *Roman Historians I.* Readings principally from Livy. 3 q.h.

802. *Roman Historians II.* Readings principally from Tacitus. 3 q.h.

803. *Lucretius.* Selections from the *De Rerum Natura.* A study of Epicurean philosophy as presented by Lucretius. 3 q.h.

804. *Advanced Composition and Syntax.* A synthesizing review of the principles of Latin syntax and practice in writing Latin, with special attention to differences in idiom, structure, and style between English and classical Latin. Prereq.: three Upper Division Latin courses, or consent of teacher. 3 q.h.

805. *Roman Satire I.* Readings principally from Horace and Juvenal. The place of satire in Latin literature. 3 q.h.

806. *Roman Satire II.* Readings principally from Martial and Petronius, and possibly Persius. 3 q.h.

807. *Plautus.* Selected plays. 3 q.h.

808. *Terence.* Selected plays. 3 q.h.

809. *Virgil's "Aeneid".* A study of the *Aeneid* based on a reading of the whole poem in English and of significant passages in Latin, with attention to style and method as well as to content. Required of candidates for certification as high school Latin teachers, unless the Supervisor of Classical Studies approves its omission. 3 q.h.

810. *Advanced Readings.* Selections from

one or more Latin writers, according to the needs or desires of the students. 1-4 q.h.

811. *History of Latin Literature I.* From its beginnings to the Golden Age, with selected readings. 3 q.h.

812. *History of Latin Literature II.* From the Golden Age to the Silver Age, with readings. 3 q.h.

813. *History of Latin Literature III.* From the Silver Age to the early Middle Ages, with readings. 3 q.h.

LINGUISTICS

The Department of Linguistics does not offer a major, but enables a student, with the advice and approval of his major advisor, to elect a minor in linguistics. The student planning such a minor should consult his advisor, especially to determine whether a course offered in both linguistics and his major department should be counted as linguistics or not.

Upper Division Courses

750. *Language and Culture.* A survey of the role of language structure as an instrument in human social behavior and social institutions. Prereq.: English 527 and Social Science 501, or their equivalents. Listed also as English 750. 4 q.h.

754. *Phonology.* An introduction to articulatory and acoustic analyses of speech sounds and their relevance to language functions. Prereq.: English 527 or its equivalent. Listed also as English 754, and Speech and Dramatics 754. 4 q.h.

755. *Principles of Linguistic Study.* Identical with English 755. 5 q.h.

756. *History and Structure of English.* Identical with English 756. 5 q.h.

760. *Applied French Phonetics.* Identical with French 760. 3 q.h.

855. *Semantics.* The study of relationships between language structure and its meanings, from the point of view of general linguistic analysis. Listed also as English 855. Prereq.: English 650 or Linguistics 755. 4 q.h.

859. *Selected Topics in Linguistics.* A study in depth of a concept or problem in linguistics. The topic is announced each time the course is offered. May be repeated once. Prereq.: English 755 or consent of the teacher. 3-5 q.h.

860. *History of the German Language.* Identical with German 860. 3 q.h.

862. *History of the French Language.* Identical with French 862. 5 q.h.

864. *History of the Spanish Language.* Identical with Spanish 864. 3 q.h.

865-866. *Comparative Romance Linguistics.* Identical with French 865-866, Italian 865-866, and Spanish 865-866. 3 + 3 q.h.

867, 868. *Comparative Germanic Linguistics.* Identical with German 867, 868. 3 + 3 q.h.

MATHEMATICS

Professors Yozwiak (chairman) and Dillon; Associate Professors Banilower, Ciotola, Demen, Hurd, Jonas, Malak, G. Mavrigian, and Santos; Assistant Professors Altinger, Biles, J. D. Faires, Goldstein, Helling, Klein, Knauf, Rodfong, Subramanian, and Whipkey; Instructors Cleary, Kozarich, Mortellaro, and Poggione.

Mathematics may be the major subject for the degree of Bachelor of Arts, Bachelor of Science, or Bachelor of Science in Education.

The student majoring in mathematics must complete, in addition to the general University requirements (see *Requirements for the Degree,* at the beginning of the College of Arts and Sciences section) a minimum of 48 quarter hours of courses of which 32 quarter hours are specified and 16 quarter hours are elective.

Specified courses include Mathematics 571, 572, 673, 674, 727, 740, 871, and 890.

Electives may be selected from any of the 700-level and 800-level courses listed except as otherwise noted. Students preparing for secondary school teaching may substitute Education 800M (special methods-Mathematics) for Mathematics 890.

It is recommended that the student select his electives with assistance from his advisor. Certain courses are to be preferred to others according to whether one contemplates graduate study, secondary school teaching, or a career in industry.

For the Bachelor of Science degree, the student majoring in mathematics must minor in physics, chemistry, or biology and his foreign language must be French, German, Italian, or Russian. The candidate for the Bachelor of Arts degree may choose any minor and any foreign language.

Lower Division Courses

500. *Algebra I.* A first course in algebra. Evaluated as one high school credit for the A.B. and B.S. degrees. A student taking this course must take an additional 5 quarter hours to complete the requirements for the degree. 5 q.h.

501. *Geometry I.* A first course in geometry. Evaluated as one high school credit for

the A.B. and B.S. degree. A student taking this course must take an additional 5 quarter hours to complete the requirements for the degree. Prereq.: One unit of high school algebra or Mathematics 500. 5 q.h.

502. *Algebra II.* Review of fundamental concepts and topics from elementary algebra. The number system; algebraic operations; functions and graphic representation of functions; solutions of linear and quadratic equations. Prereq.: One unit of high school algebra and one unit of high school geometry or Mathematics 500 and 501. 5 q.h.

503. *Trigonometry.* An analytical study of trigonometric functions and their inverses, identities, equations, and applications; logarithmic and exponential functions; complex numbers. Prereq.: Two units of high school algebra and one unit of high school geometry, or Math 502. 5 q.h.

517. *Mathematics for Elementary Teachers.* The number system and the algorithms taught in elementary school mathematics; intuitive geometry; other topics. Required of all candidates for an elementary education certificate. 5 q.h.

518. *Real Number System.* An axiomatic discussion of the real number system for elementary teachers; elementary number theory. Prereq.: One unit of high school algebra, one unit of high school geometry and Mathematics 517 or consent of teacher. Offered every spring quarter. 4 q.h.

523, 524. *Survey of Mathematics.* A course for non-science majors emphasizing some of the basic ideas in mathematics. The stress is on concepts rather than on manipulatory skills. Prereq.: One unit of high school algebra and one unit of high school geometry, or Math 500 and 501. 4 + 4 q.h.

531. *Mathematics of Business.* A general study of business mathematics embracing number and algebraic concepts. Percentage, discounts, simple and compound interest, present values, polynomials, exponents, first degree equations, logarithms, and progressions with business applications are studied. Prereq.: One unit of high school algebra or Math 500. 5 q.h.

540. *Probability and Statistics.* A course in probability and statistics with applications. The course is intended for students of the liberal arts, business, and education who desire an introduction into the subject. Specific topics include description of sample data, probability, frequency distributions, sampling estimation, testing hypotheses, correlation, and regression. Prereq.: One unit of high school geometry, 2 units of high school algebra, or Math 502. 5 q.h.

542. *Special Topics of Algebra.* A course dealing with topics of algebra that find great use in modern applications. The course is especially designed for business students but is open to others. Special topics may include logic, sets, Boolean algebra, logarithms, exponential functions, linear programming, matrices and determinants, progressions, permutations and combinations, probability, and mathematics of investment. Prereq.: One unit of high school geometry, two units of high school algebra, or Math 502. 5 q.h.

550. *Introduction to Calculus.* A short course in calculus of algebraic functions of one variable with applications. The course is intended for students in business, the social and biological sciences, and others who desire an introduction to the subject. Specific topics include the concepts of limit, derivative, integral, and applications. Prereq.: One unit of high school geometry, two units of high school algebra, or Math 502. 5 q.h.

571, 572, 673, 674. *Calculus I, II, III, IV.* An integrated course in analytic geometry and calculus. A detailed study of limits, derivatives, and integrals of one and several variables and applications. Prereq.: Four high school units of mathematics (including trigonometry) with an average of C or better and satisfactory score on ACT or CEEB examination, or Math 502 and 503.
5 + 4 + 5 + 4 q.h.

571H, 572H, 673H, 674H. *Calculus I, II, III, IV.* An honors course for selected students in analytic geometry and calculus with more emphasis on rigor than the regular course provides. A detailed study of limits, derivatives, and integrals of one and several variables and applications. Especially recommended for mathematics majors who can qualify. Prereq.: Four high school units of mathematics (including trigonometry) with an A or a high B average and a high score on the ACT or CEEB examination.
5 + 4 + 5 + 4 q.h.

617. *Algebra for Elementary Teachers.* Basic ideas and structure of algebra, including equations, inequalities, absolute value, graphing, and other algebraic systems including finite ones. Prereq.: Mathematics 518. Offered every fall quarter. 5 q.h.

618. *Geometry for Elementary Teachers.* A study of space, plane, and line as sets of points, considering separation properties and simple closed curves; the triangle, rectangle, circle, sphere, and other figures considered as sets of points with their properties developed intuitively; concept of measurement. Prereq.: Mathematics 617 or consent of teacher. Offered every winter quarter. 4 q.h.

Upper Division Courses

701. *Introduction to Set Theory.* Algebra of sets; relations and functions as sets; cardinal and ordinal numbers; the well-ordering

theorem and equivalent principles. Emphasis is on logical development of the subject. Prereq.: Mathematics 674 or consent of teacher. 4 q.h.

709. *Ordinary Differential Equations.* An introductory course in theory and solution of ordinary differential equations with applications. Prereq.: Mathematics 674. 3 q.h.

710, 711. *Higher Mathematics for Engineers and Physicists I and II.* Partial differential equations and boundary value problems; Laplace transform; vectors; Fourier series. Prereq.: Mathematics 709. 3 + 3 q.h.

725. *Matrix Theory and Linear Algebra.* Matrices; matrix operations; linear transformations; applications. Prereq.: Mathematics 673. 4 q.h.

726. *Theory of Equations.* Solution of algebraic equations; theorems on roots of polynomial equations; symmetric functions; theory of determinants; numerical methods. Prereq.: Mathematics 673. 4 q.h.

727, 728. *Abstract Algebra I, II.* Number systems, groups, integral domains, fields, vector spaces, congruences, and polynomial rings. Prereq.: Mathematics 673 or consent of teacher. 4 + 5 q.h.

730. *Foundations of Geometry.* The development of Euclidean and non-Euclidean geometries from postulate systems. Prereq.: Mathematics 673. 4 q.h.

732. *Projective Geometry.* An introductory study of projective spaces of dimension one and two (in the setting of Euclidean geometry as well as axiomatically) by synthetic and analytical methods. Prereq.: Mathematics 673. 4 q.h.

740, 741, 742. *Mathematical Statistics I, II, and III.* An introduction to the theory of probability and statistics using the concepts and methods of calculus. Includes discrete and continuous probability models, random variables and their distributions, sampling distributions, estimation, tests of hypotheses, regression, and analysis of variance. Prereq.: Mathematics 674. 3 + 3 + 3 q.h.

750. *History of Mathematics.* A survey of the historical development of mathematics. Prereq.: Mathematics 673. 4 q.h.

760. *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. Prereq.: Mathematics 674. 4 q.h.

842. *Statistical Inference.* The study of estimation, hypothesis testing, non-parametric methods and design of experiments. Emphasis on applications. Prereq.: Mathematics 742. 4 q.h.

845. *Operations Research.* An introduction to operations research: problem formulation, linear programming, queueing theory, and design of research. Emphasis on mathematical methods. Prereq.: Mathematics 742. 4 q.h.

846, 847, 848. *Theory of Probability I, II, and III.* The nature of probability theory; conditional probability; stochastic independence; binomial, Poisson, and normal distribution; laws of large numbers; limit theorems; generating functions; recurrent events; random walks; Markov chains; stochastic processes; applications. Prereq.: Mathematics 740. 3 + 3 + 3 q.h.

860. *Mathematical Logic.* An introduction to the study of theories in formalized languages and to the theory of models. Prereq.: Philosophy 619 and Mathematics 727 or consent of instructor. 4 q.h.

871, 872. *Advanced Calculus I and II.* An introduction to the theory of functions of real variables with a more critical presentation of the fundamentals of differential and integral calculus. Prereq.: Mathematics 674. 5 + 5 q.h.

875. *Introduction to Complex Variables.* Complex numbers and their geometrical representation, analytic functions of a complex variable, contour integration, Taylor and Laurent series, residues and poles, conformal mapping. Prereq.: Mathematics 710 or consent of teacher. 4 q.h.

880. *Introduction to Topology.* An introduction to the basic concepts of general topology. Compactness, connectedness, and continuity in topological spaces. Prereq.: Mathematics 701, 871. 4 q.h.

890. *Mathematics Seminar.* A required course for mathematics majors. Prereq.: Senior standing. 2 q.h.

COMPUTER SCIENCE

The computer science curriculum is designed to provide students with the broadest possible practical and theoretical background in computational methods consistent with their academic objective. This background is intended to prepare students to enter skilled positions in industry, to provide them with a tool to assist them in quantitative study in their own discipline, and to prepare them to pursue advanced coursework in computation. A minor in computer science may be obtained by completing a minimum of 21 hours of the following courses with a grade of C or better.

Lower Division Courses

600. *Introduction to Programming.* Application of data representation and flowcharting techniques to the solution of elementary problems. High level programming languages will be used to teach a variety of techniques for solving problems with computers. Programming laboratories will be specialized to scientific and business languages. Prereq.: Mathematics 502 or 531; Computer Technology 502 or consent of instructor. 4 q.h.

601. *Advanced Programming.* Advanced problem-solving techniques using problem-oriented and machine-oriented languages. General lectures with laboratories specialized to scientific or data processing applications. Prereq.: Computer Science 600; Mathematics 550 or 673. 5 q.h.

Upper Division Courses

700. *Data Structures.* Study of data representations and input-output techniques in programming languages. The data structures of various languages will be comparatively applied in computational problems to reveal their advantages and limitations. Prereq.: Computer Science 601. 4 q.h.

701. *Systems Programming I.* Techniques for constructing assemblers and compilers for computer languages. Prereq.: Computer Science 700. 5 q.h.

702. *Systems Programming II.* Techniques for constructing computer operating systems. Prereq.: Computer Science 701. 5 q.h.

810. *Computer Graphics and Terminals.* Study of problems and techniques in data collection and display. Prereq.: Computer Science 700. 4 q.h.

820. *Simulation and Artificial Intelligence.* Methods for modeling discrete systems by algorithmic and heuristic approaches. Prereq.: Computer Science 700. 5 q.h.

830. *Computational Linguistics.* Computer methods of translating natural and artificial languages. Prereq.: Computer Science 601. 5 q.h.

MEDICAL TECHNOLOGY

Students majoring in medical technology are advised in the Chemistry Department. After completing three years of study on the campus, one year of training in an accredited hospital, and successfully passing the Registry Examination, they will be granted a Bachelor of Science degree. Consult Chemistry Department for curriculum.

METALLURGY

See *Chemistry,* and the William Rayen School of Engineering section.

MILITARY SCIENCE

Lt. Colonel Connolly (chairman), professor; Major Harper, Major Radvilas, Captain Minney, and Captain Solenberger, assistant professors.

An Army Reserve Officers' Training Corps (R.O.T.C.) program was established at this university in 1950 and is administered by the Department of Military Science.

The objective of the R.O.T.C. program is to select and train college students to qualify for commissions in the United States Army. Under present policy every graduate of the R.O.T.C. program who receives a degree after successfully completing four years of academic study is tendered a commission as a second lieutenant in the United States Army Reserve. A student who distinguishes himself in academic and military subjects may be designated a distinguished military student and may apply for a Regular Army commission. Subject to quota limitations, students who are enrolled in R.O.T.C. and are in good academic standing are deferred from the military draft.

To facilitate the development of leadership, R.O.T.C. students are organized into a corps of cadets which is commanded and administered by students, officers, and non-commissioned officers.

By agreement between the United States government and the University, the Army furnishes the teachers, military equipment, textbooks, and student uniforms; the University furnishes all other facilities. A *Military Equipment Deposit and Fee* is required of each student. It is refunded to him, at the end of the academic year, when he turns in the government property issued to him (less the cost of any property lost or damaged).

Students who are veterans or who have taken R.O.T.C. work at other institutions receive credit for this training as determined by the chairman of the Department of Military Science.

The military science student has two options: he may enroll in a four-year training program, or in a two-year training program.

The four-year program is made up of two courses: the basic course, and the advanced course. The student enrolled in the four-year program must complete two years to receive credit for the basic course, and two additional years plus a six-week summer camp to receive credit for the advanced course. The basic course is open to any male student who

(1) is carrying at least 12 quarter hours, including R.O.T.C.;

(2) has enough remaining quarters at the University to complete the R.O.T.C. program;

(3) is between the ages of 14 and 23;

(4) is physically qualified;

(5) is a citizen of the United States, or applies for and receives permission to pursue the course; and

(6) has no convictions by a civil or military court other than minor traffic violations.

A student enrolled in the advanced course is paid a retainer fee of $50.00 a month during the period that he is enrolled, except for the six-week period that he is attending the advanced summer camp (normally between his junior and senior years). At this camp all meals and lodgings are provided free, and the student is paid one-half the basic monthly pay of a 2nd Lieutenant, with less than 2 years service, plus 6c a mile for travel to and from camp. The advanced course is open to any student who

(1) demonstrates a potential for becoming an effective Army officer;

(2) is a citizen of the United States or applies for and receives permission to pursue the course;

(3) complies with loyalty requirements;

(4) passes prescribed screening examinations;

(5) executes a written agreement to complete the advanced course, to attend R.O.T.C. summer camp at the time specified, and to accept a commission, if offered, into the Regular Army or the Army Reserve;

(6) has completed the basic course, or the six-week basic summer camp (for those enrolled in the two-year course), or receives credit by taking equivalent courses in the Military Schools Division, or receives credit as a result of honorable active military service of one year or more;

(7) has no convictions by a civil or military court for other than minor traffic violations;

(8) enlists in the United States Army Reserve; and

(9) is selected for the course by the Chairman of the Department of Military Science and by the President of the University.

To qualify for the two-year program the student must apply for enrollment during his sophomore year in college or in junior college, complete a R.O.T.C. questionnaire, pass a screening examination and a physical examination, and be selected for participation. If he is selected he must complete a six-week basic summer training camp which is a substitute for the basic course required of the student in the four year program. At this camp all meals and lodgings are furnished free, and the student is paid the monthly pay of a Private E-1, plus 6c a mile for travel to and from camp. When the student has met these requirements and has successfully completed the basic training camp he is eligible to enroll in the R.O.T.C. advanced course in his junior and senior years. The advanced course in the two-year program is identical with the advanced course in the four-year program; however, cadets in the two-year program are not eligible for R.O.T.C. scholarships.

Two-year scholarships are available to qualified second-year cadets who are strongly motivated toward a career in the Army. Each scholarship pays for tuition, books, and laboratory expenses for the junior and senior years. Only students who participate in the four-year program are eligible.

R.O.T.C. students should also read *Modifications for R.O.T.C. Students,* in the General Requirements and Regulations section.

Lower Division Courses

501. *First Year Basic (Military Science I).* Organization of the Army and R.O.T.C.; purpose and objectives of the R.O.T.C. program; history, policy, and organization of the local R.O.T.C. unit. Individual weapons and marksmanship; a brief resume of the evolution of firearms; practical working knowledge of the basic individual weapons and marksmanship training. One hour of lecture and one hour of leadership laboratory (drill). 1 q.h.

502. *First Year Basic (Military Science I).* Introduction to the U.S. Army and national security; United States National Defense Policy, and world-wide commitments that require support of the Armed Forces; position of the Department of the Army in the national defense system. One hour of lecture and one one hour of leadership laboratory (drill). 1 q.h.

503. *First Year Basic (Military Science I).* U.S. Army and national security continued; comparison of the military forces of the world; mission, capabilities and interdependence of the U.S. Army, U.S. Navy and U.S. Air Force; role of the U.S. Army in conceivable types of warfare. One hour of lecture and one hour of leadership laboratory (drill). 1 q.h.

In addition, the Department of the Army requires the student enrolled in this course to take a minimum of three quarter hours during

his freshman year in the areas of effective communication, science or mathematics, or psychology, to be determined in consultation with the Chairman of the Department of Military Science. Courses of one, two, or three quarter hours in these areas may be chosen; they may be courses required for a degree, or electives.

600. *Second Year Basic.* American history; a survey of American history from 1607 to the present; factors which led to the organizational, tactical, logistical, operational, strategical and social patterns found in the present-day Army; the effect of political, economic and national security matters on military posture. (Identical with History 600.) Four hours of lecture and one hour of leadership laboratory. Prereq.: Military Science 503. 3 q.h.

601. *Second Year Basic (Military Science II).* Map and aerial photograph reading; a comprehensive study of the techniques employed in the use of maps and aerial photographs. One and a half hours of lecture and one hour of leadership laboratory. Prereq.: Military Science 503, or active military service. 1 q.h.

602. *Second Year Basic (Military Science II).* American military history; a survey of American military history from the origin of the United States Army to the present with emphasis on the factors which led to the organizational, tactical, logistical, operational, strategical, and social pattern found in the present-day Army. Three hours of lecture and one hour of leadership laboratory. 3 q.h.

603. *Second Year Basic (Military Science II).* Basic military operations and tactics; organization, composition, and mission of small units; techniques of weapons employment, combat formation, patrolling, and principles of offensive and defensive combat and their application to basic military teams. One and a half hours of lecture and one hour of leadership laboratory. 1 q.h.

Upper Division Courses

701. *First Year Advanced (Military Science III).* Leadership; the psychological, physiological, and sociological factors which affect human behavior; functional approach to the role of the leader, interaction between the leader of small military unit and subordinates, and responsibilities of the leader. Military teaching principles; educational psychology pertaining to the stages of military instruction; techniques used in planning and presenting instruction; speech for instructors; production and use of training aids. Three hours of lecture and one hour of leadership laboratory (drill). Prereq.: Military Science 603, or active military service. 3 q.h.

702. *First Year Advanced (Military Science III).* Small unit tactics and communications; infantry organization; fundamentals of offensive and defensive combat and their applications to the units of the infantry battallion. Principles of communications systems used within the Army division. Three hours of lecture and one hour of leadership laboratory (drill). Prereq.: Military Science 701. 3 q.h.

703. *First Year Advanced (Military Science III).* Branches of the Army; organization, function, and mission of the arms and services; operation of the various arms and services in the overall mission of the Army. Counterinsurgency; nature and causes of insurgency; concept of counterinsurgency operations; role of the U.S. Army in countering insurgency. One and a half hours of lecture and one hour of leadership laboratory (drill). 1 q.h.

704. *Advanced R.O.T.C. Summer Camp.* Six weeks of field training, normally between junior and senior years, conducted at an Army installation. This concentrated practical training provides an opportunity to evaluate the student in his application of academic knowledge, gained in the campus classrooms, to daily leadership situations. Subjects include the organization, functions and missions of the U.S. Army; code of conduct and Geneva Convention; unit tactics; combined arms operations; communications; advanced map and aerial photograph reading; small arms marksmanship; and techniques of leadership. Prereq.: Military Science 703. 4 q.h.

In addition, the Department of the Army requires the student enrolled in this course to take a minimum of five quarter hours in the areas of science or mathematics, psychology, or political science, to be determined in consultation with the Chairman of the Department of Military Science. They may be courses required for a degree, or electives; normally, however, they must be Upper Division courses.

801. *Second Year Advanced (Military Science IV).* The military team; understanding of command and staff evaluation, organization and functions; processes for arriving at sound and timely decisions and translating decisions into plans and combat orders. Duties and responsibilities of company and battalion officers in the combat arms. Military intelligence; value and methods of producing intelligence. Three hours of lecture and one hour of leadership laboratory (drill). Prereq.: Military Science 703. 3 q.h.

802. *Second Year Advanced (Military Science IV).* Logistics; Army logistical policies, and procedures including supply, evacuation, maintenance, motor transportation, and troop movement; accounting for lost, damaged, and destroyed property; combat logistics with emphasis on the employment of logistical organization. Principles and analysis of the

nature of Internal Defense/Development, emphasizing tactical operations and civil affairs aspects. One and a half hours of lecture and one hour of leadership laboratory (drill). 1 q.h.

803. *Second Year Advanced (Military Science IV).* Military law; history and development of military law; fundamental concepts of military justice in the Armed Forces of the United States as provided for in the Uniform Code of Military Justice and the Manual of Courts-Martial; basic principles and methods employed in administering military justice. Administration; the role of the junior grade Army officer in unit administration; familiarization with Army publications and administrative procedures. Categories of and organization for combat readiness as exemplified by the Army readiness program. Obligations, responsibilities, and benefits of commissioned service. Role of the U.S. in world affairs; an analysis of the United States and its international relations; relationship between international conflict, national purpose, national power, and national policies; summary of the economic power, war potential and inclination and aptitude for the conduct of war of each major world power, block of nations and geographic area. Three hours of lecture and one hour of leadership laboratory (drill). 3 q.h.

In addition, the Department of the Army requires the student enrolled in this course to take a minimum of five quarter hours in the areas of effective communication, science or mathematics, psychology, or political science, to be determined in consultation with the Chairman of the Department of Military Science. They may be courses required for a degree, or electives; normally, however, they must be Upper Division courses.

LEADERSHIP LABORATORY

This practical exercise period conducted for an hour weekly is required of all military science students. The course provides for experiences in discipline and the development of essential characteristics of leadership through progressive drill and schooling of the soldier.

TWO-YEAR MILITARY SCIENCE PROGRAM

Lower Division Courses

604. *Basic R.O.T.C. Summer Camp.* Six weeks training at a U.S. Army installation during the summer before the student's junior year. Concentrated instruction in the principles of leadership; map and aerial photograph reading; military customs, courtesies, and traditions; organization of the U.S. Army and the R.O.T.C.; military tactics; field sanitation and hygiene; first aid; counterinsurgency; combat-intelligence; and physical training. This course is equivalent to the on-campus basic course. Prereq.: Completion of two years of college-level courses. 4 q.h.

Upper Division Courses

Military Science III & IV

Courses 701, 702, 703, 704, 801, 802, and 803 as described above for the Four Year Military Science Program. Prereq.: Completion of the *Basic R.O.T.C. Summer Camp* or one year of active military service.

MODERN LANGUAGES AND LITERATURE

See *English, French, German, Hebrew, Italian, 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 the Dana School of Music may be taken as electives by students in other units.

NURSING

Advisement for the undergraduate degree program for Registered Nurses is provided by the Department of Sociology and Anthropology.

Through the Degree Program for Registered Nurses, Registered Nurses will receive advanced credit for study at any accredited nursing school equal to one year of college study, either thirty semester hours or forty-five quarter hours. Half of this credit is for clinical work and half for class work. The latter will satisfy University requirements in science, hygiene, and physical education, while the former is recorded as general Lower Division courses. All other requirements for whatever degree is sought must be met, except the foreign language requirements for the Bachelor of Science degree.

For the two-year associate degree program in nursing, see the Technical and Community College section.

PHILOSOPHY AND RELIGIOUS STUDIES

Professor Greenman (chairman); Associate Professors J. R. Lucas, Reid, and Riley; Assistant Professors Eminhizer and Shipka; Instructor Duritsa.

I. PHILOSOPHY

A major is available for students who plan to enter the field of philosophy, the seminary, the ministry, or who wish a liberal arts background, especially for careers in religious education, social service, law, journalism, history, and allied fields.

The major consists of 45 quarter hours above the 500 level, including Philosophy 619, 700, 701, 702, 703, 711, and either 820 or 821.

One-third credit toward the major in philosophy, up to three quarter hours, will be allowed for any course listed under Humanities.

Lower Division Courses

500. *Life's Ideals.* Analysis and clarification of the goals of human effort. The structure of an ideal. How an ideal functions. The status of ideals in the universe. Discussion of some ideals pertinent to undergraduate life. Selected readings appropriate to the students' experience. Open to freshmen. 4 q.h.

600. *Introduction to Philosophy.* The nature of philosophy and its relation to science, religion, and art; study of the philosophical approach and attitude, the basic problem areas in philosophy, and some typical philosophical viewpoints. Prereq.: Communications 508. 4 q.h.

619. *Introduction to Logic.* Introduction to syllogistic or classical logic, symbolic, and inductive logic. Emphasis will be placed on the rules of the syllogism, immediate inference, propositional functions, classes, truth tables, Venn diagrams; the use of analogy, generalization, the verification of hypotheses and the scientific method. 5 q.h.

622. *Inductive Logic.* An analysis of the logic of science, probability logic, with a consideration of hypotheses and their verification, scientific method, statistics and their employment, analogy and generalization. 5 q.h.

Upper Division Courses

700. *History of Ancient Philosophy.* The development of philosophical thought in Western Civilization from the Pre-Socratics through the cosmologies of Plato, Aristotle and the Atomists: its ethical expression by Epicurus and the Stoics: and its religious involvement in the systems of Philo, Plotinus and Augustine. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

701. *History of Medieval Philosophy.* An examination of the medieval synthesis, with attention to its aims, methods, development and decline. Erigena, Roscellinus, Realism and Nominalism. Anselm and the Ontological Argument. Peter Abelard and Conceptualism. The Crusades and the new economics. The Grail legend and its influence on nationalism. Albertus Magnus, Thomas Aquinas and the return of Aristotle. Pantheism, mysticism and the rise of science. Duns Scotus and William of Ockham. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

702. *History of Modern Philosophy.* Development of philosophic thought from the Renaissance through the nineteenth century, with stress upon British empiricism, continental rationalism, and the critical philosophy of Kant and post-Kantian idealism. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

703. *Symbolic Logic.* The structure and properties of axiomatic systems; the theory of propositional and relational logic; the algebra of classes; related topics. Prereq.: Philosophy 619. 5 q.h.

710. *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. Readings from representative writers in the field. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

711. *Ethical Theories.* Examination and evaluation of the major ethical theories in Classical, Dialectic, Pragmatic and Naturalistic, Analytic and Positivist, and Existentialist thought. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

712. *Philosophy of Religion.* A philosophical consideration of the meaning and denotation of the concepts which have traditionally made up the subject matter of religion: the idea and nature of God, the soul, immortality, salvation, and the relation of these to human life. Attention will be given to the nature of religious knowledge as contrasted with scientific or logical knowledge. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

713. *Making of the Modern Mind.* The philosophic, religious, scientific, political and social developments out of which our present patterns of Western thought have arisen. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

714. *Social Philosophy.* Philosophical theories of the state and society, emphasizing the concepts of justice, community, and related ideas; consideration of the relation of the individual to the state. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

715. *Philosophy of Science.* A philosophical consideration of some of the fundamental concepts and assumptions of the sciences; the

nature of scientific knowledge; the relation of scientific to other kinds of knowledge and experience. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

749. *Philosophy of History.* A developmental inquiry into the views of history held by Greek, Roman, Christian, and modern scientific historians. Prereq.: History 651 or 652 or consent of the instructor. Listed also as History 749. 4 q.h.

800. *Theories of Knowledge.* The epistemological problem; position of the skeptic, pragmatist, empiricist, idealist, moderate realist, existentialist, and phenomenologist. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

801. *Metaphysics.* The concept of being and reality in the major philosophic theories. Classical and Scholastic, Dialectical, Naturalist and Pragmatic, Analytic and Positivist, Existentialist and Phenomenologist. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

802. *Theories of Value.* Objectivist and Relativist theories of value; the major types of value and theories of the hierarchical arrangement of values. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

810. *Philosophical Classics.* Reading and discussion of some of the great documents of philosophy: Plato's *Republic,* Aristotle's *Nichomachean Ethics,* Descartes' *Meditations,* Kant's *Critique of Pure Reason,* and James' *Essays,* or alternative selections of comparable significance. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

811. *Philosophy in America.* History of philosophic ideas in this country and introduction to its intellectual history; relations of American intellectual currents to their background in the history of philosophy. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

812. *Contemporary Philosophy.* A survey of the philosophical scene in the twentieth century: Whitehead's philosophy of organism, the various schools of existentialism, logical positivism, and the current philosophies of language. Consideration of contemporary movements to which these systems have given rise in particular areas of philosophy. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

813. *Philosophy of Man.* The various conceptions of man that are relevant to the contemporary American scene: Classical and Scholastic thought, Dialectic thought, Naturalist and Pragmatic thought, Analytic and Positivist thought, and Existentialist and Phenomenological thought. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

814. *Analytic Philosophy.* An introduction to recent analytic philosophy with attention to such topics as semantics and language analysis, the functions of language; modes of meaning; and the relation of linguistic structures to metaphysics. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

815. *Existentialism and Phenomenology.* A study of the background and teachings of existentialism; and an analysis of the methodological principles of phenomenology as seen in the writings of Kierkegaard, Husserl, Heidegger, Jaspers, Sartre, Marcel, and Merleau-Ponty. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

820. *Seminar: Contemporary Philosophical Problems.* Various assigned topics to be discussed by students after adequate research in fields where philosophical problems arise, e.g. the biological, physical, and behavioral sciences; medicine; religion; art; education, etc. Prereq.: Philosophy 600 and 8 quarter hours of Upper Division philosophy courses or approval of the department chairman. 1-3 q.h.

821. *Seminar: Areas of Philosophy.* The student will be allowed to consider in depth his particular philosophical interest. The subjects for the seminar will include ethics; logic; aesthetics; value theory; epistemology; metaphysics; language analysis; etc. Prereq.: Philosophy 600 and 8 quarter hours of Upper Division philosophy courses or approval of the department chairman. 1-3 q.h.

860. *Mathematical Logic.* Identical with Mathematics 860.

II. RELIGIOUS STUDIES

A major in religious studies is available for the student who desires to prepare for social work, religious education, or related professional activities. It consists of 45 quarter hours including Religious Studies 610, 611, 612, 756, 760 or 762, 765, 831 or 832; and Philosophy 712. The remaining hours are to be selected in religious studies, philosophy or related fields by consultation with the department chairman.

Lower Division Courses

501. *Contemporary Religion and its Backgrounds.* An exposition of Judaism, Roman Catholicism, and Protestantism: their beliefs, rituals, and usage; their origins and historical developments; and their approaches to the problems of man in modern society. Open to freshmen. 4 q.h.

601. *Introduction to Religion.* An examination of religion giving consideration to: origins, the place of myth, the idea of evil, the idea of God, the use of symbolism, the rise of sacred literature, social, psychological, and ethical importance, the place of rite and ritual, immortality, communion with the deity, and sacrifice. 4 q.h.

607. *Christian Ethics.* A study of the biblical foundations for Christian decisions in matters of self and society, marriage and family, economic life, racial relations, the state, war, peace, and international order and culture. 4 q.h.

610. *Church History I.* The history of the Christian Church from its origin through Augustine. 4 q.h.

611. *Church History II.* The medieval Church to the Renaissance. 4 q.h.

612. *Church History III.* The modern Church: from the Reformation to the present. The Ecumenical Movement. 4 q.h.

618. *History of Eastern Christian Thought.* An introductory study of the history, theology, polity, worship and morality of the Eastern Orthodox Church. Comparison with corresponding Western Christian thought. 4 q.h.

630. *Introduction to Biblical Literature.* A survey of literature of the Old and New Testaments. The authorship and purposes of the various books, the history of their compilation into the present canon, their structure and style. The nature of the Bible and the development of religious and ethical ideas. 4 q.h.

Upper Division Courses

756. *Psychology of Religion.* An introductory review of the more prominent types of personal religious experience, including elementary consideration of conscious and unconscious factors bringing them about. Prereq.: Psychology 601 and Communication 508. Identical with Psychology 703. 4 q.h.

757. *The Structure of Religious Experience.* An intermediate examination of religion from the point of view of the experiencing subject, particularly as his experiences are related to the growth and decay of religious institutions. Prereq.: Psychology 601 and Communication 508. 4 q.h.

759. *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. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

760. *Biblical Studies I. Old Testament Literature.* A critical review of the religious and historical factors involved in the formation of the Old Testament canon. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

761. *Biblical Studies II. Intertestamental Literature.* The Dead Sea Scrolls and other apocryphal literature. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

762. *Biblical Studies III. New Testament Literature.* The development and canonization of Christian Literature. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

765. *History of Religion I.* The classic religions of antiquity; a comparative introduction to the history of religion, with reference to the religions of primitive man, and the religious systems of Egypt, Mesopotamia, Persia, Greece and Rome. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

766. *History of Religion II.* Living Oriental Religions. A continuation of Religious Studies 765, historically comparing the religions of China, Japan, India, and the Near East. Prereq.: Communication 508 or junior or senior standing. 4 q.h.

830. *Religion in America.* The development of religion in America from the founding in 1607, with attention to the part played by religion in the development of the nation; the development of the religious patterns found in the country; the influence of religion on social and cultural development; and the current interest in religion. The Jewish and Christian religions will be given most of the emphasis in the course. Prereq.: History 601, 602, and 603. 4 q.h.

831. *The Psycho-Social Dynamics of Religion I.* 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.: One of the following: Religious Studies 756, 757, 765, 766, Psychology 702, or Sociology 610. 4 q.h.

832. *The Psycho-Social Dynamics of Religion II.* The same considerations as in Religious Studies 831 applied to present day religious cults. Prereq.: One of the following: Religious Studies 756, 757, 765, 766, Psychology 702 or Sociology 610. Identical with Psychology 832 and Sociology 832. 4 q.h.

850. *Seminar in Religious Studies.* A seminar to consider in depth one of the following topics: Psychology of religion; Church History; History of Religions; Biblical Studies; Religion and Modern Society; or a similar topic. Prereq.: Consent of instructor. 1-3 q.h.

PHYSICAL EDUCATION

See *Health and Physical Education.*

PHYSICS AND ASTRONOMY

Professors Ellis (chairman), Julius, and McLennan; Assistant Professors Bishop, Cochran, Dalbec, Fisher, Hanzely, Henkel, Mooney, Moorhead, and Young.

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-professional 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.

The B.A. degree program is designed for students who do not plan to continue their studies beyond the bachelor's degree. The B.S. degree program is designed for the student who plans to pursue his studies beyond the bachelor's degree. The minimum requirements for these degrees are shown at the end of the course descriptions.

Lower Division Courses

500. *Introduction to Physics.* A breadth-of-experience approach and largely non-mathematical presentation of selected theories and laws of physics. These are presented in a historical context of some of the successes and failures of famous physicists in their efforts to describe the phenomena of our universe in terms of functional relationships. This course may be taken in partial fulfillment of the minimum science requirement for a baccalaureate degree. 4 q.h.

501, 502, 503*. *Fundamentals of Physics.* A three quarter sequence consisting of elementary mechanics, sound, heat, electricity and magnetism, and light. Not open to mathematics, chemistry, or physics majors or to engineering students. Prereq.: Mathematics 502 and 503, or equivalent high school mathematics. 4 + 3 + 3 q.h.

502L, 503L. *Fundamentals of Physics Laboratory.* Two hours per week. Taken concurrently with Physics 502 and 503. 1 + 1 q.h.

510. *General Physics I.* The first of a four quarter sequence of introductory physics courses. A calculus concurrent course in mechanics: the kinematics and dynamics of masses in translation; Newton's Laws; the conservation laws; vectors. Prereq. or concurrent: Mathematics 571. 4 q.h.

Note: *The following three courses may be taken in any order after satisfactory completion of Physics 510.*

601, 602, 603. *General Physics II, III, and IV.* A calculus prerequisite sequence consisting of the mechanics of rotational motion; simple harmonic motion; wave motion of light and sound; electricity and magnetism; and selected topics in modern physics. Prereq.: Physics 510. Prereq. or concurrent: Mathematics 572. 3 + 3 + 3 q.h.

601L, 602L, 603L. *General Physics Laboratory.* Three hours per week taken concurrently with Physics 601, 602, 603. These laboratories are elective courses for engineering students. 1 + 1 + 1 q.h.

608. *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. Not applicable toward a major in physics. 4 q.h.

Upper Division Courses

Note: *Satisfactory completion of the Physics sequence 510, 601, 602, 603, and Mathematics 674 is a general prerequisite for all Upper Division courses in physics.*

700. *Physics Literature.* A study and discussion of the growth of Physical theory based on the originals of selected famous papers in Physics. Prereq.: Physics 704 and 705. 1 q.h.

701, 702, 703. Intermediate Classical Mechanics.* Elements of vector algebra and vector calculus. Statics and dynamics of a particle and of a rigid body. Inertial and accelerated coordinate systems. Prereq.: Physics 603. Prereq. or concurrent: Mathematics 710. 3 + 3 + 3 q.h.

704, 705*. *Introduction to Modern Physics.* Selected topics in atomic, nuclear physics, special relativity, and nuclear reactions. Prereq.: Physics 603. 3 + 3 q.h.

704L, 705L. *Modern Physics Laboratory.* The material for this laboratory course is selected from those experiments in atomic and nuclear physics that have laid the foundation and provided the evidence for modern quantum theory. Three hours lab. per week taken concurrently with Physics 704, 705. 1 + 1 q.h.

706. *Electronics Laboratory.* The course is designed to promote a working familiarity

* Must be taken in sequence.

with electronic devices and circuits. Analysis of circuits is emphasized rather than their design. Course material includes amplifiers, oscillators, pulse and digital circuits and measurement circuits. One hour lecture and six hours of laboratory a week. Prereq.: Junior standing in Physics Dept. or consent of instructor. 4 q.h.

710, 711, 712*. *Thermodynamics and Statistical Mechanics.* An intermediate level course in the principles and theorems of thermodynamics as derived from directly observable, macroscopic quantities. Physics 712 continues with microscopic quantities; the statistical approach, kinetic theory, and limitations imposed by quantum mechanics. Prereq.: Physics 603. Prereq. or concurrent: Mathematics 710. 3 + 3 + 3 q.h.

722. *Physical Optics and Advanced Light.* Elementary theory of thick and thin lenses; interference, diffraction, polarization of light: wave surfaces and the resolving power of optical instruments. Prereq.: Physics 603. 4 q.h.

722L. *Physical Optics Laboratory.* Experimental emphasis on physical optics: wave propagation, interference, diffraction, refraction, dispersion, polarization, and analysis of line spectra. Three hours a week concurrent with Physics 722. 1 q.h.

730, 731, 732*. *Intermediate Electricity and Magnetism.* A three quarter sequence beginning with A.C. theory and transients. Electrostatics and magnetostatics; properties of material media and an introduction to Maxwell's equations. Prereq.: Physics 603 and Mathematics 709. 3 + 3 + 3 q.h.

730L, 731L, 732L. *Intermediate Level Electricity and Magnetism.* Laboratory work in A.C. circuits, steady state and transients, non-linear, circuit elements, and transducers. Three hours lab. per week taken concurrently with 730, 731, 732. 1 + 1 + 1 q.h.

750. *Mathematical Physics.* The mathematical techniques required in the study of classical, statistical, and quantum mechanics, and in the area of field theory. Prereq.: Physics 702 and Mathematics 711. 3 q.h.

800. *Physics Seminar.* The reading of current papers in physics and the presentation of reports on current research both in, and out of the department. Prereq.: Senior standing in the Physics Department and approval of the chairman. May be repeated once. 1 q.h. each quarter

805, 806, 807*. *Upper Division Physics Laboratory.* An advanced undergraduate physics laboratory, designed to supplement the junior-senior lecture courses required of students majoring in physics. The experiments are selected from the fields of mechanics, heat, optics, electricity and magnetism, atomic physics, and nuclear physics. Six hours of laboratory a week. Prereq.: Physics 701, 702; 704, 705; and senior standing. 2 + 2 + 2 q.h.

810, 811*. *Introduction to Quantum Mechanics.* The postulates of wave mechanics, the Schroedinger wave equation, and solutions for elementary problems in quantum theory. Prereq.: Physics 702 and 705; Mathematics 711. 3 + 3 q.h.

820, 821, 822*. *Electricity and Magnetism.* Static electric and magnetic fields. Time dependent fields and currents. Maxwell's equations, electromagnetic radiation. Vector methods are used extensively. Prereq.: Physics 603 and Mathematics 711. 3 + 3 + 3 q.h.

826. *Elements of Nuclear Physics.* An introduction to the nucleus and subatomic particles, the deuteron, scattering and absorption, nuclear models, radioactivity, alpha, beta and gamma decay, accelerators, nuclear reactions, and elementary particles. Prereq.: Physics 810, 811 and Mathematics 709. 3 q.h.

826L. *Nuclear Physics Laboratory.* Basic experiments in nuclear physics designed to supplement the text material concerning nuclear structure and nuclear reactions. Three hours of laboratory each week. Taken concurrently with Physics 826. 1 q.h.

830. *Elements of Solid State Physics.* Selected topics in Solid State Physics: crystal structure, mechanical, thermal, and magnetic properties of solids. Prereq.: Permission of instructor. 4 q.h.

835. *Spectroscopy.* Introduction to atomic, molecular, and x-ray spectra. Prereq.: Permission of instructor. 4 q.h.

850. *Special topics in Physics.* The study of a standard topic at greater depth, or the development of a correlated background for areas of physical knowledge, or the physical and educational experimentation necessary to develop new physics courses. Prereq.: Consent of Instructor and department chairman. 2 to 5 q.h.

Shown below is the suggested curriculum for the first two years for any degree based on a major in physics. Complete four-year programs for all options are available at the physics office.

The student is urged to come to the physics office early in his first year to select, and consult with, an advisor from the physics staff.

* Must be taken in sequence.

FIRST YEAR

Fall Quarter	Hrs.
Physics 510 General Physics I	4
Comm. 525 Basic Course I	4
Chem. 515 General Chemistry	4
Math. 571 Analytic Geometry and Calculus I	5
H. & P.E. activity course	1

Winter Quarter	Hrs.
Physics 601 & 601L General Physics II	4
Comm. 526 Basic Course II	4
Math. 572 Analytic Geometry and Calculus II	4
Chem. 516 General Chemistry	4
H. & P.E. activity course	1

Spring Quarter	Hrs.
Physics 602 & 602L General Physics III	4
Comm. 527 Basic Course III	4
Math. 673 Analytic Geometry and Calculus III	5
Chem. 517 General Chemistry	4
H. & P.E. activity course	1

SECOND YEAR

Fall Quarter	Hrs.
Physics 603 & 603L General Physics IV	4
Soc. Sci. 501 Introduction to the Social Sciences	3
Math. 674 Analytic Geometry and Calculus IV	4
Foreign Language	4

Winter Quarter	Hrs.
Physics 704 & 704L Introduction to Modern Physics	4
Soc. Sci. 502 Introduction to Economics	3
Math. 709 Ordinary Differential Equations	3
Foreign Language	4
Elective	3

Spring Quarter	Hrs.
Physics 705 & 705L Introduction to Modern Physics	4
Soc. Sci. 503 Introduction to Political Science	3
Math. 710 Higher Math. for Engineers and Physicists I	3
Foreign Language	4
H. & P.E. 509 Health Education	3

Minimum requirements for the B.A. degree in physics with a minor in mathematics: Physics courses, 45 q.h.: 510, 601+L, 602+L, 603+L, 704+L, 705+L, 701, 702, 703, 730+L, 731+L, 732+L. Mathematics courses, 24 q.h.: 571, 572, 673, 674, 709, 710.

Minimum requirements for the B.S. degree in physics with a minor in mathematics: Physics courses, 60 q.h.: same as the B.A. above plus courses 710, 711, 712, 810, 811. Mathematics courses, 27 q.h.: same as above plus course 711.

For complete information on required courses for these degrees, see the section of this catalog which is indexed as *Requirements for Degrees; College of Arts and Sciences.*

ASTRONOMY

Assistant Professors Young (supervisor), and Bishop.

A student who wishes to prepare for graduate work in astronomy should major in physics and minor in astronomy.

Lower Division Courses

504. *Descriptive Astronomy.* A survey of the solar system and stars. Credit for this course may be applied towards fulfillment of the 16-hour general science requirement. 4 q.h.

608. *Moon and planets.* A detailed discussion of the moon and planets, with particular emphasis on the geology of the moon. Prereq.: Astronomy 503 or permission of the instructor. 3 q.h.

Upper Division Courses

700, 701, 702*. *Astrophysics I, II, III.* The application of physical principles to the study of stars and planets; stellar distances and dimensions; stellar spectra and chemical composition; nuclear reactions and evolution of stars; the motion and distribution of stars; the Milky Way and other galaxies; cosmology. Prereq.: Mathematics 674 and Physics 603. 3 + 3 + 3 q.h.

* **Note:** These courses may be used to complete a physics minor.

800, 801, 802. *Observational Astronomy.* Observational techniques in Astronomy. The University telescopes and auxiliary equipment will be used. Prereq.: Mathematics 674 and Physics 603. 3 + 3 + 3 q.h.

POLITICAL SCIENCE

Professor Sterenberg; Associate Professor Boyer (chairman); Assistant Professors Binning, Eichenberger, and Esterly; Instructors Haushalter, Hudzik, Masloff, McKean, and McKee.

A major in political science consists of 45 quarter hours, with the requirement that the student complete at least six hours in each of the four areas: American government, comparative government, international relations, and political theory.

Related minors in history, economics, and sociology are valuable to the political science major preparing for graduate study in political science, or for a career in journalism, law, public administration, or the foreign service. The student who plans to do

graduate study in political science or who expects to apply to the foreign service should achieve proficiency in at least one modern foreign language.

Lower Division Courses

600. *Elements of Politics.* An analytic approach to the study of political systems, with illustrations drawn from the American experience. 3 q.h.

601. *American National Government.* A general survey of American political structure and process at the national level, with emphasis on the constitutional order and the electoral system. 3 q.h.

640. *Elements of Comparative Government.* An inquiry into comparative politics, using as case studies the British and Soviet political systems. 3 q.h.

660. *Elements of International Relations.* An introduction to basic principles of international politics, law, and organization. 3 q.h.

680. *Elements of Political Theory.* An introduction to major twentieth century political ideologies, with emphasis on liberalism, socialism, communism, and fascism. 3 q.h.

Upper Division Courses

700. *American Executive.* An examination of the role of the chief executive officer within the governmental framework. The offices of mayor and governor are treated, but primary emphasis is on critical evaluation of the American presidency. Prereq.: Political Science 601. 3 q.h.

701. *American Legislative Process.* An examination of the lawmaking function. Attention is focused on the United States Congress, with limited consideration of state and local government legislative practices. Prereq.: Political Science 601. 3 q.h.

702. *American Judicial Process.* An examination of the American judicial system, its institutional development and its role in policy determination, as evidenced in leading Supreme Court decisions. Limited attention is given the state judicial systems. Prereq.: Political Science 601. 3 q.h.

703. *American Constitutional Law.* An inquiry into constitutional interpretation by the Supreme Court based on examination of leading cases, with particular attention to questions of federalism, executive power, civil liberties, and economic regulation. Prereq.: Political Science 702. 3 q.h.

704. *American Political Parties.* A descriptive analysis of the role of political parties in a democratic society, with emphasis on development of a theory of party and an examination of the history and characteristics of the American party system. Attention is given a quantitatively structured description of the national electorate. Prereq.: Political Science 601. 3 q.h.

706. *Minority Group Politics.* An analytic examination of the politics of minority groups within American society in terms of organization, behavior, objectives, relative influence and power. The politics of black America will be given particular attention. Prereq.: Political Science 601. 3 q.h.

707. *Interest Group Politics.* An analytic examination of the politics of special interests within American society in terms of organization, behavior, objectives, relative influence and power. Interests concerned primarily with governmental economic policy will be given special attention. Prereq.: Political Science 601. 3 q.h.

712. *Political Behavior.* An empirical examination of politics, with consideration of political leadership as related to influence patterns, public opinion, political role and style. Prereq.: Political Science 600 or 601. 3 q.h.

714. *Public Opinion.* A descriptive and quantitative analysis of public opinion in terms of its origin and location, content, interpretation, and effect, within the American political system. Prereq.: Political Science 601. 3 q.h.

718. *American Public Policy.* An inquiry into the formulation and implementation of public policy in contemporary American society, with emphasis on the role of government in determining the public interest. Prereq.: Political Science 601. 3 q.h.

720. *Public Administration.* A study of administrative organizations in American federal and state governments, with special attention to their role in the formulation and implementation of public policy. Prereq.: Political Science 601. 3 q.h.

721. *Urban Government.* An introductory study of the structure and politics of urban government, with special attention to intergovernmental relationships. Prereq.: Political Science 601. 3 q.h.

722. *State and Local Government.* A study of the political processes and institutions of state and local governments, with special attention to the federal relationship. Prereq.: Political Science 601. 3 q.h.

741. *The Government of the Soviet Union.* An examination of the ideology, institutions, and policies of the Soviet Communist system as a background for understanding the Soviet totalitarian challenge to American democracy. Prereq.: Political Science 640. 3 q.h.

742. *Politics and Economics of Developing Areas.* A systematic study of political and

economic development in the "underdeveloped areas." Prereq.: Political Science 640. 3 q.h.

743. *British Government and Politics.* An intensive study of governmental institutions and political behavior in the United Kingdom. Prereq.: Political Science 600, 601, or 640. 3 q.h.

744. *European Government and Politics.* A comparative study of governmental institutions and political behavior in France and the Federal Republic of Germany. Prereq.: Political Science 600, 601, or 640. 3 q.h.

751. *Government and Politics — Latin America.* Prereq.: Political Science 640, 742. 3 q.h.

752. *Government and Politics — Asia.* Prereq.: Political Science 640, 742. 3 q.h.

760. *International Politics.* A systematic analysis of the principles underlying politics among nations and a study of their application to present international problems. Prereq.: Political Science 660. 3 q.h.

761. *United States Foreign Policy.* A study of the formulation and execution of contemporary United States foreign policy, with attention to its basic principles in the twentieth century. Prereq.: Political Science 660. 3 q.h.

762. *Soviet Foreign Policy.* A study of the continuity and change in Soviet foreign policy, with attention to objectives, methods, and the influence of a revolutionary ideology. Prereq.: Political Science 660. 3 q.h.

763. *International Law.* Principles of international law as they have developed through custom and usage, international agreement, and judicial decisions. Prereq.: Political Science 660. 3 q.h.

764. *International Organization.* A study of international organizations with special emphasis on the United Nations in action. Prereq.: Political Science 660. 3 q.h.

780. *Political Thought I.* Political thought of the Greek period (Plato, Aristotle). Prereq.: Junior standing. 3 q.h.

781. *Political Thought II.* Political thought of the medieval period and transition to modern (Machiavelli and Bodin). Prereq.: Junior standing. 3 q.h.

782. *Political Thought III.* Political thought of the modern period (to Marx). Prereq.: Junior standing. 3 q.h.

783. *Political Thought IV.* Political thought of the modern period (from Marx to the present). Prereq.: Junior standing. 3 q.h.

800. *Select Problems, American Government.* This course may be repeated once. Prereq.: Consent of teacher. 3-6 q.h.

840. *Select Problems, Comparative Government.* This course may be repeated once. Prereq.: Consent of teacher. 3-6 q.h.

860. *Select Problems, International Relations.* This course may be repeated once. Prereq.: Consent of teacher. 3-6 q.h.

880. *Select Problems, Political Thought.* This course may be repeated once. Prereq.: Consent of teacher. 3-6 q.h.

SOCIAL SCIENCE

Lower Division Courses

501. *Introduction to the Social Sciences.* A scientific approach to the study of human individual and group behavior. The object is to familiarize the student with the contemporary approach to the various social studies, emphasizing anthropology, psychology, and sociology; to develop critical and analytical skills useful in philosophy; and to accumulate valid knowledge in other fields. (For certification and transfer purposes, this is regarded as a course in introductory sociology.) 3 q.h.

502. *Introduction to Economics.* A continuation of Social Science 501, with emphasis on the allocation of economic resources in response to human needs and wants, and on the institutions through which such allocation is made. For certification and transfer purposes Social Science 502 is regarded as a course in introductory economics. 3 q.h.

503. *Introduction to Political Science.* A continuation of Social Science 502, with emphasis on the application of elementary principles of political science. Attention is given the problems of regulating and controlling human behavior, social control functions of formal and informal groups, controls exerted on the international level by government institutions. For certification and transfer purposes Social Science 503 is regarded as a course in introductory political science. 3 q.h.

Combined Major in Social Studies

The combined major in social studies is appropriate foundation for the study of law, for graduate work in any of the social sciences, and for entry into the civil service field. It can also fulfill requirements for teacher certification in the social sciences.*

In addition to the baccalaureate degree requirements of Social Science 501, 502, 503 and History 601, 602, 603, the social studies major consists of 63 hours in the disciplines of economics, geography, history, political science, and sociology, to be distributed as follows:

A. a minimum of 18 quarter hours in each of two disciplines;*

* The student seeking teacher certification must choose history as one of his category A options, and must complete History 651, 652, 653.

B. a minimum of 8 quarter hours in each of the remaining three disciplines.

A minimum of 27 of the additional 63 hours required must be in Upper Division courses.

PRE-FORESTRY*

Youngstown State University offers a program in forestry in cooperation with the School of Forestry at Duke University. In completing this coordinated five-year course of study, the student earns the Bachelor of Science degree from Youngstown State University and the professional degree, Master of Forestry, from Duke University.

The student who pursues this course of study spends his first three years in residence at Youngstown State University, where he gets training in the liberal arts and in the sciences basic to forestry. He spends the last two years and the summer following his junior year at the Duke School of Forestry, in professional studies.

The candidate for this program enrolls in the pre-forestry curriculum at the beginning of his freshman year. At the end of the first semester of his junior year he will be recommended for admission to Duke University if his cumulative point index is at least 3.0. His recommendation will be accompanied by his formal application for admission and a transcript of his academic record; no application for admission to Duke University need be made prior to that time.

Details concerning requirements and curriculums may be obtained from the supervisor of the department.

Lower Division Courses

503-504. *Principles of Forestry.* Introduction to forestry in the United States. Contribution of forestry to the national economy. Discussion of the principles of forestry management. To be offered only in the second and third quarters of each year. 503 is prerequisite to 504. 2 + 2 q.h.

603-604. *Introduction to Forestry.* To be taught only in the second and third quarters of the academic year. 603 is prerequisite to 604. 2 + 2 q.h.

Second Year

During the latter part of the second quarter of the first year the student will designate the subject matter field he wishes to pursue in the second year. Students who successfully complete the work of the first year will be assigned to a faculty advisory committee, who in consultation with the student, will develop his study plan for the second year. Qualified students may concentrate on the following areas:

Forest management	Forest economics
Forest business management	Forest soils
Silvics and silviculture	Wood anatomy
Forest influences	Forest entomology
Mensuration and biometry	Forest-tree physiology
Forest pathology	
Physical and chemical properties of wood	
Forest harvesting and utilization	

* The Pre-Forestry program is part of the Department of Biology.

PRE-LAW STUDY

The student expecting to enter a school of law should consult Political Science Department advisors in planning either a combined major in social studies or a major of 45 hours in a department of the College of Arts and Sciences. In his junior year the pre-law student should check particularly with the pre-law advisor regarding law school interviews and examinations.

Schools of law have varying entrance requirements which the pre-law major will find stated in their catalogs. In general these recommend the choice of a bachelor of arts curriculum, with the objectives of developing facility in the use of English, familiarity with American history and philosophy, an understanding of elementary logic and mathematics, an appreciation of science in the modern world, and a fundamental knowledge of the social sciences. A major in economics relates effectively to corporation law, political science to administrative law and politics, accounting to tax law.

The University will accept a maximum of 39 quarter hours of study in an approved law school toward the completion of the pre-law curriculum in absentia, if the last 45 hours prior to these are taken at Youngstown State University. The student is cautioned, however, that few law schools now accept candidates without bachelor's degree.

PREMEDICAL STUDY AND ALLIED FIELDS

Premedical students may elect any one of the following programs:
(1) a biology major with a chemistry minor
(2) a chemistry major with a biology minor
(3) any other major and minor

Program (1) or (2) is taken by the majority of students accepted into Medical School. Program (3) is recommended only for students who can maintain extremely high grade averages.

PSYCHOLOGY

Professors S. N. Hotchkiss (chairman) and Beckman; Associate Professors E. Painter, and Sweeney; Assistant Professors Cunningham, Dobrich, Guterba, S. M. Hotchkiss, Letchworth, Morrison, and Watkins; Instructors Degli, Quinby, and Werbner.

An appropriate major in psychology is available both for students wishing a terminal liberal arts degree and for those aspiring to pursue a professional career through graduate study. The major consists, basically, of the four required courses, Psychology 601, 613,

615, and 723, plus at least 30 additional quarter hours in psychology selected from those courses designated as being applicable to the major. Those students planning to take graduate work are strongly advised to include Psychology 702, 724, 740, 800, 840, 841, and 850 among their courses. However, because psychologists enter so many diverse areas of application, each student must consult closely with his advisor to design a major and minor sequence of study best suited to his own vocational needs.

As a major, psychology is primarily an Upper Division program. Prospective majors are advised to concentrate upon the completion of the University and college requirements during their freshman and sophomore years.

Psychology 601 is the required first course for the major and is recommended for the minor. Psychology 501 provides an introduction to the field and is a sufficient prerequisite for several additional courses (see specific course listings).

This Catalog Issue includes many psychology courses with enlarged content and new numbers. To aid the student, the previous number for all renumbered courses is given in parentheses immediately following the prerequisites for that course. Students cannot receive credit for both the original and the revised course and must check these numbers carefully to avoid repeating the same course.

Biology 721 may be counted toward the major in psychology.

550. *Improvement of Adult Reading Ability.* Stresses techniques involved in the improvement of reading skill for adults; of interest to those wishing to improve their own reading ability. Meets two hours per week and is counted as two quarter hours for load and billing purposes. *Credits from this course cannot be used toward graduation.* Open to all students. 2 q.h.

Lower Division Courses

501. *Introduction to Psychology.* Gives an overview of psychology as the science of behavior; discusses major sub-areas and the activities of psychologists in each; presents basic principles of human behavior, development, and adjustment with a view to better understanding oneself and others. *Not a prerequisite for Psychology 601 and not applicable toward a major in psychology.* 3 q.h.

601. *General Psychology.* The basic principles of the scientific study of behavior, including the role of the biological and experiential factors in the development and modification of intelligence, emotion, motivation, and other important determinants and components of behavior. *Required for all psychology majors.* Prereq.: Sophomore standing or consent of chairman. 5 q.h.

613. *Quantitative Methods in Psychology.* An introduction to basic methods of handling data including frequency distributions; percentiles; measures of central tendency and dispersion; an understanding of correlation and use of graphic methods. *Required for all psychology majors.* Prereq.: C or better in Psychology 501 or 601. (713) 3 q.h.

615. *Introduction to Experimental Psychology.* The application of scientific methodology to problems in psychology. An introduction to apparatus, methods, and techniques with selected experiments to acquaint the student with basic principles. *Required for the psychology major.* Prereq.: C or better in Psychology 601 and 613. 3 q.h.

Upper Division Courses

700. *Social Psychology.* A survey and consideration of underlying psychological principles that give rise to the concept of self in society; includes such topics as interactions; social-cultural reality; group norms; the crowd; public opinion; and propaganda. *Applicable to the psychology major.* Prereq.: Psychology 501 or 601 or Sociology 600. 4 q.h.

701. *Introduction to Learning.* A discussion of concepts basic to learning; emphasis on the role of reinforcement and techniques, such as operant conditioning, which utilize it. *Not applicable to the psychology major.* Prereq.: Psychology 501 or 601. 3 q.h.

702. *Abnormal Psychology.* An examination of patterns of deviant behavior including current systems of classification; classic syndromes; the nature and trend of major maladjustments; and consideration of possible causative factors and methods of prevention and treatment. *Applicable to the psychology major.* Prereq.: Psychology 601. 4 q.h.

703. *Psychology of Religion.* Identical with Religious Studies 756. *Applicable to the psychology major only with permission of the chairman.* Prereq.: See Religious Studies 756. 4 q.h.

704. *Psychology of Music.* Psychological implications in the composition, performance and appreciation of music. Consideration of tests used to predict musical aptitude and musical interest. *Not applicable to the psychology major.* Prereq.: Psychology 501 or 601. 3 q.h.

707. *The Psychology of Marriage and Family Relations.* Psychological factors contributing to marital success and family stability; an examination of courtship, marriage, child-and-family relations; sexual relations; and mental hygiene. *Not applicable to the psychology major.* Prereq.: Psychology 501 or 601. 3 q.h.

708. *Psychology of Mental Health.* The principles of societal and individual behavior which contribute to psychological well-being and adequate self-adjustment. *Not applicable to the psychology major.* Prereq.: Psychology 501 or 601. 3 q.h.

709. *Psychology of Education.* Principles of psychology as applied to the educational process including characteristics of the individual learner; the classroom; the instructor; methods and techniques; and other characteristics of the learning process. *Applicable to the psychology major.* Prereq.: Psychology 501 or 601. 4 q.h.

711. *Applied Psychology.* An overview of psychological principles as used in various areas such as industry, law, advertising, consumer research, etc. *Not applicable to the psychology major.* Prereq.: Psychology 501 or 601. 3 q.h.

712. *Industrial Psychology I.* Principles of psychology applied to the area of business and industry including selection and placement, personnel practices, industrial testing, measurement of performance and training. The role of the psychologist in business and industry. *Applicable to the psychology major.* Prereq.: Psychology 601, 613 and junior standing or Psychology 501, junior standing and consent of instructor. 3 q.h.

716. *Industrial Psychology II.* Principles of psychology applied to the area of business and industry including measurement of attitude and morale; motivation; organization; and social aspects of men and work. *Applicable to the psychology major.* Prereq.: C or better in Psychology 712. 3 q.h.

723. *Statistical Methods in Psychology I.* A review of the basic principles of descriptive statistics including measures of central tendency, variability and correlation followed by an introduction to inferential statistics including z and t tests, Chi Square, and simple analysis of variance. *Required for the psychology major.* Prereq.: C or better in Psychology 613. (714) 4 q.h.

724. *Statistical Methods in Psychology II.* A continuation of inferential statistics including complex analysis of variance and nonparametric statistics; additional study of the special correlational techniques and the concepts of regression and prediction. Introduction to the use of the calculator and computer as aids to statistical computation. Recommended for the student preparing to seek an advanced degree. *Applicable to the psychology major.* Prereq.: C or better in Psychology 723. 4 q.h.

740. *Psychological Measurement.* Consideration of basic principles used in the construction of psychological tests, scales, and questionnaires and their use in vocational and educational guidance. *Applicable to the psychology major.* Prereq.: Psychology 601, 613 or consent of instructor. (710) 4 q.h.

755. *Developmental Psychology I (Child).* A study of human development from conception to puberty. Stresses the interaction between innate, biological factors and experience in shaping behavior. *Applicable to the psychology major.* Listed also as Home Economics 705 (in which the classroom study is supplemented by two hours a week of directed observation of children, for a total of five hours credit). Prereq.: Psychology 501 or 601. (705) 4 q.h.

756. *Developmental Psychology II. (Adolescence).* A study of human development from puberty to adulthood. *Applicable to the psychology major.* Prereq.: Psychology 501 or 601. (706) 4 q.h.

757. *Developmental Psychology III. (Adult).* A study of human development from adulthood through old age. *Applicable to the psychology major.* Prereq.: Psychology 601. 4 q.h.

800. *Psychology of Learning.* A study of the learning process with emphasis on factors such as reinforcement, discrimination, generalization, transfer, etc.; an introduction to modern learning theory. *Applicable to the psychology major.* Prereq.: 20 hours of psychology including Psychology 601 or consent of instructor. 4 q.h.

802. *Personality.* An investigation of the variables which determine personality. Normal patterns of behavior are discussed and consideration is given to the more prominent theories of personality. *Applicable to the psychology major.* Prereq.: 20 hours of psychology including Psychology 601. 4 q.h.

803. *Comparative Psychology.* A study of animal behavior at various levels of the phylogenetic scale. *Applicable to the psychology major.* Prereq.: 20 hours of psychology including Psychology 601. 4 q.h.

805. *Interviewing Techniques.* The basic principles, purposes, and problems of interviewing including practicum and review. *Applicable to the major.* Prereq.: Senior standing plus twenty hours of psychology including Psychology 601 or consent of the instructor. 4 q.h.

806. *Vocational Guidance.* Techniques of vocational guidance and their application to high school and college students, vocational rehabilitation, and adults in general. *Applicable to the psychology major.* Prereq.: Twenty hours of psychology including Psychology 601 and 740 or consent of instructor. 4 q.h.

807. *Introduction to Counseling.* A discussion of the role of the pre-professional in

helping the clinical and counseling psychologist; theories of adjustment; area resources; referral; professional problems. *Applicable to the psychology major.* Prereq.: Senior standing plus Psychology 601, 702, and 802 or consent of instructor. 4 q.h.

812. *Group Testing.* An intensive study of group achievement, intelligence and interest tests plus practice on same. *Applicable to the psychology major.* Prereq.: Senior standing with 20 hours of Psychology 601, 613, and 740 plus consent of instructor. 4 q.h.

815. *Individual Testing: Intelligence.* Intensive study of individual intelligence tests including underlying theories and concepts, with classroom practice in proper administration, scoring, and interpretation. Students will be required to participate in practice and administration of intelligence testing. *Applicable to the psychology major.* Prereq.: Senior standing plus 20 hours in psychology including Psychology 601, 613, 740 and consent of instructor. 4 q.h.

816. *Individual Testing: Practicum.* Supervised practicum in the application of individual tests; writing of reports and submission of same. *Applicable to the psychology major.* Prereq.: Psychology 815 plus consent of instructor. 4 q.h.

828. *Physiological Psychology.* The structure-functional relationships of the various divisions of the neural system; their relationships to the organism as a whole, and their contributions to human behavior. *Applicable to the psychology major.* Prereq.: Twenty hours of psychology including Psychology 601 or consent of instructor. 4 q.h.

832. *The Psycho-Social Dynamics of Religion.* Identical with Religious Studies 832. *Applicable to the psychology major only with consent of chairman.* Prereq.: See Religious Studies 832. 4 q.h.

836. *Psychology of the Exceptional Child: General.* A survey of exceptionality including the orthopedically and physically handicapped, sensorially handicapped, socially and emotionally handicapped, and the intellectually exceptional. *Applicable to the psychology major.* Prereq.: Psychology 755 or 756 and senior standing or consent of instructor. (732) 3 q.h.

837. *Psychology of the Exceptional Child: Retarded.* A detailed investigation of the psychological characteristics of the mentally retarded and the disabled learner. Mental retardation and learning disabilities on borderline, mild and severe levels will be considered. *Applicable to the psychology major.* Prereq.: Psychology 755 or 756 and senior standing or consent of instructor. 3 q.h.

838. *Psychology of the Exceptional Child: Gifted.* A detailed investigation of the psychological characteristics of the gifted; prolems of accommodation and adjustment of the gifted, the creative child. *Applicable to the psychology major.* Prereq.: Psychology 755 or 756 and senior standing or consent of instructor. 3 q.h.

840. *History of Psychology I.* A review of the major forces of psychology from its antecedents through structuralism. *Applicable to the psychology major.* Prereq.: Senior major standing plus 20 hours of psychology including Psychology 601 or consent of instructor. (722) 3 q.h.

841. *History of Psychology II.* A review of the major trends of psychology from functionalism to the present. *Applicable to the psychology major.* Prereq.: Psychology 840 or consent of instructor. (830) 3 q.h.

845. *Issues in Psychology.* A consideration of controversial issues and ideas in psychology, both long-standing and current. *Applicable to the psychology major.* Prereq.: Senior standing and consent of instructor. 3 q.h.

850. *Seminar.* Major topics in psychology not covered in the usual courses. Offered every quarter with content varying throughout the year. May be repeated to a total of 3 hours. Scheduled for two hours. *Applicable to the psychology major.* Prereq.: Senior major or consent of instructor. (741, 742) 1 q.h.

860. *Individual Study.* The individual study of a special problem or a review of the literature relating to a specific psychological problem or issue. For the exceptional student. A written report is required, one copy of which will remain on file in the department. *Applicable to the psychology major.* Prereq.: Senior major. (821, 822) 1-2 q.h.

PUBLIC RELATIONS

A suggested curriculum leading to the degree of Bachelor of Science in Business Administration with the major in advertising and 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 is not primarily in business or industry, should also consult members of the faculties of English and of social sciences before planning a curriculum.

RUSSIAN

A major in Russian consists of 45 quarter

hours above the elementary level including at least 24 hours in literature.

Lower Division Courses

501-502-503. *Elementary Russian.* Fundamental principles of grammar taught through oral and written exercises and the reading of simple prose. The stress in this course is on the aural-oral facility. No credit can be given for this course if the student has been given entrance credit for two years of high school Russian. Five class meetings 4-4-4 q.h.

601. *Intermediate Russian.* Continuation of inductive grammar. Emphasis on readings in prose and poetry. Oral and written practice based on readings. Five class meetings. Prereq.: C or better in Russian 503 or in second year high school Russian. 4 q.h.

602. *Intermediate Russian.* A continuation of Russian 601. Five class meetings. Prereq.: Russian 601 or equivalent. 4 q.h.

611, 612. *Scientific Russian.* A basic course designed to develop expeditiously an ability to read scientific literature in Russian. Five class meetings. Prereq.: C or better in Russian 503 or in second-year high school Russian and one year of a laboratory science or equivalent. 4, 4 q.h.

Upper Division Courses

711, 712, 713. *Russian Culture and Civilization.* A survey of ideas expressed in Russian literary, philosophical, aesthetic, social, and political writings and their influence on the formation of Russian thought and culture. First quarter: From the beginnings to the 18th century. Second quarter: The Imperial Period to 1917. Third quarter: 1917 to the present. Prereq.: Russian 602, its equivalent or permission of the instructor. 3, 3, 3 q.h.

762. *Advanced Russian Reading.* Reading and structural analysis of unsimplified selections from literature, journals, and newspapers. Prereq.: Russian 602 or equivalent. 3 q.h.

763. *Advanced Russian Conversation.* Intensive practice in common patterns of speech. Emphasis on construction, control, and use of idiomatic expressions. Prereq.: Russian 602 or equivalent. 3 q.h.

764. *Russian Composition.* Composition of themes in Russian on assigned subjects. Review of grammar. Prereq.: Russian 602 or equivalent. 3 q.h.

765. *Practical Russian Phonetics.* Theory and practice of Russian speech, pronunciation, stress, rhythm, and intonation. Phonemic and morphemic analysis. Prereq.: Russian 602 or consent of instructor. 3 q.h.

770. *Advanced Russian Grammar I.* Study of problems in Russian grammar. Exercises in analysis of common Russian expressions. Prereq.: Russian 602 or equivalent. 3 q.h.

771. *Advanced Russian Grammar II.* Analysis of the structure of original texts from Russian classics and journals. Study of the different types of compound and complex sentences. Prereq.: Russian 602 or equivalent. 3 q.h.

772. *Russian Stylistics.* Prereq.: Russian 602 or equivalent. 3 q.h.

804. *Russian Literature from 1100 to 1800.* Reading and interpretation of Russian literature from its beginnings to Pushkin. Prereq.: Russian 711 or permission of the instructor. 3 q.h.

805. *Russian Literature from 1800 to 1865.* Reading and interpretation of works by Pushkin, Lermontov, Gogol, Turgenev and others. Prereq.: Russian 712 or permission of the instructor. 3 q.h.

806. *Russian Literature from 1865 to 1917.* Reading and interpretation of works by Dostoevsky, Tolstoy, Goncharov, Chekov, Gorky, and others. Prereq.: Russian 712 or permission of the instructor. 3 q.h.

807. *Russian Literature Since 1917.* Reading and interpretation of works by Leonov, Blok, Fedin, Sholokhov, Pasternak, and others. Prereq.: Russian 713 or permission of the instructor. 3 q.h.

870, 871, 872. *Special Reading and Research.* Directed study on a central theme or thesis in Russian language or literature terminating in an examination, research paper, or both. Prereq.: Permission of the department head and voluntary agreement of the instructor. 1-5, 1-5, 1-5 q.h.

873, 874, 875. *Seminar in Russian Language or Literature.* A seminar in problems in Russian language or literature. Prereq.: Senior standing and permission of the instructor. 3, 3, 3 q.h.

876. *Study Abroad.* See the department chairman for details. Prereq.: Prior permission from the department chairman and major advisor. 1-15 q.h.

SOCIOLOGY AND ANTHROPOLOGY

Professor Botty; Associate Professors Kiriazis (chairman), Dobbert, Ducey, and Muntean; Assistant Professors McDonald and Poddar; Instructor Moore.

The Department of Sociology and Anthropology offers a major in either general sociology or anthropology, or a combination from sociology, anthropology, and social services. It also offers a minor in the fields of sociology, anthropology, or social services. It provides academic advisement to professional nurses.

The concentrations in sociology are useful to the professional study of law, social work, teaching or research, and other allied fields requiring work beyond the bachelor's level. Employment with a bachelor's degree is limited to such areas as high school teaching, some welfare services such as public assistance and child welfare, or some social service in public administration, social security and its allied programs, recreation and health services.

The departmental courses are classified below. All majors must take the asterisked courses in addition to any courses listed in the department. The following are suggestions:

SOCIOLOGY: 600, 601, 700, 701*, 702*, 703, 705, 706, 707, 708, 709, 740, 741, 742, 743, 751*, 760*, 761, 774, 787, 800, 898.

ANTHROPOLOGY: 612, 701*, 702*, 705, 712, 713, 714, 715, 716, 751*, 760*, 761, 770, 771, 772, 773, 774, 775, 776, 777, 778, 800, 898.

SOCIAL SERVICES: 701*, 702*, 720, 721, 722, 723, 724, 751*, 760*.

Selected courses from other departments may be added by permission of the department chairman. Computer Science 600 and Linguistics 750 may, in some cases, count toward the major.

Lower Division Courses

600. *Principles of Sociology.* Underlying principles of the science of society, with reference to types of societies, groups, and classes; development of culture and personality; laws of population; structure and organization of social institutions; dynamics of social change. Prereq.: Social Science 501 or consent of chairman. 5 q.h.

601. *Social Pathology.* The causes and present status of selected social and personal maladjustments with possible remedies. Prereq.: Social Science 501. 3 q.h.

612. *Cultural Anthropology.* An approach to the science of culture; its primitive origins. Prereq.: Social Science 501. 5 q.h.

634. *Criminal Justice.* Identical with Police Science 605. 3 q.h.

Upper Division Courses

700. *Minority Groups.* A survey of the origin and characteristics of ethnic and racial minority groups, with emphasis on the significance of membership in such a group for in-group, out-group, and community solidarity. Special emphasis on the American Negro. Prereq.: Sociology 600. 5 q.h.

701. *Social Statistics I.* Measurement and interpretation of social data by the use of descriptive techniques. Prereq.: Sociology 600. 3 q.h.

702. *Social Statistics II.* Continuation of Sociology 701. The methods of probability theory as a basis for statistical inference, hypothesis testing, correlation, chi-square and variance analysis. Prereq.: Sociology 701. 3 q.h.

703. *Sociology of Aging.* Characteristics of aging, problems for the individual and his family as well as society at large; some basic skills needed for providing services to and for the aged. Prereq.: Sociology 600. 3 q.h.

705. *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.: Sociology 600. 4 q.h.

706. *Industrial Sociology.* Industrial social organization in our urbanized culture; small and large enterprises related to each other, to our social class system, to minority groups and to our major social institutions; the repercussions of social change and technological progress. Prereq.: Sociology 600. 4 q.h.

707. *Urban Sociology.* The city in modern industrial civilization; its physical plant and land-use pattern; its changing social structure within the total social milieu; the sociological aspects of urban planning. Prereq.: Sociology 600. 5 q.h.

708. *Political Sociology.* The social conditions that affect government and politics determine political order and regulate struggles for power; associations, political parties, and movements to stabilize or to change the political order. Special consideration is given to nineteenth and twentieth century movements. Prereq.: Sociology 600. 4 q.h.

709. *Social Control.* Means of control in primitive and advanced societies. The role of the family, school, church, clubs, economic institutions, the press, radio, television, and movies. The modification of individual and group behavior by group valuations, praise, ridicule, rewards, punishments, symbols, slogans, and propaganda. Prereq.: Sociology 600. 4 q.h.

712. *Archaeology.* An introduction to the methods and subject matter of archaeology as it reconstructs paleolithic and prehistoric cultures as inferred from artifacts. Prereq.: Sociology 612. 4 q.h.

713. *Social Anthropology.* The origin, diffusion and continuity of primitive social institutions with their relation to contemporary social phenomena. Prereq.: Sociology 612. 3 q.h.

714. *Physical Anthropology I.* The physical origins of man and the biological bases of his social behavior. Prereq.: General Biology and Sociology 612. 3 q.h.

715. *Physical Anthropology II.* A continuation of Sociology 714. The distribution of man into races and cultural groups as disclosed by paleontology and archaeology. Prereq.: Sociology 714. 3 q.h.

716. *Anthropology: Maya, Aztec, and Inca Cultures.* The origins, culture and achievements of the classical civilizations of the New World: Aztec, Inca and Maya. Prereq.: Sociology 612. 3 q.h.

720. *Historical Introduction to Social Services I.* A historical survey of the origins and nature of social services in western civilization, with emphasis on the United States. Prereq.: Sociology 600. 3 q.h.

721. *Historical Introduction to Social Services II.* A survey of the programs, organization, functions, and interrelationships of the various public and private social services in the United States. Visits to local agencies. Prereq.: Sociology 720. 3 q.h.

722. *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 705 and 721. 3 q.h.

723. *Introduction to Social Group Work Methods.* Analysis of the major processes employed in social group work; relation of social group work methods to other fields, such as teaching, recreational leadership, committee work, and participation in civic and community affairs. Prereq.: Sociology 721. 3 q.h.

724. *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 service 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 721. 3 q.h.

735. *Juvenile Delinquency.* Identical with Criminal Justice 735. 4 q.h.

736. *Criminology I.* Identical with Criminal Justice 736. 3 q.h.

737. *Criminology II.* Identical with Criminal Justice 737. 3 q.h.

740. *Complex Organization.* A survey of theory and research on structures and processes of large-scale organizations; leadership, control techniques, tensions, bureaucratic pathologies and organizational change. Consideration of industrial-commercial, governmental, religious, military, and educational organizations. Prereq.: Sociology 600. 5 q.h.

741. *Collective Behavior.* An analysis of the role of social movements, intellectual criticism and socio-economic trends; study of the student movement, mobs, and crowd behavior. Prereq.: Sociology 600. 4 q.h.

742. *Small Group Processes.* A study of small group behavior; social perception and influence, attitudes and values of social microsystems. Prereq.: Sociology 600. 4 q.h.

743. *Social Stratification.* A comparative analysis of social stratification systems with a major emphasis on modern Western societies. Prereq.: Sociology 600. 4 q.h.

751. *Social Research.* Seminar in methods of obtaining, interpreting, and presenting sociological data. Each student makes an intensive study of an existing situation. Prereq.: Sociology 702. 5 q.h.

760. *History of Social Theory.* The historical development of social theory out of social philosophy with an emphasis on the scientific schools of thought of the 19th and early 20th centuries. Prereq.: Sociology 600. 5 q.h.

761. *Modern Sociological Theory.* An analysis of key schools of sociological theory of the present. 4 q.h.

770. *Anthropology: African Cultures.* An analysis of ancient and contemporary cultures found in Africa. Prereq.: Sociology 612. 4 q.h.

771. *Anthropology: Middle Eastern Cultures.* An analysis of ancient and contemporary cultures found in the Middle East. Prereq.: Sociology 612. 4 q.h.

772. *Asian Cultures.* An analysis of ancient and contemporary cultures in Asia. Prereq.: Sociology 612. 4 q.h.

773. *Australian and Oceanic Cultures.* An analysis of ancient and contemporary cultures found in Australia and Oceania. Prereq.: Sociology 612. 3 q.h.

774. *Comparative Community Studies.* A comparative study of peasant society as a social type contrasted with primitive and industrial society; the impact of contact, problems of modernization, stability and conflict in developing cultures. Prereq.: Sociology 612. 5 q.h.

775. *North American Indians.* The prehistory, culture, and achievements of the North American Indians. Prereq.: Sociology 612. 4 q.h.

776. *South American Indians.* The pre-

history, culture, and achievements of the South American Indians. Prereq.: Sociology 612. 4 q.h.

777. *Method and Theory in Archaeology.* A survey of past and contemporary theory and methodology in archaeology with an emphasis on recent innovations in the U.S. and Europe. Prereq.: Sociology 712. 4 q.h.

778. *Archaeological Techniques.* An introduction to archaeological field methods including surveying, mapping, excavation and artifact analysis. Prereq.: Sociology 712. 4 q.h.

787. *Population Movements.* Trends in world population in their relation to history, migration and urbanization. Human demography and ecology: various measurements of the size, density, and distribution of population as well as their economic and social environments. Listed also as Economics 787 and History 787. Prereq.: Junior standing. 4 q.h.

800. *Social and Cultural Factors in Personality Development.* An analysis of the dynamic relationship between social structure and cultural patterns in the development of personality throughout the entire life process. Prereq.: Sociology 612 and 705. 4 q.h.

898. *Select Problems in Sociology and Anthropology.* Senior readings in sociology and anthropology dealing with selected current problems in theory and methods. Variable credit is given according to the nature and extensiveness of the problems and literature to be consulted. Intended for students planning to enter graduate school. Prereq.: Departmental major in senior year. 1-5 q.h.

SPANISH

A major in Spanish consists of 45 quarter hours above the elementary level, including Spanish 701, 702, 703. For a combined major in humanities, see *Humanities.*

Lower Division Courses

501-502-503. *Elementary Spanish.* Fundamental principles of grammar taught through oral and written exercises and the reading of simple prose. The stress in this course is on the aural-oral facility. No credit can be given for this course if the student has been given entrance credit for two years of high school Spanish. Five class meetings. 4 + 4 + 4 q.h.

601. *Intermediate Spanish.* Review of grammar through oral and written exercises. Reading of modern prose and poetry. Five class meetings. Prereq.: C or better in Spanish 503 or in second year high school Spanish. 4 q.h.

602. *Intermediate Spanish.* A continuation of 601. Five class meetings. Prereq.: Spanish 601 or equivalent. 4 q.h.

Upper Division Courses

All Upper Division courses (except 865, 866) are conducted in Spanish.

701, 702, 703. *Survey of Spanish Literature.* An introduction to the study of Spanish Literature, aimed at acquainting the student with the main works, writers, and principal literary tendencies and movements. First quarter: from the beginnings to 1700. Second quarter: from 1700 to 1900. Third quarter: from 1900 to the present. 3 + 3 + 3 q.h.

711, 712, 713. *Survey of Spanish-American Literature.* An introduction to the study of Spanish-American Literature, aimed at acquainting the student with the main works, writers and principal literary tendencies and movements. First quarter: from the beginning to 1888. Second quarter: Modernismo. Third quarter: from 1910 to the present. 3 + 3 + 3 q.h.

721. *Advanced Spanish Grammar.* A review in depth of Spanish Grammar, with special attention to sentence structure, study of idiom, and building of vocabulary. Prereq.: Spanish 602. 5 q.h.

722. *Spanish Composition.* Skill in writing, developed through analysis of literary works, Spanish syntax, stylistic devices, and directed composition. Prereq.: Spanish 602. 3 q.h.

723. *Explicacion de Textos.* Detailed examination of poetry and prose to develop skill in perceptive analysis of literature. Prereq.: Spanish 722. 3 q.h.

731, 732, 733. *Spanish Conversation.* A course in oral Spanish, with the teacher using the direct conversational approach to help the student speak the language fluently. First quarter: topics leading to the use of Spanish in practical everyday situations. Second quarter: topics leading to acquaint the student with the Spanish culture and civilization as expressed in everyday life. Third quarter: topics leading to acquaint the student with the Spanish American republics, their way of life, social and political institutions. 3 + 3 + 3 q.h.

801, 802, 803. *Classical Spanish Literature.* The literature of the Golden Age. First quarter: the drama. Second quarter: the prose. Third quarter: the poetry. Prereq.: Spanish 701, 702, 703. 3 + 3 + 3 q.h.

811, 812, 813. *Nineteenth Century Spanish Literature.* The literature of the nineteenth century starting with the end of neoclassicism, romanticism, realism, and naturalism. First quarter: the drama. Second quar-

ter: the prose with special emphasis on the renaissance of the novel. Third quarter: the poetry. Prereq.: 701, 702, 703.
3 + 3 + 3 q.h.

821, 822, 823. *Twentieth Century Spanish Literature.* The literature of the twentieth century, including the Generation of 1898, modernismo, postmodernismo, and the contemporary writers. First quarter: the drama. Second quarter: the prose. Third quarter: the poetry. Prereq.: 701, 702, 703.
3 + 3 + 3 q.h.

831, 832, 833. *Modern Spanish American Literature.* The literature of the Spanish American countries from the middle of the nineteenth century to the present. First quarter: the essay, the short story, and the drama. Second quarter: the novel. Third quarter: the poetry. Prereq.: Spanish 712, 713.
3 + 3 + 3 q.h.

841, 842. *Medieval Spanish Literature.* The literature of the 12th, 13th, 14th, and 15th centuries including the *jarchas* through Jorge Manrique; the prose from Alfonso el Sabio through *La Celestina.* Prereq.: Spanish 701 or equivalent. 3, 3 q.h.

843. *Pre-Lope de Vega Drama.* The evolution of the drama from *El Auto de los Reyes Magos* through Juan del Encina. Prereq.: Spanish 701 or equivalent. 3 q.h.

864. *History of the Spanish Language.* The development of the Spanish language from Latin to Old Spanish to Modern Spanish with an intensive study of the development of the 2000 basic words in Modern Spanish: sounds, inflections, syntax, word meaning, and usage. Prereq.: Senior standing or permission of the instructor. 3 q.h.

865, 866. *Comparative Romance Linguistics.* First course: the phonology and vocabulary of the chief Romance dialects. Second course: morphology and syntax. 3 + 3 q.h.

870, 871, 872. *Special Reading and Research.* Directed study on a central theme or thesis in Spanish language or literature terminating in an examination, research paper, or both. Prereq.: Permission of the department head and the voluntary agreement of the instructor. 1-5, 1-5, 1-5 q.h.

873, 874, 875. *Seminar in Spanish Language or Literature.* A seminar in problems in Spanish language or literature. Prereq.: Senior standing or permission of the instructor.
3, 3, 3 q.h.

876. *Study Abroad.* See the department chairman for details. Prereq.: Prior permission from the department chairman and major advisor. 1-15 q.h.

SPEECH AND DRAMATICS

Associate Professors Elser (chairman) and H. Crites; Assistant Professor O'Neill; Instructors Grcevich and Reeve.

Speech majors are expected to complete a minimum of 45 quarter hours with emphasis in one of three areas: Public Address, Theatre, or Radio and Television.

The prerequisites to courses in speech are Public Speaking 613, Communication 506, or preparation satisfactory to the teacher or department chairman.

Lower Division Courses

515. *Fundamentals of Speech.* A survey of principles of group discussion and principles of public speaking. Study and practices of basic techniques for effective oral communication including techniques of interpersonal communication together with more formal strategies of speech. (For transfer students only with one year previously in Composition.) 3 q.h.

611. *Introduction to Theatre Arts.* Study of the theory, the history, the cultural role, and the physical characteristics of the theatre as an institution in human society. 4 q.h.

613. *Public Speaking.* The effective construction and delivery of speeches. Frequent presentation of short talks before the class.
3 q.h.

614. *Business and Professional Speech.* A study of the principles of conference speaking in business, educational, industrial, and professional situations. Primarily for students enrolled in Business Administration. 3 q.h.

615-616. *Oral Interpretation.* An introduction to the basic philosophy and methods of the oral interpretation of literature (prose, poetry, and drama) with emphasis on performance in class. Prereq.: Speech 613 or 614. 3 + 3 q.h.

617. *Principles and Practices of Broadcasting.* A survey course designed to familiarize students with the principles and practices involved in radio and television broadcasting. Prereq.: Speech 613 or 614.
3 q.h.

618, 619, 620. *Play Production* (Lecture and Laboratory). Instruction in the production of plays in class and before the public. First course: Introduction problems. Second course: Costuming, makeup, and technical work coincident with the productions of the University Theatre. Third course: Scene design, stage lighting, costume design. Prereq.: Speech 613 or 614. 3 + 3 + 3 q.h.

621. *Voice and Diction.* A fundamental study of the voice mechanism; breath con-

trol, enunciation, articulation, vocal variety. Prereq.: 615. 4 q.h.

623, 624. *Rehearsal and Performance.* Detailed study of a play through preparing it for public performance. Credit given for roles played in University Theatre productions. 1-3 + 1-3 q.h.

Upper Division Courses

713. *Radio and Television Announcing.* A study of the announcer's role in radio and television stations. Basic principles and practices of announcing, continuity writing, and broadcast operation. Class and laboratory. Prereq.: 617 or consent of instructor. 3 q.h.

714. *Persuasive Speaking.* Presentation of the rhetorical theory of persuasive speaking. Students will prepare and present a series of persuasive speeches throughout the quarter. Prereq.: See cover statement, page 000. 4 q.h.

715. *Parliamentary Procedure.* A study of the proper procedures in the conduct of business meetings, the formation of organizations, the writing of constitutions. Prereq.: Speech 613 or 614 or consent of instructor. 2 q.h.

716, 717, 718. *Acting.* Rehearsal and classroom performance. Course One: Elementary techniques of stage action and practice in the reading and acting of dramatic literature. Course II: Advanced work in character analysis and development. Course III: Creation of roles in plays of different types, styles and periods. 3 + 3 + 3 q.h.

719, 720, 721. *Play Production.* (Lecture and Laboratory). A more direct participation in the theatre production of the department than is attempted in 618, 619, 620. This can include assignment as assistant director, stage manager, house manager, scene designer, etc. Prereq.: Consent of instructor or department head. 3 + 3 + 3 q.h.

722. *Makeup for Stage and Television.* The history, purpose, and techniques of application of makeup. Laboratory participation working on productions for both stage and television. Prereq.: Play Production 618, 619, 620 or consent of instructor. 3 q.h.

723. *Elementary Set Design for Stage and Television.* The fundamentals of set design for the stage and television. From working drawing to set construction. Prereq.: Play Production 719 or consent of instructor. 3 q.h.

724. *Oral Communication Theory.* A survey of oral communication from behavioral science literature. The communication process will be related to the Shannon and Weaver model of source, message, and receiver. 4 q.h.

725, 726. *Radio and Television Production.* Practical application of Broadcast techniques and practices. Experience in the production of various types of radio and television programs of WYSU and other broadcast facilities. Class and laboratory 12 hours a week. Prereq.: 713 or consent of department chairman. 4 + 4 q.h.

727. *Creative Dramatics.* Principles and practices in the conduct of informal drama with children and adults. Improvised play making with emphasis on the creative development of the participants. Prereq.: Communication 508 or consent of instructor. 3 q.h.

728. *Speech Problems for the Classroom Teacher.* A consideration of speech improvement for all pupils and of speech correction for pupils with speech and/or hearing problems on the kindergarten, primary, and intermediate levels. Types of difficulties, techniques, and materials for development and continued use of good voice and acceptable speech. Required of all elementary teachers. Elective for secondary teachers. 3 q.h.

729. *Radio and Television Station Writing.* Fundamentals of broadcast writing, emphasis on the theory, analysis, and practice in the preparation of station and program continuity, news, and documentaries. Prereq.: Radio and Television Announcing 713. 4 q.h.

754. *Phonology.* Identical with Phonology 754. Prereq.: Communication 508 or its equivalent. 4 q.h.

811. *Argumentation and Debate.* Principles and practices of formal argumentation including analysis of issues, evidence, reasoning, and refutation. Prereq.: See cover statement, page 000. 4 q.h.

812. *Discussion and Conference Techniques.* Principles and practices of small group discussion. The course will teach techniques of effective group interaction as well as review significant behavioral research in this area. Prereq.: See cover statement, page 000. 4 q.h.

813. *Classical Rhetoric.* A study principally of the teaching of Aristotle, Cicero, and Quintilian, with chief focus on the three principal divisions—discovery of arguments, arrangement of materials, and style. Prereq.: Consent of instructor or department head. 4 q.h.

814. *Medieval and Renaissance Rhetoric.* A study of the teaching of St. Augustine, through Ramus, and of the English Vernacular Rhetorics, Cox through Whately. Prereq.: Consent of instructor or department head. 4 q.h.

815. *Applied Public Speaking.* To be taken by members of the forensic team only after one quarter of work on the team and with permission of the debate coach. 3 or 5 q.h.

816. *American Rhetoric.* Theory and Practice: Colonial times to the present, including the history of the study of Rhetoric in American education. Prereq.: Consent of instructor or department head. 4 q.h.

817. *British and American Oratory.* A study of important speakers and speeches in relation to times of cultural crisis. Prereq.: Consent of instructor or department head. 4 q.h.

818. *Contemporary Public Address.* A study of contemporary speakers and their effectiveness. The course will also focus on twentieth century trends in communication theory, including the growth of experimental research, semantics, and linguistics. Prereq.: Consent of instructor or department head. 4 q.h.

820. *Broadcasting Regulations.* Responsibilities of broadcasters as prescribed by law and governmental policies and regulations and court decisions. Comparative study and analysis of purposes, methods, and techniques of foreign broadcasting operations. Prereq.: Radio and Television Station Writing 729. 4 q.h.

821, 822, 823. *Theatre Directing.* (Lecture and laboratory). Course I: Introduction to the problems of directing. Course II: Continuation with the student directing or assisting in directing a one-act play either in class or for public performance. Course III: Problems involved in directing the longer play. Special emphasis will be given to the production of the high school play. Prereq.: Consent of the department chairman or teacher. 3 + 3 + 3 q.h.

UNIVERSITY HONORS SEMINAR

Professors Roberts (supervisor), P. Botty, T. Miner, and Slavin.

701, 702, 703. *The University Honors 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 two teachers and occasional special lecturers. Meetings are symposia in which individual papers are presented and criticized. Students completing the seminar with distinction are granted special honors by the University. Departmental chairmen will determine what credit can be applied toward the student's major. Limited to students selected by the faculty members participating in the program. 3 + 3 + 3 q.h.

ZOOLOGY

See *Biology.*

SCHOOL OF BUSINESS ADMINISTRATION

SCHOOL OF BUSINESS ADMINISTRATION

Robert LaVelle Miller, Dean

ORGANIZATION AND DEGREES

The school of Business Administration has four departments: Accounting, Advertising and Public Relations, Business Organization, and Merchandising.

Majors are offered in accounting, advertising and public relations, commercial art, financial management, general administration, industrial management, industrial or retail merchandising, public administration, transportation management, and secretarial studies. Minors are offered in accounting, advertising, business organization (except when the majors are financial management, general administration, industrial management, public administration, or transportation management), and merchandising.

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 the Bachelor of Science in Education with a major in business education, for which see the School of Education. A two-year curriculum leading to the Associate in Applied Business degree through the Technical and Community College is also offered in all of the above areas of study. See the Technical and Community College section.

SCHOOL OF BUSINESS ADMINISTRATION

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 the General Requirements and Regulations section.

2. The courses and other requirements to be completed in the University. They are explained in the General Requirements and Regulations section but are recapitulated below.

The curriculums leading to the degree require a minimum of 186 quarter hours of credit (194 for commercial art, general administration, or transportation management; 196 for secretarial studies; 202 for accounting, financial management, or public administration), 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.*

R.O.T.C. students are allowed certain modifications of the requirements, as explained in the General Requirements and Regulations section.

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

PRE-COLLEGE

Requirements

SUBJECT	HIGH SCHOOL UNITS
English	3
United States history and civics	1
Algebra	1-2
Geometry	0-1
Science or additional mathematics	1
Others	10-8
	16

IN THE UNIVERSITY

COURSE REQUIREMENTS (OTHER THAN THE MAJOR AND MINOR) UNIVERSITY CORE COURSES

		QUARTER HOURS OF CREDIT
*Communication 525-526-527 Communication I-II-III		12
Humanities elective:		12
English: 600-level literature course	5	
Philosophy and Religious Studies elective *OR* Humanities elective	4	
Elective	3	
Social Studies electives:		20
Economics 601, 602, 603 Principles I, II, III	9	
Psychology 501 Introduction to Psychology *OR* Psychology 601 General Psychology	3 or 5	
**Electives	8 or 6	

*With the use of proficiency tests and/or an example of the student's writing which, with proven capability, will exempt him from one or more of the Communication courses.

**Social Studies electives may be satisfied by Soc. Sci. 501, 502, 503 Introduction to Social Science I, II, III (9 q.h.); or Soc. 600, Principles of Sociology (5 q.h.) and Pol. Sci. 600, Elements of Politics (3 q.h.) or Pol. Sci. 601, American National Government (3 q.h.); or 9 hours of history electives; or other subjects in consultation with the department chairman.

Science electives:		17 or 18
Science electives	12 or 8	
***Mathematics 531 Mathematics of Business *OR* Mathematics 542 Special Topics of Algebra and Mathematics 550 Introduction to Calculus (where applicable to a specific curriculum)	5 or 10	
Health and Physical Education 509 Health Education		3
Health and Physical Education activity courses		3
		67-68

SCHOOL OF BUSINESS ADMINISTRATION CORE COURSES

	QUARTER HOURS OF CREDIT
Accounting 601, 602, 603 Elementary Accounting I, II, III	9
Business Organization 511 Introduction to Business	3
Business Organization 701 Law I	3
Business Organization 712 Business Letters	3
Business Organization 720 Business Finance	4
Business Organization 725 Fundamentals of Management	5
Business Organization 750 Human Behavior in Organization	4
Economics 704 Statistics I	4
Merchandising 624 Marketing	5
	40

REQUIREMENTS IN ADDITION TO COURSES

	QUARTER HOURS OF CREDIT
Completion of the number of quarter hours required for degree	186 to 202

Upper Division status (including completion of any specified preparatory courses not completed at time of entrance).
Major and minor requirements.
See the year-by-year curriculums in the Curriculums section.
Course-level requirements.
Point index requirement.
Residence requirement.
Application for graduation.

REQUIREMENTS FOR THE MAJOR AND MINOR

The courses required for the majors in accounting, advertising and public relations, financial management, industrial management, industrial or retail merchandising, and transportation management are stated in the announcements of the accounting, advertising and public relations, business organization, and merchandising departments. The combined major in commercial art is stated in the announcement of the advertising and public relations department. The combined majors in general administration and public administration are stated in the announcements of the business organization department. The major in secretarial studies is stated in a separate announcement at the end of the Curriculums section. The year-by-year curriculums that appear in the Curriculums 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 department chairman of the student's major and by the Dean of the School of Business Administration. A grade of C or better is required in each course counted toward the major and minor.

***Prerequisite for Math. 531 is one unit of high school algebra or Math. 500, Algebra I (5 q.h.). Prerequisite for Math. 542 and/or Math. 550 is one unit of high school geometry and two units of high school algebra or Math. 501, Geometry I (5 q.h.) and Math 500, 502, Algebra I, II (5 ÷ 5 q.h.) depending on student's high school units completed.

NOTE: Students taking courses to satisfy high school deficiencies must take additional credit hours to complete the requirements for the degree.

SCHOOL OF BUSINESS ADMINISTRATION

OBJECTIVES

Our responsibility in the School of Business Administration, by the nature of its name, demands that we educate our students for particular areas of employment according to their choice. Consequently, formal diversified programs of study have been designed to accomplish this end.

Although many of our students are preparing for professional competency in one particular area, our students receive a truly broad liberal education. Over half of their academic work is within the scope of liberal arts education and many of the courses in the School of Business Administration have a behavioral science approach in today's ever-changing environment.

The courses taught in the School of Business Administration are varied in nature. Therefore, teaching methodology must conform to the needs and requirements of each individual course and instructor. However, full emphasis is given to the class discussion type method, and exchange of ideas between professor and pupil is encouraged.

COURSES OF INSTRUCTION AND CURRICULUMS

The student should 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 at the end of the General Requirements and Regulations section. Each student is charged with the responsibility to check the catalog for prerequisites for each course the student wishes to take. This will insure minimum changes of registration on the student's behalf and will alleviate much of the anguish of a broken or confused schedule. Any waiver of a prerequisite is at the discretion of the teacher with the approval of the department chairman.

Curriculums for the several major fields open to business administration students will be found after the course descriptions for merchandising.

ACCOUNTING

Professor Reilly; Associate Professors Chuey, Evans, and Jenkins; Assistant Professors Magner (acting chairman), Fortunato, Goldstein, Petrych, Schneider, and Zetts.

Accounting courses provide a study of record keeping methods and the presentation, analysis, and interpretation of financial and statistical data. Courses covering accounting theory, data processing, cost analysis, consolidated statements, auditing, taxes, and other areas in accounting, are offered for the students interested in this field of specialization. They are designed for students who want to become accountants in business and industrial firms; to prepare for certification through experience in the employ of certified public accountants; to acquire a knowledgeable background in accounting as a tool for careers in business at the executive level; or to enter the teaching profession.

In view of this variety of aims and interests, the student may take either a major or a minor in accounting. The curriculum for a major in accounting consists of 50-54 quarter hours as outlined in the curriculum printed in the Curriculums section. A student majoring in accounting must have a minor of at least 21 quarter hours in a related field or in a field approved by the Chairman of the Accounting Department and the Dean of the School of Business Administration.

A suggested minor in accounting consists of 22-24 quarter hours and includes Accounting 601, 602, 603, 701-702, plus 3-5 additional hours.

A grade of C or better in Accounting 603 is prerequisite to all more advanced courses in accounting. Approval of the Chairman of the Accounting Department is required to carry three or more accounting courses the following quarter.

Lower Division Courses

601, 602, 603. *Elementary Accounting I, II, III.* Fundamentals of record keeping and the development of the complete accounting cycle with emphasis upon working papers and classified financial statements for service, merchandising, and manufacturing operations. A practice set and problems supplement the theory, principles, and management applications. 3 + 3 + 3 q.h.

Upper Division Courses

701-702. *Intermediate Accounting I-II.* A detailed study of the theoretical background of accounting principles and procedures. Emphasis is placed on the proper reporting of net income, classification of equity by source, various methods of inventory accounting, problems connected with fixed assets and their depreciation, and techniques of analysis of financial operations. Prereq.: C or better in Accounting 603. 5 + 5 q.h.

710. *Basic Concepts of Data Processing.* Through the consideration of the logical components of data processing, the complete concept of data processing is developed from the unit record card and punched-card machines through computer systems. Flow-charting, the universally accepted language of business (COBOL), and business applications are included. Prereq.: Junior standing, if non-accounting major. 3 q.h.

711. *Accounting Control and Decision Making.* A detailed study of the principles and concepts and the uses of accounting for decision-making purposes. A practice set is included with numerous examples and illustrations to facilitate the understanding of the interrelation of the accounting function with manual, automated, and electronic data processing. Prereq.: Accounting 603. 3 q.h.

712. *Distribution Cost Accounting.* A detailed study of cost ascertainment and budgetary control of commercial expenses which include both selling (often referred to as distribution or marketing expenses) and administrative expenses. Areas covered include expense and cash budgets, forecasting and preparation of performance reports. Prereq.: Accounting 603. 3 q.h.

713. *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. Prereq.: C or better in Accounting 603. 4 q.h.

714. *Advanced Cost Accounting.* This course covers 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 713. 4 q.h.

800. *Computer Concepts.* 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 710 or consent of the teacher. 3 q.h.

801. *Advanced Accounting.* Partnerships: formation, operation, and liquidation: installment sales; consignments; branch accounting; receivership; joint ventures; consolidations and mergers. Prereq.: C or better in Accounting 702. 5 q.h.

807. *Auditing.* Auditing practices and procedures are introduced and related to problems encountered in actual practice. A short audit case is worked through by the student. Prereq.: C or better in Accounting 713 and 801. 4 q.h.

810. *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, operating position trends, and other variations. Prereq.: Accounting 603 or consent of the department chairman. 3 q.h.

813. *Federal Tax Theory.* The principles underlying our income tax laws. Emphasis is placed on items included or excluded in determining income subject to tax; sales or exchanges; basis for determining gains or losses; capital assets and treatment of capital gains and losses by all taxpayers; business deductions including bad debt losses, operating losses, depreciation, depletion, installment sales; special problems affecting corporations, capital changes and securities. Prereq.: Junior standing. 4 q.h.

814. *Federal Tax Practice.* Emphasis is placed upon special areas of tax law as it pertains to partnerships, estates and trusts, gifts taxes, estate taxes, and payroll taxes. The student is trained in researching tax law; the student prepares tax returns on official tax forms. Prereq.: C or better in Accounting 813. 4 q.h.

816. *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.: C or better in Accounting 714 and 801. 3 q.h.

818. *Controllership.* A seminar approach to controllership applications. Case studies are presented in which the student becomes a member of a committee which either: defines the problem existing in an actual case; originates alternative courses of action for the problem; or, evaluates the best solution to the problem. In addition, each student is assigned an individual term paper to do original research on throughout the quarter for a practical application of controllership. Prereq.: C or better in Accounting 714 and 801. 3 q.h.

820. *Funds Accounting.* The principles and standards, terminology, and classification of accounts for governmental and non-profit organizations. General and specific funds'

applications as to budgets, revenues and expenditures, fixed assets, bonded debt and interest, and interfund relationships and transfers. Auditing and financial reporting of funds. Prereq.: Accounting 702 or consent of the department chairman. 4 q.h.

831. *C. P. A. Review I.* All types of accounting theory, law, and auditing problems are solved and discussed from the standpoint of both theory and practice, with special emphasis on accuracy and clarity in such problems as are encountered in C. P. A. examinations. Students take two full-day examinations during the quarter under conditions similar to those encountered when taking the C. P. A. examination. Prereq.: C or better in Accounting 807 or consent of the department chairman. 3 q.h.

832. *C. P. A. Review II.* All types of accounting practice 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. Students take two full-day examinations during the quarter under conditions similar to those encountered when taking the C. P. A. examination. Prereq.: C or better in Accounting 801 or consent of the department chairman. 3 q.h.

840. *Accounting Internship Program.* Observational and participatory accounting and professional business experience under the direction of University faculty members and partners of the accounting firms participating in the program. This program is offered during the winter quarter of each academic year. The candidates will be employed full-time for the entire quarter in the offices of the participating accounting firms. Weekly campus conferences are required, and attendance at these conferences is mandatory. A written evaluation of the job experience is required by students and firms. Prereq.: Accounting major, junior standing, 2.75 accounting average, and 2.50 overall average, and approval of internship committee. 4 q.h.

851. *Business Readings and Applications.* Individual readings and research in accounting problems. The student chooses special topics beyond the required readings and prepares papers on these topics for the benefit of the group. Prereq.: C or better in Accounting 801 or consent of the department chairman. 3 q.h.

ADVERTISING AND PUBLIC RELATIONS

Associate Professor Flad (chairman); Assistant Professors Braden, Koornick, Mamula, and Sekeres.

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.

Public relations courses complement the advertising courses for students who wish to enter any of the following fields: advertising agencies; newspapers, radio and television; or positions in the area of advertising and public relations in commercial firms, any of the nonprofit public service organizations, or governmental agencies.

A major in advertising and public relations consists of 47 quarter hours; it includes 32 quarter hours in the advertising sequence and 15 quarter hours in the public relations sequence as outlined in the curriculum printed in the Curriculums section.

In cooperation with the Art Department, a combined major in commercial art is also offered and consists of 72 quarter hours; it includes 26 quarter hours in the advertising and public relations sequence; 30 quarter hours in art; and 16 quarter hours in merchandising as outlined in the curriculum printed in the Curriculums section.

A student majoring in advertising and public relations or commercial art must have a minor of at least 21 quarter hours in a related field or in a field approved by the Chairman of the Advertising and Public Relations Department and the Dean of the School of Business Administration.

A suggested minor in advertising consists of 23 quarter hours and includes Advertising 627, 628, 629, 725, and 727 plus 6 additional hours.

Advertising Sequence
Lower Division Courses

627. *Advertising Principles I.* A survey of advertising as an instrument of modern business and selling, including the various forms of advertising. This course includes the economics, methods, and psychology of advertising, with an introduction to marketing research, consumer analysis, market analysis, and sales potentials. Prereq.: Sophomore standing. 3 q.h.

628. *Advertising Principles II.* This course deals with such problems as careful media selection, the use of newspapers, magazines, radio, television, and direct mail. Other media covered include point-of-purchase, outdoor posters, transportation advertising, trade shows, and expositions. The course also includes discussion of popular consumer appeals and some phases of copywriting. Prereq.: Advertising and Public Relations 627. 3 q.h.

629. *Advertising Principles III.* Visual elements of the advertisement which include layout, balance, and composition. Mechanics of reproduction: printing, typography, plates, and engraving. The course also comprises a study of advertising agencies, company advertising departments, advertising campaigns, and budgeting. Prereq.: Advertising and Public Relations 628. 3 q.h.

Upper Division Courses

725. *Advertising Copywriting.* Definition and discussion of the various elements of copywriting. Practical and creative application of copywriting: the writing of headlines, body copy, brand names, trade-marks, and slogans, in consumer, industrial, and business publications. Class will meet five hours a week with three hours of lecture and two hours of workshop. Prereq.: Advertising and Public Relations 629. 4 q.h.

727. *Advertising Layout.* Emphasis is on the actual making of layouts: complete layouts that have good attention value, attractive style, clarity, and definite sales appeal. Layouts are designed for magazine and newspaper advertisements, direct mail, magazine covers, outdoor posters, packages, and graphic arts in television. Class will meet five hours a week with three hours of lecture and two hours of workshop. Prereq.: Advertising and Public Relations 725. 4 q.h.

811. *Direct Mail Advertising.* The planning and preparation of the major types of direct mail advertising, including the discussion and writing of sales letters, leaflets, folders, brochures, booklets, catalogs, house organs and a study of mimeographing, multigraphing, various types of printing, and engraving. Prereq.: Advertising and Public Relations 725. 3 q.h.

814. *Advertising Case Studies.* A study of actual case histories taken from leading business firms. Analyses of these cases and their promotional backgrounds provide an understanding of the practical application of advertising to specific business situations. The student is in the position of the business executive who must make decisions on various advertising problems. Prereq.: Advertising and Public Relations 725. 3 q.h.

815. *Radio and Television Advertising.* The history, organization, and practices of the broadcasting profession from the viewpoints of both the advertiser and advertising agency, and of the stations and networks. The course includes the consideration of such problems as choosing the station, the time and method of broadcast, types of programs, the writing and production of various kinds of commercials, and merchandising the campaign to the trade and to the consumer. Prereq.: Advertising and Public Relations 725. 3 q.h.

821. *Advertising Problems and Campaigns I.* Application of fundamental theories and practices to a specific advertising problem, including the development and creation of a complete consumer advertising campaign. This is a highly creative course and gives the student an opportunity to use his own imagination and ideas in preparing advertisements for all of the media used in modern advertising today. Prereq.: Advertising and Public Relations 727. 3 q.h.

822. *Advertising Problems and Campaigns II.* This course comprises the various space and time-buying functions, budgeting, scheduling, media planning, and media selection. The student learns how to figure advertising costs and must make definite decisions about expenditures for the proper advertising-selling-media mix. Prereq.: Advertising and Public Relations 821. 3 q.h.

Public Relations Sequence

710. *Basic Public Relations.* A study of the management function which investigates and evaluates public attitudes, policies, means, and techniques used in the field to earn public understanding and acceptance. Prereq.: Junior standing. 3 q.h.

753. *Introduction to Journalism.* A survey course introducing students to journalism history, press law, ethics, libel, newspaper organization, and theory of communications. Emphasis is on practical writing exercises based on a known set of facts. Prereq.: Junior standing. 3 q.h.

755. *News Reporting and Writing.* The development of the reporter with emphasis on beat and spot news reporting for newspapers and house organs. Consideration of material related to newspaper offices, sources of news, writing styles, and modern public relations techniques. Prereq.: Advertising and Public Relations 753. 3 q.h.

757. *Editing and Makeup.* Stresses the editor's and editorial activities. Emphasis on active preparation of newspaper and house organ stories, evaluation of news, news-gathering methods, plus principles of copy-reading, editing, make-up, headlines, typography, illustrations, and page-layout. Prereq.: Advertising and Public Relations 755. 3 q.h.

810. *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.: Advertising and Public Relations 710 and Business Organization 712. 3 q.h.

SCHOOL OF BUSINESS ADMINISTRATION

BUSINESS EDUCATION

For the major in business education, see the School of Education.

BUSINESS ORGANIZATION

Professor Hovey; Associate Professors Teodorescu (chairman), Curran, and Krishnan; Assistant Professors Boland, Dastoli, Fortunato, Grim, Gutknecht, Lacich, Long, Meiners, Painter, Provance, Schneider, Walsh, and Wolanin; Instructor 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 for the majors in financial management, industrial management, and transportation management; (c) provide many of the courses for the combined majors in general administration and public administration, and for the major in business education; and (d) provide for the minor in business organization.

The majors in business organization and their requirements in business organization courses are: financial management, a total of 46-49 quarter hours; industrial management, a total of 47 quarter hours; and transportation management, a total of 45-49 quarter hours. The combined major in general administration consists of a total of 75 quarter hours in accounting, business organization, and merchandising. The combined major in public administration consists of a total of 76 quarter hours in accounting, business organization, and political science. See the curriculums for each of these majors which are printed in the Curriculums section.

A student majoring in financial management, general administration, industrial management, public administration, or transportation management must have a minor of at least 21 quarter hours in a related field or in a field approved by the Chairman of the Business Organization Department and the Dean of the School of Business Administration.

A suggested minor in business organization consists of 21-24 quarter hours and includes Business Organization 720, 725, and 750 plus 8-11 additional hours.

The major in business education is done under the direction of the School of Education.

Lower Division Courses

511. *Introduction to Business.* An overview of the broad concept of business to provide a foundation for understanding the interrelationship of the various functions of business in order to determine areas of interest and aptitude. 3 q.h.

605. *Transportation Rates I.* The study of shipping documents, freight classifications, shipping rules, tariff publishing rules and regulations. 3 q.h.

606. *Transportation Rates II.* The practical application of rates, tariffs, and classifications. Particular rate problems are used in this application. Prereq.: Business Organization 605. 3 q.h.

Upper Division Courses

701. *Law I.* A study of business law and its role in modern society. The formation of contracts, the legal requisites of an enforceable agreement, fraud, duress, etc., the transfer of contractual rights, discharge of contracts, relationship between principal and agent, employer and employee, and their responsibilities are studied. Bailments with reference to their nature, classification, and termination, and carriers are analyzed. Prereq.: Junior standing. 3 q.h.

702. *Law II.* The provisions of the Uniform Commercial Code are studied with reference to the sales contract, transfer title, warranties, duties, liabilites, rights, and remedies of the parties. This course also considers commercial paper, requisites and meaning of negotiability, rights and liabilities, defenses and discharge under the Uniform Commercial Code. Bank deposits, personal property, and public rights in private property are covered. Prereq.: Business Organization 701. 3 q.h.

703. *Law III.* The partnership: creation, authority of partners, duties, rights, liabilities and terminations are considered. The corporation with its nature, classification, creation and dissolution, stock, rights, liabilities, stockholders, bankruptcy and management, is analyzed. Real property, deeds, conveyancing, trusts and mortgages are covered. Prereq.: Business Organization 702. 3 q.h.

705. *Principles of Transportation.* The historical, economic, and regulatory background of transportation is studied. Emphasis is placed on the economic basis of rates and market centers. The valuation of property assets and their rate of return is given consideration. Prereq.: Economics 603. 5 q.h.

707. *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 procedures; and federal, state, and municipal regulations and restrictions as to weight, length, and public liability. Prereq.: Junior standing. 5 q.h.

712. *Business Letters.* This course is

intended to give students an understanding of the human aspects of communication, to help them develop logical patterns of ideas, and to aid them in achieving clear, concise, and relevant expression. Prereq.: Communication 508 or 527. 3 q.h.

713. *Report Writing.* Students are prepared to write reports of the sort required in business and professional activities. Form and structure of various types of reports, procedures and principles of effective communication are treated. Practical problems ranging from simple memorandums to problem-solving reports are assigned. Prereq.: Business Organization 712. 3 q.h.

717. *Real Estate Principles.* Principles of real property ownership and real estate practices; types of deeds, leases, and restrictions; real estate brokerage, selling, and advertising; property management; subdividing and developing; zoning and its effects. Prereq.: Business Organization 701. 3 q.h.

718. *Real Estate Finance and Problems.* Methods of financing 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 717. 3 q.h.

720. *Business Finance.* A study of the financial problems associated with the life cycle of a business. This course consists of the analysis of problems relating to estimating the financial needs of an enterprise and to evaluating the alternative means of providing temporary and permanent capital. The relationship of current financial decisions with financial policy is analyzed from the viewpoint of management and the investor. Prereq.: Junior standing. 4 q.h.

722. *Insurance Fundamentals.* The fundamental nature of risk and its influence upon all human activities is studied. Principles of insurance, insurance coverage, and other loss-bearing techniques are examined. Prereq.: Business Organization 701. 3 q.h.

723. *Life Insurance.* The fundamental nature of life insurance and the principles and technical facts in the field of study. The proper use of life insurance in personal and business planning. Prereq.: Business Organization 701. 3 q.h.

724. *Credit Management.* The nature, uses, and general functions of credit plus the credit instruments and legal aids for the credit department are presented. Management of the business credit-granting function; management of the consumer credit-granting function; investigation and analysis of mercantile, bank, and foreign credit risks; analysis of financial statements for credit purposes; control of accounts receivable in relation to sales, inventory, and working capital; and the control of credits and collections are evolved. Prereq.: Accounting 603 and Business Organization 702. 3 q.h.

725. *Fundamentals of Management.* This course emphasizes the basic principles of management rather than those involving business organization. It studies the nature of managerial action within an organization, formal and informal structure, process of making decisions, and interrelated activities in management. Prereq.: Junior standing. 5 q.h.

730. *Investment Analysis and Management.* Studies the nature and investment merits of corporate bonds, preferred stocks, and common stocks from the viewpoint of the individual investor. Special factors relating to the analysis of securities of public utilities, banks, and investment companies are also considered. Principles of portfolio management for individual investors are analyzed. Prereq.: Junior standing. 3 q.h.

731. *The Stock Market.* Considers organization, operation, and regulation of the security market. Practices, procedures, and regulations relating to the listing of securities and to the buying and selling of securities are covered. Prereq.: Business Organization 730 or consent of the department chairman. 3 q.h.

740. *Office Management and Methods.* A study of office management, its nature and characteristics. Common office work, services, systems, procedures, and methods are analyzed. The role of new technology and automation in office management is emphasized. Prereq.: Junior standing. 3 q.h.

746. *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.: Junior standing. 3 q.h.

750. *Human Behavior in Organization.* A study of human factors in the administration function. Emphasis is placed on the contributions of the behavioral sciences to the student of business. Among the topics covered are history of human relations, leadership and its development, labor-management relations, group dynamics, and communication and group processes. Prereq.: Business Organization 725. 4 q.h.

804. *Personnel Management.* Deals with objectives, functions, and organization of typical personnel programs, including problems involved in personnel administration.

Emphasizes job analysis, job evaluation and description, selection and placement, education and training, safety and health, employee services, employee relations, and the administration of wages and hours. Prereq.: Business Organization 725 and 750. 4 q.h.

808. *Water Transportation.* The history of water transportation is studied. Other objectives of the course are to acquaint the student with the mechanics of making shipments through ocean transport; maritime law; cargo insurance; Federal regulations; and rate conferences. Prereq.: Business Organization 705. 3 q.h.

816. *Problems in Transportation.* Problem study of selected areas in transportation to meet the needs of students having a professional interest in the field. The Interstate Commerce Act is also reviewed for current changes. Prereq.: Business Organization 705 and 746. 3 q.h.

819. *Production Management.* A systematic study of current production theories and practices with particular emphasis on methods analysis, work measurement, wage incentives, production planning and control, plant layout and materials handling, and cost methods. Prereq.: Business Organization 725 and Economics 704. 4 q.h.

820. *Production Control.* An analysis of functions and techniques necessary in planning, routing, scheduling, and controlling flow of materials through various production processes and operations. Prereq.: Business Organization 819. 4 q.h.

833. *Public Utilities.* Development and importance of the public utility industry. The legal basis for its regulation and control. Public utility financing and problems concerning public utility economics. Prereq.: Economics 603. 3 q.h.

835. *Advanced Business Finance.* The policies and practices required for effectively planning and controlling the sources and uses of a company's funds are analyzed, with emphasis on the adaptation of financial principle promotion, long-term financing, income administration, expansion, and reorganization. Prereq.: Business Organization 720. 4 q.h.

850. *Development of Executive Ability.* Analysis of a series of cases presenting typical and real problems in the area of management as faced by contemporary business concerns. Discussions and reports are used to assist the student in developing his attitude and skill as a leader and decision maker. Prereq.: Business Organization 725 and 750 and senior standing. 3 q.h.

851. *Problems in Industrial Management.* A series of case problems are presented, analyzed and interpreted covering areas in industrial management. In addition, each student is required to do original research in the field by collecting and analyzing data pertaining to specific problems either at the production or at the administrative level of an industrial enterprise. Prereq.: Business Organization 750 and 819. 3 q.h.

855. *Business Ethics.* Analysis of major policies involved in the management of a business and its relation to society, stockholders, customers, employees, competitors, and government. Prereq.: Business Organization 725 and 750 or consent of the department chairman. 2 q.h.

COMMERCIAL ART

For the combined major in commercial art, see Advertising and Public Relations.

FINANCIAL MANAGEMENT

For the major in financial management, see Business Organization.

GENERAL ADMINISTRATION

For the combined major in general administration, see Business Organization.

INDUSTRIAL MANAGEMENT

For the major in industrial management, see Business Organization.

MERCHANDISING

Professor Almond (chairman); Associate Professor Hanks; Assistant Professors Braden, Burkholder, Deiderick, Liber, Mathews, and Seifert; Instructor Davis.

Merchandising courses, industrial and retail, comprise a study of materials and their sources, industrial and retail buying and selling methods, quality analyses, fashions, and methods of promotion. They are designed for the student who wishes to become an owner, purchasing agent, buyer, department manager, manufacturer's representative, stylist, or sales executive.

A major in merchandising may be in either industrial merchandising or retail merchandising. A major in industrial merchandising consists of 45-47 quarter hours and a major in retail merchandising consists of 45-47 quarter hours as outlined in the curriculum printed in the Curriculums section. A student majoring in industrial merchandising or in retail merchandising must have a minor of at least 21 quarter hours in a related field or in a field approved by the Chairman of the Merchandising Department and by the Dean of the School of Business Administration.

A suggested minor in merchandising consists of 22-24 quarter hours and includes Merchandising 624 and 625 and 14-16 additional hours.

Lower Division Courses

530. *Introduction to Merchandising Techniques.* This course is designed to provide complete and detailed explanation of the many merchandising problems. The primary objective of the course is to help the student understand and apply merchandising techniques to practical situations. (This course is required in the merchandising technology curriculum only for the Technical and Community College.) 5 q.h.

624. *Marketing.* A general survey, with attention to marketing functions, policies, and marketing institutions involved in the distribution of goods and services, product development and pricing, marketing costs, consumer motivation and buying habits, and governmental regulations. 5 q.h.

625. *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. 3 q.h.

Upper Division Courses

709. *Retail Marketing.* The entire marketing system considered from the consumer's and management's viewpoint, in theories and practices from a retail managerial approach, with the retailer acting as a consumer's 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 624. 3 q.h.

711. *Management of Retail Buying.* Study of principles and philosophy that determines excellence in merchandise selection. Management of buying functions, breadth of assortment, depth of stock and development of buying cycles. Gives ethical and legal considerations in buying. Suggests what to buy through consumer behavior, customer wants, and sales experiences. Prereq.: Merchandising 624. 3 q.h.

720. *Industrial Marketing.* Characteristics of manufacturers' goods, channels of distribution, functions 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 624. 3 q.h.

726. *Dynamic Thinking.* Application of the principles of positive imaging to the desires of the individual are presented. Every person has the power to magnify himself; to multiply the ways in which he exists; to make his life full, confident, significant, interesting, and successful. Personal success in being creative is the basis for good selling. Prereq.: Junior standing. 3 q.h.

731. *Non-Textiles.* Apparel accessories. Designed to meet the needs of buyers, copywriters, training departments, comparison shoppers, and instructors in 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 products, furs, jewelry, metals, stones, and cosmetics. 3 q.h.

733. *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 q.h.

735. *Visual Merchandise Presentation.* Principles of interior, window, and industrial display. Planning, selecting, and preparing merchandising arrangements. Discussion of display department's organization, functions, and management: merchandising promotion through display; signs and pricing; and display illumination. Prereq.: Junior standing. 3 q.h.

740. *Merchandising of Women's Fashions.* A course designed to familiarize the student with trends and cycles in European and American markets, the coordination of styling and fashion promotion for women's apparel, and the determination of value in buying and selling women's merchandise. 3 q.h.

745. *Textile Fabrics.* Textile fabrics: cotton, silk, linen, wool, nylon, rayon, and other new materials; methods of dyeing and printing; weaves: twill, plaid, satin, jacquard; tests to distinguish fibers. Government rulings are studied. Uses and wearability of materials are investigated. Swatches of materials are used as illustrations. Prereq.: Junior standing. 5 q.h.

750. *Industrial Textile Products.* The study of the characteristics and specifications of textiles engineered for a specific industrial end use to enable the student to develop a functioning knowledge of textiles, with experiments on fiber, yarn, construction,

weaves, and finishes. Industrial Textiles will include such items as upholstery for buses, planes, and automobiles; astronauts' clothing; textiles for operating rooms and specialized clothing as well as the commonly referred-to items: filter cloth, tarpaulins, mail bags, hose, tire and other automotive fabrics, etc. The course would include discussions, visual presentations, projects, reports, observation trips, lectures, guest speakers, and films. Swatches of industrial fabrics are used as illustrations. Prereq.: Junior standing. 5 q.h.

755. *Selecting Textile Fabrics.* Evaluation of fashion fabrics for selection of suitable fabrics for men's, women's and children's clothing. Knowledge necessary for merchandising fashion goods. Factors on serviceability, fashionability, and care. Knowledge necessary for planning decor of home furnishing fabrics, draperies, curtains, rugs, and other household fabrics are studied. Swatches of material are used as illustrations. Prereq.: Merchandising 745 or consent of instructor. 4 q.h.

811. *Merchandising Techniques I.* Designed to provide mastery of the tools that will be used in buying, pricing, stock control, and the analysis of statistical data. A collection of up-to-date mathematical problems and cases faced by the retailer are analyzed in making managerial decisions. Prereq.: Merchandising 711 or consent of the department chairman. 3 q.h.

812. *Merchandising Techniques II.* Emphasis on merchandising planning; forecasting sales; planning markdowns; planning stocks; calculating reorder quantities; planning and controlling expenses; and setting up goal figures as a guide to operations. Prereq.: Merchandising 811. 3 q.h.

815. *Marketing Research.* Introduction to the major areas of research in marketing. Attention is given to problem definition, research design, gathering information and analysis to assist marketing management with the decision making process. Both empirical and theoretical concepts are explored. Review of research problems, approaches and trends in industrial retailing, wholesaling, trade association, advertising agency, publishing and consulting firms. Prereq.: Merchandising 624 and Economics 704. 4 q.h.

820. *Sales Promotion.* A critical analysis of the range and activities of sales promotion; determining what and where to promote; selecting merchandise for promotion, budgeting, planning, and executing promotional activities; external and internal methods of promotion; and coordination of all sales promotion activities. Prereq.: Senior standing. 3 q.h.

825. *Marketing Management.* A comprehensive study of the management functions in marketing including organization, planning, research, merchandising, sales, advertising and promotion, marketing channels, and control related to corporate policies and objectives. Management practices covering recruiting, selecting, training, equipping, compensating, and supervising are investigated. Prereq.: Merchandising 709 or 720. 3 q.h.

827. *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 q.h.

831. *Executive Protocol.* A study of the importance of grooming, manners, dress, physical fitness, and personnel relations necessary in today's business world. Emphasis is placed on the courtesies and habits that help develop young men and women into executive material. Prereq.: Junior standing. 2 q.h.

840. *Blueprint Reading.* A study of the basic skills for reading and interpreting blueprints as an aid in industrial purchasing and industrial management. Prereq.: Senior standing. 3 q.h.

841. *Industrial Purchasing I.* Presents the organization, principles, and procedures of industrial purchasing. Topics included are standardization, quality control, inspection, stores control, right price, right source, research planning and forecasting. Case studies are used and field trips are taken to various industries in the area. Prereq.: Merchandising 720. 3 q.h.

842. *Industrial Purchasing II.* Consideration of materials budgets, value analysis, negotiation, make or buy, capital equipment, systems, policies, ethics, legal aspects, contract cancellations, and evaluating purchasing performances. Case studies are used and field trips are taken to various industries in the area. Prereq.: Merchandising 841. 3 q.h.

845. *International Marketing.* Development of United States trade, foreign trade promotion, organization, export and import procedures and practices. Taught from the viewpoint of the international marketing manager who must recognize differences between markets in various countries as influenced by their particular cultural and economic environment. Prereq.: Merchandising 709 or 720 or consent of the teacher. 3 q.h.

851. *Seminar.* Each student undertakes original research in some phase of merchandising or the merchandising business and presents his findings to the class, which

studies and discusses them. May be repeated. Prereq.: Senior standing with a major in merchandising. 1 q.h.

PUBLIC ADMINISTRATION

For the combined major in public administration, see Business Organization.

TRANSPORTATION MANAGEMENT

For the major in transportation management, see Business Organization.

CURRICULUMS

Required or Suggested 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 specified or related field. It also provides the 186 to 202 quarter hours (as specified) needed for graduation and includes courses that meet all general course-requirements and all degree course-requirements.

R.O.T.C. students may have certain course-requirements waived or modified: see Modification for R.O.T.C. students, in the General Requirements and Regulations section.

ACCOUNTING

The accounting curriculum requires a total of 202 hours.

First Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Science electives	8
Social Studies electives	6-8
H. & P.E. 509C Health Education	3
	51-53

Second Year	Hrs.
Acctg. 701-702 Intermediate Accounting I-II	10
Acctg. 710 Basic Concepts of Data Processing or Computer Science 600 Introduction to Programming	3 or 4
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Mdsg. 624 Marketing	5
Psych. 601 General Psychology	5
Speech 614 Business and Professional Speech	3
Electives	6
H. & P.E. activity courses	3
	49-50

Third Year	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting	4
Acctg. 801 Advanced Accounting	5
Bus. Org. 701, 702, 703 Law I, II, III	9
Bus. Org. 712 Business Letters	3
Bus. Org. 720 Business Finance	4
Bus. Org. 725 Fundamentals of Management	5
Econ. 704, 705 Economics and Social Statistics I, II	7
Philosophy and Religion elective or Humanities elective	4
Electives	6
	51

Fourth Year	Hrs.
Acctg. 807 Auditing	4
Acctg. 813 Federal Tax Theory	4
Acctg. 814 Federal Tax Practice	4
Accounting electives (Upper Division)	7-6
Bus. Org. 722 Insurance Fundamentals	3
Bus. Org. 750 Human Behavior in Organization	4
Bus. Org. 819 Production Management or Bus. Org. 850 Development of Executive Ability	4 or 3
Econ. 803 Business and Government or Economics elective (Upper Division)	4 or 3
Electives (Upper Division)	8
Electives	9
	51-48

ADVERTISING AND PUBLIC RELATIONS

The advertising and public relations curriculum requires a total of 186 hours.

First Year	Hrs.
Art 510 Color and Design I	4
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Mdsg. 624 Marketing	5
Science electives	8
Social Studies electives	6-8
H. & P.E. 509C Health Education	3
	46-48

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Adv.PR 627, 628, 629 Advertising Principles I, II, III	9
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Mdsg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Science elective	4
H. & P.E. activity courses	3
	47

Third Year	Hrs.
Adv.PR 710 Basic Public Relations	3
Adv.PR 725 Advertising Copywriting	4
Adv.PR 727 Advertising Layout	4
Adv.PR 753 Introduction to Journalism	3
Adv.PR 755 News Reporting and Writing	3
Adv.PR 757 Editing and Make-up	3
Art 623 Advertising Art I	3
Art 624 Advertising Art II or elective	3
Bus. Org. 701 Law I	3
Bus. Org. 712 Business Letters	3
Bus. Org. 725 Fundamentals of Management	5
Econ. 704 Economics and Social Statistics I	4
Speech 614 Business and Professional Speech or Humanities elective	3
Elective	4-3
	48-47

Fourth Year	Hrs.
Adv.PR 810 Advanced Public Relations	3
Adv.PR 811 Direct Mail Advertising	3
Adv.PR 814 Advertising Case Studies	3
Adv.PR 815 Radio and Television Advertising	3
Adv.PR 821 Advertising Problems and Campaigns I	3
Adv.PR 822 Advertising Problems and Campaigns II	3
Bus. Org. 720 Business Finance	4
Bus. Org. 750 Human Behavior in Organization	4
Mdsg. 815 Marketing Research	4
Mdsg. 820 Sales Promotion or elective (Upper Division)	3
Philosophy and Religious Studies elective or Humanities elective	4
Elective (Upper Division)	4
Elective	4-3
	45-44

COMMERCIAL ART

The commercial art curriculum requires a total of 194 hours.

First Year	Hrs.
Art 510 Color and Design	4
Art 513 Survey of Art or Humanities elective	3
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Science electives	8
Social Studies electives	6-8
H. & P.E. 509C Health Education	3
	44-46

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Adv.PR 627, 628, 629 Advertising Principles I, II, III	9
Art 602 Drawing	3
Art 611 Printmaking	4
Econ. 601, 602, 603 Principles of Economics I, II, III	9
Mdsg. 624 Marketing	5
Psych. 501 Introduction to Psychology or Psych. 601 General Psychology	3 or 5
Science elective	4
H. & P.E. activity courses	3
	49-51

Third Year	Hrs.
Adv.PR 710 Basic Public Relations	3
Adv.PR 725 Advertising Copywriting	4
Adv.PR 727 Advertising Layout	4
Art 623, 624 Advertising Art I, II	6
Art 606 Beginning Painting	4
Art 625 Advertising Art II	3
Art 705 Advanced Drawing	3
English: 600-level literature elective	5
Bus. Org. 701 Law I	3
Bus. Org. 712 Business Letters	3
Bus. Org. 725 Fundamentals of Management	5
Econ. 704 Economics and Social Statistics I	4
Electives	6-4
	53-51

Fourth Year	Hrs.
Adv.PR 821 Advertising Problems and Campaigns I	3
Adv.PR 822 Advertising Problems and Campaigns II or Advertising and Public Relations elective	3
Art 727, 728 Advanced Advertising Art	6
Art 729 Advanced Advertising Art or Art elective (Upper Division)	3
Bus. Org. 720 Business Finance	4
Bus. Org. 750 Human Behavior in Organization	4
Mdsg. 733 Furnishings	3
Mdsg. 745 Textile Fabrics or Mdsg. 750 Industrial Textile Products	5
Mdsg. 820 Sales Promotion or Merchandising elective (Upper Division)	3
Philosophy and Religious Studies elective or Humanities elective	4
Electives (Upper Division)	10-8
	48-46

FINANCIAL MANAGEMENT

Suggested Curriculum for the Degree of Bachelor of Science in Business Administration with the Major in Financial Management and a Suggested Minor in Economics.

The financial management curriculum requires a total of 202 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Mdsg. 624 Marketing	5
Science electives	8
Soc. 600 Principles of Sociology	5
Speech 614 Business and Professional Speech	3
H. & P.E. 509C Health Education	3
	49

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 601 American National Government	3
Psych. 601 General Psychology	5
Social Studies elective or elective	3-5
Electives	9-7
H. & P.E. activity courses	3
	50

Third Year	Hrs.
Acctg. 710 Basic Concepts of Data Processing or Computer Science 600 Introduction to Programming	3 or 4
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or Acctg. 813 Federal Tax Theory	4
Bus. Org. 701, 702, 703 Law I, II, III	9
Bus. Org. 712 Business Letters	3
Bus. Org. 720 Business Finance	4
Bus. Org. 722 Insurance Fundamentals	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 750 Human Behavior in Organization	4
Econ. 701 Money and Banking	3
Econ. 704, 705, 706 Economics and Social Statistics I, II, III	10
	52-53

Fourth Year	Hrs.
Acctg. 810 Statement Analysis or Bus. Org. 724 Credit Management	3
Adv.PR 710 Basic Public Relations	3
Bus. Org. 713 Report Writing	3
Bus. Org. 717 Real Estate Principles	3
Bus. Org. 718 Real Estate Finance and Management	3
Bus. Org. 723 Life Insurance	3
Bus. Org. 730 Investment Analysis and Management	3
Bus. Org. 731 The Stock Market	3
Bus. Org. 835 Advanced Business Finance	4
Bus. Org. 850 Development of Executive Ability	3
Bus. Org. 855 Business Ethics	2
Econ. 712, 713 Intermediate Macro-economics I, II	6
Econ. 811 International Trade I	3
Mdsg. 815 Marketing Research or elective	4
Electives	5-4
	51-50

The following courses are suggested as electives:

Acctg. 701-702 Intermediate Accounting I-II (10)
Bus. Org. 804 Personnel Management (4)
Bus. Org. 833 Public Utilities (3)
Econ. 702 Public Finance (3)
Econ. 703 Monetary and Fiscal Policy (3)
Econ. 710 Intermediate Micro-economics Theory I (3)
Econ. 708 Economics of American Industry (3)
Hist. 744 The History of American Business (3)
Mdsg. 726 Dynamic Thinking (3)
Mdsg. 831 Executive Protocol (2)
Pol. Sci. 700 The American Executive (3)
Pol. Sci. 701 The American Legislature (3)
Pol. Sci. 712 Political Behavior (3)
Pol. Sci. 720 Public Administration (3)
Soc. 706 Industrial Sociology (4)
Soc. 709 Social Control (3)

GENERAL ADMINISTRATION

The general administration curriculum requires a total of 194 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Mdsg. 624 Marketing	5

Science electives	12
Social Studies electives	6-8
H. & P.E. 509C Health Education	3
	46-48

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Adv.PR 627, 628, 629 Advertising Principles I, II, III	9
Computer Science 600 Introduction to Programming	4
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Mdsg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Speech 614 Business and Professional Speech or Humanities elective	3
H. & P.E. activity courses	3
	50

Third Year	Hrs.
Acctg. 713 Basic Cost Accounting	4
Accounting elective	3-4
Adv.PR 710 Basic Public Relations	3
Bus. Org. 701, 702 Law I, II	6
Bus. Org. 712 Business Letters	3
Bus. Org. 720 Business Finance	4
Bus. Org. 722 Insurance Fundamentals	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 750 Human Behavior in Organization	4
Econ. 704 Economics and Social Statistics I	4
Merchandising electives	3
Electives	6-4
	48-47

Fourth Year	Hrs.
Bus. Org. 705 Principles of Transportation	5
Bus. Org. 713 Report Writing	3
Bus. Org. 724 Credit Management	3
Bus. Org. 730 Investment Analysis and Management	3
Bus. Org. 804 Personnel Management	4
Bus. Org. 819 Production Management or Bus. Org. 850 Development of Executive Ability	4 or 3
Bus. Org. 855 Business Ethics	2
Econ. 803 Business and Government	4
Econ. 831 Labor Markets or Econ. 833 Collective Bargaining and Arbitration or Econ. 835 Labor Legislation	4
Economics elective	3
Merchandising electives	6
Philosophy and Religious Studies elective or Humanities elective	4
Electives	5
	50-49

INDUSTRIAL MANAGEMENT

The industrial management curriculum requires a total of 202 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Mdsg. 624 Marketing	5
Science electives	8
Soc. 600 Principles of Sociology	5
Speech 614 Business and Professional Speech	3
H. & P.E. 509C Health Education	3
	49

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 601 American National Government	3
Psych. 601 General Psychology	5
Social Studies elective or elective	3-5
Electives	10-8
H. & P.E. activity courses	3
	51

Third Year	Hrs.
Acctg. 710 Basic Concepts of Data Processing or Computer Science 600 Introduction to Programming	3 or 4
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or Acctg. 813 Federal Tax Theory	4
Adv.PR 710 Basic Public Relations or elective	3
Bus. Org. 701, 702, 703 Law I, II, III	9
Bus. Org. 705 Principles of Transportation	5
Bus. Org. 712 Business Letters	3
Bus. Org. 720 Business Finance	4
Bus. Org. 722 Insurance Fundamentals	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 750 Human Behavior in Organization	4
Econ. 704, 705 Economics and Social Statistics I, II	7
	54-55

Fourth Year	Hrs.
Bus. Org. 713 Report Writing	3
Bus. Org. 730 Investment Analysis and Management	3

Bus. Org. 804 Personnel Management	4
Bus. Org. 819 Production Management	4
Bus. Org. 820 Production Control	4
Bus. Org. 851 Problems in Industrial Management	3
Bus. Org. 855 Business Ethics	2
Econ. 706 Economics and Social Statistics III	3
Econ. 712, 713 Intermediate Macro-economics I, II	6
Mdsg. 720 Industrial Marketing	3
Merchandising elective (Upper Division)	3
Elective (Upper Division)	3 or 2
Electives	7
	48-47

MERCHANDISING

The merchandising curriculums require a total of 186 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Geog. 519 Economic Geography	5
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Mdsg. 624 Marketing	5
Science electives	8
Social Studies electives	6-8
H. & P.E. 509C Health Education	3
	47-49

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Adv.PR 627, 628, 629 Advertising Principles I, II, III	9
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Mdsg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Science elective	4
H. & P.E. activity courses	3
	47

Specialization in Industrial Merchandising

Third Year	Hrs.
Acctg. 713 Basic Cost Accounting or Acctg. 712 Distribution Cost Accounting	4 or 3
Adv.PR 710 Basic Public Relations	3
Bus. Org. 701, 702 Law I, II	6
Bus. Org. 712 Business Letters	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 746 Industrial Traffic Management	3
Econ. 704 Economics and Social Statistics I	4
Mdsg. 720 Industrial Marketing	3
Mdsg. 726 Dynamic Thinking or Merchandising elective	3
Mdsg. 750 Industrial Textile Products	5
Speech 614 Business and Professional Speech or Humanities elective	3
Electives	6-3
	48-44

Fourth Year	Hrs.
Acctg. 810 Statement Analysis or Bus. Org. 724 Credit Management	3
Bus. Org. 720 Business Finance	4
Bus. Org. 750 Human Behavior in Organization	4
Mdsg. 815 Marketing Research	4
Mdsg. 825 Marketing Management	3
Mdsg. 840 Blueprint Reading	3
Mdsg. 841, 842 Industrial Purchasing I, II	6
Mdsg. 845 International Marketing	3
Merchandising electives	7-9
Philosophy and Religious Studies elective or Humanities elective	4
Elective	3
	44-46

Specialization in Retail Merchandising

Third Year	Hrs.
Acctg. 712 Distribution Cost Accounting	3
Adv.PR 710 Basic Public Relations	3
Adv.PR 725 Advertising Copywriting	4
Bus. Org. 701, 702 Law I, II	6
Bus. Org. 712 Business Letters	3
Bus. Org. 725 Fundamentals of Management	5
Econ. 704 Economics and Social Statistics I	4
Mdsg. 709 Retail Marketing	3
Mdsg. 711 Management of Retail Buying	3
Mdsg. 726 Dynamic Thinking or Merchandising elective	3
Mdsg. 731 Non-Textiles: Apparel Accessories or Mdsg. 733 Furnishings	3
Mdsg. 745 Textile Fabrics	5
Speech 614 Business and Professional Speech or Humanities elective	3
	48

Fourth Year	Hrs.
Acctg. 810 Statement Analysis or Bus. Org. 724 Credit Management	3
Bus. Org. 720 Business Finance	4
Bus. Org. 750 Human Behavior in Organization	4
Mdsg. 811, 812 Merchandising Techniques I, II	6
Mdsg. 815 Marketing Research	4
Merchandising electives	10-12
Philosophy and Religious Studies elective or Humanities elective	4
Electives	9-5
	44-42

SCHOOL OF BUSINESS ADMINISTRATION

PUBLIC ADMINISTRATION

The public administration curriculum requires a total of 202 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Geog. 519 Economic Geography or elective	5
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Mdsg. 624 Marketing	5
Science electives	12
Soc. 600 Principles of Sociology	5
H. & P.E. 509C Health Education	3
	50

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Computer Science 600 Introduction to Programming	4
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Pol. Sci. 600 Elements of Politics	3
Pol. Sci. 601 American National Government	3
Psych. 601 General Psychology	5
Soc. 612 Cultural Anthropology	5
Speech 614 Business and Professional Speech	3
H. & P.E. activity courses	3
	49

Third Year	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or Acctg. 813 Federal Tax Theory	4
Adv.PR 710 Basic Public Relations	3
Bus. Org. 701 Law I	3
Bus. Org. 712 Business Letters	3
Bus. Org. 713 Report Writing	3
Bus. Org. 720 Business Finance	4
Bus. Org. 725 Fundamentals of Management	5
Econ. 702 Public Finance	3
Econ. 704 Economics and Social Statistics I	4
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 704 American Political Parties	3
Pol. Sci. 720 Public Administration	3
Elective	4
	50

Fourth Year	Hrs.
Acctg. 820 Funds Accounting	4
Bus. Org. 740 Office Management or Business Organization elective	3
Bus. Org. 750 Human Behavior in Organization	4
Bus. Org. 804 Personnel Management	4
Bus. Org. 833 Public Utilities	3
Bus. Org. 850 Development of Executive Ability	3
Bus. Org. 855 Business Ethics	2
Econ. 803 Business and Government	4
Econ. 831 Labor Markets	4
Mdsg. 720 Industrial Marketing or elective	3
Mdsg. 815 Marketing Research	4
Pol. Sci. 721 Urban Government	3
Pol. Sci. 722 State and Local Government	3
Political Science elective (Upper Division)	3
Soc. 707 Urban Sociology	3
Elective	3
	53

TRANSPORTATION MANAGEMENT

The transportation management curriculum requires a total of 194 hours.

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communication I-II-III	12
Geog. 519 Economic Geography	5
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus or Science elective	5 or 4
Mdsg. 624 Marketing	5
Science electives	8
Speech 614 Business and Professional Speech or Humanities elective	3
H. & P.E. 509C Health Education	3
	49-48

Second Year	Hrs.
Acctg. 601, 602, 603 Elementary Accounting I, II, III	9
Bus. Org. 605, 606 Transportation Rates I, II or electives	6
Computer Science 600 Introduction to Programming	4
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Philosophy and Religious Studies elective or Humanities elective	4
Psych. 601 General Psychology	5
Soc. 600 Principles of Sociology	5
H. & P.E. activity courses	3
	50

Third Year	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or elective (Upper Division)	4
Bus. Org. 701, 702 Law I, II	6
Bus. Org. 703 Law III or elective	3
Bus. Org. 705 Principles of Transportation	5
Bus. Org. 707 Commercial Motor Transportation	5
Bus. Org. 712 Business Letters	3
Bus. Org. 720 Business Finance	4
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 746 Industrial Traffic Management	3
Econ. 704, 705 Economics and Social Statistics I, II	7
	49

Fourth Year	Hrs.
Acctg. 810 Statement Analysis or Bus. Org. 730 Investment Analysis and Management	3
Adv.PR 710 Basic Public Relations	3
Bus. Org. 713 Report Writing or elective	3
Bus. Org. 722 Insurance Fundamentals	3
Bus. Org. 750 Human Behavior in Organization	4
Bus. Org. 804 Personnel Management or elective (Upper Division)	4
Bus. Org. 808 Water Transportation	3
Bus. Org. 816 Problems in Transportation	3
Bus. Org. 833 Public Utilities	3
Bus. Org. 855 Business Ethics or elective	2
Econ. 803 Business and Government	4
Econ. 811 Theory of International Trade I	3
Mdsg. 720 Industrial Marketing	3
Merchandising elective	3
Elective	2-3
	46-47

SECRETARIAL STUDIES

Suggested Curriculum for the Degree of Bachelor of Science in Business Administration with the Major in Secretarial Studies.

The secretarial studies curriculum requires a total of 196 hours.

NOTE: See the Technical and Community College section for the first two years of the secretarial studies program.

The student, after the completion of the 2-year program, may then transfer to the School of Business Administration and satisfy the necessary requirements for the third and fourth years leading to the degree of Bachelor of Science in Business Administration.

Third Year	Hrs.
*Acctg. 713 Basic Cost Accounting	4
Adv.PR 627 Principles of Advertising I	3
Econ. 601, 602, 603 Principles of Economics I, II, III	9
English: 600-level literature elective	5
Mdsg. 624 Marketing	5
Mdsg. 625 Salesmanship	3
Philosophy and Religious Studies elective or Humanities elective	4
Science electives	12
Speech 614 Business and Professional Speech or Humanities elective	3
	48

Fourth Year	Hrs.
*Acctg. 810 Statement Analysis	3
Adv.PR 710 Basic Public Relations	3
Bus. Org. 720 Business Finance	4
Bus. Org. 724 Credit Management	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 750 Human Behavior in Organization	4
Bus. Org. 804 Personnel Management	4
Business Organization (Upper Division elective)	2-4
Econ. 704 Economics and Social Statistics I	4
Mdsg. 709 Retail Marketing or Mdsg. 720 Industrial Marketing	3
Electives (Upper Division)	8-6
Elective(s)	5
	48

*The student's qualifications for entering these courses will be determined by the Chairman of the Department of Accounting.

Donald W. Robinson, Dean

ORGANIZATION AND DEGREES

The School of Education is primarily an Upper Division school and has four departments: Foundations of Education, Elementary Education, Secondary Education and Special Education. With the cooperation of the College of Arts and Sciences, the School of Business Administration, and the Dana School of Music, it prepares teachers for both public and private schools.

Professional courses are offered leading to teacher certification and to a Bachelor of Science in Education degree.

A student has a wide variety of choices for his major which may be in elementary education or in one of the many teaching field areas in secondary education or in the specialized fields of art, health and physical education, or music. Elementary majors may also add kindergarten-preparation and certification; and both elementary and secondary teachers may supplement their programs by courses leading to certification for teaching of the educable mentally retarded (formerly slow learners).

Prospective teachers may also be certified on the basis of degrees conferred by the College of Arts and Sciences, School of Music, and School of Business Administration, providing the student meets requirements for admission to Upper Division status in the School of Education and completes the proper preparatory sequences.

The student who wishes to qualify for a B.S. in Education degree enrolls in the School of Education; upon satisfactory completion of two years of general course requirements at the required level of academic proficiency and upon the demonstration of satisfactory competence in English the student is granted Upper Division status in the School of Education. Such

status must be granted before qualifying courses for certification may be taken. Specific details are given later.

OBJECTIVES OF TEACHER EDUCATION AT YOUNGSTOWN STATE UNIVERSITY

The School of Education promotes the general objectives of Youngstown State University. The University's policy of a broad general education (liberal education) combined with specialized and professional training is promoted through various curriculums of the School of Education.

The faculty of the School of Education, therefore, requires that students obtain a broad general education (liberal education) and plan a program of continuous professional and content study. In order to realize this overall goal, the staff and faculty maintain the following general objectives for the programs of teacher education.

1. To provide specialized training and education for students who are prospective teachers which enable them:

a. To describe and to demonstrate a wide variety of techniques and methods characteristic of what is believed to be excellent teaching.

b. To begin in the development of an understanding of the origin, nature, and current trends of the American elementary and secondary schools.

c. To learn the characteristics and the behavior of pupils leading to an understanding of growth and development patterns of pupils in various grade levels or school categories.

d. To realize the importance of communication to successful teaching through the additional practice of speech and writing skills in education courses.

e. To utilize properly contributions from relative academic disciplines for the improvement of education processes.

f. To relate research to educational processes and to recognize areas of needed research.

g. To blend theory and practice through supervised experiences relative to elementary school or secondary school, or both in the case of the dual program.

2. To encourage capable students to enter the teaching profession by establishing and maintaining high academic and personal standards as requirements for admission to and successful completion of such programs which enable the prospective teacher:

a. To realize the necessity of maintaining knowledge in depth relative to all concerned content fields.

b. To prepare for a life of service based upon a recognition of the vital role of the teacher in American society.

c. To develop further the concept of the worth and dignity of each individual.

d. To identify and to relate to assumptions generally held for successful teaching.

3. To conduct classes in an atmosphere of freedom conducive to free inquiry, creativity, and intellectual development in order to exemplify the practice which is expected to be followed as our students become teachers.

4. To present per se and by example the professional ethics applicable to the field of teaching.

5. To provide personal advisement so that each student may better understand himself through examination of his abilities, limitations, values, and goals, enabling him:

a. To decide upon the area(s) of teaching in which he can contribute most to the education of his future pupils.

b. To accept his need for a program of continuous study involving personal investigation, in-service training, and formal graduate study when appropriate.

REQUIREMENTS FOR CERTIFICATION

All candidates for any form of teaching certificate must meet the requirements for admission to Upper Division status in the School of Education, but the degree earned may be conferred by any of the University schools in accordance with the specific requirements for the degree desired.

1. The candidate for the elementary or kindergarten-elementary 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.

2. The candidate for the secondary education certificate must major in one of his subject-matter teaching fields. Additional teaching fields may be added, or more than one major may be completed if desired. These require varying amounts of concentration. A separate bulletin available at the School of Education Office explains these requirements. The degree earned may be either a Bachelor of Science in Education or a Bachelor of Arts, in accordance with the requirements for these degrees.

A candidate for the special education certificate in the field of educable mentally retarded (slow learning) must complete all of the courses required for certification as prescribed by the State Department of Education.

3. Under certain conditions a student may earn a Bachelor of Arts degree with a major in foundations of education *but his program does not lead to a teaching certificate.*

4. A dual program may be undertaken that leads to certification at both the elementary and secondary levels. Under this program two majors are required, one in elementary education, and one in a high school teaching field. The degree earned is normally the Bachelor of Science in Education, but may be the Bachelor of Arts.

A combined program in elementary education and educable mentally retarded is also available. The degree earned is the Bachelor of Science in Education. Under this program a social studies concentration area is required.

5. The degree of Bachelor of Science in Education is granted only to the student who qualifies for a teaching certificate.

6. Teaching certificates are awarded only upon application. The appropriate application form is available at the School of Education Office. Students anticipating certification must complete an application form and file it in the Education Office at the beginning of the quarter in which the requirements are to be completed.

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; for further information see the General Requirements and Regulations section.

2. The courses and other requirements to be completed in the University. They are explained in the General Requirements section.

The curriculums leading to these degrees require a minimum of 193 quarter hours of credit and are designed to be completed in four aca-

demic years.* A student willing and able to carry heavier loads successfully or to attend four quarters annually, may finish in less time.

R.O.T.C. students are allowed certain modifications of the requirements, as explained in the General Requirements and Regulations section.

3. ALL STUDENTS ENROLLED IN THE SCHOOL OF EDUCATION: DEGREE IS *Bachelor of Science in Education* (Not just Bachelor of Science.)

PLEASE BE CONSISTENT WHEN DESIGNATING *MAJOR.* Majors should be as follows:

Category I - Elementary Education

1. *Elementary Education* (if working for El. Cert. only)
2. *Elementary - KP* (if working for both El. and Kindergarten Certificates)
3. *Elementary - EMR* (if working for both El. and Slow-learning certificates)
4. *Elementary - KP - EMR* (This is a possible but unlikely combination - use only if working for certification in all 3 areas - El. - Kindergarten - Slow Learners)

Category II - Secondary

1. Please use the word Secondary followed by the teaching field major. THUS - Secondary - English or Secondary - Math, etc.
2. The term *EMR* may follow if also working for Slow Learning certification. THUS - Secondary - Social Studies - EMR.

Category III - *Special Subject*

Use word *Special* followed by subject area, THUS: - *Special - Art* or *Special - HPE.*

*This may be reduced to 190 quarter hours if Education 502 is not required. See course description for Education 502 under Foundations of Education.

NOTE: Since Music students enroll in School of Music rather than School of Education, this does not apply to them.

Category IV - *Dual Program*

If working for both Secondary and Elementary Certification use word Dual, followed by secondary subject field major, THUS: *Dual Biology,* etc.

NOTE: If degree, school, or major needs to be changed, secure *form* from School of Education Office.

COURSES OF INSTRUCTION AND CURRICULUMS**

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 State 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, and a capacity for successful college work as determined by entrance tests. Currently a point average of 2.5 in at least 90 quarter hours of completed college work and satisfactory demonstration of competence in written and spoken English are required of each candidate in order to qualify for Upper Division status in the School of Education. The English competence may be shown by a percentile score of at least 40 on a comprehensive English test, or by satisfactory completion of a three-hour course in English proficiency.

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 Upper Division status in the School of Education, and must be approved before he enrolls in Upper Division education courses. Before approval to take Upper Division courses is given, the student is enrolled in his appropriate school, in accordance with the degree or special area involved as follows: All B.S. in Education candidates are enrolled in the School of Education, regardless of major. Candidates

**The student should 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 at the end of the General Requirements and Regulations section.

for A.B. or B.S. degrees are enrolled in the College of Arts and Sciences, but must also be admitted to Upper Division status in the School of Education. B.Mus., B.S. in B.A., or B.E. degree candidates are enrolled in the schools awarding the respective degrees, but must be approved for Upper Division status in the School of Education in order to earn a teaching certificate. Requirements for admission to Upper Division status in the School of Education should normally be met by the end of the sophomore year. If they have not been met at this time the student is advised to reconsider his program and plan for some objective other than teaching. In any case, later qualification for such status does not constitute justification for waiving any course prerequisites or planned sequences, and will almost certainly result in prolongation of the preparatory period beyond the normal four years. The degree of Bachelor of Science in Education is granted only to the student who qualifies for a teaching certificate. He should take Education 501 in his freshman year; this course explains the requirements fully. Requirements for admission to Upper Division status in the School of Education are the same for transfer students as they are for regular students of Youngstown State University, *and the point index calculated for admission is based on all course work regardless of where it is completed.*

The candidate for the provisional high school certificate must complete the requirements for a major in at least one teaching field; he may prepare for additional teaching fields either as minors or majors, if desired. 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.

ADVISEMENT

All prospective teachers are advised by the faculty of the school and department in which their major is located; e.g.:

1. Elementary education candidates working for the B.S. in Education degree will have a major in education; therefore, they are advised at all times by faculty members in the School of Education.

2. Secondary Education candidates, and candidates in the special certification fields of art, music, and health and physical education, are advised at all times by faculty members in their major departments; in addition, after they have been admitted to Upper Division status in the School of Education, they will be assigned advisors in the School of Education who will be responsible for questions dealing with certification.

EDUCATION 501 IS PREREQUISITE TO ANY OTHER COURSE IN EDUCATION UNLESS WAIVED BY THE DEAN OF THE SCHOOL OF EDUCATION.

FOUNDATIONS OF EDUCATION

Associate Professors Swan (chairman), Azneer, Baldino, DiGiulio, DiRusso, Eshleman, Kirschner, and Watkins; Assistant Professor Beckett; Instructors Battin and Heym.

Lower Division Courses

501. *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. Required of all candidates for any form of teaching certificates and/or the education major. This course is a prerequisite for any upper division education course unless waived by the Dean of the School of Education. 3 q.h.

502. *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. This course is required on all programs leading to teacher certification, *unless waived on the basis of superior standing on a standardized English examination administered in Education 501.* If waived, the quarter hours for graduation may be reduced from 193 to 190. 3 q.h.

Upper Division Courses

(Open only to students who have been admitted to Upper Division status in the School of Education)

708. *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 educational guidance, school control, moral education, and the selection and improvement of teachers. Required of all secondary education candidates, elective for others. 3 q.h.

710. *Educational Measurement and Guidance.* Construction, administration, scoring, and interpreting of objective examinations;

selection and administration of standardized tests and scales, and their use in vocational and educational guidance. Prereq.: Junior or senior standing. Required of elementary candidates, elective for others. 4 q.h.

829. *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. 4 q.h.

870. *Problems of the Classroom Teacher.* Adjustment of teaching surroundings; seeking practical and acceptable solutions to problems through rethinking of philosophy, instructional methods, and ethics; the professional, legal, and social status of the teacher; teacher-pupil relations, and other problems. Elective. 3 q.h.

871. *Pupils' 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. Elective. 3 q.h.

872. *Statistical Methods in Education.* An introductory course in frequency distributions, measure of central tendency, measure of variability, calculation and meaning of percentiles, the normal curve, reliability and validity of measures and simple correlation. Elective. 3 q.h.

880. *Inner-City Educational Workshop.* A survey of some of the more creative and innovative approaches being used in inner-city schools; lectures, discussions, visual aids; nationally recognized experts in the field employed as consultants. A review of economic, social, and psychological forces which have changed our cities, and the educational implications thereof. A critical evaluation of personal attitudes which lead to prejudice, misunderstanding, and fear. Prereq.: Certificated teachers employed in inner-city schools. 3 q.h.

ELEMENTARY EDUCATION

Professors Chrisp (chairman) and Vanaman; Associate Professors Braden, Overby, and Steele; Assistant Professors Imlay, Nichols, Roderick, and Scott.

Upper Division Courses

(Open only to students who have been admitted to Upper Division status in the School of Education)

713. *The Teaching of Arithmetic.* Principles in the learning of arithmetic and their application to its effective teaching. Required of all elementary candidates. 3 q.h.

714. *The Teaching of Social Science in the Elementary School.* Principles effective in the learning of history, geography, and related social sciences and their application to the teaching of these subjects. Unit planning emphasized. Required of all elementary candidates. 3 q.h.

715. *The Teaching of Science in the Elementary School.* Principles in the learning of science and their application to effective teaching. Required of all elementary candidates. 3 q.h.

801. *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. 3 q.h.

812. *Language Arts I.* The principles and techniques of teaching reading in the elementary school at each level of advancement, adequate guidance of reading in all the various aspects of a broad program of instruction. Basic instruction in reading in the content fields, literature, and recreational reading. 3 q.h.

813. *Language Arts II.* Teaching oral and written communication through consideration of listening, speaking, handwriting, spelling, reading, creative and formal writing in the elementary school. Teaching of word attack skills. 3 q.h.

830. *Early Childhood Education: Part I.* The first in a series of three courses designed to prepare the student for teaching children ages 4-6 years. Required for a Kindergarten-Primary certificate. Acquainting the child with his environment, expanding the child's understanding of his community with its responsibilities, and preparing the child for his role in society. 3 q.h.

831. *Early Childhood Education: Part II.* The second in a series of three courses designed to prepare the student for teaching children ages 4-6 years. Required for a Kindergarten-Primary certificate. A study of early kindergarten educators and their influence on the history and development of today's kindergarten program. Preparation of a workable environment for the 5-year-old with emphasis on his physical, mental, and social characteristics. 3 q.h.

832. *Early Childhood Education: Part III.* The last in a series of three courses designed to prepare the student for teaching children ages 4-6 years. A study of teaching proced-

ures, methods, and materials used on the kindergarten level. Areas of curricular investigation include social studies, science, language arts, numbers, and music. 3 q.h.

890. *Elementary Education Workshop.* A workshop which provides intensive study and related activity in one of the following elementary curricular areas: arithmetic, science, reading, social studies, or language arts. 3 q.h.

SECONDARY EDUCATION

Professor Shipman (chairman); Associate Professors Hill, Schoenhard, Solak, and Turner; Assistant Professors Beckett, Bronstrup, DeJovine, and Knauf.

Youngstown State University offers courses leading to high school certification in these fields. Courses and advisors for the major are provided by the Arts and Sciences College department of the same name except where otherwise indicated.

Art (available as major for Special Certificate for grades 1-12 or high school major or minor);
Biological Science (major or minor);
Bookkeeping (Accounting major, School of Business Administration);
Bookkeeping-Basic Business (Accounting major, School of Business Administration);
Business Education (Comprehensive Major, secretarial) (major only);
General Business Education (There is no minor teaching field entitled Business Education. The major will qualify for teacher certification in Bookkeeping (Bookkeeping and Accounting); Bookkeeping-Basic Business, Salesmanship - Merchandising, and Typing);
Chemistry (major or minor);
Earth Science (major or minor);
Economics (major or minor);
English (major or minor);
French (major or minor);
General Science (minor only);
Geography (major or minor);
German (major or minor);
Health Education and Physical Education (available as a major for Special Certificate for grades 1-12 or high school major or minor);
Health Education (major for R.N. only);
History and Government (major or minor);
Home Economics (major only);
Italian (major or minor);
Latin (major or minor);
Mathematics (major or minor);
Music (available as a major for Special Certificate for grades 1-12, Bachelor of Music in the School of Music);
Physical Science (minor only);
Physics (major or minor);
Russian (major or minor);
Salesmanship-Merchandising (Advertising and Public Relations or Merchandising major in the School of Business Administration);
Social Studies (Comprehensive major only);
Sociology (major or minor);
Spanish (major or minor);
Speech (major or minor);
Stenography-Typing (minor only);
Typing (minor only).

(Open only to students who have been admitted to Upper Division status in the School of Education)

706. *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. Required of all secondary and special fields candidates. Prereq. or concurrent: Education 704. 3 q.h.

800G. *Special Methods.* Offered every quarter. 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 secondary schools, reports, and term paper may be required. Each student confers with the chairman of the department of his major teaching subject. (When the number of students justifies it, the course may be organized into a seminar of students having the same field of subject preparation. In such cases the course will be listed as Education 800B for Business Education which will be offered only in the winter and summer quarters, Education 800E for English which will be offered only in the fall and winter quarters, Education 800L for foreign languages which will be offered only in the fall quarter, Education 800M for Math which will be offered only in the fall quarter, and Education 800S for social studies which will be offered only in the fall and winter quarters). This course is prerequisite to Education 842, Student Teaching. Prereq.: Education 706 and senior standing. 3 q.h.

850. *Teaching of Reading in Secondary and Advanced Subject Matter Areas.* A comprehensive survey of the elementary reading program as a basis for understanding the improving techniques that develop skills applicable to secondary students, with major emphasis, through secondary academic subject matter, on readiness, comprehension (factual, critical, organizational, reading-study), vocabulary development, word meaning, context, configuration, and picture clues, phonetic and structural analysis, dictionary usage, and silent and oral reading. This

course no longer required for Pennsylvania certification. 3 q.h.

SPECIAL EDUCATION

Associate Professors Clayton (chairman) and Smith; Assistant Professor Imlay.

Upper Division Courses

(Open only to students who have been admitted to Upper Division status in the School of Education)

732. *Education of Exceptional Children.* Prereq.: Admission to the School of Education. Required for special program in educable mentally retarded (slow learners). 4 q.h.

833. *Teaching Educable Mentally Retarded (Slow Learners).* Problems, techniques, and aids, with opportunity to study individual problems: attention to curricular units, guidance, and planning. 4 q.h.

834. *Teaching the Trainable 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 Education 732, and at least nine hours of elementary methods. 4 q.h.

851. *Principles and Practices in Curriculum Planning and Development for Educable Mentally Retarded (Slow Learners): Social studies.* Principles, practices, materials, and aids in teaching social studies to educable mentally retarded (slow learners); opportunities to study individual problems; attention to curriculum units, guidance, and planning Prereq.: Education 732 and 833, or equivalent. 3 q.h.

852. *Principles and Practices in Curriculum Planning and Development for Educable Mentally Retarded (Slow Learners): Language Arts.* Principles, practices, materials, and aids in teaching language arts to educable mentally retarded (slow learners); opportunities to study individual problems; attention to curriculum units, guidance, and planning. Prereq.: Education 732 and 833, or equivalent. 3 q.h

853. *Principles and Practices in Curriculum Planning and Development for Educable Mentally Retarded (Slow Learners): Arithmetic.* Principles, practices, and aids in teaching arithmetic to educable mentally retarded (slow learners); opportunity to study individual problems; attention to curriculum units, guidance, and planning. Prereq.: Education 732 and 833, or equivalent. 3 q.h.

854. *Preparation, Selection and Adaptation of Instructional Materials for Educable Mentally Retarded (Slow Learners).* A survey course of suitable instructional material for educable mentally retarded (slow learners) including administrative procedures, grouping principles, state standards, and text books. Prereq.: Education 732 and 833, or equivalent. 3 q.h.

855. *Occupational Orientation and Job Training for Educable Mentally Retarded (Slow Learners).* Background and development of job training programs, covering aspects of occupational adjustment in terms of practical academic experiences and employment opportunities. Prereq.: Education 732 and 833 or equivalent. 3 q.h.

856. *Evaluation of Reading Difficulties.* A comprehensive survey of the elementary reading program. Selection, administration, the scoring of various tests, and techniques for evaluating the child with a reading problem. 3 q.h.

857. *Development of Remedial Reading Techniques.* Instructional techniques and procedures for meeting specific needs of the child with reading difficulties—opportunities to examine materials, machines, and other equipment for reading improvement. 3 q.h.

STUDENT TEACHING

Wilbert M. Hammack, Director

(Open only to students who have been admitted to Upper Division status in the School of Education)

The student teaching experience in the sequence of professional courses leading to provisional (standard) certification is differentiated into two in-school experience courses totalling 18 quarter hours.

The Professional Lab portion (three quarter hours) of this experience normally occurs in the student's junior year and the student teaching practicum (15 quarter hours) is to be experienced in the student's senior year.

704. *Professional Laboratory Experiences: High School.* Observational and participatory experiences under the direction of regular high school cooperating teachers and administrative personnel. The purpose of this course is to provide the student with a comprehensive experience of the total school operation. The goal of this course is to enable the student to enter Education 842 or 843 with (a) an understanding of the

teacher's function in the total organization and program of services for the students in the high school and (b) a satisfactory level of personal confidence for the task of teaching in an organized and functioning classroom. The students may perform tasks assisting various faculty or staff in the school or observe the performance of such tasks on a schedule arranged by the principal or his designee. Such assignment will not be exclusively or principally in the student's major interest area. The minimum time must be at least six hours weekly, but the full school time involved in one full day must be met or two half-days (as a minimum acceptable time block per day) even if it exceeds six hours. In addition, one hour of campus seminar is required weekly. Course should be scheduled during the first quarter following admission to Upper Division status (after 90 quarter hours earned) and should precede or be scheduled concurrently with Education 706. Required of all regular high school, special, and dual candidates. Prereq.: Admission to Upper Division status in the School of Education, or consent of the Dean of the School of Education.

705. *Professional Laboratory Experiences: Elementary.* Observational and participatory experiences in actual elementary school situations under the direction of regular school cooperating teachers and administrative personnel. The purpose of this course is to provide the student with a comprehensive experience of the total school operation. The goal of this course is to enable the student to enter Education 841 with (a) an understanding of the teacher's function in the total organization and program of services for the children in the elementary school and (b) some level of personal confidence for the task of teaching in an organized and functioning classroom. The students may perform tasks assisting various faculty or staff in the school or observe the performance of such tasks on a schedule arranged by the principal or his designee. Such assignment will not be exclusively or principally in the student's major interest area. The minimum time is to be at least six hours weekly, but the full school time per day must be observed even if it exceeds six hours. The student should reserve one full day or two half-days (the minimum acceptable time block) in his class schedule to satisfy the time requirement for this course. In addition, one hour of campus seminar is required weekly. Course should be scheduled during the quarter following admission to Upper Division status (after 90 quarter hours earned) and should precede the basic methods courses. Required of all regular elementary candidates. Prereq.: Admission to Upper Division in the School of Education or consent of the Dean of the School of Education.

841. *Supervised Student Teaching: Elementary.* Actual classroom teaching under the direction of experienced cooperating teachers and campus supervisors. Required of all elementary candidates. Course to be scheduled during one of the senior year quarters, except that it is not offered in the summer quarter.

Application to take this course should be filed as follows: For fall, winter, or spring quarter scheduling, by *March 1st* of the year preceding the academic year in which student teaching is to be completed. Later application risks assignment for location preference.

In addition to the application the student must register for Education 841 during the open registration period preceding the quarter in which the student teaching is to be experienced.

Prerequisites: Completion of the major methods courses (specifically Education 705, Education 713, and Education 812, 813); admission to Upper Division status in the School of Education (this requires that the candidate have a grade point index of 2.50 or higher in all college work); satisfactory completion of the English competence requirement; and the recommendation and unqualified approval of the head (or his designee) of the Elementary Education Department.

Purpose of the course is to provide opportunity for the student teachers to apply techniques and methods learned in pre-requisite courses to actual classroom teaching situations with responsibility to pupils on an increasing load assignment throughout the weeks of the quarter.

The goal of the course is to permit the student teacher to have developed behavior patterns and skills necessary to function as a teacher, and to be able to perform effective service to pupils and a school organization on initial professional assignment.

Quality and Nature of Work and Schedule. All classroom teaching and participatory experiences must be satisfactory at all times or the work may be discontinued without warning. Weekly campus seminars are required and attendance at these seminars is mandatory. (Students failing to attend the first regularly scheduled seminar will be automatically dropped.) Additional individual conferences with the campus supervisor, the seminar instructor, or with the regular classroom teacher may be called as needed, and must follow any supervisory visits. The Student Teaching Program requires the presence of the student teacher in the classroom for the whole day during each school day of the entire quarter, and, therefore, additional courses should not be scheduled. 15 q.h.

842. *Supervised Student Teaching: High School.* Actual classroom teaching under the direction of experienced cooperating teachers and campus supervisors. Required of all candidates for high school certificates. Course to be scheduled during one of the senior year quarters, except that it is not offered in the summer quarter.

Application to take this course should be filed as follows: For fall, winter, or spring quarter scheduling, by *March 1st* of the year preceding the academic year in which student teaching is to be completed. Later application risks assignment for location preference.

In addition to the application the student must register for Education 842 during the open registration period preceding the quarter in which the student teaching is to be experienced.

Prerequisites: Admission to Upper Division status in the School of Education (see Education 841 for requirements) and completion of Education 704, 706, and Education 800 or the equivalent special methods course in the special fields concerned—i.e., health and physical education, art, music, or home economics (waiver of the Education 800 pre-requisite will normally not be allowed except to post-graduate students who are willing to take Education 800 concurrently. To do so, however, is not recommended, since both Education 800 and 842 make many demands upon the student); grades of at least B in two-thirds of the minimum subject field requirements for certification with no subject field course grade in the minimum requirement below C; and the unqualified approval of the chairman of the department of each of the student's teaching fields and of the head (or his designee) of the Secondary Education Department.

Purpose of the course is to provide opportunity for the student teachers to apply techniques and methods learned in pre-requisite courses to actual classroom teaching situations with responsibility to students on an increasing load assignment throughout the weeks of the quarter.

The goal of the course is to permit the student teacher to have developed behavior patterns and skills necessary to function as a teacher, and to be able to perform effective service to students and a school organization on initial professional assignment.

Quality and Nature of Work and Schedule. All classroom teaching and participatory experiences must be satisfactory at all times or the work may be discontinued without warning. Weekly campus seminars are required and attendance at these seminars is mandatory. (Students failing to attend the first regularly scheduled seminar will be dropped automatically.) Additional individual conferences with the campus supervisor, the seminar instructor, or with the regular classroom teacher may be called as needed, and must follow any supervisory visits. The Student Teaching Program requires the presence of the student teacher in the classroom for the whole day during each school day of the entire quarter, and, therefore, additional courses should not be scheduled. 15 q.h.

843. *Supervised Student Teaching: Special Field and Dual Program.* Actual classroom teaching under the direction of experienced cooperating teachers and campus supervisors. Required of all candidates for Special Certification applying to subject fields grades K-12 (do not confuse with special education for educable mentally retarded, etc.) and for dual program certification (i.e., both elementary and high school certificates). Course to be scheduled during one of the senior year quarters, except that it is not offered in the summer quarter.

Assignments will be in both elementary and secondary teaching situations, with approximately half of the total time for each situation. Teaching time will occupy the full school day for one entire quarter.

Application to take this course should be filed as follows: For fall, winter, or spring quarter scheduling, by *March 1st* of the year preceding the academic year in which student teaching is to be completed. Later application risks assignment for location preference.

In addition to the application the student must register for Education 843 during the open registration period preceding the quarter in which the student teaching is to be experienced.

Prerequisites: Admission to Upper Division status in the School of Education (see Education 841 for requirements); completion of Education 704, Education 706, and the appropriate special methods courses (i.e., Education 800, for dual candidates, HPE 711, 712, 713, 815 for HPE candidates, HPE 815C for school health education candidates, Music 823, 824, 825 for music candidates, or Art 724 for art candidates); grades of at least B in two-thirds of the minimum subject fields requirement for certification with no subject field course grade in the minimum requirement below C; and the unqualified approval of the dean or department chairman of the subject area involved and the head (or his designee) of the Secondary Education Department.

Purpose of the course is to provide opportunity for the student teachers to apply techniques and methods learned in pre-requisite courses to actual classroom teaching situations with responsibility to students on

an increasing load assignment throughout the weeks of the quarter.

The goal of the course is to permit the student teacher to have developed behavior patterns and skills necessary to function as a teacher, and to be able to perform effective service to students and a school organization on initial professional assignment.

Quality and Nature of Work and Schedule. All classroom teaching and participatory experiences must be satisfactory at all times or the work may be discontinued without warning. Weekly campus seminars are required and attendance at these seminars is mandatory. (Students failing to attend the first regularly scheduled seminar will be automatically dropped.) Additional individual conferences with the campus supervisor, the seminar instructor, or with the regular classroom teacher may be called as needed, and must follow any supervisory visits. The Student Teaching Program requires the presence of the student teacher in the classroom for the whole day during each school day of the entire quarter; additional courses should not be scheduled. 15 q.h.

860. *Supervised Student Teaching: Educable Mentally Retarded (Slow Learning Children.)* Actual classroom teaching under the direction of experienced cooperating teachers and campus supervisors. Required of all candidates for special education. Course to be scheduled during one of the senior year quarters, except it is not offered in the summer quarter.

Application to take this course should be filed with the Student Teaching Office as follows: For fall, winter, or spring quarter scheduling, by *March 1st* of the year preceding the academic year in which student teaching is to be completed. Later application risks assignment for location preference.

In addition to the application, the student must register for Education 860 during the open registration period preceding the quarter in which the student teaching is to be experienced.

Prerequisites: Admission to Upper Division status in the School of Education (see Education 841 for requirements); completion of Education 705, 732, 833, 851, 852, and 853; and the recommendation and unqualified approval by the head (or his designee) of the Special Education Department.

Purpose of the course is to provide the opportunity for student teachers to apply techniques and methods learned in pre-requisite courses to actual classroom teaching situations with responsibility to pupils on an increasing load assignment throughout the weeks of the quarter.

The goal of the course is to permit the student teacher to have developed behavior patterns and skills necessary to function as a teacher, and to be able to perform effective service to pupils and a school organization on initial professional assignment.

Quality and Nature of Work and Schedule. All classroom teaching and participatory experiences must be satisfactory at all times or the work may be discontinued without warning. Weekly campus seminars are required and attendance at these seminars is mandatory. (Students failing to attend the first regularly scheduled seminar will be automatically dropped.) Additional individual conferences with the campus supervisor, the seminar instructor, or with the regular classroom teacher may be called as needed, and must follow any supervisory visits. The Student Teaching Program requires the presence of the student teacher in the classroom for the whole day during each school day of the entire quarter; therefore, additional courses should not be scheduled. 15 q.h.

THE WILLIAM RAYEN SCHOOL OF ENGINEERING

Michael Jean Charignon, Dean

ORGANIZATION AND DEGREES

OBJECTIVES

The aim of the William Rayen School of Engineering is to complete the general objectives of the University by providing a rigorous discipline in engineering based on a sound understanding of the fundamental sciences and arts upon which all engineering rests.

Each curriculum therefore combines three interrelated programs: in basic science, in a technical field, and in liberal arts. 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 liberal arts 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 as an engineer, as a citizen, and as an individual.

The student may major in chemical, civil, electrical, industrial, mechanical, or metallurgical engineering. Curriculums for these major fields are given at the end of this section.

FACILITIES

The Engineering Science Building is the home of the William Rayen School of Engineering. The use of this building was a gift to the University by the people of Ohio as enacted by the Ohio Legislature in 1965. The building was completed and dedicated in 1968 after the University became Youngstown State University. It contains 171,000 square feet of usable floor space which includes 48 laboratories, 30 classrooms, and 8 research and development rooms.

The school's spacious laboratories have modern equipment for standard experiments as well as for advanced study in many fields. There is a 288-seat auditorium, facilities for closed circuit television, and a computer center. The School also operates a machine shop to construct equipment used in research activities. The ample drawing rooms, classrooms, and offices are entirely modern.

The *Chemical Engineering Unit Operations Laboratories* are located in the Engineering Science Building and the Ward Beecher Science Building.

There are six laboratories which are equipped with bench scale and pilot plant equipment to be used for heat and mass transfer and chemical reactions. The available facilities include an analog computer, pneumatic controllers, chemical reactor, distillation and absorption columns, double effect evaporator, grinding and crushing mills, rotary and vacuum tumble dryers, vacuum leaf and plate frame filters, extraction units, and a gas chromatograph.

The *Civil Engineering Laboratories* include the following: a concrete laboratory, an environmental engineering laboratory, an incompressible fluids laboratory, a photogrammetry laboratory, a soil mechanics laboratory, a strength of materials laboratory, and a surveying laboratory.

The concrete laboratory is equipped to do routine testing and research related to effects of static, dynamic, and impact loads.

The environmental engineering laboratory is equipped to perform bacteriological, chemical, and physical tests and research on water and waste-water.

The incompressible fluids laboratory is equipped to perform a variety of fluid flow experiments. The equipment includes a self-contained flume, 4' x 3' x 60' long, an 80' x 4' x 4' flow channel, and a constant-head standpipe.

The photogrammetry laboratory is equipped with a Kelsh Plotter and auxiliary equipment.

The soil mechanics laboratory is completely equipped to perform tests and research on soils.

The strength of materials laboratory is equipped to perform strength tests on materials. The equipment includes a 600,000-pound Universal Testing Machine, three 120,000-pound Universal Testing Machines, three torsion machines, as well as a variety of smaller testing machines.

The surveying laboratory is equipped for instruction in the care and use of all surveying instruments and calculating machines.

The *Electrical Engineering Laboratories* include a circuits laboratory, basic electronics laboratory, physical electronics laboratory, quantum electronics laboratory, networks and communications laboratory, switching circuits and communications laboratory, electromagnetic energy conversion laboratory, controls laboratory and fields laboratory, all of which have an ample supply of standard and specialized equipment.

The electronics laboratories contain signal generators; oscilloscopes; equipment for the study of thin films, thick films, and membranes; XY recorders; ruby and helium-neon lasers; vacuum systems; optical benches; monochromators; spectrophotometers; spectographs; an array of beam-splitters; optical attenuators; and Q-switches.

The communications laboratories contain a variety of signal generators, frequency analyzers, transmission lines, breadboard modules, and a digital computer.

The electromagnetic energy conversion laboratory has available generalized machines, magnetic core devices, rotating amplifiers, torque translators, and a variety of frequency and speed instruments.

The controls laboratory includes a variety of circuit components; amplifiers; analog computers; a function follower; and function generators.

The fields laboratory has available microwave generators, wave guides, and meters, antennae, a shielded room, and a large roof area for tracking, radiation and solar experiments.

The *Mechanical Engineering Department* maintains eight laboratories in the Engineering Science Building. Located on the first floor are laboratories for thermodynamics, heat transfer, compressible fluids, internal combustion engines, and photoelasticity. Laboratories for heat power, experimental machine design, and vibrations are located in the basement.

The laboratories in the heat and fluid flow areas of study contain such major apparatus as a steam power plant; subsonic and supersonic wind tunnels; conduction, convection, and radiation heat transfer test units; a 90 horsepower gas turbine with test stand; commercial refrigeration and air conditioning units; various internal combustion engines; steam boiler, engine, and turbine; and gas analyzers.

The laboratories in the Mechanical Design area of study are equipped with apparatus necessary for static, dynamic, and impact stress analysis by methods employing electrical strain gages, photoelasticity, and brittle lacquers; a long-time creep tester; fatigue testers; vibration sources with analyzers and recorders; and an analog computer.

The *Metallurgical Engineering Laboratories*, located in the basement and first floor of the Engineering Science Building, include a field-ion microscope laboratory, electron microscope laboratory, multi-purpose radio-isotope analysis, counting system, diffusion laboratory, radiograph laboratory, x-ray laboratory, phase transformation laboratory, calorimetric laboratory, metallographic laboratory, high pressure and high temperature laboratories, ultrasonic laboratory, electric and magnetic properties laboratory, special process metallurgy laboratory, zone melting laboratory, welding laboratory, electrometallurgy laboratory, alloy preparation laboratory, single crystal laboratory, and a general mineral benefication laboratory.

The various metallurgical laboratories are equipped for all phases of metallurgical studies with the latest modern equipment, which includes a modified calorimeter with special accessories such as a quartz thermometer, sophisticated adiabatic calorimeter and modern electronic devices, heat treatment facilities such as salt pots and electric furnaces; dark room facilities; large metallographs; microscopes; rolling mills and forming equipment; electron beam zone refiner, induction furnaces; grinding equipment; mounting presses; motorized specimen polishers; specimen etching facility; sectioning tools; a collection of over 400 prepared specimens; hardness testers; and high speed cut-off machines.

AWARDS AND PRIZES

Awards and prizes for engineering students are listed in the General Information section.

FEES

See *Fees and Expenses* in the General Requirements and Regulations section.

SCHOLARSHIPS AND LOANS

Scholarships and loan funds applicable to engineering students are listed in the General Information section.

ADMISSION

For admission to the William Rayen School of Engineering see *Admission Requirements* in the General Requirements and Regulations section. For courses leading to the degree of Bachelor of Engineering, see the pages that follow.

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 the General Requirements and Regulations section.

2. The courses and other requirements to be completed in the University. They are explained in the General Requirements and Regulations section but are recapitulated below.

The curriculums leading to this degree require a minimum of 214 quarter hours of credit and are designed to be completed in four academic years. The

program can be accelerated for completion in three and a half calendar years by the student willing and able to carry heavier loads.* A student planning to take summer courses should consult his advisor.**

R.O.T.C. students may meet the health education and physical education *activity* course requirement by completing Military Science 501-502-503 and 601-602-603, but no other courses are waived for such students who are working toward the B.E.

* 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 501, 502, 503 and Business Organization 701, 702, 703.

PRE-COLLEGE

SUBJECT	HIGH SCHOOL UNITS
English	3
United States history and civics	1
Algebra	2
Geometry	1
Physics	1
Others***	8

***A unit of mechanical drawing and a half-unit of trigonometry or solid geometry, or both, are strongly advised.

IN THE UNIVERSITY

REQUIREMENTS IN ADDITION TO COURSES

Completion of at least 214 quarter hours.
Upper division status (including completion of any specified preparatory course not completed at time of entrance).
Major and minor requirements.
The major is a specialization in a branch of engineering. The minor is completed through the required courses in mathematics. See the year-by-year curriculums in each department.
Course-level requirements.
Residence requirement.
Application for graduation.

COURSE REQUIREMENTS (OTHER THAN THE MAJOR AND MINOR) BASIC COURSES

	QUARTER HOURS
Communication 525-526-527 Basic Course I-II-III	12
Health and Physical Education 509M and 509W Health Education	3
Health and Physical Education Activity Courses	3
Social Science 501, 502, and 503 Introduction to the Social Sciences I, II, III	12
Science:	
Chemistry 515-516-517 General Chemistry	12
Physics 510, 601-602-603 General Physics	13
Mathematics 572, 573, 674, 675 Calculus I, II, III, IV	18
ENGINEERING COURSES:	
Mechanical Engineering 501 Engineering Drawing	3
Mechanical Engineering 502 Engineering Drawing, Descriptive Geometry	3
Mechanical Engineering 640 Dynamics I	3
Civil Engineering 610, 611, and 614	8
AREA COURSES (Liberal Arts) Minimum of	18

COURSES OF INSTRUCTION AND CURRICULUMS†

CHEMICAL ENGINEERING

Professor Luginbill (chairman); Associate Professors Sheng and Stevens; Assistant Professor Szirmay.

680. *Techniques of Chemical Engineering.* 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.: Mathematics 673, Chemistry 517. 3 q.h.

681. *Industrial Stoichiometry.* To aid the non-chemical engineer to organize, evaluate, and effectively utilize the information inherent in chemically stoichiometric relationships, as they apply to actual plant situations. Prereq.: Mathematics 673, Chemistry 517. 3 q.h.

682, 683, 684. *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 physiochemical principles. Illustrations of the proper analytical and evaluation 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.: Mathematics 673, Chemistry 517. 3 + 3 + 3 q.h.

685. *Corrosion Control Engineering.* Introduction to electrochemical mechanism and theory of corrosion, engineering practices and criteria for both anodic and cathodic control by anodic rectification. Theory and engineering practices in the use of inhibitors. Prereq.: Mathematics 673, Chemistry 517. 3 q.h.

686. *Industrial Waste Control.* Introduction to modern methods for waste control in chemical operations including filtration, ejector aeration, deep well disposal, activated sludge treatment and disposal, instrumental analytical control methods, and current approach to waste control education and program formulation. Prereq.: Mathematics 673, Chemistry 517. 3 q.h.

780, 781, 782. *Thermodynamics.* Macroscopic approach of the first and second laws of themodynamics based on the open-system. Applications of both laws to fluid dynamics, refrigeration, power cycle, phase and chemical equilibria. Expanded treatment of energy balances and pressure-volume-temperature relations. Prereq.: Chemical Engineering 684, Mathematics 674. 2 + 2 + 2 q.h.

783. *Engineering Plastics.* A survey of the plastics industry from the following standpoints: 1. Mechanisms of formation and the process and operations necessary for their implementation. 2. Relationship of formulation with product properties. 3. Various sources and preparations of monomers. 4. Relative availability of reagent materials and their cost. 5. Polymer classification on a utility basis. Prereq.: Mathematics 674, Chemical Engineering 684. 3 q.h.

784. *Fluid Flow.* Basic theory, calculation, measurement and control of fluid flow. Transportation of fluid. Fundamentals of fluidization and two-phase flow. Study of the relationship of chemical, toxic, and radioactive properties of fluids on the design of equipment needed for their handling. Prereq.: Chemical Engineering 684, Mathematics 674. 3 q.h.

784L. *Fluid Flow Laboratory.* Experimentation with various types of flow measurement and control devices. Correlation of effect of physical properties of fluids on their flow characteristics. Prereq.: To be taken concurrently with Chemical Engineering 784. 1 q.h.

785. *Heat Transfer.* Basic theory of conduction, convection, and radiation and its application to both steady and unsteady chemical processes. Also included are study and design of heat transfer equipment in evaporation operations, and special attention to the best utilization of process stream enthalpies. Prereq.: Chemical Engineering 784-784L. 3 q.h.

785L. *Heat Transfer Laboratory.* Experimentation with various types of heat exchangers. Correlation of exchanger design best suited for specific process conditions. Calorimetry. Heats of combustion. Prereq.: To be taken concurrently with Chemical Engineering 785. 1 q.h.

786, 787, 788. *Unit Operations I, II, and III.* A thorough study of diffusional operations and equilibrium stages involving both mass and energy transfer. In addition, phase separations as crystallization, filtration, distillation, extraction, mixing, and material handling will be discussed. Prereq.: Chemical Engineering 785-785L. 3 + 3 + 3 q.h.

786L, 787L, 788L. *Unit Operations Laboratory I, II, and III.* Taken concurrently with Chemical Engineering 786, 787, 788. 1 + 1 + 1 q.h

801, 802, 803. *Thesis.* The student prepares a written report of at least 2,500 words on an investigation of a subject selected by either the student or the dean of the engineering school. Three bound copies are re-

† The student should 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 at the end of the General Requirements and Regulations section.

quired; specifications are available on request. For credit, the thesis must be accepted by both the dean and the advisor. Prereq.: Senior standing. 2 + 2 + 2 q.h.

880, 881. *Kinetics.* Theoretical developments and methods of interpreting experimental data pertaining to chemical kinetics. General design principles and construction features of reactors with application of these principles to the design of specific reactors. Prereq.: Chemical Engineering 786-786L and Mathematics 709. 3 + 2 q.h.

882. *Process Dynamics.* Introduction to automatic control and control loop concepts, measurement of variables, dynamic properties of instruments, process response, discussions of controller types, derivation of equations for first and second order control systems, and derivation of equations for first and second order process. Prereq.: Chemical Engineering 881 and Mathematics 710. 4 q.h.

883. *Mathematical Methods in Chemical Engineering.* The applications of advanced mathematics to the solution of chemical engineering problems. Topics covered include treatment and interpretation of engineering data, formulation of ordinary and partial differential equations governing chemical engineering operations and their solutions by use of numerical and analytical techniques. Prereq.: Chemical Engineering 881, Mathematics 710. 3 q.h.

885, 886. *Process and Plant Design.* Presentation of the analytical approach for establishing a technically and economically efficient plant and process design. Demonstration of the importance of proper correlation of laboratory and field data into a reliable and workable basis for projecting cost estimates of pilot and commercial plant "scale-ups." Prereq.: Chemical Engineering 880, Chemical Engineering 787-787L. 3 + 3 q.h.

CIVIL ENGINEERING

Professor Cernica (chairman); Associate Professor Williamson; Assistant Professors Bakos, Bellini, Besner, Hibbeler, Householder, and Ritter.

610. *Statics I.* Principles of mechanics as applied to statics with vector application to resultants of forces, centroids, and distributed loads, and equilibrium. Prereq.: Physics 510, Mathematics 572. 3 q.h.

611. *Statics II.* Continuation of Statics I to include friction, moments of inertia, and principle of virtual work. Prereq.: Civil Engineering 610. 2 q.h.

614. *Strength of Materials I.* Elementary theory in relationships between load, stress, strain in tension, compression, direct and torsional shear, and stresses in simple beams. Prereq.: Civil Engineering 611. 3 q.h.

615. *Strength of Materials II.* Stresses in indeterminate beams, deflection of beams, joints, column theory, and energy concepts. Prereq.: Civil Engineering 614. 2 q.h.

615L. *Strength of Materials II Laboratory.* Experimental verification of theories of Strength of Materials. Prereq.: Concurrently with Civil Engineering 615. 1 q.h.

718. *Fluid Mechanics I.* A study of the laws of fluid mechanics and their application as applied to incompressible flow; properties of fluids; fluid statics; kinematics and kinetics of one-dimensional flow; impulse-momentum; and flow in pipes and channels. Prereq.: Mechanical Engineering 741. 3 q.h.

718L. *Fluid Mechanics I Laboratory.* Engineering applications with selected laboratory experiments to illustrate the theory of fluid mechanics. Taken concurrently with Civil Engineering 718. 1 q.h.

719. *Hydraulic Engineering.* Civil engineering applications of fundamental fluid mechanics principles to open and closed channel flow including the basic concepts of hydraulic structures. Prereq.: Civil Engineering 718. 3 q.h.

720. *Surveying I.* The theory of surveying, and the use of instruments. Problems in leveling, traversing, and topography. Prereq.: Mathematics 572 and Mechanical Engineering 501. 3 q.h.

720L. *Surveying I Laboratory.* Field surveying principles and techniques. Uses of the transit, level, and plane table are stressed. Taken concurrently with Civil Engineering 720. 1 q.h.

721. *Surveying II.* A study involving the location, design, and construction of transportation systems, including route selection, horizontal and vertical alignment, earthwork calculation, and layout. Prereq.: Civil Engineering 720. 3 q.h.

721L. *Surveying II Laboratory.* Field application of surveying principles and techniques used in route location mapping and layout. Introduction to the Kelsh Plotter. Taken concurrently with Civil Engineering 721. 1 q.h.

724. *Transportation I.* Traffic engineering principles. Basic characteristics of vehicles and operators. Volume, speed, delay, capacity, accident, parking, and origin and destination studies. Techniques for improving traffic operations. Prereq.: Civil Engineering 720. 2 q.h.

724L. *Transportation I Laboratory.* Field studies of traffic volumes, intersection operations, traffic controls and parking. Taken concurrently with Civil Engineering 724. 1 q.h.

740. *Structural Analysis I.* Fundamental and systematic determination of reactions,

shears, moments, and stresses in statically determinate beams, frames, trusses, arches, cables, and suspension bridges. Consideration of dead, live, moving, wind, thermal, and earthquake loads. Prereq.: Civil Engineering 615. 3 q.h.

741. *Structural Analysis II.* Elastic deflections of simple structures. Classical and numerical methods for computing beam deflections. General procedure for computing deflections in rigid frames. Energy relations in structural systems, real work and complementary work. Prereq.: Civil Engineering 740. 3 q.h.

820. *Surveying III.* Principles of photogrammetry, including reading, interpretations, and geometric characteristics of aerial photographs. Prereq.: Civil Engineering 721. 2 q.h.

820L. *Surveying III Laboratory.* Stereoscopic principles and their application in the production of planimetric and topographic maps. Taken concurrently with Civil Engineering 820. 1 q.h.

824. *Transportation II.* Route planning and engineering: economics, finance, design standards, plan preparation, and construction supervision. Various modes of transportation studied. Prereq.: Civil Engineering 721. 3 q.h.

825. *Transportation III.* Design methods for flexible, rigid, and other wheel-supporting pavements. Prereq.: Civil Engineering 841 and/or concurrently with Civil Engineering 850. 2 q.h.

825L. *Transportation III Laboratory.* Design of pavement mixtures: proportioning and preparation of test specimens. Laboratory tests on materials to determine suitability for use in paving mixtures. Taken concurrently with Civil Engineering 825. 1 q.h.

826. *Transportation IV.* Comprehensive transportation planning based on engineering and urban planning principles. Studies of existing and anticipated population, land use, economic base, travel characteristics, and transportation networks are included. Network design is based on the level of service concept. Prereq.: Civil Engineering 824. 3 q.h.

830. *Hydrology.* A study of the properties, distribution and behavior of water in nature as it appears in its three forms: precipitation, surface water, and subsurface water. Prereq.: Civil Engineering 719. 3 q.h.

831. *Environmental Engineering I.* A study of the elements and design of water supply and wastewater disposal systems, with emphasis on the determination of sources, quantity of flow, collection and treatment systems. Prereq.: Civil Engineering 719. 3 q.h.

832. *Environmental Engineering II.* A study of the elements of the water and wastewater treatment processes, with emphasis on physical, chemical, and biological treatment. Prereq. Civil Engineering 831. 2 q.h.

832L. *Environmental Engineering II Laboratory.* Laboratory studies to support the topics of Environmental Engineering II. Taken concurrently with Civil Engineering 832. 1 q.h.

833. *Environmental Engineering III.* A study of the elements of air pollution and its control. Prereq.: Civil Engineering 832. 3 q.h.

840. *Structural Analysis III.* Analysis of statically indeterminate beams, girders, bents, trusses, and multistory frames by exact and approximate methods utilizing concepts of strain-energy, virtual work, slope- deflection, and moment distribution. Prereq.: Civil Engineering 741. 3 q.h.

841. *Structural Design I.* Structural design of concrete beams, slabs, columns, walls, and footings. Investigation and proportioning of members and connections in accordance with the assigned specifications for elastic, ultimate, and prestressed concrete structures. Prereq. or concurrent: Civil Engineering 741. 3 q.h.

842. *Structural Design II.* The application of structural theory to the design of steel structures, including beams, girders, columns, frames, and truss members. Selection of members and connections in accordance with assigned specifications. Brief discussion and structural design of other metals. Prereq. or concurrent: Civil Engineering 741. 3 q.h.

843. *Systems Engineering I.* System approach to engineering design and operations involving deterministic models; linear programming, critical path scheduling, and competitive strategies and their application to construction planning and other engineering problems. Prereq.: Mathematics 710. 3 q.h.

844. *Systems Engineering II.* System approach to engineering design and operation involving probabilistic models: queueing theory. Other stochastic processes and elementary decision theory and their application to transportation and other engineering problems. Prereq.: Civil Engineering 843. 3 q.h.

845. *Civil Engineering Analysis.* Application of mathematical and numerical methods to the systematic analysis and development of problems in the field of civil engineering. Prereq.: Civil Engineering 842. 3 q.h.

846. *Advanced Structural Analysis.* Matrix formulation and solution of complex structural problems; force and displacement methods using flexibility and stiffness-coefficient matrices. Prereq.: Civil Engineering 840. 3 q.h.

847. *Structural Dynamics.* Principles and

practices of dynamic design of structures. Prereq.: Civil Engineering 840. 3 q.h.

848. *Analysis and Design of Plate and Shell Structures.* Analysis and design of plate and shell-type structures with particular emphasis on these methods which yield practical solution to structural problems. Prereq.: Civil Engineering 840. 3 q.h.

850. *Soil Mechanics.* Properties of soils, soil classification, capillarity and permeability, stress and strain, shear, consolidation and compressibility, and seepage. Prereq.: Mathematics 710 and Civil Engineering 615. 3 q.h.

850L. *Soil Mechanics Laboratory.* Experimental application of the principles and procedures of soil testing. Taken concurrently with Civil Engineering 850. 1 q.h.

851. *Foundation Engineering.* Analysis and design of foundation structures: retaining walls, abutments, piers, piles, and footings; bearing pressures, movements and stability including embankments. Prereq.: Civil Engineering 850. 3 q.h.

852. *Advanced Soil Mechanics.* Stress-strain failure relationships for soils, shear phenomena and stability, lateral earth pressures, seepage, and consolidation. Prereq.: Civil Engineering 850. 3 q.h.

860-861-862. *Thesis: Engineering Thesis.* The student prepares a written report of at least 2,500 words on an investigation of a subject selected by either the student or the faculty advisor. Three bound copies are required; specifications are available on request. For credit, the thesis must be accepted by both the dean and the advisor. Prereq.: Senior standing. 2 + 2 + 2 q.h.

ELECTRICAL ENGINEERING

Associate Professors Kramer (chairman), Siman, and Stein. Assistant Professors Hankey, Skarote, and Zuckerwar.

601. *Circuit Theory I.* Basic principles of linear circuit theory. Network theorems and equations, and topology, phasor algebra, analysis of transient and steady state behavior of simple circuits. Prereq.: Mathematics 673, Physics 601. Concurrent: Mathematics 674, Physics 602. 3 q.h.

602. *Circuit Theory II.* Complex algebra, phasor diagrams, impedance and admittance; complex frequency, poles and zeroes. Bode diagrams; magnetically coupled circuits, transformers equivalent circuits; power and energy, average and effective values; three-phase circuits. Prereq.: Electrical Engineering 601. Concurrent: Mathematics 709, Physics 603, Electrical Engineering 612L. 3 q.h.

603. *Circuit Theory III.* Fourier Series and Integral with circuit applications, Laplace transforms; mechanical, electro-mechanical and other analogs, mixed systems, linear electronic circuits. Prereq.: Electrical Engineering 602. Concurrent: Electrical Engineering 613L. 3 q.h.

612L. *Electrical Laboratory I.* Introduction to digital computer programming; characteristics and capabilities of electrical instruments; measurement of resistance, capacitance, inductance, and impedance at audio frequencies. Concurrent: Electrical Engineering 602. 1 q.h.

613L. *Electrical Laboratory II.* A laboratory study of electric circuits including resonant circuits, current and voltage loci, coupled circuits, network theorems, and circuit transients. Electrical Measurements. Prereq.: Electrical Engineering 612L. Concurrent: Electrical Engineering 603. 1 q.h.

701. *Circuit Theory IV.* Laplace transform analysis, zero-pole structure of network impedance functions, Foster's reactance theorem synthesis of simple networks. Prereq.: Electrical Engineering 603. 3 q.h.

702. *Circuit Theory V.* Properties and applications of frequency selective networks; design of image impedance filters, interstage networks and impedance matching networks; transient response of networks; matrices; circuit transfer; functions. Prereq.: Electrical Engineering 701. 3 q.h.

703. *Control Analysis I.* The characteristics of closed-loop automatic control systems, system behavior from classical and Laplace transform methods; stability, compensation methods, components for use in servo systems, analog computers. Prereq.: Electrical Engineering 702. 3 q.h.

704. *Field Theory I.* Vector relations, static electric fields, dielectric materials, boundary conditions, field mapping, steady electric currents and their magnetic fields, motion of charged particles. Prereq.: Physics 603, Mathematics 709. Concurrent: Mathematics 710. 3 q.h.

705. *Field Theory II.* Ferromagnetic materials, time changing electric and magnetic fields, Maxwell's equations, relations between field and circuit theory, plane waves, Poynting vector energy relations, boundary value problems. Prereq.: Electrical Engineering 704. Concurrent: Mathematics 711. 3 q.h.

706. *Transmission and Radiation.* General transmission theory, infinite line, terminated line, impedance transformation, waveguide; simple antenna systems, group and phase velocity, impedance of waveguide. Prereq.: Electrical Engineering 705. Concurrent: Electrical Engineering 716L. 3 q.h.

707. *Physical Electronics I.* Physical theory of electron devices; terminal characteristics; large and small signal analysis of electron devices as circuit components; applications to rectification and to amplification; equivalent circuits. Prereq.: Electrical Engineering 603, Electrical Engineering 704. Concurrent: Electrical Engineering 711L. 3 q.h.

708. *Electronic Circuit Theory II.* Multistage amplifier coupling; broadbanding; basic feedback analysis and applications; power amplifiers; Class B and C large signal analysis; single-frequency oscillators. Transfer functions. Prereq.: Electrical Engineering 707. Concurrent: Electrical Engineering 711L. 3 q.h.

709. *Electronic Circuit Theory III.* Amplitude, angle frequency, and pulse modulation, modulators; demodulators; AM and FM; switching networks utilizing gaseous vacuum and semi-conductor devices, and transductors; control circuits system applications and transfer functions. Prereq.: Electrical Engineering 708. 3 q.h.

711L. *Electrical Laboratory III.* Transient analysis; determination characteristics of vacuum, gaseous, and solid state electron devices; power supplies, rectifiers, single stage amplifiers. Concurrent: Electrical Engineering 707. 1 q.h.

712L. *Electrical Laboratory IV.* Nonsinusoidal waveform analysis; field plotting. Tube and transistor multistage amplifiers and broadbanding; audio and radio frequency power amplifiers; characteristics and equivalent circuits of linear motion and saturable core devices, general magnetic networks and transformers. Prereq.: Electrical Engineering 707. Concurrent: Electrical Engineering 708. 1 q.h.

713. *Electrical Engineering.* Introduction to circuit analysis; circuit analysis concepts and their extension to mechanical and thermal systems by analogy. Electrical instruments and measurements. (Not open to students majoring in electrical engineering.) Prereq.: Physics 603, Mathematics 709. 3 q.h.

713L. *Electrical Engineering Laboratory.* To be taken concurrently with Electrical Engineering 713. 1 q.h.

714. *Electron Devices and Circuits.* Theory and application of semiconductors, transistors, photoelectric, vacuum and gas filled tubes. Study of amplifiers, oscillators, magnetic amplifiers, filters and circuits used in electronics. (Not open to students majoring in electrical engineering.) Prereq.: Electrical Engineering 713. 3 q.h.

714L. *Electron Devices and Circuits Laboratory.* To be taken with Electrical Engineering 714. 1 q.h.

715. *Electrical Devices.* Introduction to the basic principles of analysis of electromechanical devices, study of automatic feedback control and instrumentation. The approach is organized to extend the circuit analysis concepts introduced in the prerequisite course. (Not open to students in electrical engineering). Prereq.: Electrical Engineering 713. 3 q.h.

715L. *Electrical Devices Laboratory.* To be taken concurrently with Electrical Engineering 715. 1 q.h.

716L. *Electrical Laboratory V.* Transmission line parameters; attenuation, magnitude, and phase of voltage, and current on lines; reflected waves; waveguide characteristics and techniques; filters antenna patterns and impedances. Microwave measurements. Concurrent: Electrical Engineering 706. 1 q.h.

717L. *Electrical Laboratory VI.* Modulation: demodulation of a modulated wave; production of shaped waveforms; switching and control circuit applications; design and evaluation of a single-frequency oscillator; filters. Concurrent: Electrical Engineering 709. 1 q.h.

718L. *Electrical Laboratory VII.* Laboratory study of feedback amplifiers, control systems and their components, operational amplifiers, and analog computers. Concurrent: Electrical Engineering 703. 1 q.h.

801, 802, 803. *Thesis.* The student prepares a written report of at least 2,500 words on an investigation of a subject selected by the student and agreed upon by the major advisor and the department chairman. Prereq.: 150 hours of degree credit completed. Conferences scheduled as required. 2 + 2 + 2 q.h.

804L. *Electrical Laboratory VIII.* Study of selected transient and steady-state performances of direct current, synchronous, and induction machines. Concurrent: Electrical Engineering 811. 1 q.h.

805. *Quantum Electronics.* Electronic energy levels in quantum electronic devices; energy transistions in crystalline and gaseous media. Applications to semiconductors, masers, and lasers. Prereq.: Electrical Engineering 706, Electrical Engineering 709, Physics 705. Concurrent: Mechanical Engineering 600. 3 q.h.

806L. *Quantum Electronics Laboratory.* Studies of semiconductor, maser and laser materials, devices; amplifiers, monochromatic sources, modulation, and detection; frequency, wavelength, and power measurements; plasma studies. Concurrent: Electrical Engineering 805. 1 q.h.

807. *Pulse, Digital and Switching Circuits.* The generation and processing of non-sinu-

soidal waveforms in active and passive devices and circuits. (Pulse, digital and switching waveforms.) Prereq.: Electrical Engineering 708, Electrical Engineering 702. 3 q.h.

808. *Electronic Circuits Signals and Systems.* A continuation of Electrical Engineering 709 with emphasis on problems arising from communications and electronics areas. Correlation of classical differential equations approach to time and frequency domain interrelationships with Fourier and Laplace methods, and applications of these concepts to problems in communications and control arts. Numerical methods, including impulse-train techniques. Prereq.: Electrical Engineering 709. 3 q.h.

809. *Electrical Energy Conversion I.* Properties and theory of magnetic circuits as applied to electro-mechanical energy conversion. Transformers, non-linear magnetic devices. Introduction to rotating machine analysis. Prereq.: Electrical Engineering 706. 3 q.h.

810. *Electrical Energy Conversion II.* Field and circuit concepts of idealized rotating machines; steady and transient states; thermal transients; control machines and systems. Prereq.: Electrical Engineering 809. 3 q.h.

811. *Electrical Energy Conversion III.* Field and circuit concepts of realistic rotating machines; generalized two-phase machines as control components; magnetic amplifiers. Prereq.: Electrical Engineering 810. Concurrent: Electrical Engineering 804L. 3 q.h.

812. *Molecular Engineering.* Treatment of materials of electrical engineering in terms of atomic, nuclear, and molecular phenomena. Interaction between electromagnetic fields and materials; classical treatment and quantum effects; particle statistics in thermal equilibrium. Conduction in metals, semiconductors, and superconductors; electric and magnetic polarization; ferroelectricity and ferromagnetism; electromechanical and magnetic mechanical effects; influence of material properties on energy storage, conversion, and control. Prereq.: Electrical Engineering 706, Mechanical Engineering 741, Physics 705. 3 q.h.

813. *Logic Circuit Theory.* Synthesis of switching circuits using Boolean Algebra, coding, sequential switching circuits. Prereq.: Electrical Engineering 709. 3 q.h.

814L. *Digital Computer Laboratory.* Laboratory study of counting, arithmetic, and digital circuits. Concurrent: Electrical Engineering 813. 1 q.h.

815. *Energy, Radiation and Propagation.* Dipole, loop, aperture, reflector, lens, surface wave and other antennas; array theory; radiation resistance, directivity and input impedance; traveling wave antennas. Prereq.: Electrical Engineering 706. 3 q.h.

816L. *Radiation Laboratory.* Measurements and interpretation of antenna field patterns, impedances, gains, and current distribution; microwave measurements. Concurrent: Electrical Engineering 815. 1 q.h.

817. *Control Analysis II.* Linear and non-linear control system compensation techniques in the time and frequency domain. Signal flow diagrams input-output control systems, compensations to eliminate the effects of parameter variations. Prereq.: Electrical Engineering 703. 4 q.h.

819. *Plasma Dynamics.* Plasma kinetic theory; charged particle interaction; waves in plasma; plasma oscillation; magnetic fluid dynamics; plasma gruerateration. Prereq.: Electrical Engineering 706, Mechanical Engineering 741, Physics 705. 3 q.h.

820. *Modern Control Theory.* Introduction to the design of linear feedback control systems for minimum time response. Design of feedback systems with bang-bang control and minimum fuel constraints. Design of linear system with free and semi-free configurations for minimum mean square error. Prereq.: Electrical Engineering 703. 4 q.h.

INDUSTRIAL ENGINEERING

Associate Professor Sorokach (chairman); Assistant Professor Gonzalez.

601. *Computers I.* Slide rule and desk calculator fundamentals. An introduction to digital computers and flow diagramming of elementary problems. Prereq.: Mathematics 654 and Physics 510. 2 q.h.

602. *Computers II.* Flow diagramming and problem layout. Fortran language will be employed to solve a wide variety of elementary engineering problems on the digital computer. Prereq. or concurrent: Mathematics 656, Physics 603. 3 q.h.

701, 702. *Industrial Organization and Management I & II.* The general principles of industrial organization and management. Prereq. or concurrent: Mathematics 740. 3 + 3 q.h.

703. *Systems Analysis.* Simulation of Industrial Engineering systems. Models of inventory, queueing, and material handling systems will be examined and simulated on the 360-40 digital computer. Elementary problems of production systems involving decisions under uncertainty will be investigated. Prereq.: Industrial Engineering 602, Mathematics 742. 3 q.h.

711. *Methods I.* Fundamentals and elements of motion study. Construction and use of process charts and operations analysis.

Work simplification and standardization. Characteristics of motions and basic divisions of accomplishment. Prereq. or concurrent: Industrial Engineering 702. 3 q.h.

712. *Methods II.* Tools and methods of time study. Practice in making time study observations. Determination of constant 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.: Industrial Engineering 711. 3 q.h.

721. *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 determinations. The mechanics of making a plant job evaluation. Prereq.: Industrial Engineering 702. 3 q.h.

801-802. *Production Planning and Control.* The fundamentals and techniques of planning and control required in the coordination of product engineering, production engineering, material control, expediting, purchasing, scheduling, and dispatching. Plant capacity and plant layout. Economic lot size calculations. Prereq. or concurrent: Industrial Engineering 702. 3 + 3 q.h.

822, 823. *Quality Control.* Objective 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.: Industrial Engineering 702. 2 + 2 q.h.

824. *Engineering Economy.* An introduction to the analysis and evaluation of factors that affect the economic success of engineering projects. Topics include basic accounting, interest, depreciation, cost classification, comparison of alternatives, make-buy decisions, and replacement models. Prereq.: Mathematics 653. 3 q.h.

825. *Advanced Engineering Economy.* An extension and application of the topics considered in Industrial Engineering 824. Such extensions will be applied to such areas as decisions under assumed certainty, decisions under risk, replacement policies, bidding and purchasing policies. Prereq.: Industrial Engineering 824, and Mathematics 740. 3 q.h.

826. *Engineering Analysis.* The use of an algorithmic language in the solution of complex engineering problems. Intended to provide background and techniques for the solutions of such problems numerically. Models of linear and non-linear systems in all engineering disciplines will be considered. Prereq.: Industrial Engineering 602 and Mathematics 710. 3 q.h.

831. *Linear Programming I.* Model formulation and the development of algorithms for the solution of linear type problems encountered in Industrial Engineering. The Simplex technique and various transportation algorithms including the Vogel approximation and stepping stone methods will be applied for the solution to the linear type models. Prereq.: Industrial Engineering 701 and Mathematics 725. 3 q.h.

832. *Linear Programming II.* An extension of Industrial Engineering 831 which will include the revised Simplex technique, duality in models, the product form of the inverse techniques to be used in the computer solution of linear models. Degeneracy procedures and cycling will be considered in the transportation and Simplex algorithms. Expansion type industrial applications will be considered. Prereq.: Industrial Engineering 831. 3 q.h.

833. *Introduction to Operations Research.* An introduction to the techniques used in operations research in the formulation of deterministic models used in the analysis of various industrial engineering problems. Inventory, scheduling, queueing and replacement models will be considered. Monte Carlo techniques used in the simulation of the above models will be introduced. Prereq.: Industrial Engineering 702 and Mathematics 741. 3 q.h.

841-842-843. *Industrial Engineering Thesis.* The student prepares a written report of at least 2,500 words on an investigation of a subject selected by the student and agreed upon by the major advisor and the department chairman. Prereq.: 150 hours of degree credit completed. Conferences scheduled as required. 2 + 2 + 2 q.h.

MECHANICAL ENGINEERING

Professors D'Isa (chairman) and Tarantine; Associate Professors Pejack and Petrek; Assistant Professors Arnett, Erzurum, and Lovas.

500. *Drawing Fundamentals.* Instruction in the use of drafting instruments, blue-print reading, orthographic projection, freehand sketching, sections, conventions, auxiliary and pictorial drawing. Intended for students who have not had at least one year of high school drawing or the equivalent in drafting experience. 3 q.h.

501. *Engineering Drawing.* Orthographic projection, auxiliary and oblique views, developments, and detail and assembly drawings of machine parts. Prereq.: Mechanical Engineering 500 or equivalent. 3 q.h.

502. *Descriptive Geometry.* Exercises

involving points, oblique lines and oblique planes in space. Determination of distances, intersections and angles. The intersection of fundamental geometric shapes and development of their surface. Prereq.: Mechanical Engineering 501. 3 q.h.

600. *Thermodynamics I.* Thermodynamic properties of gases and vapors and their relationship in flow and non-flow first law energy transformations. Equations of state. Compression and expansion processes of gases and vapors. Entropy and the second law. Efficiencies. Prereq.: Physics 510. Prereq. or concurrent: Mathematics 673. 3 q.h.

601. *Thermodynamics II.* Entropy; availability and irreversibility; thermodynamic cycles; relations among thermodynamic properties. Prereq.: Mechanical Engineering 600. Prereq. or concurrent: Mathematics 674. 3 q.h.

602. *Thermodynamics III.* Mixtures and solutions; psychrometry; phase equilibrium; thermodynamics of chemical reactions. Prereq.: Mechanical Engineering 601. 3 q.h.

640. *Dynamics I.* The absolute and relative motion phases of kinematics of particles. Kinetics of particles using equations of motion and the work-energy and impulse-momentum methods. Vector notation is employed primarily for three-dimensional problems. Prereq. or concurrent: Civil Engineering 611, Mathematics 709. 2 q.h.

680. *Seminar.* Orientation in mechanical engineering and the writing of engineering reports and thesis. Prereq.: 90 hours of degree credit completed. 1 q.h.

720. *Heat Transfer I.* A study of the fundamental laws of heat conduction. Steady and unsteady-state one and two dimensional conduction problems solved both analytically and numerically. Prereq.: Mathematics 711. Prereq. or concurrent: Mechanical Engineering 602. 3 q.h.

741. *Dynamics II.* The same topic coverage as Dynamics I, but extended to rigid bodies and non-rigid systems of particles. Prereq.: Mechanical Engineering 640. 3 q.h.

742. *Dynamics of Machinery.* Application of analytical mechanics, with particular emphasis on machines. Prereq.: Mechanical Engineering 741. 3 q.h.

750. *Strength of Materials III.* Analytical and Mohr circle analysis of stresses and strains at a point. Introduction to classical elasticity; boundary valued problems in rectangular Cartesian and cylindrical polar coordinates. Energy method of Castigliano. Prereq.: Civil Engineering 615, Mathematics 711. 3 q.h.

790. *Thermodynamics V.* (Non-Mechanical Engineering Only.) Cycle analysis and an introduction to fuels, combustion, and heat transfer by conduction, convection, and radiation. Prereq.: Mechanical Engineering 600. 3 q.h.

801-802-803. *Mechanical Engineering Thesis.* The student prepares a written report on an investigation of a subject selected by the student and agreed upon by the major advisor and the department chairman. Prereq.: 150 hours of degree credit completed. Conferences scheduled as required. 2 + 2 + 2 q.h.

804. *Applied Thermodynamics.* Application of principles of thermodynamics to power, refrigeration, and energy conversion devices. Prereq.: Mechanical Engineering 602. 4 q.h.

804L. *Thermodynamics IV Laboratory.* Experiments involving vapor power and refrigeration cycles. Analysis of fossil fuels. Taken concurrently with Mechanical Engineering 804. 1 q.h.

821. *Heat Transfer II.* A study of the fundamental principles of heat transfer by convection and radiation. Empirical relations for forced and natural convection systems. Condensation and boiling heat transfer. Heat exchangers. Radiation problems including the influence of both the material properties and the geometrical arrangement of the bodies involved. Prereq.: Mechanical Engineering 720. 4 q.h.

821L. *Heat Transfer II Laboratory.* Thermocouple and optical pyrometer temperature measurements. Experiments in heat transfer by conduction, convection, and radiation. Taken concurrently with Mechanical Engineering 821. 1 q.h.

822. *Internal Combustion Engines.* Thermodynamics analysis of internal combustion engine and gas turbine cycles; fuels, carburetion, and the effect of supercharging on internal combustion engine performance. Prereq.: Mechanical Engineering 602, Mathematics 711. 3 q.h.

823. *Refrigeration and Air Conditioning.* The application of thermodynamic, fluid flow, and heat transfer principles to domestic and industrial refrigeration systems for purposes of material processes and human comfort. Prereq.: Mechanical Engineering 602, Civil Engineering 718. 3 q.h.

824. *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.: Mechanical Engineering 720, Physics 705, Mathematics 711. 3 q.h.

824L. *Principles of Nuclear Reactors Laboratory.* Detection and measurement of radioactivity using Guger-Muller tubes. Scintillation and gas flow detectors, and radiation analyzer. Isotope production using the reactor and decay of same. Flux distribution in the reactor. Taken concurrently with Mechanical Engineering 824. 1 q.h.

830. *Fluid Mechanics II.* The theory of one-dimensional compressible flow. The control volume approach to the conservation of mass, energy, and momentum integral equations. An introduction to differential analysis and non-viscous flow theory. Prereq.: Civil Engineering 718, Mathematics 711. 4 q.h.

830L. *Fluid Mechanics II Laboratory.* Experiments on compressible fluid flow in the subsonic and supersonic regions. Taken concurrently with Mechanical Engineering 830. 1 q.h.

851. *Strength of Materials IV.* Theories of failure for metals. Introduction to plasticity, creep, impact, and fatigue of metals. Prereq.: Mechanical Engineering 750. 4 q.h.

851L. *Strength of Materials IV Laboratory.* Static and dynamic electrical strain gage applications. Introduction to photoelasticity. Theory of brittle lacquers. Taken concurrently with Mechanical Engineering 851. 1 q.h.

860. *Machine Design I.* The design and use of machine elements such as shafts, keys, couplings, springs, screws, brakes, clutches, belts, and welded connections. Prereq.: Mechanical Engineering 742. 3 q.h.

860L. *Machine Design I Laboratory.* Practical design problems, each incorporating the design of several machine elements. Taken concurrently with Mechanical Engineering 860. 1 q.h.

861. *Machine Design II.* A continuation of Machine Design I, including lubrication; ball and roller bearings; spur, bevel, worm, and helical gears; and flywheels. Selected application of Castigliano's Theorem. Prereq.: Mechanical Engineering 860, Mechanical Engineering 860L. 3 q.h.

861L. *Machine Design II Laboratory.* Practical design problems involving all of the subjects covered in Machine Design I and II. Specifications for gearing and materials are introduced in the design problems. Taken concurrently with Mechanical Engineering 861. 1 q.h.

870. *Mechanical Vibrations.* The behavior of the lumped system with one and two degrees of freedom including applications (such as: vibration isolation, Seismic Instruments, etc.). Methods of analyzing lumped systems with many degrees of freedom. Prereq.: Civil Engineering 615, Mechanical Engineering 741, Mathematics 711. 4 q.h.

870L. *Mechanical Vibrations I Laboratory.* Experiments involving mechanical systems and some electrical analogies. Analog computer simulation of vibration systems is introduced. Taken concurrently with Mechanical Engineering 870. 1 q.h.

881. *Engineering Analysis I.* An integration of the fundamental facts, principles, and laws of mathematics, science, and engineering, and their utilization in a rigorous training in methods of analysis and solutions of engineering problems. Prereq.: Mathematics 710. 4 q.h.

892. *Control Theory.* Introduction to the principles of automatic control of electromechanical and hydraulic systems using Laplace transform methods. Discussion of system stability. (Not for electrical engineering majors.) Prereq.: Civil Engineering 718, Mathematics 711. 4 q.h.

METALLURGICAL ENGINEERING AND MATERIALS SCIENCE

Professor Ahmed (chairman); Assistant Professors Filatovs and Jones.

601. *Introduction to Materials Science I.* Discussions of the basic electronic structure and properties of materials, theory of binding in solids including metals, alloys, semi-conductors, ceramic, and plastic materials, electrical and magnetic properties of materials crystallography. Prereq.: Chemistry 517. 3 q.h.

602. *Introduction to Materials Science II.* Discussions of the elastic and plastic properties of materials, ductile and brittle behavior of metals, plastic deformation, elementary ideas of dislocations and their basic properties, strain hardening. Prereq.: Metallurgical Engineering 601. 3 q.h.

603. *Introduction to Materials Science III.* Phase equilibria and phase diagram. Kinetics of phase changes, industrial metallurgy and structural materials. Prereq.: Metallurgical Engineering 602. 3 q.h.

614, 615. *Structure and Properties of Materials I & II.* Structure of pure metals, ferrous, and non-ferrous alloys and their correlation with the previous history, heat treatment and physical properties. (1 hour lecture + 3 hours laboratory.) Prereq.: Metallurgical Engineering 603. 2 + 2 q.h.

620, 621. *Chemical Principles of Materials Science I, II.* Discussion of the application of physiochemical principles to metallurgical or materials problems. Prereq.: Chemistry 517. 3 + 3 q.h.

630, 631, 632. *Principles of Extractive Metallurgy I, II, III.* Fundamentals of extractive metallurgy and metallurgical processes, general classification of ores and principles of ore dressing, treatment of concentrates, hydrometallurgical and pyrometallurgical processes, fluxes and slags, production of metal, refining of crude metal, ferrous production metallurgy, concentration of ores, charge calculation, blast furnace—its operations, chemistry of the process, open hearth processes, electric smelting of ores, casting of ingots, non-ferrous production metallurgy, mineral beneficiation smelting refining, and casting of non-ferrous metals. Prereq.: Chemistry 517. 3 + 3 + 3 q.h.

650. *Atomic and Molecular Structure of Materials.* Discussions of the atomic structure and molecular structures of materials with particular emphasis on the energy levels and material properties. Prereq.: Chemistry 517, Mathematics 655, Physics 602. 3 q.h.

730, 731, 732. *Metallography, Heat Treatment, and Pyrometry I, II, III.* Laboratory experiments to determine the effects of heat treatment on the structure, physical, and mechanical properties of ferrous and non-ferrous alloys. (1 hour lecture + 3 hours laboratory.) Prereq.: Metallurgical Engineering 632. 2 + 2 + 2 q.h.

740, 741. *Mechanical Working and Its Effect on Materials I, II.* General discussion of the different types of mechanical working processes, rolling, forging, pressing, extrusion, wire drawing, etc., their effects on material properties, fracture mechanics, effect of strain rate and temperature on materials properties. (1 hour lecture + 3 hours laboratory.) Prereq.: Metallurgical Engineering 632. 2 + 2 q.h.

780. *Casting, Welding and Solidification.* General discussion of the engineering aspects of welding and solidification of ferrous and non-ferrous alloys. Prereq.: Metallurgical Engineering 615, 632. 3 q.h.

781. *Powder Metallurgy.* Scope of powder metallurgy, production of powders, sintering of powders, diffusion bonding, basic theories, application. Prereq.: Metallurgical Engineering 615, 632. 3 q.h.

782. *Phase Diagrams.* Discussions and interpretation of phase diagrams of multicomponent system. Prereq.: Metallurgical Engineering 615, 632. 3 q.h.

783. *Ferrous and Non-Ferrous Alloys.* Basic scientific principles and theories applied to the design and heat treatment of alloys. Constitution, microstructure, heat treatment, phase distribution, and properties of ferrous and non-ferrous alloys. Prereq.: Metallurgical Engineering 632. 3 q.h.

784. *Crystalline Solids.* Discussion of crystallography point lattice and space lattices. Prereq.: Metallurgical Engineering 650. 3 q.h.

791, 792, 793. *Physical Metallurgy I, II, III.* Review of atomic and nuclear structure of materials. Band theory of solids; advanced discussion on electrical conductivity, magnetic properties, and thermal properties of materials, different types of solids. Elastic and plastic properties of materials: Modes of plastic deformation; slip and twinning; quantitative discussion on deformation mechanism; dislocation theories and their application. Phase diagrams and kinetics of phase transformation; theoretical treatment of nucleation and growth processes; diffusion. Prereq.: Metallurgical Engineering 621, 632, 650. 3 + 3 + 3 q.h.

791L, 792L, 793L. *Physical Metallurgy Laboratory I, II, III.* Laboratory experiments to illustrate the theories presented in Metallurgical Engineering 791, 792, 793. Experiments on resistivity, point defects, dislocations, recovery, recrystallization and grain growth, phase changes in solids. Determination of phase diagrams, etc. Prereq.: Metallurgical Engineering 791, 792, 793 or concurrent. 1 + 1 + 1 q.h.

815, 816. *Particle Interaction I and II.* Properties of radioactive particles. Interactions of nuclear particles with materials. Principles of detection, applications to engineering materials. (2 hour lecture + 3 hour laboratory.) Prereq.: Metallurgical Engineering 791. 3 + 3 q.h.

817. *Management of Nuclear By-Products.* Sources and characteristics of radioactive material, principles and determination of tolerance; standards and regulations; protection from side effects. Prereq.: Metallurgical Engineering 815 or concurrent. 1 q.h.

830, 831, 835. *Introduction to Nuclear Materials I, II, III.* Nuclear materials—their fission and fusion; classification of reactors; general theory, design and control of reactors; control systems; instrumentation. Kinetics and dynamic behavior of nuclear reactors; comprehensive theory and design; reactor stability under operating conditions; neutron kinetics and perturbation theory; nuclear heat generation and removal; selection of materials; production and processing of nuclear materials. Prereq.: Metallurgical Engineering 793. 3 + 3 + 3 q.h.

840. *Modern Research Techniques.* The aim of this course is to familiarize the students with the "tools" of experimental metallurgy. Prereq.: Metallurgical Engineering 793.

851. *Introduction to Polymer Science.* Discussions of polymer materials with particular emphasis on their characteristics.

Bonding mechanisms and composition. Prereq.: Metallurgical Engineering 793. 3 q.h.

852, 853, 854. *Advanced Engineering Materials (Non-Metallic) I, II, III.* Discussions on ceramic materials composites and cermets with special emphasis on atomic bonding; structure of crystalline and non-crystalline solids; diffusion; grain growth; sintering and micro structure. Different types of glasses. Physical and mechanical properties; structure; volume and shear flow; glass-metal interface. Prereq.: Metallurgical Engineering 793. 3 + 3 + 3 q.h.

860. *Mechanical Behavior of Materials.* Elastic and plastic behaviors of materials under stress; theoretical discussions of theory of elasticity; theory of plasticity and laws of plasticity; applications of the theories on the various deformation processes; rolling wire drawing and extrusion design of rolling mills and extrusion dies. Prereq.: Metallurgical Engineering 793, 741 or consent of instructor. 3 q.h.

861. *Applied X-Rays I.* Generation of X-rays; principle of radiography, X-ray absorption; X-ray diffraction interaction of X-rays with matter; Laue back reflection and transmission powder diffraction; diffractometer; determination of crystal structure and lattice parameter. (Lecture + Lab.) Prereq.: Metallurgical Engineering 793. 3 q.h.

862. *Applied X-Rays II.* Application of X-rays in physical metallurgy to determine solubility, lattice structure, atom location, grain size, preferred orientation, phase diagrams. (Lecture + Lab.) Prereq.: Metallurgical Engineering 861. 3 q.h.

863. *Thermodynamics of Materials I.* Principles of thermodynamics and its applications to materials metallurgical systems, processes, and alloys. Prereq.: Metallurgical Engineering 793 and Mathematics 710. 3 q.h.

864. *Thermodynamics of Materials II.* Applications of thermodynamic principles to materials systems theory of alloys. Prereq.: Metallurgical Engineering 863. 3 q.h.

865. *Advanced Science of Materials.* Structure and properties of materials; theories of binding in solid-free electron theory, band theory, and zone theories, density of states; electrical and magnetic behaviors theory of alloys phases; structure of alloys. Prereq.: Metallurgical Engineering 793. 3 q.h.

866. *Special Topics.* Discussion of special topics (in metallurgy or material science) which are of current research interests. Prereq.: Consent of instructor. 3 q.h.

871. *Physical Metallurgy IV.* Discussion on theories of corrosion, age-hardening, gases in metal. Prereq.: Metallurgical Engineering 793. 3 q.h.

872. *Refractory Metals and Alloys.* Production and processing of refractory metals; physical and mechanical properties of the metals and their alloys; design of refractory alloys. Prereq.: Metallurgical Engineering 793. 3 q.h.

890. *Metallurgy and Materials Colloquium.* Review of current Metallurgical and Materials research papers. Prereq.: Consent of advisor. 1 q.h.

891-892-893. *Thesis I, II, III.* The student carries out an investigation on an approved project under the major advisor. The student presents a written report. The project must be formally approved by the department head. Prereq.: Senior standing or 150 q.h. 3—4 q.h. each

Curriculum for the Degree of Bachelor of Engineering with the Major in Chemical Engineering

First Year	Hrs.
Math. 571, 572, and 673 Calculus 1, II, III	14
Chem. 515-515L, 516-516L, 517-517L General Chemistry	12
Physics 510, 601, 602 General Physics	10
Communication 525-526-527 Basic Course I-II-III	12
Health and Phys. Ed. Health Education	3
M.E. 501 Drawing	3
	54

Second Year	Hrs.
Math. 674, Calculus IV, 709 Ordinary Differential Equations, 710 Advanced Engineering Math	10
Physics 603 General Physics	3
M.E. 610 Statics I, 611 Statics II	5
Social Science 501, 502, 503 Introduction to the Social Sciences I, II, III	9
Chemistry 719-719L, 720-720L, 721-721L Organic	12
Ch.E. 682, 683, 684 Ch.E. Principles I, II, III	9
Ch.E. Elective	3
M.E. 502 Descriptive Geometry	3
	54

Third Year	Hrs.
Ch.E. 780, 781, 782, Thermo I, II, III	6
Ch.E. 784-784L Fluid Flow	4
Ch.E. 785-785L Heat Transfer	4
Ch.E. 786-786L Unit Operations I	4
E.E. 713-713L and 715-715L E.E. and Electron Devices	8
I.E. 602 Computers II	3
Ch.E. Elective	3
C.E. 614 Strength of Materials I	3
Health and Physical Education Physical Activities	3
Chem. 603 Quantitative	5
Liberal Arts Electives	10
	53

Fourth Year	Hrs.
Ch.E. 787-787L and 788-788L Unit Operations II and III	8
Ch.E. 880-881 Kinetics I and II	5
Ch.E. 882 Process Dynamics	4
Ch.E. 885-886 Plant and Process Design I, II	6
Ch.E. 801, 802, 803 Chemical Engineering Thesis I, II, III	6
Chem. 739-739L, 740-740L, 741-741L Physical Chemistry	12
Liberal Arts Electives	10
	54

Curriculum for the Degree of Bachelor of Engineering with the Major in Civil Engineering

First Year	Hrs.
Math. 571 Analytical Geometry and Calculus I	5
Chem. 515 General Chemistry	4
Comm. 525 Basic Course I	4
Soc. Sci. 501 Introduction to Social Science	3
Math. 572 Analytic Geometry and Calculus II	4
Chem. 516 General Chemistry	4
Physics 510 General Physics I	4
Comm. 526 Basic Course II	4
Soc. Sci. 502 Introduction to Social Science	3
Math. 673 Calculus III	5
Chem. 517 General Chemistry	4
Phys. 601 General Physics II	3
Comm. 527 Basic Course III	4
Soc. Sci. 503 Introduction to Social Science	3
	54

Second Year	Hrs.
Math. 674 Analytic Geometry and Calculus IV	4
Phys. 602 General Physics III	3
C.E. 610 Statics I	3
M.E. 600 Thermodynamics I	3
M.E. 501 Engineering Drawing	3
H. & P.E. Activity Course	1
Math. 709 Diff. Equations	3
Elective (Tech.-out of Dept.)	3
Elective (Tech.-in or out of Dept.)	3
C.E. 611 Statics II	2
Elective (Liberal Arts)*	10
I.E. 602 Computer II	3
H. & P.E. Activity Course	1
Math. 710 Diff. Equations	3
M.E. 502 Descriptive Geometry	3
C.E. 614 Strength of Materials I	3
M.E. 640 Dynamics I	2
H. & P.E. Activity Course	1
Ch.E. 681 Ind. Stoichiometry	3
	57

Third Year	Hrs.
Elective (Liberal Arts)*	10
C.E. 615 Strength of Materials II	2
C.E. 615L Strength of Materials II Lab	1
M.E. 741 Dynamics II	3
E.E. 713 Electrical Engineering	3
E.E. 713L Electrical Engineering Lab	1
C.E. 720 Surveying I	3
C.E. 720L Surveying I Lab	1
E.E. 715 Electron Devices and Controls	3
E.E. 715L Electron Devices and Controls Lab	1
C.E. 740 Structural Analysis I	3
C.E. 718 Fluid Mechanics I	3
C.E. 718L Fluid Mechanics I Lab	1
H. & P.E. Health Education	3
M.E. 750 Strength of Materials III	3
C.E. 741 Structures II Analysis	3
C.E. 719 Hydraulic Engineering	3
C.E. 724 Transportation I	2
C.E. 724L Transportation I Lab	1
Mt.E. 601 Engineering Materials I	3
C.E. 721 Surveying II	3
C.E. 721L Surveying II Lab	1
	57

Fourth Year	Hrs.
C.E. 840 Structures III Analysis	3
C.E. 824 Transportation II	3
C.E. 831 Environmental Engineering I	3
C.E. 860 Thesis	2
Elective (Tech.-out of Dept.)	3
C.E. 825 Transportation III	2
C.E. 825L Transportation III Lab	1
C.E. 841 Structure Design I	3
C.E. 832 Environmental Engrg. II	2
C.E. 832L Environmental Engrg. II Lab	1
C.E. 861 Thesis	2
C.E. 850 Soil Mechanics	3
C.E. 850L Soil Mechanics Lab	1
Elective (Tech.-in or out of Dept.)	3
C.E. 851 Foundation Engineering	3
C.E. 842 Structure Design II	3
C.E. 862 Thesis	2
Elective (Tech.-in or out of Dept.)	6
	46

Department Technical Electives	Hrs.
C.E. 820 Surveying III	3
C.E. 820L Laboratory	1
C.E. 826 Transportation IV	3
C.E. 830 Hydrology	3
C.E. 833 Environmental Engineering III	3
C.E. 843 Systems Engr. I	3
C.E. 844 Systems Engr. II	3
C.E. 845 Civil Engr. Analysis	3
C.E. 846 Adv. Structr. Analysis	3
C.E. 847 Struct. Dyn.	3
C.E. 848 Plate and Shells	3
C.E. 852 Adv. Soil Mech.	3

Out-Of-Department Technical Electives	Hrs.
I.E. 703 Computer III	3
Mt.E. 602 Engr. Mat'ls II	3

* LIBERAL ARTS: A student must choose 20 hours from courses in economics, history, humanities, literature, language, philosophy, psychology, and religion for which the student has prerequisites and his advisor's approval.

M.E. 718 Thermo. V	3
M.E. 851 Strength IV	4
M.E. 870 Mechanical Vibrations	4
M.E. 830 Fluid Mech. II	4
Geology 503 Physical	5
Physics 704 Modern	3
Physics 705 Modern	3
Math. 711 Higher Math for Engineers	3
Math. 740 Statistics I	3
Math. 741 Statistics II	3
Math. 742 Statistics III	3

Curriculum for the Degree of Bachelor of Engineering with the Major in Electrical Engineering

First Year	Hrs.
Math. 571, 572, 673 Analytic Geometry and Calculus I, II, III	14
Physics 510, 601, 602 General Physics I, II, III	10
Comm. 525-526-527 Basic Courses I-II-III	12
Soc. Sci. 501, 502, 503 Introduction to Social Science I, II, III	9
M.E. 501 Engineering Drawing	3
M.E. 502 Descriptive Geometry	3
H. & P.E. 509 Health Education	3
H. & P.E. activity course	2
	56

Second Year	Hrs.
Chem. & Chem. Lab. 515, 515L; 516, 516L; 517, 517L General Chemistry I, II, III	12
Math. 674 Analytic Geometry and Calculus IV	4
Math. 709 Ordinary Differential Equations	3
Math. 710 Higher Mathematics for Engineers I	3
Physics 603 General Physics IV	3
Physics 704, 705 Modern Physics I, II	6
E.E. 601, 602, 603 Circuit Theory I, II, III	9
E.E. 612L, 613L Electrical Laboratory I, II	2
C.E. 610, 611 Statics I, II	5
M.E. 640 Dynamics I	2
I.E. 602 Computers II	3
H. & P.E. activity course	1
Liberal Arts Elective	3
	56

Third Year	Hrs.
Math. 711 Higher Mathematics for Engineers II	3
E.E. 701, 702 Circuit Theory IV, V	6
E.E. 703 Control Analysis I	3
E.E. 704, 705 Field Theory I, II	6
E.E. 706 Transmission & Radiation	3
E.E. 707 Physical Electronics I	3
E.E. 708, 709 Electronic Circuit Theory II, III	6
E.E. 711L, 712L, 716L Electrical Laboratory III, IV, V	3
E.E. 641 Dynamics II	3
M.E. 600, 790 Thermodynamics I, V	6
Econ. 707 Economics of American Industry	4
Mt.E. 601 Engineering Materials I	3
Liberal Arts Electives	9
	58

Fourth Year	Hrs.
E.E. 809, 810, 811 Electrical Energy Conversion I, II, III	9
E.E. 805 Quantum Electronics	3
E.E. 717L, 718L, 804L Electrical Laboratory VI, VII, VIII	3
Mt.E. 602 Engineering Materials II	3
E.E. 801, 802, 803 Thesis I, II, III	6
C.E. 614 Strength of Materials I	3
Technical Electives	10
Liberal Arts Electives	6
Philosophy & Humanities	4
	47

Curriculum for the Degree of Bachelor of Engineering with the Major in Industrial Engineering

First Year	Hrs.
Math. 571, 572, 573 Calculus I, II, III	14
Physics 510, 601, 602 General	10
Communications 525-526-527	12
Social Science 501, 502, 503	9
M.E. 501 Engr. Drawing	3
M.E. 502 Descriptive Geom.	3
I.E. 601 Computers I	2
H. & P.E. 509 Health	3
H. & P.E. Activity	1
	57

Second Year	Hrs.
Chem. 515, 516, 517 General	9
Chemistry Labs	3
Liberal Arts Electives	12
Math. 709 Diff. Equations	4
Math. 710 Higher Math for Engineers	3
C.E. 610, 611 Statics I, II	5
Ch.E. 681 Indus. Stoiciometry	3
Physics 603 General	3
I.E. 602 Computers II	3
M.E. 600 Thermo I	3
Acctg. 601 Elementary	3
M.E. 640 Dynamics I	2
H. & P.E. Activity	1
	57

Third Year	Hrs.
Math. 740, 741 Statistics I, II	6
Math. 725 Matrix	4
I.E. 701, 702 Indus. Org.	6
I.E. 703 Systems Analysis	3
Philosophy Elective	4
I.E. 711, 712 Methods I, II	6
Engineering Elective	3
C.E. 614 Strength of Materials	3
E.E. 715 Elect. Devices	3
E.E. 715L Lab	1
M.E. 741 Dynamics II	3
E.E. 713 Elect. Engr.	3
E.E. 713L Elect. Lab	1

Technical Elective	3
H. & P.E. Activity	1
	50

Fourth Year	Hrs.
I.E. 841, 842, 843 Thesis I, II, III	6
I.E. 831, 832 Lin. Prog. I, II	6
I.E. 833 Intro. Oper. Research	3
I.E. 822, 823 Quality Control	4
I.E. 721 Job Analysis	3
I.E. 801, 802 Production I, II	6
I.E. 826 Engr. Analysis	3
Econ. 707 Amer. Industry	4
I.E. 824 Engr. Economy	3
I.E. 825 Adv. Engr. Economy	3
Engineering Electives	7
Technical Elective	3
	51

ELECTIVES

Engineering Electives:	Hrs.
C.E. 615, 615L Strength of Materials II and Lab	4
Also, any 700- or 800-level engineering course for which the student has the prerequisites may be taken with the advisor's approval.	
Technical Electives:	
Math. 711 Higher Math. II	3
Math. 760 Numerical Analysis	4
Math. 742 Statistics III	3
Math. 842 Statistical Inference	4
Math. 846, 847, 848 Probability	12
Also, any 700- or 800-level engineering course for which the student has the prerequisites may be taken with the advisor's approval.	

Curriculum for the Degree in Bachelor of Engineering with the Major in Mechanical Engineering

First Year	Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Phys. 510, 601, 602 General Physics I, II, III	10
Comm. 525-526-527 Communication I-II-III	12
Soc. Sci. 501, 502, 503 Introduction I, II, III	9
M.E. 501, 502 Engineering Drawing, Descriptive Geometry	6
H. & P.E. 509 Health Education	3
	54

Second Year	Hrs.
Math. 674 Calculus IV	4
Math. 709 Ordinary Differential Equations	3
Math. 710 Higher Mathematics for Engineers I	3
Phys. 603 General Physics IV	3
Chem. 515, 516, 517 General Chemistry	12
M.E. 600, 601, 602 Thermodynamics I, II, III	9
C.E. 610, 611 Statics I, II	5
M.E. 640 Dynamics I	2
*I.E. 602 Computers II	3
M.E. 680 Seminar	1
Elective (Liberal Arts)	5
H. & P.E. Activity Course	3
	53

Third Year	Hrs.
Math. 711 Higher Mathematics for Engineers II	3
E.E. 713, 714, 715 Electrical Engineering	9
E.E. 713L, 714L, 715L Electrical Engineering Laboratory	3
Phys. 704, 705 Modern Physics I, II	6
M.E. 741 Dynamics II	3
M.E. 742 Dynamics of Machinery	3
Mt. E. 601, 602 Material Science I, II	6
C.E. 614, 615 Strength of Materials I, II	5
C.E. 615L Strength of Materials II Laboratory	1
C.E. 718, 718L Fluid Mechanics I, Laboratory	4
M.E. 720 Heat Transfer I	3
Elective (Liberal Arts)	9
	55

Fourth Year	Hrs.
M.E. 801, 802, 803 Thesis	6
M.E. 750 Strength of Materials III	3
M.E. 860, 860L, Machine Design I, Laboratory	4
Elective (Liberal Arts)	4
Elective (Out Of Department)	4
Elective (Departmental)	31
	52

* It is highly advisable that this course be taken before proceeding to the third year.

ELECTIVES

Departmental Electives	Hrs.
804 Applied Thermodynamics	4
804L Thermodynamics Lab	1
821 Heat Transfer II	4
821L Heat Transfer Lab	1
822 Internal Combustion Engines	3
823 Refrigeration and Air Conditioning	3
824 Principles of Nuclear Reactors	3
824L Nuclear Reactors Lab	1
830 Fluid Mechanics II	4
830L Fluid Mechanics Lab	1
851 Strength of Materials IV	4
851L Strength of Materials Lab	1
861 Machine Design II	3
861L Machine Design Lab	1
870 Mechanical Vibrations	4
870L Mechanical Vibrations Lab	1
881 Engineering Analysis I	4
892 Control Theory	4

Liberal Arts: Chosen from 600-level or above courses in art, economics, literature, language**, history, humanities, music, philosophy and religion, political science, psychology, and sociology for which the student has prerequisites. Except for language, it is preferable that a student take no more than one course in each of the above areas.

** Requires department chairman's approval.

Curriculum for the Degree of Bachelor of Engineering with Major in Metallurgical Engineering or Materials Science

The department offers three options:
a. Metallurgical Engineering
b. Materials Science
c. Nuclear Metallurgy

First Year	Hrs.
Comm. 525-526-527	12
Chemistry 515, 516, 517	12
Math. 571, 572, 673	14
Mech. Engr. 501, 502	6
Physics 510, 601	7
H. & P.E. 509, 500, 500	5
	57

Second Year	Hrs.
Math. 674, 709, 710	10
Met. Engr. 601, 602, 603	9
Met. Engr. 614, 615	4
Met. Engr. 630, 631, 632	9
Met. Engr. 650	3
Physics 602, 603	6
Soc. Sci. 501, 502, 503	9
C. Engr. 610, 611	6
Mech. Engr. 640	2
H. & P.E. 525	1
	59

Third Year	Hrs.
Met. Engr. 620, 621	6
Met. Engr. 740, 741	4
Met. Engr. 791, 792, 793	9
Met. Engr. 791L, 792L, 793L	3
Math. 711	3
C. Engr. 614	3
E. Engr. 713, 713L, 715, 715L	8
Electives (Met. Engr.-General)	6
Electives (Technical)	8
Electives (Liberal Arts)	7
	57

Fourth Year	Hrs.
Met. Engr. 730, 731, 732	6
Met. Engr. 860	3
Met. Engr. 861	3
Met. Engr. 863	3
Met. Engr. 840	1
Met. Engr. 890	1
Met. Engr. 891, 892, 893	9
Electives (Met. Engr.-Options)	9
Electives (Liberal Arts)	6
Electives (Liberal Arts or Technical)	3
	44

ELECTIVES

I. Technical (out of department)

The student must choose 11 hours of technical electives from the following courses. Election of courses not listed requires department head's approval.

Chem. Engr. 685, 783
E.E. 714, 714L
M.E. 881, 882
I.E. 602, 701, 702, 703
Math. 725, 740, 741, 742, 760
Chem. 621, 622, 623
Phys. 704, 826, 810, 811
Geol. 503, 504

II. General (in department)

The student may choose 6 or more hours from the courses listed below.

Met. Engr. 784 Crystalline Solids	3
Met. Engr. 862 Applied X-Rays II	3
Met. Engr. 864 Thermodynamics of Solids II	3
Met. Engr. 865 Advanced Science of Material	3
Met. Engr. 866 Special Topics	3

III. Met. Engr. Options

The student must choose at least 9 hours in one of the following options:

OPTION A: Metallurgical Engineering

Met. Engr. 780 Casting, Welding, Solidification	3
Met. Engr. 781 Powder Metallurgy	3
Met. Engr. 783 Ferrous and Non-ferrous Alloys	3
Met. Engr. 870 Theory of Alloys	3
Met. Engr. 871 Physical Metallurgy IV	3
Met. Engr. 872 Refractory Metals and Alloys	3

OPTION B: Materials Science

Met. Engr. 782 Phase Diagrams	3
Met. Engr. 851 Intro. to Poly. Sci.	3
Met. Engr. 852 Adv. Engr. Mat'l I	3
Met. Engr. 853 Adv. Engr. Mat'l II	3
Met. Engr. 854 Adv. Engr. Mat'l III	3

OPTION C: Nuclear Metallurgy

Met. Engr. 815 Particle Interaction I	3
Met. Engr. 816 Particle Interaction II	3
Met. Engr. 817 Management of Nuc. By-Product	1
Met. Engr. 830 Intro. to Nuc. Mat'ls I	3
Met. Engr. 831 Intro. to Nuc. Mat'ls II	3
Met. Engr. 835 Intro. to Nuc. Mat'ls III	3

THE DANA SCHOOL OF MUSIC

Charles Henry Aurand, Dean

ORGANIZATION AND DEGREES

OBJECTIVES

The Dana School of Music of Youngstown State 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.

The purpose of the Dana School of Music of Youngstown State University is to complement the general objectives of the University by providing intensive professional training in music based on a thorough understanding of the fundamental skills and the theory upon which all music rests, and to provide for the non-music major an opportunity to develop his background of musical knowledge.

The requirements for entrance and for graduation as set forth in this catalog are in accordance with the published regulations of the National Association of Schools of Music, of which the Dana School of Music is a member.

The School offers instruction for both professional and avocational needs. Provided that they are capable of college-level work, students of the University who have studied voice or an instrument may continue the study of music, subject only to the limitations imposed by their respective schools or divisions.

The curriculums of the Dana School of Music may be divided into four components: Music Education, Theoretical Studies, Liberal Arts, and Applied Music.

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 the University cooperates closely with the public schools of Youngstown and vicinity.

Credit in music is allowed in varying amounts toward the other degrees granted by Youngstown State University.

BUILDINGS

The school's main building, at 616 Wick Avenue, contains the administrative offices, 13 studios, 4 classrooms, 4 soundproof record-playing rooms, and the record library. The Dana Recital Hall, at the corner of Bryson and Spring streets, contains studios, a rehearsal hall, and a recital hall. The Dana Annex, directly behind the main music building, contains 20 soundproof practice rooms and a pipe organ practice room. In the second story of Central Hall, on the main campus, are 2 studios, a soundproof rehearsal and recital hall seating 300, and instrumental and choral libraries. Frequent use is made of the C. J. Strouss Memorial Auditorium for concerts and recitals. The Dana Recital Hall, with a seating capacity of 300, serves as an excellent hall for chamber music and solo recitals.

EQUIPMENT

Equipment includes 20 grand pianos, 27 uprights, a Sperrhake harpsichord, 4 practice organs, and band and orchestra instruments. The 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 to 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 Dana 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 the Dana School of Music. For other scholarships, see *Scholarships and Loans* in the General Information section.

PLACEMENT SERVICE

Through its many alumni, the school can give its graduates considerable assistance in finding professional positions. Its contacts extend through 42 states, and each year requests for graduates are received from all branches of the profession. Full services of the University Placement Office are available to music students. For further information, see *Placement Service* in the General Information section.

MUSICAL ACTIVITIES

The Dana School of Music supplements the concerts of the Monday Musical Club and the Youngstown Philharmonic Orchestra with the *Dana Concert Series.* This series brings to the University and to the public artistic solo and ensemble programs featuring faculty members and guest artists, composers, and musicologists. In addition, the faculty presents a series of programs for the general public.

Graduation recitals and informal student recitals afford additional training through experience in public performance. Attendance at recitals is obligatory for music students. Additional hours of credit in the major field may be required if attendance is impossible.

The *Concert Choir* is a select chorus which performs a wide range of works from the choral repertoire. Membership is by audition.

The *Madrigal Singers* is for selected graduate and undergraduate students. It is a small ensemble of singers for the study and performance of music from all periods and repertoires.

The *University Chorus* is a large mixed chorus open to any student in the University who can qualify. Literature studied will include as wide a variety of periods and styles as is practical. The chorus will appear in public concert at least once a quarter.

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 *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 also accompanies the concert choir and the opera workshop. It is open to all students in the University who can qualify.

Opera is a tradition at Youngstown State 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 Dana School of Music, but qualified students in the University may audition for the cast and the opera chorus.

PROFESSIONAL FRATERNITIES

Alpha Nu chapter of Sigma Alpha Iota, international professional music fraternity for women, and Delta Eta chapter of Phi Mu Alpha Sinfonia fraternity of America, are chartered to the Dana School of Music.

OTHER STUDENT ACTIVITIES

Students of the Dana School of Music may take part in other Youngstown State University activities as described under *Student Activities,* in the General Information section. The Student Chapter of the Music Educators National Association and the Youngstown Chapter of Composers, Authors and Artists of America are also open to University students.

THE ALUMNI ASSOCIATION

The Dana School of Music has a large and active Alumni Association formed many years ago during the School's independent existence which operates within the framework of the Youngstown State University Alumni Association. The organization is the means of a continuing relationship between the School and its graduates, and its services are continually increasing. See also *Alumni Association* in the General Information section.

FEES

See *Fees and Expenses* in the General Requirements and Regulations section.

APPLICATION AND EXAMINATIONS

An applicant for admission to the Dana School of Music must satisfy the general requirements for admission to the University (see the General Requirements and Regulations section). 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 quarter, December 2 for the winter quarter, or February 24 for the spring quarter.

Entering freshmen are required to audition on their applied instrument and take a placement examination in theory to determine proficiency in applied music and general musicianship. These auditions and examinations are scheduled on announced dates preceding the fall entrance date.

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

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 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.

ADMISSION FROM OTHER INSTITUTIONS

The general policy is stated in the General Requirements and Regulations section. Advanced standing in applied music and in aural and written theory is granted tentatively and must be validated by examinations.

SPECIAL STUDENTS

The general policy is stated in the General Requirements and Regulations section. 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 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 the General Requirements and Regulations section. These courses are normally taken in high school. Those lacking must 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; they are explained in the General Requirements and Regulations section but are recapitulated below.

a. Curriculums. Curriculums leading to this degree require from 208 to 216 quarter 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 advisor.

b. R.O.T.C. R.O.T.C. students are allowed certain modifications of the requirements, as explained in the General Requirements and Regulations section.

PRE-COLLEGE ACADEMIC

SUBJECT	HIGH SCHOOL UNITS
English	3
United States history and civics	1
Mathematics	1
Science	1
Others**	10

MUSICAL

Proficiency adequate for undertaking college-level music courses.

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

** French, German, or Italian will be most advantageous for the student intending to major in voice. See **Proficiency in a Foreign Language,** in the College of Arts and Sciences section.

IN THE UNIVERSITY

REQUIREMENTS IN ADDITION TO COURSES

Upper Division status (including completion of any specified preparatory courses lacking at time of entrance).

Major and minor requirements
For details, see the complete year-by-year curriculums at the end of this section. A grade of C or lower may indicate a need for retention on a certain proficiency level. This will be determined by the student's proficiency in his major instrument examination.

Course-level requirements.
Point index requirements.
Residence requirement.
Application for graduation.

COURSE REQUIREMENTS (OTHER THAN THE MAJOR AND MINOR)

	QUARTER HOURS OF CREDIT
BASIC COURSES	
Communication 525-526-527 Basic Course I-II-III	12
Health and Physical Education 509M or 509W Health Education	3
Health and Physical Education activity courses	6

AREA COURSES

Social studies:
Course work in two or more of the following departments: Economics, Geography, History, Political Science (including the Social Science sequence courses), Psychology, and Sociology 20

Humanities:
Literature courses in English or Humanities (600-level or above); courses in a literature in a foreign language (700-level or above); course work in the Department of Philosophy and Religious Studies; or history and/or appreciation courses in the Department of Art, of Speech and Drama, or of the Dana School of Music 10

Science:
Physics of Sound 608 and 12 q.h. of one laboratory science or as noted in the general course requirements of the catalog 16

PROFESSIONAL COURSES

Music 510-511-512 Theory I 12
Music 610-611-612 Theory II 12
Music 717-718 Vocal and Instrumental Conducting and Ensemble, Advanced Conducting 719 or 720 9
Music 780-781-782 History of Music 9
Advanced theory (Counterpoint, Analytical Technique, etc.) 6
Music ensembles 12
Recital 1

FOR TWO MAJORS, IN MUSIC AND IN MUSIC EDUCATION

Students who wish to complete a major (Bachelor of Music degree) in an instrument or in voice, theory, composition, or sacred music, and also a major in music education should consult the Dean of the Dana School of Music.

COURSES OF INSTRUCTION AND CURRICULUMS†

FACULTY

Professors Aurand and Walker; Associate Professors Alleman, Byo, Gould, L. M. Hopkins, R. E. Hopkins, Sample, Spiro, and Vogel; Assistant Professors Conable, Kagarice, Lavin, Orr, Pellegrini, Raridon, Rosenberg, Rullman, Skolnik, Starkey, and Wisler; Instructors Badal and Mayhall.

APPLIED MUSIC

The student not qualifying for Applied Music 504 or 507 (whichever his curriculum requires) takes the relevant course 500 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 music courses as many quarter hours as he would in the courses not taken.

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 quarter of residence study.

In most cases instruction is in one half-hour weekly lesson per credit, except where class instruction is given.

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 quarter. 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 half-hour lessons in a one-hour course, six half-hour lessons in a two-hour course, or nine half-hour lessons in a three-hour course. In case of prolonged illness, the lessons may be made up at the discretion of the teacher.

As far as teaching staff and practice rooms are available, enrollments in applied music will be accepted in the following order:

† The student should 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 at the end of the General Requirements and Regulations section.

1. Full-time music majors
2. Other students in the University
3. Private students

A student's choice of teacher will be respected as far as possible, but final assignment rests with the Dean of the School of Music.

RECITALS

Students are required to perform in a departmental or all-student recital once each quarter after their freshman year, and to give a recital when they are seniors.

HONORS RECITALS: Two programs per year are set aside for outstanding student performances.

CONCERTO RECITAL: An annual recital features outstanding student performers of concertos or arias with orchestral accompaniment.

899. *Senior Recital.* A 30- to 60-minute public performance of senior-level literature. Prereq.: Completion of junior-level major instrument proficiency. 1 q.h.

ENSEMBLES

To enable students in music to have wide experience in the performance of music written for large instrumental and vocal groups, they are required to participate in music ensembles as follows: String majors are required to be members of the University Orchestra for each quarter of the four years. All other instrumental majors are required to be in University Band for each quarter of the four years. (Wind majors who are accepted by audition for orchestra may meet their ensemble requirement by participating in orchestra.)* All instrumental majors are required to take one year of a choral ensemble; voice majors must participate in a major choral ensemble* for each quarter of the four years and in a second major ensemble (choral or instrumental) for one year; piano, organ, and sacred music majors are required to sing in one of the major choral ensembles for four years.

There is no tuition charge for full-time students 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. Three hours of Marching Band credit may be substituted for three hours of the general requirement in physical activity courses.

*The Dean may waive ensemble participation in exceptional cases and during the student teaching quarter. The major instrumental ensembles are Band (Concert and Marching) and Symphony Orchestra. The major choral ensembles are Dana Chorus and Concert Choir.

Any ensemble course may be repeated any number of quarters.

Concert Choir. Open to any student in the University who can qualify. 1 q.h.

Madrigal Singers. Open to any student in the University who can qualify. 1 q.h.

University Chorus. Open to any student in the University who can qualify. 1 q.h.

Concert Band. Open to any student in the University who can qualify. 1 q.h.

Marching Band. Open to any University student who can qualify. Functions only during the football season. Six hours a week. Three hours of Marching Band credit may be applied toward the health and physical education activity requirement. 1 q.h.

Opera Workshop. Open to all students of the University who are interested in the art and craft of stage production and the lyric theater. Students may audition for roles, in which they will be prepared musically and dramatically. In a practical, working atmosphere, study is also offered in stage lighting, the making of sets, costuming, makeup, etc. Both singers and stage crew may acquaint themselves with the history of opera, costume history, and general information about opera. The course culminates in the production of one or more operas. Credit may be taken in accordance with the amount of work to be undertaken by the student. Students may also enroll without credit. 1-3 q.h.

Symphony Orchestra. Open to any student in the University who can qualify. 1 q.h.

Percussion Ensemble. Limited to students of the School of Music. 1 q.h.

String Ensemble. Open to any University student who can qualify. 1 q.h.

Woodwind Ensemble. Limited to students of the School of Music. 1 q.h.

Brass Ensemble. Limited to students of the School of Music. 1 q.h.

String Quartet. Limited to selected students of the School of Music. 1 q.h.

Accompanying. Open to advanced piano and organ students of the School of Music. 1 q.h.

Stage Band Workshop. A laboratory experience in twentieth century band techniques. Emphasis is on analysis of harmonic progressions, form, and performance requirements of this musical idiom. n.c.

PIANO

500. For those who do not qualify for Piano 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. All major and minor scales and tonic, dominant seventh and diminished seventh arpeggios, hands together, four octaves. Bach, *Three-Part Inventions;* less difficult sonatas of Mozart or Haydn; romantic and contemporary compositions.
3 + 3 + 3 q.h.

607-608-609. Scales in thirds, sixths, and tenths. Bach, *French Suites, Well-Tempered Clavier;* sonatas of Mozart, Haydn, early Beethoven, or Schubert; romantic and contemporary compositions. 3 + 3 + 3 q.h.

707-708-709. Continuation of scale and arpeggio study. Bach, *English Suites, Well-Tempered Clavier;* Beethoven sonatas; Mozart, Haydn, or early Beethoven concertos; less difficult etudes of Chopin; romantic and modern compositions. 3 + 3 + 3 q.h.

807-808-809. Scales in double thirds and octaves. Bach, *Partitas, Toccatas, Well-Tempered Clavier;* Beethoven sonatas; romantic concertos; larger works of Chopin; romantic and contemporary compositions. Senior recital.
3 + 3 + 3 q.h.

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.

504-505-506. See Piano 507-508-509.
2 + 2 + 2 q.h.

604-605-606. See Piano 607-608-609.
2 + 2 + 2 q.h.

704-705-706. See Piano 707-708-709.
2 + 2 + 2 q.h.

804-805-806. See Piano 807-808-809.
2 + 2 + 2 q.h.

Minor Courses

All students not majoring in piano must complete a four-hour piano minor. At the end of this period, and upon recommendation of their piano teacher, they will be examined in the following skills:

(1) the ability to sight-read four-part songs;

(2) the ability to harmonize at sight, improvising a simple piano accompaniment for songs requiring the use of I, IV, V chords and some simple modulations; and to transpose the songs and harmonizations to other keys; and

(3) the ability to sight-read fairly fluently simple accompaniments, vocal or instrumental, and simple piano compositions of the type used for school rhythmic activities.

501-502-503. Elements of keyboard technique, with emphasis on developing fluency in sight-reading. Easiest compositions of Bach; Bartok, *Mikrokosmos,* vol. I. All major and minor scales and tonic chords and arpeggios, hands separately. 1 + 1 + 1 q.h.

601-602-603. All major and minor scales and tonic, dominant seventh and diminished seventh arpeggios, hands separately, three octaves. Bach, selections from *Notenbuechlein* or *Clavier-Buechlein;* Mozart, earliest pieces. Beethoven, sonatinas. Romantic and contemporary compositions. 1 + 1 + 1 q.h.

701-702-703. Scales and arpeggios as above, hands together. Bach, *Little Preludes,* selected suite movements. Haydn, *Divertimenti.* Clementi, sonatinas. Romantic and contemporary compositions. 1 + 1 + 1 q.h.

801-802-803. Scales and arpeggios as above, in faster tempo. Bach, *Two-Part Inventions.* Mozart, *Sonata facile.* Beethoven, easier sets of variations. Romantic and contemporary compositions. 1 + 1 + 1 q.h.

HARPSICHORD

501-502-503. Instruction in basic technique, with discussion of construction, literature, ornamentation, and performance practices. Prereq.: Consent of teacher.
1 + 1 + 1 q.h.

601-602-603. Elizabethan dances and variations; Kuhnau, *Biblical Sonatas;* Bach, *French Suites.* Prereq.: Harpsichord 503.
1 + 1 + 1 q.h.

701-702-703. Bull, fantasias and variations; Couperin, selected pieces; Bach, *Well-Tempered Clavier.* Prereq.: Harpsichord 603.
1 + 1 + 1 q.h.

801-802-803. Bach, *English Suites, Italian Concerto.* Scarlatti, sonatas. Contemporary works. Continuo playing. Prereq.: Harpsichord 703. 1 + 1 + 1 q.h.

ORGAN

500. Intended for those who do not qualify for Organ 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. Studies and compositions from methods such as Gleason Method of Organ Playing, or Flor Peeters *Ars Organi.* Seventy-nine *Chorale Preludes,* Bach-Dupre, Chorale Preludes from *Das Orgelbuechlein,* Eight Little Preludes and Fugues; Romantic and contemporary compositions.
3 + 3 + 3 q.h.

607-608-609. Continuation of studies and development of technique as needed. Bach: *Fantasy and Fugue in C Minor; Fugue in G Minor; First Sonata; Prelude in F Minor;* chorale preludes, Mendelssohn: *Second Sonata.* Pieces from Historical Series (Vol. I, ed. Bonnet). Modern compositions by American, French, English, or German composers. 3 + 3 + 3 q.h.

707-708-709. Bach: chorale preludes; *Prelude and Fugue in E Minor* (Wedge); *Prelude and Fugue in A Minor; 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 Heroique.* Mendelssohn: *Third Sonata.* Modern compositions. 3 + 3 + 3 q.h.

807-808-809. Bach: *Third Sonata;* chorale preludes; *Fantasy and Fugue in G Minor; Toccata, Adagio, and Fugue in C Major; Prelude and Fugue in E-Flat* ("St. Anne's"); *Passacaglia and Fugue in C Minor; Prelude and Fugue in B Minor.* Franck: *Chorale in A Minor.* Mendelssohn: *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. Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See Organ 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Organ 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Organ 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Organ 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. See Piano 501-502-503. 1 + 1 + 1 q.h.

601-602-603. See Piano 601-602-603. 1 + 1 + 1 q.h.

701-702-703. See Piano 701-702-703. 1 + 1 + 1 q.h.

801-802-803. See Piano 801-802-803. 1 + 1 + 1 q.h.

VOICE

500. For those who do not qualify for Voice 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. Concentration on the development of basic technique for the singer; breath control, freedom and relaxation of the vocal mechanism, maximum resonance, and accurate articulation. At the teacher's discretion, the student will apply the technique acquired in selected works of the vocal repertoire. Foreign-language songs may be introduced. Amount of repertoire to be decided on an individual basis. 3 + 3 + 3 q.h.

607-608-609. Primary emphasis continues to be placed upon the development of the voice and the mastery of technique. The student will be expected to have attained sufficient mastery by the end of this year to properly sing a number of songs in English and in foreign languages. One or two arias from opera and oratorio will be included. Minimum requirements established by the voice faculty; requirements beyond these established by the teacher on an individual basis. 3 + 3 + 3 q.h.

707-708-709. Technical study continued with a view to maintaining steady growth in technical mastery. The repertoire will be enlarged to include a wide range of styles and periods. Songs appropriate to the individual voice will be chosen in English, French, Italian, and German. Operatic and oratorio arias will be required. 3 + 3 + 3 q.h.

807-808-809. Advanced literature and technique. Additional songs of the standard repertoire by French, German, Italian, Russian, English, and American composers. The student will demonstrate ability to sing in three foreign languages, and will have a repertoire of at least four operatic arias, four oratorio arias, twenty classic and twenty modern songs, for immediate use. He should have a knowledge of the general song literature. Each senior will be required to prepare a public recital and give a creditable performance of a program of songs and arias chosen from this and previous courses. 3 + 3 + 3 q.h.

Major Courses for Music Education

The following courses differ only in degree from those listed above. Minimum attainment at the end of four years will be those goals set for the third year above. Senior recitals will be required.

504-505-506. See Voice 507-508-509.
2 + 2 + 2 q.h.

604-605-606. See Voice 607-608-609.
2 + 2 + 2 q.h.

704-705-706. See Voice 707-708-709.
2 + 2 + 2 q.h.

804-805-806. See Voice 807-808-809.
2 + 2 + 2 q.h.

Minor Courses

501-502-503. Concentration on producing a pleasing and musical vocal tone. In addition to exercises chosen on the basis of their needs, students will be expected to learn a limited number of songs. Amount of repertoire decided by voice faculty. Open to students with no previous training. 1 + 1 + 1 q.h.

601-602-603. Continued study of vocal technique, and literature suited to the individual voice. Songs and arias in foreign languages at the discretion of the instructor. Prereq.: Voice 501-502-503.
1 + 1 + 1 q.h.

701-702-703. Advanced vocal technique and literature. For those who can qualify. Prereq.: Voice 601-602-603.
1 + 1 + 1 q.h.

801-802-803. Advanced vocal technique and literature. For those who can qualify. Prereq.: Voice 701-702-703.
1 + 1 + 1 q.h.

VIOLIN

500. For those who do not qualify for Violin 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. Kreutzer, *Studies*, to No. 32. Concertos by Vivaldi, Nardini, Rode, deBeriot. Sonatas by Corelli, Veracini, Leclair. Technical material including Sevcik, Op. 8 and 9, Flesch Scale System. Not fewer than six short compositions suitable for recital repertoire. Major and minor scales and arpeggios in three octaves, using fundamental strokes. 3 + 3 + 3 q.h.

607-608-609. 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 507-508-509 continued.
3 + 3 + 3 q.h.

707-708-709. 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; Schradiek, Book II.
3 + 3 + 3 q.h.

807-808-809. Advanced studies from Wieniawski; Dont, Op. 35; Gavinies and Paganini concertos. Wieniawski, Saint-Saens, Mendelssohn, Lalo, Beethoven, etc.
Senior recital.
3 + 3 + 3 q.h.

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.

504-505-506. See Violin 507-508-509.
2 + 2 + 2 q.h.

604-605-606. See Violin 607-608-609.
2 + 2 + 2 q.h.

704-705-706. See Violin 707-708-709.
2 + 2 + 2 q.h.

804-805-806. See Violin 807-808-809.
2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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 Rode and easy first-position pieces. Scales and arpeggios in keys of not more than four accidentals.
1 + 1 + 1 q.h.

601-602-603. Beginning of position studies. Maia Bang, Book III. Hans Sitt, Op. 32, Books II and III. Kayser, Op. 20, pieces in first three positions. 1 + 1 + 1 q.h.

701-702-703. Position studies continued. Maia Bang, Book IV. Schubert sonatinas. Mazas, *Special Studies*. Accolay and Hollander concertos. Easy double stops and scales. Scales and arpeggios in five positions. Not fewer than six new recital pieces.
1 + 1 + 1 q.h.

801-802-803. Continued study of positions. Maia Bang, Book V. Studies of Mazas and Dont: beginning of Kreutzer. *Allegro Brillante* by Tenhave, concerto by Hollander, sonatas by Handel. Scales in three octaves.
1 + 1 + 1 q.h.

VIOLA

500. For those who do not qualify for Viola 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. Studies by Mazas, Kreutzer,

Sitt, Schradiek technic. Sonatas by Handel; repertoire material: not fewer than six pieces. Scales and arpeggios in three octaves. 3 + 3 + 3 q.h.

607-608-609. Studies by Kreutzer and Fiorillo. Sonatas by Vivaldi and Marcello. Scales and arpeggios continued. Six recital pieces. 3 + 3 + 3 q.h.

707-708-709. Studies by Rode, Campagnoli, and Bruni. Concertos by Stamitz and Mozart. Scales in double stops. Six recital pieces. 3 + 3 + 3 q.h.

807-808-809. Studies by Gavinies and Dolesji; sonatas by Bowen, Bach, and others. Scales and arpeggios continued. Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See Viola 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Viola 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Viola 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Viola 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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 + 1 q.h.

601-602-603. Development of left hand facility. Beginning of lower positions. Studies by Kayser. Scales in positions. Pieces in positions. 1 + 1 + 1 q.h.

701-702-703. 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 + 1 q.h.

801-802-803. Higher positions. Mazas, Kreutzer. Pieces by Nardini, Sitt, and others. Scales in three octaves. 1 + 1 + 1 q.h.

CELLO

500. Intended for those who do not qualify for Cello 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. 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 + 3 q.h.

607-608-609. 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 + 3 q.h.

707-708-709. 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 + 3 q.h.

807-808-809. All scales in octaves, thirds, sixths, and tenths. Piatti, *Caprices,* and Servais, *Caprices.* Repertoire such as Reger, *Solo Suite No. 2,* and Haydn or Dvorak concerto. Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See Cello 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Cello 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Cello 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Cello 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Kummer, *Method,* and Schroeder, *Studies.* Scales and solos in first position. 1 + 1 + 1 q.h.

601-602-603. Schroeder, *Studies.* Scales. Klengel, *Concertino in C Major;* Marcello, *Sonata in F Major.* 1 + 1 + 1 q.h.

701-702-703. Schroeder, *Studies.* Scales. Loeillet, *Sonata in G Major;* Goltermann. *Concerto No. 4.* 1 + 1 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who qualify. 1 + 1 + 1 q.h.

STRING BASS

500. For those who do not qualify for String Bass 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. 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 + 3 q.h.

607-608-609. Hrabe, *Studies.* Repertoire, such as Cappuzzi, *Concerto;* sonatas by Galliard and Loeillet; Ratez, *Six Characteristic Pieces,* Op. 46. 3 + 3 + 3 q.h.

707-708-709. Bille, *Method,* Part II, Books 4 and 5. Concert pieces to include sonatas by Eccles, Antoniotti, and D'Andrieu. 3 + 3 + 3 q.h.

807-808-809. Kreutzer, *Studies.* Reynolds, *Orchestra Studies;* Strauss, *Orchestra Studies.* Solos to include Koussevitzky concerto or Dragonetti concerto. Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See String Bass 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See String Bass 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See String Bass 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See String Bass 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Simandl, *Method,* Part I. Scales. 1 + 1 + 1 q.h.

601-602-603. Simandl, *Method,* Part II. Bach, *Minuet and Gavotte;* Vivaldi, *Intermezzo.* 1 + 1 + 1 q.h.

701-702-703. Simandl, *30 Etudes.* Anderson, *Sonatina.* 1 + 1 + 1 q.h.

801-802-803. For those who can qualify. 1 + 1 + 1 q.h.

FLUTE

500. To be elected by students who do not qualify for Flute 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. All major and minor scales, 2 octaves with articulations; all Handel sonatas; any two by Quantz, Blavet, and Telemann; Andersen, *Studies,* Op. 41 and 33; Berbiquier, *18 Studies;* or works of comparable level. 3 + 3 + 3 q.h.

607-608-609. All scales by thirds and fourths; all Bach sonatas including *Sonata in A Minor for flute alone;* Bach, *Suite in B Minor for flute and strings;* Telemann, *Suite in A Minor* for flute and strings; Andersen, *Studies,* Op. 21 and 30; Hugues, *40 Studies,* Op. 75; Mozart concertos in D and G; or works of comparable level. 3 + 3 + 3 q.h.

707-708-709. Hindemith, *Sonata;* Piston, *Sonata;* Schubert, *Variations,* Op. 160; Poulenc, *Sonata;* Griffes, *Poem;* Andersen, *Studies,* Op. 63 and 15; orchestra studies; or works of comparable level. 3 + 3 + 3 q.h.

807-808-809. Dutilleux, *Sonatine;* Messiaen, *Le Merle Noir;* Debussy, *Trio for Flute, Viola and Harp;* selected contemporary music; Andersen, *Studies,* Op. 60; Jean-Jean, *Etudes;* orchestra studies; or works of comparable level. 3 + 3 + 3 q.h.

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.

504-505-506. See Flute 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Flute 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Flute 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Flute 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Moyse, *40 Little Pieces for the Beginning Flutist;* Platonov, 30 Studies; Handel sonatas. 1 + 1 + 1 q.h.

601-602-603. Studies and solos of the level indicated for Flute 507 and 508. 1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Flute 508 and 509. 1 + 1 + 1 q.h.

801-802-803. Studies and solos of the level indicated for Flute 607 and 608. 1 + 1 + 1 q.h.

CLARINET

500. To be elected by those who do not qualify for Clarinet 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. 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;* Jean-Jean, *Clair Matin;* Mozart, *Concerto.* 3 + 3 + 3 q.h.

607-608-609. Studies and solos such as Rose, *32 Etudes;* Baermann, *Method,* Book IV; Perier, *Etudes de Genres et Interpretation,* Book I; Marty, *First Fantasy;* Lefevre, *Fantaisie Caprice;* Hahn, *Sarabande et Themes Varies.* 3 + 3 + 3 q.h.

707-708-709. 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 + 3 q.h.

807-808-809. Studies and solos such as Stark, *24 Grand Studies;* Jean-Jean, *18 Etudes;* Jean-Jean, *16 Modern Etudes;* orchestral studies; Widor, *Introduction and Ronde;* Debussy, *Premiere Rhapsodie;* Brahms, *sonatas;* Milhaud, *Concerto.* Senior recital. 3 + 3 + 3 q.h.

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.

504-505 506. See Clarinet 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Clarinet 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Clarinet 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Clarinet 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Klose, *Method,* Book I; Perier, *Le Debutant Clarinettiste, 20 Etudes Melodiques et Faciles;* Gretchaninoff, *Suite Miniature;* Petit, *Piece de Concours.* 1 + 1 + 1 q.h.

601-602-603. 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 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Clarinet 507-508. 1 + 1 + 1 q.h.

801-802-803. Studies and solos of the level indicated for Clarinet 607-608. 1 + 1 + 1 q.h.

OBOE

500. For those who do not qualify for Oboe 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. 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 + 3 q.h.

607-608-609. 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 + 3 q.h.

707-708-709. 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 + 3 q.h.

807-808-809. Continued study of English horn. Studies and solos such as Andraud, *Vade-Mecum;* Gillet, *Advanced Studies;* Jean-Jean, *Remembrances;* Rivier, *Improvisation and Finale;* Dallier, *Fantaisie Caprice;* Piston, *Suite.* Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See Oboe 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Oboe 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Oboe 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Oboe 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Studies and solos such as Andraud, *Method* (1949); Niemann-Labate, *Oboe Method;* Bakaleinikoff, *Elegy;* Templeton, *Siciliana;* J. Wagner, *Three Pastorales.* 1 + 1 + 1 q.h.

601-602-603. 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 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Oboe 507-508-509. 1 + 1 + 1 q.h.

801-802-803. Studies and solos of the level indicated for Oboe 607-608-609. 1 + 1 + 1 q.h.

BASSOON

500. For those who do not qualify for Bassoon 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. Studies and solos such as Weissenborn, *Duets;* Oubradous, *Enseignement Complete du Basson,* Book I; Jancourt, *Reverie;* Foret, *Three Pieces;* Mozart, *First Concerto.* 3 + 3 + 3 q.h.

607-608-609. Studies and solos such as Milde, Book II; Oubradous, *Enseignement Complete du Basson,* Book II; orchestral studies; Hindemith, *Sonata;* Handel, *Concerto in C Minor;* Jean-Jean, *Capriccioso.* 3 + 3 + 3 q.h.

707-708-709. 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 + 3 q.h.

807-808-809. Studies and solos such as Giampieri, *Daily Studies;* Orefice, *Bravura Studies;* orchestral studies; Pierne, *Prelude de Concert;* Bozza, *Concerto,* Op. 49; Bozza, *Fantaisie;* Jean-Jean, *Prelude and Scherzo.* Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See Bassoon 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Bassoon 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Bassoon 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Bassoon 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Studies and solos such as Weissenborn. Op. 8 Book I; Jancourt, *Studies,* Book I; Isaak, *Jolly Dutchman;* Ziesi, *Souvenir.* 1 + 1 + 1 q.h.

601-602-603. Studies and solos such as Weissenborn, Op. 8, Books I and II; Jancourt, *Studies,* Books I and II; Bakaleinikoff, *Ballad;* Weissenborn, *Capriccio.* 1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Bassoon 507-508-509. 1 + 1 + 1 q.h.

801-802-803. Studies and solos of the level indicated for Bassoon 607-608-609. 1 + 1 + 1 q.h.

SAXOPHONE

500. To be elected by those who do not qualify for Saxophone 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. *The Art of Saxophone Playing,* L. Teal; Technique from L. Teal, *Saxophone Workbook:* tone studies, vibrato studies, articulation studies, major/minor scales, dominant-seventh arpeggios. Pares, *Daily Exercises and Scales.* Representative Studies including H. Klose, *25 Daily Exercises;* J. L. Small, *Rhythmical and Technical Studies;* H. Voxman, *Selected Studies;* M. Mule, *18 Studies after Berbiguier;* M. Perrin, *Exercises Transcendants.* Representative repertoire including Mule, *Classics for the Saxophone;* H. Eccles, *Sonata (viola da gamba);* G. F. Handel, *Sonata No. 3 (violin);* P. Creston, *Sonata;* J. Haydn, *Concerto (Oboe);* P. Lantier, *Sicilienne.* 3 + 3 + 3 q.h.

607-608-609. Technique including L. Teal, *Saxophonist Workbook;* Rascher, *158 Exercises;* G. Iasili, *Daily Exercises;* M. Mule, *53 Etudes,* Book I; M. Mule, *30 Exercises after Sousman;* Sellner, *Progressive Studies in Articulation;* H. Klose, *Exercises Journaliers;* H. Klose, *Etudes Genre et Mechanism;* M. Mule, *48 Etudes d'apres Ferling.* Representative repertoire including J. S. Bach, *VI Sonata (flute);* P. Bonneau, *Suite;* E. Bozza, *Pulcinella;* C. Debussy, *Rhapsodie pour Saxophone;* H. Badings, *Concerto;* H. Tomasi, *Ballade.* 3 + 3 + 3 q.h.

707-708-709. Technique to include review of all materials covered during first two years with emphasis on increasing technical facility. Representative etudes including S. Karg-Elart, *25 Capricien und Sonata;* E. Bozza, *Twelve Etudes - Caprices;* M. Mule, *53 Etudes,* Book II; M. Mule, *Etudes Varies.* Representative repertoire including E. Bozza, *Concertino;* D. Milhand, *Scaramouche;* H. Tomasi, *Concerto;* P. Bonneau, *Concerto;* Glazounov, *Concerto in E-flat.* 3 + 3 + 3 q.h.

807-808-809. Continued emphasis on technical facility in all keys. Greater emphasis on sight reading, new etudes, duets, trios, quartets of all periods and study of numerous chamber works. Representative etudes to include E. Bozza, *12 Etudes (Caprices);* A. Ameller, *Etudes Expressives;* M. Mule, *53 Etudes,* Book III; A. Massis, *6 Etudes.* Representative repertoire to include E. Bozza, *Improvisation et Caprice;* J. Ibert, *Concertino da Camera;* R. Bernier, *Homage A Sax;* P.

Bonneau, *Caprice en Form de Valse;* E. Bozza, *Piece Breve,* L. E. Larson, *Concerto.*
3 + 3 + 3 q.h.

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.

504-505-506. See Saxophone 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Saxophone 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Saxophone 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Saxophone 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Deville, *Universal Method for Saxophone;* Hovery, *Daily Exercises for Saxophone;* Hovey, *Daily Exercises for Saxophone;* Hovey, *First Book of Practical Studies;* Pores-Whistler, *Modern Pares Foundation Studies;* Klose, *25 Daily Exercises.* Representative repertoire including Voxman (ed.), *Concert and Contest Collection;* Teal (ed.), *Solos for Saxophone Players;* Bach, *Arioso.*
1 + 1 + 1 q.h.

601-602-603. DeVille, *Universal Method for Saxophone;* Skornicka, *Supplementary Studies;* Samie-Teal, *24 Easy Etudes from Samie;* Small, *27 Melodious and Rhythmical Exercises.* Representative repertoire including Debussy, *En Bateau;* Debussy, *La Fille Aux Cheveux De Lin;* Reutter, *Elegie.*
1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Saxophone 507-508.
1 + 1 + 1 q.h.

801-802-803. Studies and solos of the level indicated for Saxophone 607-608.
1 + 1 + 1 q.h.

TRUMPET

500. To be elected by those who do not qualify for Trumpet 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. 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 producton, 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. 3 + 3 + 3 q.h.

607-608-609. Concentration upon basic techniques; slurs, scales, chords, intervals, and single, double, and triple articulations in major and minor keys, using Arban's *Method;* Schlossberg, *Daily Drills and Studies;* Clarke, *Studies;* Sachse, *Transposition Studies; Orchestral Studies from the Symphonic Repertoire.* Cantabile solos and other solos.
3 + 3 + 3 q.h.

707-708-709. Continuation of technical studies; Arban's *Method;* Schlossberg, *Studies;* Paudert, *Studies;* Brandt, *Orchestral Studies;* Petit, *Studies;* Sachse, *Transposition Studies; Orchestral Studies from the Symphonic Repertoire.* Sight-reading. Solos by Fitzgerald, Vidal, Barat, Goeyens, Deboeck, Busser, and others. 3 + 3 + 3 q.h.

807-808-809. Advanced studies by Clarke, Peitzsch, Laurent, Petit, Charlier; Sachse, *Transposition Studies; Orchestral Studies from the Symphonic Repertoire.* Sight reading. Solos. Concertos by Haydn, Vidal, Williams, Brandt, Delacroix. Sonatas by Hindemith and Tuthill. Senior recital.
3 + 3 + 3 q.h.

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.

504-505-506. See Trumpet 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Trumpet 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Trumpet 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Trumpet 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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 + 1 q.h.

601-602-603. 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 + 1 q.h.

701-702-703. 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 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who can qualify.
1 + 1 + 1 q.h.

FRENCH HORN

500. For those who do not qualify for French Horn 504 and 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. 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 + 3 q.h.

607-608-609. 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 + 3 q.h.

707-708-709. Continuation of technical studies, using Alphonse, Pottag, Gallay. Transposition and sight reading. Solos of grade IV difficulty. 3 + 3 + 3 q.h.

807-808-809. Advanced studies, including studies by Pottag, Gallay, Alphonse. Transposition and sight reading. Grade V and VI solos. Senior recital. 3 + 3 + 3 q.h.

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.

504-505-506. See French Horn 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See French Horn 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See French Horn 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See French Horn 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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 + 1 q.h.

601-602-603. Horner, *Studies.* Continued stress upon fundamentals of grade I. Scale studies in major and minor keys. Extension of range. Selected cantabile solos.
1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for French Horn 507-508-509.
1 + 1 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who can qualify.
1 + 1 + 1 q.h.

TROMBONE

500. For those who do not qualify for Trombone 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. 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. All major scales in eighth notes; introduction to tenor clef; sight reading; study materials by Rochut, Blume, Mueller, and Ostrander. Cantabile solos by Barat, Telemann, David, Henry Smith solo collection and other solos of grade III and IV difficulty.
3 + 3 + 3 q.h.

607-608-609. Continuation of technical studies. All major and minor scales with any articulation in eighth notes. Introduction to alto clef; sight reading; Solos of grade III and IV difficulty including solos by Sanders, McKay, Handel, and Marcello.
3 + 3 + 3 q.h.

707-708-709. Continuation of basic technical studies with materials by Rochut, Blume, Lafosse, Kopprasch. All scales and arpeggios in any articulation in eighth notes. Introduction to orchestral excerpts using collections by Brown, Stoneberg, Bertold, and Menken. Solos of grade IV and V difficulty including solos by Rimsky-Korsakov, Jacob, Boda, Stojowski, and Bozza. 3 + 3 + 3 q.h.

807-808-809. Advanced studies by Rochut, Kahila, Blazhevich, and Lafosse. Continuation of orchestral excerpts. Solos by J. S. Bach, K. P. E. Bach, Hindeman, Serocki, Hartley, White, and other solos of grade V and VI difficulty. Senior recital.
3 + 3 + 3 q.h.

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.

504-505-506. See Trombone 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Trombone 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Trombone 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Trombone 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Studies to develop embouchure, attack, release, breath control, tone quality, flexibility, knowledge of positions. Studies by Cimera, Hovey, Endressen. Selected cantabile solos. 1 + 1 + 1 q.h.

601-602-603. Continuation of development of skills stressed in 500 level courses. Scale studies, stressing legato and staccato articulation. Extension of range. Studies by Mueller, Cimera, Arban. Study of cantabile solos for development of legato-cantabile style. 1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Trombone 507-508-509. 1 + 1 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who can qualify. 1 + 1 + 1 q.h.

TUBA

500. For those who do not qualify for Tuba 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. The development of fundamental skills, such as tone production, embouchure, breath control, flexibility, and legato and staccato articulations. Major scales in eighth notes. Studies by Cimera, Eby, Arban, Rochut, and Hejda; Sight reading; Cantabile solos of grade III difficulty including Wekselblatt collection, works by Purcell, Beethoven, and Bach. 3 + 3 + 3 q.h.

607-608-609. Studies by Kopprasch, Arban, Rochut, and Vasiliev. All major and minor scales in eighth notes; sight readings; solos of grade III and IV difficulty including works by Lebedev, Marcello, Hartley, Bach, Frackenpohl, and others. 3 + 3 + 3 q.h.

707-708-709. Continuation of technical studies. Materials by Blazhevich, Vasiliev, Rochut, Bernard and others. All scales and arpeggios in eighth notes; solos of grade IV and V difficulty by Hindemith, Beversdorf, Vaughan Williams, and horn solos by Strauss and Mozart. 3 + 3 + 3 q.h.

807-808-809. Continuation of technical studies. Emphasis on orchestral excerpts collected by Brown, Stoneberg, and Sear. Solos of grade V and VI difficulty. 3 + 3 + 3 q.h.

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.

504-505-506. See Tuba 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Tuba 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Tuba 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Tuba 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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, Hovey. Cantabile solos. 1 + 1 + 1 q.h.

601-602-603. Continuation of development of skills stressed in grade I. Scale and chord studies. Extension of range. Studies by Eby, Arban, Hovey. Cantabile solos. 1 + 1 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Tuba 507-508-509. 1 + 1 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who qualify. 1 + 1 + 1 q.h.

BARITONE HORN

500. For those who do not qualify for Baritone Horn 504 or 507. This course may be repeated. 1 q.h.

Major Courses

507-508-509. 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. All major scales in eighth notes; knowledge of bass, treble and tenor clefs; sight reading; study materials by Rochut, Blume, Mueller,

and Arban. Cantabile solos by Barat, Telemann, David, Henry Smith solo collection and other solos of grade III and IV difficulty.
3 + 3 + 3 q.h.

607-608-609. Continuation of technical studies. All major and minor scales in eighth notes with any articulations. Sight reading; solos of grade III and IV difficulty including works by Sanders, McKay, Handel, and Marcello. 3 + 3 + 3 q.h.

707-708-709. Continuation of basic technical studies with materials by Rochut, Blume, Lafosse, Kopprasch. All scales and arpeggios in any articulation in eighth notes. Solos of grade IV and V difficulty including works by Rimsky-Korsakov, Jacob, Boda, Stojowski.
3 + 3 + 3 q.h.

807-808-809. Advanced studies by Rochut, Kahila, Blazhevich, and Lafosse. Emphasis on band and orchestral excerpts. Solos of grade V and VI difficulty including works by Bach, Handel, Serocki, Hartley, Beasley, and White. 3 + 3 + 3 q.h.

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.

504-505-506. See Baritone Horn 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Baritone Horn 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Baritone Horn 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Baritone Horn 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. Studies to develop embouchure, attack, release, breath control, tone quality, flexibility, knowledge of positions. Studies by Cimera, Hovey, Endressen. Selected cantabile solos. 1 + 1 + 1 q.h.

601-602-603. 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 + 1 q.h.

701-702-703. Studies and solos of the level indicated for Baritone 507-508-509.
1 + 1 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who can qualify.
1 + 1 + 1 q.h.

PERCUSSION

500. To be elected by those who do not qualify for Percussion 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507-508-509. 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: melleting, roll, scales, arpeggios. Peterson, *Rubank Elementary Method;* graded violin, saxophone, and clarinet exercises.
3 + 3 + 3 q.h.

607-608-609. Snare drum: Moeller, *Rudimental Solos;* Wilcoxon, *Rudimental Swing.* Foot studies for bass drum. Gardner, *Postgraduate 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 + 3 q.h.

707-708-709. 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 petal, pedal effects, glissandi. Gardner, Sietz, Cross, and Zettleman methods.
3 + 3 + 3 q.h.

807-808-809. 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 + 3 q.h.

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.

504-505-506. See Percussion 507-508-509. 2 + 2 + 2 q.h.

604-605-606. See Percussion 607-608-609. 2 + 2 + 2 q.h.

704-705-706. See Percussion 707-708-709. 2 + 2 + 2 q.h.

804-805-806. See Percussion 807-808-809. 2 + 2 + 2 q.h.

Minor Courses

501-502-503. 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 + 1 q.h.

601-602-603. 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 + 1 q.h.

701-702-703. 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 + 1 q.h.

801-802-803. Continued on a more advanced level. For those who can qualify. 1 + 1 + 1 q.h.

THEORY AND COMPOSITION

510-511-512. *Theory I.* A unified course of study consisting of ear-training, sight-singing, and keyboard and written harmony, using simple chord construction. Formal and harmonic analysis of simple compositions. Meets five hours a week. 4 + 4 + 4 q.h.

610-611-612. *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 503-504-505 with grade of C or better. 4 + 4 + 4 q.h.

513-514-515. *Composition A.*

613-614-615. *Composition B.*

713-714-715. *Composition C.*

813-814-815. *Composition D.*

Organized on a progressive basis, beginning with exercises in the creative use of the materials of music leading directly into free composition for a variety of media. Extensive analysis of the music of recognized masters. By the end of the fourth year the student will have composed songs; works for solo instruments, singly and in combination; choral music; and a large-scale composition, such as a string quartet or a sonata for piano alone or with another instrument. Selections from the student's works performed in a recital of at least an hour's duration. Prereq. or concurrent: Music 503-504-505, 603-604-605. 3 q.h. each

651-652. *Elementary Sight-Singing and Ear-Training.* A course designed to provide additional work in sight-singing and ear-training for students who want to improve their ability to recognize intervals, chords, melodic and rhythmic patterns and harmonic progressions. Class meets four hours a week. 3 + 3 q.h.

751. *Analytical Techniques.* Analysis of representative repertoire from the Renaissance, Baroque, Classical, Romantic and Contemporary periods. 3 q.h.

753. *Counterpoint I.* Study of the medieval modes; harmonic, melodic, rhythmic, and contrapuntal aspects of the sixteenth-century vocal polyphony. One recitation a week is devoted to sight-singing and ear-training in the style of the period, with special emphasis on the works of Palestrina and Lassus. Prereq.: Music 612. 3 q.h.

754. *Counterpoint II.* Study of the eighteenth-century contrapuntal technique. Analysis of the works of Bach, culminating in composition of two- and three-part inventions by the student. Class meets three times a week. Prereq.: Music 612. 3 q.h.

807. *Orchestration.* A study of the instruments of the modern orchestra, their tone color individually and in combination. Writing and arranging for them singly, in groups, and in full score. Prereq.: Music 612. 3 q.h.

808. *Band Arranging.* Same as Music 807 except that this course is concerned with the symphonic band. Prereq.: Music 612. 3 q.h.

820-821-822. *Composition.* 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. Prereq.: Music 751. 2 + 2 + 2 q.h.

830. *Materials of Twentieth Century Music.* A study of the various elements of twentieth century composition, including melody, harmony, rhythm, texture, and form. Prereq.: Music 612. 3 q.h.

851-852. *Advanced Sight-Singing and Ear-Training.* Advanced training of student's sense of pitch, rhythm, and tonal memory. Harmonic, melodic, and rhythmic dictation; music reading. Extensive work in difficult tonal and rhythmic patterns. Four class ses-

sions a week. Prereq.: Music 603-604-605 or satisfactory achievement on a placement test given by the teacher. 3 + 3 q.h.

MUSIC HISTORY AND LITERATURE

709, 710, 711. *History and Appreciation of Art and Music: General.* Identical with Art 709, 710, 711. 3 + 3 + 3 q.h.

740. *Piano Literature.* The study and interpretation of the standard piano literature from a training as well as a performance viewpoint. Representative literature from the earliest keyboard works to the most recent publications is included. 3 q.h.

780-781-782. *Music History and Literature.* A study of music from earliest times to the present with special reference to the relation of the history of music to that of other arts and to the political and religious history of the corresponding period. The orientation of musical literature to the periods in which it was written and the style of individual composers are also stressed. 3 + 3 + 3 q.h.

869. *Organ Literature and Service Playing.* A study of the representative literature of the organ, with an emphasis on the service playing of hymns, anthems, and solos. The fundamentals of improvisation, modulation, and transposition. 3 q.h.

871. *Baroque Music.* Trends in musical thought and stylistic developments during the period 1600-1750. A survey of the literature of the time: opera from Monteverdi to Handel; keyboard and instrumental works; significant choral and orchestral works, etc. Prereq.: Music 612 and 782. 3 q.h.

872. *Eighteenth-Century and the Viennese Classical School.* Musical developments from the decline of the Baroque to the turn of the century; stylistic elements contributing to the rise of classicism and culminating in the works of Mozart, Haydn, and Beethoven. Prereq.: Music 612 and 782. 3 q.h.

874. *19th Century Romantic Period.* Musical developments from Schubert through Wagner; aesthetic, formal, and technical trends with special emphasis on nationalism and the music drama. Representative works of Schumann, Berlioz, Brahms, etc. will be studied. Prereq.: Music 612 and 782. 3 q.h.

875. *Contemporary Music.* Study of musical conditions existing at the end of the nineteenth century: new aesthetics, impressionism, expressionism, neo-classicism etc., and the musical techniques associated with them. Principal composers of the twentieth century including Bartok, Stravinsky, Debussy, Schoenberg, Prokofieff, and others, and a selected list of their chief masterworks are studied. Prereq.: Music 612 and 782. 3 q.h.

879. *Vocal Literature.* A study of vocal literature from all periods. Special emphasis on English language repertoire and on material especially suitable for high school students. Songs are prepared for performance in class. Three classes a week. 3 q.h.

SACRED MUSIC

761. *Hymnology.* The history of the hymn and the hymn tune; types of hymns and their uses; analysis and interpretation of hymns; evaluation of standard hymnals. 3 q.h.

762. *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. 3 q.h.

763. *Junior and Senior Choir Methods.* Organization, methods, child psychology, the child voice, and materials suitable for choirs; the organization and motivation of the volunteer choir; achieving balance, blend, intonation; interpretation of choral literature, program building, and methods; psychology in rehearsal. 3 q.h.

861. *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. 3 q.h.

863. *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. 3 q.h.

CONDUCTING

717. *Vocal Conducting Methods Ensemble.* A course in vocal conducting techniques and ensemble methods. Students make up the ensemble thereby providing a live situation. Ample opportunity for practice in conducting is provided. Materials suitable for use in secondary schools are used and discussed. Three class sessions a week. 3 q.h.

718. *Instrumental Conducting Methods Ensemble.* A course in instrumental conducting techniques and ensemble methods. Students perform on minor instruments, thereby providing an ensemble with ample opportunity for practice in conducting. Materials suitable for secondary schools are used and discussed. Three class sessions a week. Prereq.: Music 717. 3 q.h.

719. *Advanced Choral Conducting.* Advanced conducting technique as it applies to

choral groups; rehearsal practices; choral techniques; special choral problems. Effort is made to enlarge the student's expressive resources as a conductor, and to develop his ability to discover the implications of the score. Three class sessions a week. Practical work with chorus. Sacred music majors take special work in sacred literature for extra credit. Prereq.: Music 718. 3 q.h.

720. *Advanced Instrumental Conducting.* Advanced baton technique and rehearsal techniques for instrumental ensembles. Score-reading, direction of bands and orchestras. Three class sessions a week. Prereq.: Music 718. 3 q.h.

MUSIC EDUCATION

521. *Introduction to Music Fundamentals.* Development of skill in reading music through singing, conducting, and elementary keyboard experience. For non-music majors. 3 q.h.

525-526-527-528. *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 + 1 q.h.

621. *Music Literature and Appreciation.* A survey course with emphasis on the development of listening techniques. Music of the past and present studies as a reflection of its social and cultural milieu. For non-music majors. Prereq.: Music 521. 3 q.h.

625-626-627. *String Methods.* Like Music 525-526-527, but for string instruments. Meets two hours a week. 1 + 1 + 1 q.h.

635-636-637. *Diction (Phonetics).* A course designed to assist singers in diction problems in English and foreign language song literature. The course makes use of the International Phonetic Alphabet, and begins with problems in English diction, carrying over basic principles to the study of Italian, German, and French diction. Three class sessions a week. 2 + 2 + 2 q.h.

721. *Music Education for Elementary Teachers.* Discussion and demonstration of repertoire, techniques and teaching aids required for teaching music in the elementary school. Prereq.: Music 621 and admission to the School of Education. 3 q.h.

725-726-727. *Brass Methods.* Like Music 525-526-527, but for brass instruments. Meets two hours a week. 1 + 1 + 1 q.h.

728. *Percussion Methods.* Like Music 525-526, but for percussion instruments. Two hours a week. 1 q.h.

823. *Music Teaching in the Elementary School.* A study of the role of music in the life of the child. An examination of principles, repertoire, and techniques of teaching. Prereq.: Admission to the School of Education 3 q.h.

824. *Junior and Senior High School Vocal Methods.* Applied vocal techniques in a group setting. Methods of instruction for adolescent voices. Repertoire for the adolescent soloist. Prereq.: Admission to the School of Education. 3 q.h.

825. *Music Teaching in the Secondary School.* Methods of organizing and conducting instrumental and vocal classes, bands, orchestras, and choruses in the public schools. Special areas and devices unique to music teaching are surveyed in detail. Prereq.: Admission to the School of Education. 3 q.h.

839. *Marching Band Techniques.* Organizing and conducting the marching band. Gridiron charting and marching procedures with a study of precision drill, formations, and pageantry; instrumentation and arranging for field playing. 3 q.h.

848-849-850. *Piano Pedagogy.* The methods, materials, and special problems involved in the teaching of piano. Supervised practice teaching. 1 + 1 + 1 q.h.

CURRICULUMS

Curriculums for the Degree of Bachelor of Music

Piano Major

Designed for the student primarily interested in performance and/or in teaching (other than in public schools).

First Year	Hrs.
Applied major 507-508-509	9
Applied minor 501-502-503	3
Mus. Theory 510-511-512	12
Ensemble (Band, Orchestra, or Choir)	3
Comm. 525-526-527	12
Soc. Sci. electives	8
H & PE M, C or W	3
	50

Second Year	Hrs.
Applied major 607-608-609	9
Applied minor 601-602-603	3
Mus. Theory 610-611-612	12
Mus. Hist. & Lit. 780-781-782	9
Ensemble (Band, Orchestra, or Choir)	3
Soc. Sci. electives	12
H & PE Activity	3
Accompanying	3
	54

Third Year	Hrs.
Applied major 707-708-709	9
Applied minor 701-702-703	3
Mus. 751 Analytical Tech.	3
Mus. 717 Voc. Cond. Mthd. Ensemble	3
Mus. 753-754 Counterpoint I & II	6
Mus. 651-652 Sight Sing. & Ear Trng.	6
Mus. 740 Piano Lit.	3
Mus. 718 Instr. Cond. Mthd. Ensemble	3
Mus. 719 or 720 Adv. Cond.	3
Ensemble (Band, Orchestra, or Choir)	3
Science electives	8
Accompanying	3
	53

Fourth Year	Hrs.
Applied major 807-808-809	9
Applied minor 801-802-803	3
Mus. 807 Orchestration	3
Music elective	6
Mus. 820-821-822 Composition	6
Mus. Hist. & Lit. elective	9
Physics of Sound 608	4
Science elective	4
Electives	5
Senior Recital 899	1
Piano Pedagogy	3
	53

Instrumental Major

First Year	Hrs.
Applied major 507-508-509	9
Applied minor 501-502-503	3
Mus. Theory 510-511-512	12
Ensemble (Band, Orchestra, or Choir)	3
Comm. 525-526-527	12
Soc. Sci. electives	12
H & PE - M, C or W	3
	54

Second Year	Hrs.
Applied major 607-608-609	9
Applied minor 601-602-603	3
Mus. Theory 610-611-612	12
Mus. Hist. & Lit. 780-781-782	9
Ensemble (Band, Orchestra, or Choir)	3
Soc. Sci. electives	12
H & PE Activity	3
	51

Third Year	Hrs.
Applied major 707-708-709	9
Applied minor 701-702-703	3
Mus. 751 Analytical Tech.	3
Mus. 717 Voc. Cond. Mthd. Ensemble	3
Mus. 753-754 Counterpoint I & II	6
Mus. 651-652 Sight Sing. & Ear Trng.	6
Mus. Hist. & Lit. elective	3
Mus. 718 Instr. Cond. Mthd. Ensemble	3
Mus. 719 or 720 Adv. Cond.	3
Ensemble (Band, Orchestra or Choir)	3
Science electives	8
Music elective	3
	53

Fourth Year	Hrs.
Applied major 807, 808, 809	9
Applied minor 801, 802, 803	3
Mus. 807 Orchestration	3
Mus. 809 Band Arranging	3
Mus. 820, 821, 822 Composition I	6
Mus. Hist. & Lit. elective or Symphonic Lit. 827-828	9
Ensembles	3
Philosophy & Religious Studies elective or Humanities	4
Electives	8
Senior Recital 899	1
	49

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.

Entrance Requirements. To enter the four-year degree course in voice, the student should be able to sing standard songs and the simpler classics in good English on pitch with correct phrasing and musical intelligence. He should also demonstrate his ability to read a simple song at sight and a knowledge of the rudiments of music. Some knowledge of piano is required.

This curriculum lists 27 hours in foreign languages. If the student has two units of high school French, German or Italian he may substitute nine hours of electives.

Curriculum for the Degree of Bachelor of Music with Major in Voice

First Year	Hrs.
Applied major 507-508-509	9
Applied minor 501-502-503	3
Mus. Theory 510-511-512	12
Ensemble (Choir)	3
Comm. 525-526-527	12
Italian 501-502-503	9
H & PE, M.C. or W.	3
	51

Second Year	Hrs.
Applied major 607-608-609	9
Applied minor 601-602-603	3
Mus. Theory 610-611-612	12
French 501-502-503	9
Ensemble (Choir)	3
Soc. Sci. electives	12
H & PE Activity	3
Science elective	4
	55

Third Year	Hrs.
Applied major 707-708-709	9
Applied minor 701-702-703	3
Mus. 717 Voc. Cond. Mthd. Ensemble	3
Mus. 718 Instr. Cond.	3
Mus. 719 Adv. Voc. Cond.	3
German 501-502-503	9
Mus. Hist. & Lit. 780-781-782	9
Soc. Sci. electives	8
Science electives	4
Ensemble (Choir)	3
	54

Fourth Year	Hrs.
Applied major 807-808-809	9
Applied minor 801-802-803	3
Mus. 751 Anal. Tech.	3
Mus. 753-754 Counterpoint I and II	6
Physics of Sound 608	4
Mus. 820, 821, 822 Composition	6
Mus. 807 Orchestration	3
Mus. 851-852 Sight Sing. & Ear Trng.	6
Science electives	4
Ensemble (Choir)	3
Mus. Hist. & Lit. elective	6
Senior recital	1
	54

Curriculum for the Degree of Bachelor of Music with Major in Composition

First Year	Hrs.
Applied major 504-505-506	6
Applied minor (voice) 501-502-503	3
Applied minor (strings)	3
Mus. Theory 510-511-512	12
Composition A 513-514-515	6
Ensembles (Band, Orchestra, or Choir)	3
Comm. 525-526-527	12
Soc. Stu. electives	8
	53

Second Year	Hrs.
Applied major 604-605-606	6
Applied minor (woodwinds)	3
Mus. theory 610-611-612	12
Composition B 613-614-615	6
Mus. Hist. & Lit. 780-781-782	9
Ensembles (Band, Orchestra, or Choir)	3
Soc. Stu. elective	4
Science elective	4
H & PE 509 M, C or W	3
H & PE Activity courses	3
	53

Third Year	Hrs.
Applied major 704-705-706	6
Applied minor (brass)	3
Composition C, 713-714-715	6
Conducting 717-718-719	9
Counterpoint I & II 753-754	6
Soc. Stu. electives	12
Analytical Technics 751	3
Ensemble (Band, Orchestra, or Choir)	3
	48

Fourth Year	Hrs.
Applied major 804, 805, 806	6
Applied minor (Percussion)	1
Conducting 720	3
Mus. Theory, Hist. or Lit. elective	9
Mus.-Orchestration 807	3
Mus.-Band arranging 808	3
Mus. 851, 852, Sight Singing and Ear Training	6
Science Elective	4
Physics 608 (Sound)	4
Composition D 813, 814, 815	6
Ensemble (Band, Orch., or Chor.)	3
Recital 899	1
	49

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 graduate level.

First Year	Hrs.
Applied Major (Organ or Voice) 507, 508, 509	9
Applied Minor (Organ, Voice, or Piano) 501, 502, 503	3

Music Theory 510, 511, 512	12
Ensembles (Chor.)	3
Comm. 525-526-527	12
Social Studies electives	8
H. & P. E. 509 M, C, or W	3
H. & P. E. Activity courses	3
	53

Second Year	Hrs.
Applied Major 607, 608, 609	9
Applied Minor 601, 602, 603	3
Mus. Theory 610, 611, 612	12
Ensembles (Choir)	3
Science electives	12
Social Studies electives	12
	51

Third Year	Hrs.
Applied major 707, 708, 709	9
Applied minor 701, 702, 703	3
Mus. 717, Vocal Conducting	3
Mus. 761, Hymnology	3
Mus. 763, Choir Methods	3
Mus. Hist. & Lit. 780, 781, 782	9
Ensembles (Choir)	3
Accompanying	3
Phil. & Rel. Studies or Church Hist. I & II	9
Elective	3
Mus. 753, 754, Counterpoint I & II	6
	54

Fourth Year	Hrs.
Applied major 807, 808, 809	9
Applied minor 801, 802, 803	3
Physics 608 (Sound)	4
Mus. 751, Analytical Tech.	3
Mus. 762, Gregorian Chant	3
Mus. 820, 821, 822 Composition	6
Mus. 719, Adv. Choral Cond.	3
Mus. 863, Choral Lit.	3
Mus. 861, Hist. of Sacred Music	3
Mus. 869, Organ Lit. & Service Playing	3
Ensembles (Choir)	3
Accompanying	3
Elective	3
Recital 899	1
	50

Music Education Major: Instrumental, Vocal, Piano, or Organ

The following curriculums meet the requirements for the special provisional teaching certificate in Ohio. They total 207 to 217 hours. 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 fulfill 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 must complete one applied music major of 24 quarter hours (courses 504-505-506, 604-605-606, 704-705-706, 804-805-806 in any one instrument or in voice).

Curriculum for the Degree of Bachelor of Music with the Major in Music Education

Music Education Major: Instrumental

First Year	Hrs.
Applied Major 504, 505, 506	6
Applied Minor 501, 502, 503	3
Mus. Theory 510, 511, 512	12
Mus. Woodwind 525, 526, 527	3
Ensembles (Band or Orch.)	3
Comm. 525-526-527	12
Social Studies electives	8
H. & P. E. activities	3
	50

Second Year	Hrs.
Applied Major 604, 605, 606	6
Applied Minor 601, 602, 603	3
Mus. Theory 610, 611, 612	12
Mus. Strings 625, 626, 627	3
Mus. Hist. & Lit. 780, 781, 782	9
Ensembles (Band or Orch.)	3
Social Studies electives	12
H. & P. E. 509 W., C. or M.	3
Educ. 501, Introduction	3
	54

Third Year	Hrs.
Applied Major 704-705-706	6
Applied Minors	3
Mus. 823 First Six grades	3
Mus. 824 Jr. High Methods	3
Mus. 825 Sec. School Mus.	3
Mus. Brass 725, 726, 727	3
Conducting 717, 718, 720	9
Science electives	8
Ensemble (Band or Orch.)	3
Mus. Theory electives	6
Mus. Hist. & Lit. electives	3
	50

Fourth Year	Hrs.
Applied Major 804, 805, 806	6
Applied Minors	2
Science electives	4
Mus. Percussion 728	1
Educ. 704 Lab.	3
Educ. 706 Principles	4

Educ. 708 Sociology	3
Physics 608 Sound	4
Psych. 709, Educational	3
Ensembles (Band or Orch.)	3
Recital 899	1
Educ. 843, Student Teaching	15
	49

Curriculum for the Degree of Bachelor of Music with the Major in Music Education: Voice

First Year	Hrs.
Applied Major 504-505-506	6
Applied Minor 501-502-503	3
Mus. Theory 510-511-512	12
Mus. Woodwinds 525-526-527	3
Ensemble (Choir)	3
Comm. 525-526-527	12
Social Studies electives	8
H. & P. E. activities	3
	50

Second Year	Hrs.
Applied Major 604-605-606	6
Applied Minor 601-602-603	3
Mus. Theory 610-611-612	12
Mus. Strings 625-626-627	3
Mus. Diction 635-636-637	6
Ensemble (Choir)	3
Science electives	8
Educ. 501 Introduction	3
Social Studies elective	4
H. & P. E. 509 M., W., or C.	3
	51

Third Year	Hrs.
Applied Major 704-705-706	6
Mus. Conducting 717-718-719	9
Mus. Brass 725-726-727	3
Mus. Ed. 823-824-825	9
Mus. Hist. & Lit. 780-781-782	9
Social Studies electives	8
Ensemble (Choir)	3
Educ. 704 Lab.	3
Theory elective	3
Mus. Percussion 728	1
	54

Fourth Year	Hrs.
Applied Major 804-805-806	6
Ensemble (Choir)	3
Mus. Hist. & Lit. elective	3
Mus. Vocal Lit.	3
Educ. 706 Principles	3
Educ. 708 Sociology	3
Educ. 843 Student Teaching	15
Mus. Theory elective	3
Science elective	4
Recital 899	1
Physics 608, Sound	4
	48

Curriculum for the Degree of Bachelor of Music with the Major in Music Education: Piano or Organ

First Year	Hrs.
Applied Major 504-505-506	6
Applied Minor (Voice) 501-502-503	3
Mus. Theory 510-511-512	12
Mus. Woodwinds 525-526-527	3
Ensembles (Band, orch., or choir)	3
Comm. 525-526-527	12
Social Studies electives	8
H. & P. E. activity courses	3
H. & P. E. 509 M., C., or W.	3
	53

Second Year	Hrs.
Applied Major 604-605-606	6
Applied Minor (Voice) 601-602-603	3
Mus. Theory 610-611-612	12
Mus. Brass 725-726-727	3
Mus. Strings 625-626-627	3
Mus. Accompanying	3
Mus. Ensembles (Band, orch., or choir)	3
Social Studies electives	12
Educ. 501 Introduction	3
Science elective	4
Mus. Percussion 728	1
	53

Third Year	Hrs.
Applied Major 704-705-706	6
Music elective	3
Mus. Conducting 717-718-719 (or 720)	9
Mus. Hist. & Lit. 780-781-782	9
Mus. Theory elective	6
Mus. Educ. 823-824-825	9
Accompanying	3
Ensemble (Band, orch., or choir)	3
Educ. 704 Lab.	3
Science elective	4
	55

Fourth Year	Hrs.
Applied Major 804-805-806	6
Music electives	10
Mus. Piano Literature	3
Mus. Hist. & Lit. elective	3
Mus. Piano Pedagogy 848-849-850	3
Mus. Recital 899	1
Science elective	4

Physics 608, Sound	4
Educ. 706 Principles	3
Educ. 708 Sociology	3
Educ. 843 Student Teaching	15
	55

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 the 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 in the section concerned with that school.

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 100 quarter hours. A possible four-year curriculum consisting of 190 quarter hours is listed for the student's convenience below.

First Year	Hrs.
Applied Major 504-505-506	6
Applied Minor (Piano) 501-502-503	3
Mus. 510-511-512 Theory	12
Mus. Woodwinds 525-526-527	3
Ensemble (Band, orch., or choir)	3
Comm. 525-526-527	12
Social Studies electives	8
H. & P. E. activity courses	3
H. & P. E. 509 M., C., or W.	3
	53

Second Year	Hrs.
Applied Major 604-605-606	6
Applied Minor (Piano) 601-602-603	3
Mus. Theory 610-611-612	12
Mus. Brass 725-726-727	3
Mus. Strings 625-626-627	3
Accompanying	3
Ensemble (Band, orch., or choir)	3
Education 501, Introduction	3
Social Studies elective	12
Science elective	4
	52

Third Year	Hrs.
Applied Major 704-705-706	6
Mus. elective	3
Mus. 728 Percussion	1
Mus. 717-718-719 (or 720)	9
Mus. 780-781-782 Hist. & Lit.	9
Mus. Theory elective	6
Mus. Educ. 823-824-825	9
Accompanying	3
Ensemble (Band, orch., or choir)	3
Educ. 704 Lab.	3
Science elective	4
	56

Fourth Year	Hrs.
Applied Major 804-805-806	6
Mus. electives	10
Mus. 869 Organ Lit. & Service Playing	3
Mus. Hist. & Lit. elective	3
Ensemble (Band, orch., or choir)	3
Mus. 899 Recital	1
Physics 608 Sound	4
Science elective	4
Educ. 706 Principles	3
Educ. 708 Sociology	3
Educ. 843 Student Teaching	15
	55

REQUIREMENTS FOR THE DEGREE

Bachelor of Arts
with Major in Applied Music

First Year	Hrs.
Applied Major 505-506-507	6
Mus. Theory I 510-511-512	12
Comm. 525-526-527	12
Social Studies electives	8
Ensembles (Band, Orches., Choir)	3
H. & P. E. Activity courses	3
H. & P. E. 509 M., C., W.	3
	47

Second Year	Hrs.
Applied Major 605-606-607	6
Mus. Theory II 610-611-612	12
Social Studies Elective	12
Foreign Language	9-20
Ensemble (Band, Orch., Choir)	3
Physics 608, Sound	4
	46-57

Third Year	Hrs.
Applied Major 705-706-707	6
Mus. History 780-781-782	9
Mus. Elective in Theory	6
Science Elective	12
Ensemble (Band, orch., choir)	3
English elective (600 or above)	6
Electives (700- or 800-level)	6
	48

Fourth Year	Hrs.
Applied Major 805-806-807	6
Mus. Hist. and Lit. elective	6
Electives (700- or 800-level)	37
	49

REQUIREMENTS FOR THE DEGREE

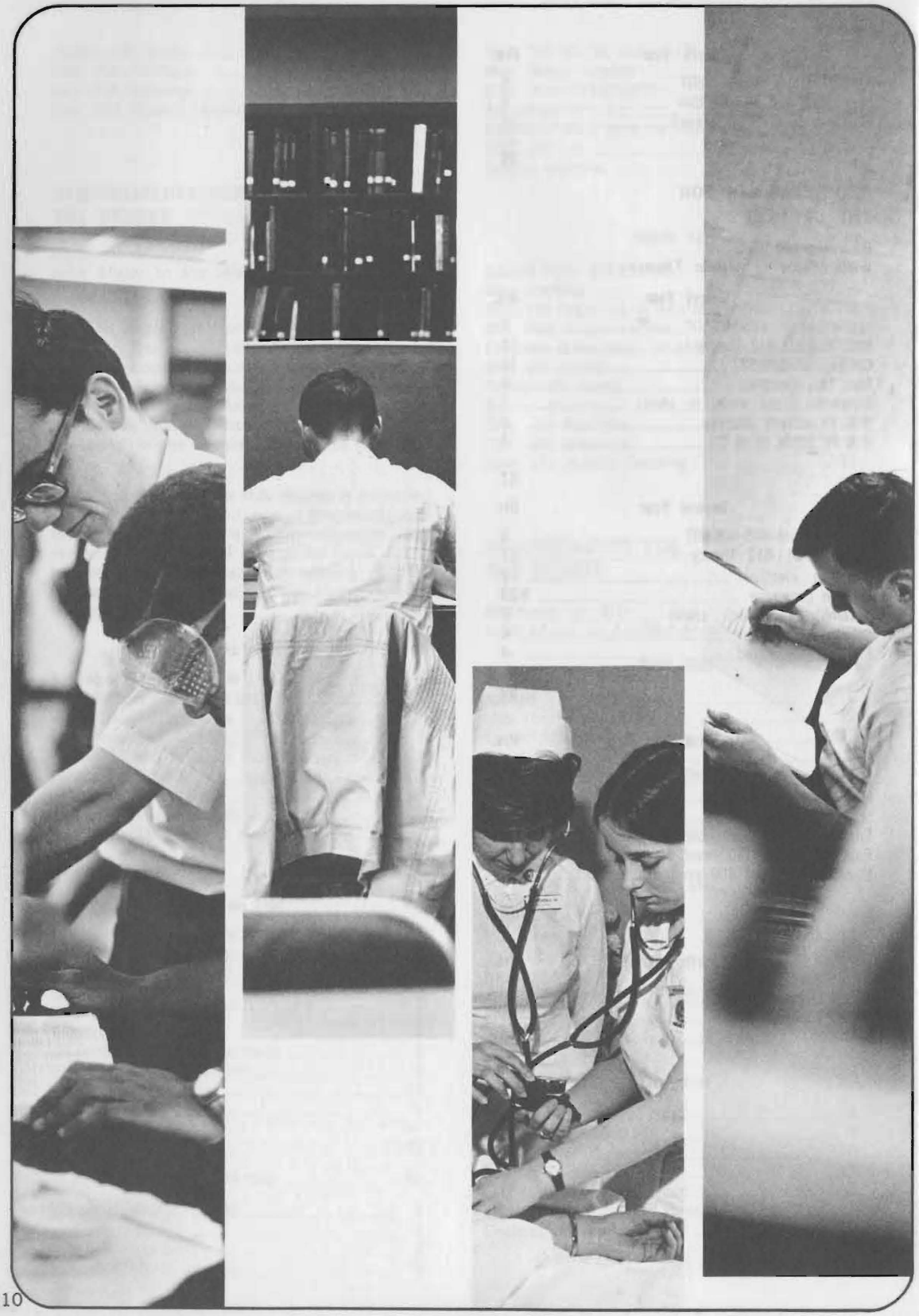
Bachelor of Arts with Major in Music Theory

First Year	Hrs.
Applied Major 505-506-507	6
Mus. 510-511-512 Theory I	12
Comm. 525-526-527	12
Soc. Stu. electives	8
Ensemble (Band, orch., or choir)	3
H & PE activity courses	3
H & PE 509M, W or C	3
	47

Second Year	Hrs.
Applied major 605-606-607	6
Mus. 610-611-612 Theory II	12
Soc. Stu. electives	12
Foreign Language	9-20
Ensemble (Band, orch., choir)	3
Science elective	4
Physics 608 Sound	4
	50

Third Year	Hrs.
Mus. Hist. 780-781-782	9
Mus. Theory elective	6
Science elective	4
Ensemble (Band, orch., choir)	3
English elective (600-level or higher)	6
Electives (700- or 800-level)	20
	48

Fourth Year	Hrs.
Music Lit. elective	9
Music Theory elective	10
Electives	26
	45



TECHNICAL AND COMMUNITY COLLEGE

Nicholas Paraska, Dean

ORGANIZATION AND DEGREES

OBJECTIVES

It is the aim of the Technical and Community College to further the Youngstown State University objective of making higher education available to all by:

1) providing technical education at the semi-professional level through a variety of two-year programs;
2) providing programs of study in business education and secretarial studies, corrections, and law enforcement administration leading to a baccalaureate degree; and
3) providing a continuing education program of conferences, institutes, seminars, workshops, and non-credit courses to meet the needs of the community.

The Technical and Community College has seven departments: Business Education and Secretarial Studies, Business Technology, Continuing Education, Criminal Justice, Engineering Technology, Nursing, and Special Studies.

Two-year programs are offered: in associate in arts leading to the degree of Associate in Arts; in accounting technology, advertising technology, business administration technology, commercial art technology, general administration technology, merchandising technology, public administration technology, secretarial studies, and transportation management technology leading to the degree of Associate in Applied Business; and in civil engineering technology, computer technology, electrical engineering technology, food service technology, mechanical engineering technology, metallurgical engineering technology, nursing, and police science technology leading to the degree of Associate in Applied Science.

Courses are offered leading to the bachelor's degree with majors in business education, corrections, law enforcement administration, and secretarial studies.

Continuing Education programs including conferences, institutes, seminars, workshops, and a variety of non-credit courses are offered to meet the needs of the area.

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

1. The pre-college or preparatory courses for each degree as covered in the General Requirements and Regulations section.

2. The courses and other requirements to be completed in the University as explained in the General Requirements and Regulations section. The exact course requirements are given in the curriculum for each program.

COURSES OF INSTRUCTION AND CURRICULUMS

DEPARTMENT OF BUSINESS EDUCATION AND SECRETARIAL STUDIES

Associate Professor Turner (chairman); Instructors Boggess, Hille, Phillips, Sebestyen, and Walton.

The courses in Business Education and Secretarial Studies are designed for students interested in secretarial positions and more advanced types of office work, and for education students with a teaching field in business education.

After completing the two-year program, a student who wishes to complete a four-year program may complete the requirements for a bachelor's degree in business education or secretarial studies.

A suggested curriculum leading to the Associate in Applied Business degree with a major in secretarial studies is included following the course descriptions. Candidates for the Bachelor of Science in Education degree should consult the School of Education section of the catalog. Candidates for the Bachelor of Science in Business Administration degree, with a major in secretarial studies, should consult the School of Business Administration.

Lower Division Courses

500. *Typewriting for Beginners.* The basic principles of touch typewriting. Students who take this course will add three quarter hours to degree requirements. 3 q.h.

504. *Shorthand for Beginners.* The fundamental principles of the Gregg system of shorthand are presented. (Students who take this course will add four quarter hours to degree requirements.) 4 q.h.

511. *Typewriting.* Application of typewriting skill to business problems with emphasis on techniques and speed building. Prereq.: BE & SS 500 or equivalent. 3 q.h.

601. *Typewriting.* Advanced typewriting with emphasis on speed, accuracy, and refinement of techniques. Prereq.: BE & SS 511 or equivalent. 3 q.h.

604, 605, 606. *Secretarial Accounting I, II, III.* Designed to give students a foundation in the theory and practice of accounting principles as these principles apply to single proprietorship, partnership, and corporations. 3 + 3 + 3 q.h.

604L. *Secretarial Accounting I Lab.* Actual accounting problem practice to parallel BE & SS 604. Prereq.: Concurrently with BE & SS 604. 1 q.h.

607-608. *Shorthand Dictation I-II.* Beginning dictation and transcription. A speed of 60 words a minute should be attained in the first course, and a speed of 80 words a minute in the second course. Prereq.: BE & SS 500 and 504, or equivalent. 3 + 3 q.h.

610. *Production Typewriting.* Intensive drill for speed and accuracy on typewriting production problems. Prereq.: BE & SS 511. 3 q.h.

617. *Business Machines I.* The operation of key-driven, rotary, printing, and electronic calculators with application to business problems. 3 q.h.

618. *Business Machines II.* Building of skill in the operation of bookkeeping, transcribing, and duplicating machines and special typewriters. Prereq.: BE & SS 601. 3 q.h.

Upper Division Courses

701. *Dictation and Transcription.* For increased speed and accuracy in transcription from shorthand notes. Prereq.: BE & SS 511 and 608. 3 q.h.

702. *Shorthand Dictation III.* Emphasis on dictation speed, transcription accuracy, and

vocabulary building. A speed of 100 words a minute in dictation should be attained. Prereq.: BE & SS 608. 3 q.h.

703. *Shorthand Dictation IV.* Intensive drill on speed and accuracy in taking dictation and transcription. A dictation speed of 120 words a minute should be attained. Prereq.: BE & SS 703. 3 q.h.

705. *Specialized Dictation.* Dictation and transcription in specialized fields: law, medicine, etc. Prereq.: BE & SS 703. 3 q.h.

707, 708. *Business Law I, II.* The role of law in business. Case studies in contracts, agencies, negotiable instruments, bailments, sales, real and personal property, wills, partnerships, corporations, and insurance. 3 + 3 q.h.

709. *Business Communication.* The study of business vocabulary, spelling, punctuation, and correct word usage needed in shorthand transcription. The mechanics, psychology, and principles of effective letter and report writing. 5 q.h.

710. *Introduction to Data Processing.* A study of the vocabulary and media of data processing. Problems in procedures and applications of basic current uses. Prereq.: BE & SS 604. 3 q.h.

717. *Comprehensive Business Machines.* Designed to provide the student with a working knowledge of typical office machines with emphasis on the uses of these machines and teaching techniques. For business education students only. Prereq.: BE & SS 601. 3 q.h.

720. *Personal Relations in Business.* A study of the secretary in business; her effectiveness as related to her personality and to her concept of the fundamental purposes of business. Prereq.: Junior standing or permission. 4 q.h.

803. *Office Practice.* Application of theory to practice; typical office problems and discussion of office procedures. Prereq.: BE & SS 601. 3 q.h.

804. *Records and Records Management.* Fundamentals of record storage, retention, and management. Case studies and projects in various record systems in business. 2 q.h.

810. *Techniques in Teaching Typewriting.* Includes demonstration and practice of techniques of teaching typewriting with emphasis on the psychology of skill and currently accepted theories. Prereq.: BE & SS 511 and junior standing. 1 q.h.

CURRICULUM

Suggested Curriculum leading to the Degree of Associate in Applied Business

First Year	Hrs.
Bus. Org. 511 Introduction to Business	3
Comm. 525-526-527 Communications I-II-III	12
BE & SS 511, 601 Typewriting	6
Math. 531 Mathematics of Business	5
BE & SS 607, 608 Shorthand Dictation I, II	6
BE & SS 617, 618 Business Machines I, II	6
Soc. Sci. 501, 502, 503 Introduction I, II, III	9
H. & P.E. 509 Health Education	3
	50

Second Year	Hrs.
Psych. 501 General Psychology	3
BE & SS 709 Business Communications	5
BE & SS 610 Production Typewriting	3
BE & SS 604, 605, 606 Secretarial Accounting I, II, III	9
BE & SS 701 Dictation & Transcription	3
BE & SS 702, 703 Shorthand Dictation III, IV	6
BE & SS 803 Office Practice	3
BE & SS 804 Records & Records Management	2
BE & SS 707, 708 Business Law	6
Electives	6
	46
Total Credit Hours	96

DEPARTMENT OF BUSINESS TECHNOLOGY

Assistant Professor C. Painter (chairman).

All courses included in the business technology curriculums are listed under other departments.

CURRICULUMS

The following curriculums lead to the Associate in Applied Business degree.

ACCOUNTING TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Bus. Org. 511 Introduction to Business	3
Soc. Sci. 501 Introduction to Social Science	3
H. & P.E. 509 Health Education	3
	13

Second Quarter	Hrs.
Comm. 526 Communications II	4
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Psychology	3

Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
	15

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Acctg. 601 Elementary Accounting I or BE & SS 604 Secretarial Accounting I	3
BE & SS 604L Secretarial Accounting I Laboratory	1
Soc. Sci. 503 Introduction to Political Science	3
Mdsg. 624 Marketing	5
	15

Fourth Quarter	Hrs.
Acctg. 602 Elementary Accounting II or BE & SS 605 Secretarial Accounting II	3
Econ. 601 Principles of Economics	3
Mdsg. 625 Salesmanship	3
Bus. Org. 701 Law I	3
	12

Second Year

Fifth Quarter	Hrs.
Acctg. 603 Elementary Accounting III or BE & SS 606 Secretarial Accounting III	3
Econ. 602 Principles of Economics II	3
CPT 610 Fundamentals of Programming	4
Electives (Bus. Adm.)	3
	13

Sixth Quarter	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 711 Accounting Control and Decision Making	3
Bus. Org. 713 Report Writing	3
Econ. 603 Principles of Economics III	3
	13

Seventh Quarter	Hrs.
Acctg. 813 Federal Tax Theory	4
Acctg. 810 Statement Analysis	3
Bus. Org. 725 Fundamentals of Management	5
Electives (Bus. Adm.)	3
	15
Total Credit Hours	96*

ADVERTISING TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Bus. Org. 511 Introduction to Business	3
Art 510 Color & Design	3
Soc. Sci. 501 Introduction to Social Science	3
	13

Second Quarter	Hrs.
Comm. 526 Communications II	4
Adv. 627 Advertising Principles I	3
Soc. Sci. 502 Introduction to Economics	3
H. & P.E. Health Education	3
	13

Third Quarter	Hrs.
Adv. 628 Advertising Principles II	3
Soc. Sci. 503 Introduction to Political Science	3
Math. 531 Mathematics of Business	5
Psych. 501 Introduction to Psychology	3
	14

Fourth Quarter	Hrs.
Adv. 629 Advertising Procedures	3
Mdsg. 624 Marketing	5
	8

Second Year

Fifth Quarter	Hrs.
Adv. 710 Basic Public Relations	3
Adv. P.R. 725 Advertising Copywriting	4
Econ. 601 Principles of Economics	3
Mdsg. 625 Salesmanship	3
Bus. Org. 701 Law I	3
	16

Sixth Quarter	Hrs.
Adv. P.R. 727 Advertising Layout	4
Adv. 753 Introduction to Journalism	3
Adv. 814 Advertising Case Studies	3
Bus. Org. 712 Business Letters	3
Econ. 602 Principles of Economics	3
	16

Seventh Quarter	Hrs.
Adv. 731 Advertising Copy - Layout II	3
Adv. 811 Direct Mail Advertising	3
Adv. 815 Radio and Television Advertising	3
Econ. 603 Principles of Economics III	3
Electives (Bus. Adm.)	6
	15
Total Credit Hours	95*

* If Orientation 501 and 502 are required, add 6 quarter hours.

BUSINESS MANAGEMENT TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Bus. Org. 511 Introduction to Business	3
Soc. Sci. 501 Introduction to Social Science	3
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
	15

Second Quarter	Hrs.
Comm. 526 Communications II	4
Soc. Sci. 502 Introduction to Economics	3
Mdsg. 624 Marketing	5
Econ. 601 Principles of Economics	3
	15

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Soc. Sci. 503 Introduction to Political Science	3
Econ. 602 Principles of Economics II	3
Psych. 501 Introduction to Psychology	3
	12

Fourth Quarter	Hrs.
Econ. 603 Principles of Economics III	3
Bus. Org. 701 Law I	3
Bus. Org. 725 Fundamentals of Management	5
	11

Second Year

Fifth Quarter	Hrs.
Acctg. 601 Elementary Accounting I	3
Mdsg. 625 Salesmanship	3
Bus. Org. 705 Principles of Transportation	5
H. & P.E. 509 Health Education	3
	14

Sixth Quarter	Hrs.
Acctg. 602 Elementary Accounting II	3
Bus. Org. 720 Business Finance	4
Pol. Sci. 601 American National Government	3
Econ. 704 Economics and Social Statistics	3
Bus. Org. 730 Investment Analysis and Management	3
	16

Seventh Quarter	Hrs.
Acctg. 603 Elementary Accounting III	3
Bus. Org. 712 Business Letters	3
Bus. Org. 750 Human Behavior in Organization	4
Bus. Org. 724 Credit Management	3
	13
Total Credit Hours	96*

COMMERCIAL ART TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Art 510 Color & Design	3
Adv. 627 Advertising Principles I	3
Art 601 Beginning Drawing	3
	13

Second Quarter	Hrs.
Comm. 526 Communications II	4
Art 602 Drawing	3
Adv. 628 Advertising Principles II	3
Art 623 Advertising Art I	3
Soc. Sci. 501 Introduction to Social Science	3
	16

Third Quarter	Hrs.
Math. 531 Mathematics of Business	5
Art 624 Advertising Art II	3
Art 606 Beginning Painting	3
Adv. 629 Advertising Procedures	3
	14

Fourth Quarter	Hrs.
Mdsg. 624 Marketing	5
Psych. 501 Introduction to Psychology	3
Art 611 Printmaking	4
	12

Second Year

Fifth Quarter	Hrs.
Adv. P.R. 725 Advertising Copywriting	4
Art 625 Advertising Art III	3
Art 727 Advanced Advertising Art I	3
Art 513 Survey of Art	3
H. & P.E. 509 Health Education	3
	16

Sixth Quarter	Hrs.
Art 728 Advanced Advertising Art II	3
Mdsg. 625 Salesmanship	3
Soc. Sci. 502 Introduction to Economics	3
Bus. Org. 701 Law I	3
	12

* If Orientation 501 and 502 are required, add 6 quarter hours.

Seventh Quarter	Hrs.
Adv. P.R. 727 Advertising Layout	4
Art 729 Advanced Advertising Art III	3
Soc. Sci. 503 Introduction to Political Science	3
Elective (Bus. Adm.)	3
	13
Total Credit Hours	96*

GENERAL ADMINISTRATION TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Bus. Org. 511 Introduction to Business	3
Mdsg. 624 Marketing	5
	12

Second Quarter	Hrs.
Comm. 526 Communications II	4
Psych. 501 Introduction to Psychology	3
Soc. Sci. 501 Introduction to Social Science	3
H. & P.E. 509 Health Education	3
	13

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Soc. Sci. 502 Introduction to Economics	3
Math. 531 Mathematics of Business or Math. 542 Special Topics of Algebra	5
Geog. 519 Economic Geography	5
	16

Fourth Quarter	Hrs.
Bus. Org. 701 Law I	3
Mdsg. 625 Salesmanship	3
Soc. Sci. 503 Introduction to Political Science	3
Bus. Org. 712 Business Letters	3
	12

Second Year

Fifth Quarter	Hrs.
Acctg. 601 Elementary Accounting I	3
Econ. 601 Principles of Economics I	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 713 Report Writing	3
	14

Sixth Quarter	Hrs.
Acctg. 602 Elementary Accounting II	3
Econ. 602 Principles of Economics II	3
Bus. Org. 720 Business Finance	4
Electives (Bus. Adm.)	6
	16

Seventh Quarter	Hrs.
Acctg. 603 Elementary Accounting III	3
Econ. 603 Principles of Economics III	3
Bus. Org. 724 Credit Management	3
Bus. Org. 750 Human Behavior in Organization	4
	13
Total Credit Hours	96*

MERCHANDISING TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Mdsg. 624 Marketing	5
Soc. Sci. 501 Introduction to Social Science	3
	12

Second Quarter	Hrs.
Comm. 526 Communications II	4
Bus. Org. 511 Introduction to Business	3
H. & P.E. 509 Health Education	3
Soc. Sci. 502 Introduction to Economics	3
	13

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Psych. 501 Introduction to Psychology	3
Soc. Sci. 503 Introduction to Political Science	3
Mdsg. 530 Introduction to Merchandising Techniques	5
	14

Fourth Quarter	Hrs.
Bus. Org. 701 Law I	3
Mdsg. 625 Salesmanship	3
Econ. 601 Principles of Economics I	3
Adv. 627 Advertising Principles I	3
	12

Second Year

Fifth Quarter	Hrs.
Acctg. 601 Elementary Accounting I	3
Geog. 519 Economic Geography	5
Econ. 602 Principles of Economics II	3
Adv. 628 Advertising Principles I	3
	14

Sixth Quarter	Hrs.
Acctg. 602 Elementary Accounting II	3
Adv. 629 Advertising Principles II	3
Mdsg. 720 Industrial Marketing	3

* If Orientation 501 and 502 are required, add 6 quarter hours.

Mdsg. 745 Textile Fabrics	5
Mdsg. 735 Visual Merchandise Presentation	3
	17

Seventh Quarter	Hrs.
Econ. 603 Principles of Economics III	3
Mdsg. 750 Industrial Textile Products	5
Mdsg. 711 Management of Retail Buying	3
Electives (Mdsg.)	3
	14
Total Credit Hours	96*

PUBLIC ADMINISTRATION TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Soc. Sci. 501 Introduction to Social Science	3
Bus. Org. 511 Introduction to Business	3
H. & P.E. 509 Health Education	3
	13

Second Quarter	Hrs.
Comm. 526 Communications II	4
Soc. Sci. 502 Introduction to Economics	3
Math. 531 Mathematics of Business	5
Econ. 601 Principles of Economics I	3
	15

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Soc. Sci. 503 Introduction to Political Science	3
Pol. Sci. 600 Elements of American Government	3
Geog. 519 Economic Geography	5
	14

Fourth Quarter	Hrs.
Econ. 602 Principles of Economics II	3
Pol. Sci. 601 American National Government	3
Bus. Org. 701 Law I	3
Psych. 501 Introduction to Psychology	3
	12

Second Year

Fifth Quarter	Hrs.
Acctg. 601 Elementary Accounting I	3
Econ. 603 Principles of Economics III	3
Pol. Sci. 722 American State and Local Government	3
Pol. Sci. 704 American Political Parties	3
Pol. Sci. 720 Public Administration	3
	15

Sixth Quarter	Hrs.
Acctg. 602 Elementary Accounting II	3
Bus. Org. 720 Business Finance	4
Adv. P.R. 710 Basic Public Relations	3
Bus. Org. 712 Business Letters	3
Pol. Sci. 721 Urban Government	3
	16

Seventh Quarter	Hrs.
Acctg. 603 Elementary Accounting III	3
Bus. Org. 725 Fundamentals of Management	5
Bus. Org. 724 Credit Management	3
Bus. Org. 833 Public Utilities	3
	14
Total Credit Hours	99*

TRANSPORTATION MANAGEMENT TECHNOLOGY

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Bus. Org. 511 Introduction to Business	3
Soc. Sci. 501 Introduction to Social Science	3
Math. 531 Mathematics of Business	5
	15

Second Quarter	Hrs.
Comm. 526 Communications II	4
Bus. Org. 605 Transportation Rates I	3
Soc. Sci. 502 Introduction to Economics	3
Econ. 601 Principles of Economics	3
Psych. 501 Introduction to Psychology	3
	16

Third Quarter	Hrs.
Speech 614 Business and Professional Speech	3
Soc. Sci. 503 Introduction to Political Science	3
Mdsg. 624 Marketing	5
Econ. 602 Principles of Economics II	3
Bus. Org. 606 Transportation Rates II	3
	17

Fourth Quarter	Hrs.
Econ. 603 Principles of Economics III	3
Acctg. 601 Elementary Accounting I	3
H. & P.E. 509 Health Education	3
Bus. Org. 701 Law I	3
Bus. Org. 712 Business Letters	3
	15

* If Orientation 501 and 502 are required, add 6 quarter hours.

Fifth Quarter	Hrs.
Acctg. 602 Elementary Accounting II	3
Bus. Org. 707 Commercial Motor Transportation	5
Bus. Org. 705 Principles of Transportation	5
Econ. 704 Economics and Social Statistics I	3
	16

Sixth Quarter	Hrs.
Acctg. 603 Elementary Accounting III	3
Mdsg. 720 Industrial Marketing	3
Bus. Org. 746 Industrial Traffic Management	3
Bus. Org. 808 Water Transportation	3
Bus. Org. 702 Law II	3
	15
Total Credit Hours	94*

Suggested electives in the School of Business Administration that may be taken by any business technology major in consultation with his advisor: Acctg. 701, 702, and 810; Adv. P.R. 753, 755, 757, and 810; Bus. Org. 702, 703, 705, 712, 717, 720, 724, 750, and 804.

DEPARTMENT OF CONTINUING EDUCATION

Associate Professor Looby (chairman).

The Department of Continuing Education at Youngstown State University offers a variety of courses and integrated programs of study in an attempt to meet the educational needs of adults who reside in the Youngstown area.

Continuing education in a rapidly changing society is a necessity for many adults who must learn to cope with the conditions of the times. In an era where more knowledge has been discovered in the past decade than in mankind's entire history, the need for life-long learning has become a fact.

Non-credit courses which include technical and professional education, aesthetic and recreational enrichment, as well as family living and liberal education classes are designed to provide an opportunity for adults to continue their own personal development both as individuals and citizens.

The activities that normally are included as a continuing education are conferences, workshops, institutes, seminars, and non-credit courses of any duration. There are no requirements for admission to the non-credit program and transcripts of previous academic work are not required.

New courses and programs are constantly being considered, and individuals and groups are encouraged to call the Department of Continuing Education to request specific course offering.

DEPARTMENT OF CRIMINAL JUSTICE

Assistant Professors J. Foster (chairman), Boland, Cress, Degarmo, I. Domonkos, and Overberg.

Youngstown State University offers three academic programs in criminal justice; a two-year program in police science technology leading to the degree Associate in Applied Science; a four-year program in law enforcement administration leading to the degree Bachelor of Science; and a four-year program in corrections leading to the degree Bachelor of Science.

The *police science technology* program is considered appropriate training for persons preparing for employment in most municipal, state, and private law enforcement agencies. The program consists of 93 quarter hours, 47 quarter hours of which are in the technical subjects listed below as Lower Division courses. Students who have satisfactorily completed the police science technology program may enter a four-year program if they so desire.

The program in *law enforcement administration* is designed for persons preparing for employment in federal law enforcement agencies, administrative positions in municipal or state agencies, and as instructors in police education programs. The program consists of a concentration of 45 quarter hours, of which 20 quarter hours or more must be from the Upper Division courses listed below. The Lower Division courses recommended for this program are 501, 605, 610, 611, 612, 620, 621, and 660. The student must also meet the general degree requirements for the Bachelor of Science.

The program in *corrections* is offered for students preparing for a career in probation, parole, or institutional services with either adults or juveniles. The program consists of a concentration of 45 quarter hours of courses selected on an interdisciplinary basis

as approved by the student's advisor. The following courses are required: 605, 701, 702, 703, 800, 805, and 806. The student must also meet the general degree requirements for the Bachelor of Science.

Lower Division Courses

501. *Introduction to Law Enforcement.* History of civil police powers, police department administration, laws affecting police powers and functions, professional ethics, and other topics relating to police functions in a democratic society. 3 q.h.

604. *Patrol and Field Operations.* Police logistics, surveillance, etc., with emphasis on techniques and functions of police patrol. 3 q.h.

605. *Criminal Justice.* The nature of the criminal act; the duty and power of the policeman in dealing with acts which later may be determined by courts to have been criminal; the authority of one person to deprive another of his freedom; procedural steps in determining that a person has committed a criminal act; the elements of particular crimes at common law and as charged by the statutes. 3 q.h.

610. *Principles of Criminal Investigation.* The fundamentals of crime investigation; the qualifications of the investigator; the crime scene search; the recording, collection, and preservation of physical evidence; the methods and techniques of interview and interrogation. Prereq.: Crim. 605. 3 q.h.

611. *Advanced Criminal Investigation.* The application of general techniques of investigation to specific areas, such as arson, narcotics violations, sex offenses, larceny, burglary, robbery, forgery, and homicide; the sources of information; testimony and courtroom procedure. Three hours of lecture and one hour of laboratory work per week. Prereq.: Crim. 610. 3 q.h.

612. *Criminal Identification.* A thorough presentation of the available means of identifying criminals including consideration of fingerprinting, observation and description, photography, handwriting, and trace evidence with stress on the practical application of identification principles in modern police work. Prereq.: Crim. 611. 3 q.h.

620. *Criminal Procedure.* Designed to give the student a basic understanding of criminal law and procedure, the laws of arrest, constitutional provisions relating to search and seizure, search warrants, habeas corpus, and the function and operation of the grand jury, by reviewing procedures from incident to final disposition. Prereq.: Crim. 605. 3 q.h.

621. *Evidence for the Patrolman.* Designed to familiarize the student with evidence used in criminal proceedings, the general rules governing the admissibility of evidence, the hearsay rule and its exceptions, opinion evidence, circumstantial evidence, documentary evidence, presumptions, corpus delicti, and evidentiary privileges. Prereq.: Crim. 620. 3 q.h.

630. *Crime and Society.* Crime statistics; ecological, cultural and social patterns of criminal behavior; methods of treatment including probation and parole; crime prevention. 3 q.h.

631. *Delinquency Control.* Theories of delinquency causation; juvenile court; detention methods of treatment and prevention of delinquency; role of the police in delinquency control. 3 q.h.

640. *Police Supervision.* Police administration and organization as it relates to supervision; examination of various systems, the integration and coordination of all levels of supervision, inter-unit relationships, line of authority, and the duty and authority of various levels of command. 3 q.h.

645. *Police Skills.* Practice and theory of the use of technical equipment in law enforcement; fire-arm training; defensive tactics; safe, legal, and correct methods of stopping vehicles and apprehending offenders; police vehicle operation and equipment; communications; case and arrest records; personal identification records; uniform crime reporting; individual report writing. Two hours lecture, 2 hours laboratory per week. Prereq.: 10 q.h. Crim. Justice classes. 3 q.h.

650. *Traffic Law.* A study of the traffic laws of the various states with emphasis upon the laws of Ohio and adjacent states. 2 q.h.

652. *Traffic Accident Investigation.* Traffic accidents and their causes; legal responsibilities in connection with traffic accidents; acquiring, recording, and evaluating the facts; hit-skip accidents; determination of speed from skid marks; statements, photography, and measurements in accident investigations; civil aspects in police accident investigations. 3 q.h.

653. *Traffic Control.* A study of the engineering and mechanical features of traffic control with emphasis on techniques of traffic control; traffic control in emergencies; area control; point control; congestion relief. 3 q.h.

660. *Police Community Relations.* Application of sound public relations principles to the entire police operation. Consideration is given to press releases and press relations, community and minority group relations, civil rights, and the role of the police officer as he relates to human beings in conflict. 3 q.h.

Upper Division Courses

701. *Probation and Parole.* An examination of the theory and practice of probation and parole with juvenile and adult offenders. Prereq.: Junior standing. 4 q.h.

702. *Institutional Services in Corrections.* An examination of contemporary theory and practice in the administration of juvenile and adult correctional institutions. Prereq.: Junior standing. 4 q.h.

703. *Correctional Case Management.* The application of counseling and interviewing techniques and theory to the correctional client. Field and clinical situations are simulated so that the student can gain some experience in interviewing, chronological recording, report writing, and oral presentation of cases. Three hours of lecture and six hours of practicum per week. Prereq.: Junior standing. 5 q.h.

735. *Juvenile Delinquency.* Social and psychological factors underlying delinquency, the juvenile court, and probation; treatment and prevention measures. Prereq.: Sociology 600 (identical with Sociology 735). 4 q.h.

736. *Criminology I.* The psychological and social factors underlying crime, criminal behavior, and prevention. Prereq.: Sociology 600 (indentical with Sociology 736). 3 q.h.

737. *Criminology II.* The legal administration of criminal justice, from apprehension to acquittal or conviction. Prereq.: Sociology 600 (identical with Sociology 737). 3 q.h.

748. *Commercial and Industrial Security.* Plant protection and industrial security; merchandising safety and security; credit and insurance investigative procedures. 3 q.h.

753. *Criminalistics.* Study of fingerprinting, chemical analysis, polygraph operations, photography, fundamental pharmacology as these relate to the preparation and evaluation of physical evidence. Three hours of lecture and one hour of laboratory work a week. 3 q.h.

770. *Municipal Police Administration.* Detailed examination of police organization and management; tactics and budgeting, supervision; record systems; discipline, promotion, communications, public relations. 3 q.h.

780. *Special Police Problems.* Police procedures in riot control, sex offenders, narcotics, emotionally disturbed persons, dependent and neglected children, domestic quarrels, etc. Prereq.: Senior standing. 3 q.h.

800. *Research and Theory in Corrections.* Extensive reading in the literature of the correctional field, with special attention given to contemporary research data and theory in corrections. Prereq.: Senior standing. 5 q.h.

805, 806. *Correctional Internship.* Observational and participatory experiences in correctional agencies under the direction of experienced and qualified correctional personnel. The student will spend 8 hours weekly in the agency. In addition attendance at a 2-hour weekly seminar is required. Prereq.: Permission of instructor. 5 + 5 q.h.

810. *Research and Theory in Crime and Delinquency.* Extensive reading in the literature with special attention given to contemporary research data and theory on delinquency, crime, and the administration of criminal justice. Prereq.: Crim. 735, 736 and senior standing. 5 q.h.

815. *Police Management Concepts.* Modern police management theory; and analysis of organization development, systems management, executive decision making, organizational behavior, supervision problems, and the role of technology in law enforcement administration. Prereq.: Crim. 770. 4 q.h.

820. *Prevention and Control of Deviant Behavior.* Crime and criminal behavior viewed as one of many forms of deviation from political, moral, and conduct norms of the majority culture. Study of forces that produce conformity and of the process whereby certain forms of conduct are officially prescribed and controlled through social intervention. Prereq.: Crim. 735, 736. 4 q.h.

POLICE SCIENCE TECHNOLOGY CURRICULUM

First Year

First Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
Comm. 525 Communications I	4
Crim. 501 Introduction to Law Enforcement	3
Crim. 650 Traffic Law	2
Electives (Science)	4
	16

Second Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
Comm. 526 Communications II	4
Crim. 604 Patrol and Field Operations	3
Crim. 653 Traffic Control	3
BE & SS 500 Typewriting for Beginners	3
	16

Third Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
Crim. 645 Police Skills	3
Crim. 605 Criminal Justice	3
Crim. 652 Traffic Accident Investigation	3
Electives (Science)	4
	16

Second Year

Fourth Quarter	Hrs.
Crim. 610 Principles of Criminal Investigation	3
Crim. 660 Police Community Relations	3
Soc. 600 Principles of Sociology	5
H. & P.E. 509 Health Education	3
	14

Fifth Quarter	Hrs.
Crim. 611 Advanced Criminal Investigation	3
Crim. 620 Criminal Procedure	3
Crim. 630 Crime and Society	3
Psych. 601 General Psychology	4
Electives (History, Sociology, Economics or Geography)	3
	16

Sixth Quarter	Hrs.
Crim. 612 Criminal Identification	3
Crim. 621 Evidence for the Patrolman	3
Crim. 631 Delinquency Control	3
Crim. 640 Police Supervision	3
Electives (Political Science)	3
	15
Total Credit Hours	93

DEPARTMENT OF ENGINEERING TECHNOLOGY

Professor Richley (chairman); Assistant Professors Chrobak and Terlecki.

The Associate in Applied Science degree is awarded to recognize graduation in the following programs.

CIVIL ENGINEERING TECHNOLOGY

603. *Structural Drafting.* Instruction in drafting room procedures and methods used in map drawing and in the graphical presentation of wood, steel, and concrete structures. Emphasis is placed on working drawing and on detailing structural steel and reinforced concrete members. One hour of lecture and three hours of laboratory per week. Prereq.: ME 501. 2 q.h.

605. *Strength of Materials.* Elementary theory in relationships between load, stress, strain in tension, compression, direct and torsional shear, and stresses in simple beams. Prereq.: MET 520. 3 q.h.

605L. *Strength of Materials Laboratory.* Instruction in use and care of testing machines and equipment and experimental verification of theories of strength of materials. Three hours of laboratory per week. Taken concurrently with CET 605. 1 q.h.

606. *Construction Materials.* A study of aggregates, portland and asphalt cement, concrete, lumber, and steel and their roles in construction. 3 q.h.

606L. *Construction Materials Laboratory.* Testing of construction materials as usually encountered in control of construction with emphasis on ASTM and AASHO standard tests. Three hours of laboratory per week. Taken concurrently with CET 606. 1 q.h.

610. *Elementary Structures.* An introduction to structural analysis and determination of reactions, shears, moments, and stresses in structural members. 3 q.h.

615. *Soil Mechanics.* A study of properties of soils, soil classification, strength and bearing capacity, compressibility, seepage, and frost action. 3 q.h.

615L. *Soil Mechanics Laboratory.* Practice in soil identification and classification and determination of seepage, compressibility, and bearing capacity through laboratory testing of soils. Three hours of laboratory per week. Taken concurrently with CET 615. 1 q.h.

620. *Construction Management.* A study of construction planning; determination of materials, equipment, and labor; construction scheduling and supervision of construction. 3 q.h.

622. *Advanced Surveying.* Precise surveying instruments and practice. Land and city surveying. Plane coordinate systems in cadastral surveying. Topographic mapping. 3 q.h.

622L. *Advanced Surveying Laboratory.* Practice in use of precise instruments in surveying and mapping. Three hours of laboratory per week. Taken concurrently with CET 622. 1 q.h.

First Year

First Quarter	Hrs.
Math. 502 Algebra II	5
Comm. 525 Communications I	4
ME 500 Drawing Fundamentals	3
Chem. 501 Survey of Chemistry	4
	16

Second Quarter	Hrs.
Math. 503 Trigonometry	5
Comm. 526 Communications II	4
ME 501 Engineering Drawing	3
Physics 501 Fundamentals of Physics	4
	16

Third Quarter	Hrs.
Math. 550 Introduction to Calculus	5
Physics 502 Fundamentals of Physics	3
CE 720 Surveying I	3
CE 720L Surveying I Laboratory	1
MET 520 Mechanics	5
	17

Second Year

Fourth Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
CE 721 Surveying II	3
CE 721L Surveying II Laboratory	1
ME 502 Descriptive Geometry	3
CET 605 Strength of Materials	3
CET 605L Strength of Materials Laboratory	1
H. & P.E. 509 Health Education	3
	17

Fifth Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
CET 615 Soil Mechanics	3
CET 615L Soil Mechanics Laboratory	1
CET 620 Construction Management	3
Physics 503 Fundamentals of Physics	3
Physics 503L Fundamentals of Physics Laboratory	1
CET 603 Structural Drafting	2
	16

Sixth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
CET 622 Advanced Surveying	3
CET 622L Advanced Surveying Laboratory	1
CET 610 Elementary Structures	3
CET 606 Construction Materials	3
CET 606L Construction Materials Laboratory	1
Elective (Non-Technical)	3
	17
Total Credit Hours	99

COMPUTER TECHNOLOGY

Assistant Professor Chrobak (supervisor).

501. *Data Processing Concepts.* Evolution of Data processing; introduction to business structures and Data processing; the unit record; principles of operation of unit record equipment; laboratory exercises will be executed involving planning and wiring a range of unit record equipment. Three hours of lecture and three hours of laboratory per week. 4 q.h.

502. *Computer Concepts.* Basic data representation, Hollerith, binary, binary coded decimal systems; development of computer systems, description of basic component operations, arithmetic units, storage media. Input-output devices; methods of flow charting; use of decision tables. 3 q.h.

601, 602, 603. *Scientific Programming I, II, and III.* Introduction to the use of computers by engineers and scientists; study of the high level scientific programming language known as FORTRAN; application of FORTRAN to engineering and scientific problems, scaling, floating point arithmetic and an introduction to numerical analysis. Three hours of lecture and three hours of laboratory per week. Prereq.: Math. 550 or equivalent. 4 + 4 + 4 q.h.

610. *Fundamentals of Programming.* History of languages, fundamental concepts for the understanding of stored programming; flow charting, input and output data conversion; subroutines and macro routines and use of utility programs. The high level business oriented language known as COBOL will be used as the instrument of this study. The writing and testing of problems in COBOL language. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 502, CPT 501 or consent of instructor. 4 q.h.

611. *Programming - S/360 Assembler.* This course includes the use of the assembler language developed for this computer and the writing, testing, and running of programs on this computer. Three hours lecture and three hours of laboratory per week. Prereq.: CPT 610. 4 q.h.

612. *Programming-PL/1.* Detailed study of the PL/1 language; analysis of its facilities will be made to demonstrate specific applicability to engineering, mathematical, and commercial problems. Several class problems will be coded to reinforce efficient coding techniques. Three hours lecture and three hours laboratory per week. Prereq.: CPT 601, CPT 611. 4 q.h.

614. *Business Systems and Procedures.* Study of methods of analysis and evaluation of information flow, development of operating systems including forms design, use of equipment, and employee training. Prereq.: Acctg. 602, CPT 611. 3 q.h.

616. *Operating Systems.* Study of advanced programming; operating systems including translators, compilers, high level language processing, batch processing, real time processing, and multiprogramming. Prereq.: CPT 611. 3 q.h.

618. *Data Processing Application.* This course is designed to acquaint the student with business data processing applications. Practical case studies include payroll, accounts payable, budget control, inventory con-

trol, production control, etc. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 614. 4 q.h.

620. *Data Processing Supervision.* Study of the organization of a computer center operation, machine selection and layout, scheduling; training and supervision of personnel; development of program descriptions and establishment of program standards. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 614. 4 q.h.

First Year

First Quarter	Hrs.
Math. 502 Algebra II	5
Comm. 525 Communications I	4
CPT 501 Data Processing Concepts	4
H. & P.E. 509 Health Education	3
	16

Second Quarter	Hrs.
Math. 503 Trigonometry	5
Comm. 526 Communications II	4
Soc. Sci. 501 Introduction to Social Science	3
CPT 502 Computer Concepts	3
	15

Third Quarter	Hrs.
Math. 550 Introduction to Calculus	5
Physics 501 Fundamentals of Physics	4
Acctg. 601 Elementary Accounting I	3
CPT 610 Fundamentals of Programming	4
	16

Second Year

Fourth Quarter	Hrs.
Physics 502 Fundamentals of Physics	3
Acctg. 602 Elementary Accounting II	3
Soc. Sci. 502 Introduction to Economics	3
CPT 601 Scientific Programming I	4
CPT 611 Programming-S/360 Assembler	4
	17

Fifth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
CPT 602 Scientific Programming II	4
CPT 612 Programming-PL/1	4
CPT 614 Business Systems and Procedures	3
Elective (Non-Technical)	3
	17

Sixth Quarter	Hrs.
CPT 603 Scientific Programming III	4
CPT 616 Operating Systems	3
CPT 618 Data Processing Applications	4
CPT 620 Data Processing Supervision	4
	15
Total Credit Hours	96

ELECTRICAL ENGINEERING TECHNOLOGY

Professor Richley (supervisor).

500. *Electrical Drafting.* Standard electrical symbols; types of electrical diagrams, elementary wiring diagrams for industrial buildings, power plants, industrial controls, and communication circuits; lineless diagrams, wiring lists; layouts for chassis, panels, switchboards, laboratories; multiview drawings, pictorial drawings, sections, details of electrical equipment. Prereq.: ME 500. 2 q.h.

501. *Circuit Theory I.* Fundamental electrical definitions and units; electrical energy sources, Ohm's Law, Kirchhoff's Laws; analysis of D.C. circuits; network theorems; magnetic circuits and permanent magnets. Prereq.: Math. 502, Nat. Sci. 520. Concurrent: Math. 503. 3 q.h.

501L. *Circuit Theory I Laboratory.* Experiments on the use of instruments; measurements of resistance, effect of length cross section, and material on resistance, measurement of voltage, currents and power in D.C. series and parallel circuits; network theorems. Three hours of laboratory per week. Taken concurrently with EET 501. 1 q.h.

502. *Circuit Theory II.* Inductance, capacitance; analysis of simple transient circuits; alternating current and voltage; Phasor algebra, solution of steady state A.C. circuits; network theorems; Phasor diagrams; power, power factor; resonant circuits. Prereq.: EET 501. Concurrent: Math. 550. 3 q.h.

502L. *Circuit Theory II Laboratory.* Experiments on the measurements of inductance and capacitance; simple transient circuits; measurement of voltage, current, and power in A.C. single phase series and parallel circuits; resonant circuits. Three hours of laboratory per week. Taken concurrently with EET 502. 1 q.h.

503. *Circuit Theory III.* Graphical analysis of circuits, locus plots; mutually coupled circuits; two-port networks; non-sinusoidal analysis; electric wave filters, polyphase circuits. Prereq.: EET 502, Math. 550. 3 q.h.

503L. *Circuit Theory III Laboratory.* Experiments on the measurement of mutual inductance; mutually coupled circuits; two-port parameters; non-sinusoidal waves; filters; three phase circuits. Three hours of laboratory per week. Taken concurrently with EET 503. 1 q.h.

600. *Measurements.* Error analysis; basic meter in D.C. measurement; basic meter in A.C. measurement; comparison methods; A.C. bridge methods; transducers; instrument transformers, test equipment; cathode ray oscilloscope; magnetic measurements; audio and radio frequency test methods; counting and digital display instruments. Prereq.: EET 502. Concurrent: EET 503. 3 q.h.

600L. *Measurements Laboratory.* Experiments involving the use of basic and specialized equipment to obtain accurate measurements. Precision workmanship and techniques are emphasized. Three hours of laboratory per week. Taken concurrently with EET 600. 1 q.h.

605. *Electronics I.* Semiconductor principles and the semiconductor diode; thermonic emission and the vacuum diode; rectifiers, power supplies, and filters; vacuum tubes, triode, tetrode, pentode; transistor characteristics and applications. Prereq.: EET 502. Concurrent: EET 503, EET 600. 3 q.h.

605L. *Electronics I Laboratory.* Experiments on vacuum tube characteristics; diode, triode, tetrode, pentode; transistor characteristics; half-wave, full-wave rectifiers. Three hours of laboratory per week. Taken concurrently with EET 605. 1 q.h.

606. *Electronics II.* Analysis of vacuum tube and transistor amplifiers; transformer coupling; R-C coupled amplifiers; power amplifiers; special purpose amplifiers; phase inverters. Prereq.: EET 503, EET 600, EET 605. 3 q.h.

606L. *Electronics II Laboratory.* Experiments on vacuum tube amplifiers; transistor amplifiers; R-C coupled amplifiers; power amplifiers; magnetic amplifiers. Three hours of laboratory per week. Taken concurrently with EET 606. 1 q.h.

607. *Electronics III.* Analysis of feedback amplifiers; audio and radio frequency oscillators; amplitude and frequency modulation, demodulation; cathode ray oscilloscope; glow and arc discharge tubes; electronic power conversion; photoelectric devices. Prereq.: EET 606. 3 q.h.

607L. *Electronics III Laboratory.* Experiments on feedback amplifiers; oscillators; basic amplitude and frequency modulated transmitter; photoelectric devices; associated circuit devices. Three hours of laboratory per week. Taken concurrently with EET 607. 1 q.h.

609. *Analog Computers.* Theory and operation of the analog computer. Emphasis is placed on circuit operation and usage rather than design. One hour of lecture and three hours of laboratory per week. Concurrent: EET 606. 2 q.h.

610. *Direct Current Machines.* Construction and principles of operation of D.C. motors and generators; characteristics, efficiency, control and associated equipment; specialized D.C. machines. Prereq.: EET 503, EET 600. 3 q.h.

610L. *Direct Current Machines Laboratory.* Experiments on direct current machinery, characteristics, operation, efficiency, control. Three hours of laboratory per week. Taken concurrently with EET 610. 1 q.h.

611. *Alternating Current Machines.* Transformer construction design, standards, operational characteristics; three phase transformers; special transformers; alternators; induction motors; synchronous motors; single phase motors. Prereq.: EET 610. 3 q.h.

611L. *Alternating Current Machines Laboratory.* Experiments on transformers; alternators; induction and synchronous motors. Three hours of laboratory per week. Taken concurrently with EET 611. 1 q.h.

612. *Electrical Power Systems.* Power systems; transmission line parameters; transmission line calculations; steady state power system representation and calculations; power system economy. Prereq.: EET 610. Concurrent: EET 611. 3 q.h.

614. *Industrial Controls.* Analysis of electronic control circuits in industry; feedback circuits; electronic timers; photoelectric devices; electronic power conversion; motor control; heating system control; servomechanisms. Concurrent: EET 611, EET 607. 3 q.h.

First Year

First Quarter	Hrs.
Math. 502 Algebra II	5
Chem. 501 Survey of Chemistry	4
Comm. 525 Communications I	4
ME 500 Drawing Fundamentals	3
	16

Second Quarter	Hrs.
Math. 503 Trigonometry	5
Physics 501 Fundamentals of Physics	4
EET 500 Electrical Drafting	2
EET 501 Circuit Theory I	3
EET 501L Circuit Theory I Laboratory	1
H. & P.E. 509 Health Education	3
	18

Third Quarter	Hrs.
Math. 550 Introduction to Calculus	5
Physics 503 Fundamentals of Physics	3
EET 502 Circuit Theory II	3
EET 502L Circuit Theory II Laboratory	1
Comm. 526 Communications II	4
	16

Second Year

Fourth Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
EET 503 Circuit Theory III	3
EET 503L Circuit Theory III Laboratory	1
EET 605 Electronics I	3
EET 605L Electronics I Laboratory	1
CPT 601 Scientific Programming I	4
	15

Fifth Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
EET 600 Measurements	3
EET 600L Measurements Laboratory	1
EET 606 Electronics II	3
EET 606L Electronics II Laboratory	1
EET 609 Analog Computer	2
EET 610 Direct Current Machines	3
EET 610L Direct Current Machines Laboratory	1
	17

Sixth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
EET 607 Electronics III	3
EET 607L Electronics III Laboratory	1
EET 611 Alternating Current Machines	3
EET 611L Alternating Current Machines Laboratory	1
EET 614 Industrial Controls	3
Elective (Non-Technical)	3
	17
Total Credit Hours	99

MECHANICAL ENGINEERING TECHNOLOGY

510. *Manufacturing Processes.* A course in the study of manufacturing materials, methods, processes, tooling and equipment. Topics include welding, forging, casting, molding, hot and cold working, and production machining. 3 q.h.

520. *Mechanics.* The study of forces, couples, and resultants; equilibrium of force systems; motion of particles and rigid bodies; work and energy. Prereq.: Physics 501. 5 q.h.

600. *Advanced Drawing.* The detail, assembly, and specifications of a complete machine. One hour lecture and five hours laboratory per week. Prereq.: CET 605, ME 501. 3 q.h.

605. *Thermodynamics.* The study of the first and second laws of thermodynamics involving gases, vapors, and mixtures and their application to thermodynamic cycles such as compressors, steam plants, I.C. engines and refrigeration. Prereq.: Physics 502, Math. 550. 4 q.h.

606. *Machine Design I.* Study and design of machine elements such as bolts, screws, shafting, and welded connections. Three hours lecture and three hours laboratory per week. Prereq.: CET 605. 4 q.h.

607. *Machine Design II.* Continuation of 606 with the study of gears, cams, clutches, flywheels and the application of standard machine components. Three hours lecture and three hours laboratory per week. Prereq.: MET 606. 4 q.h.

610. *Mechanical Equipment.* The study of common mechanical equipment such as refrigerators, pumps, internal combustion engines, and vibration equipment. Prereq.: CET 605, MET 605. 3 q.h.

610L. *Mechanical Equipment Laboratory.* Laboratory tests and applications of equipment covered in MET 610. Three hours laboratory per week. Concurrent with MET 610. 1 q.h.

620. *Tool Design.* Practice and procedure in design and selection of tools such as cutting tools, jigs, fixtures and dies used in industry. Prereq.: CET 605. 3 q.h.

621. *Machine Tools.* Study and practice in the use of machine shop tools such as drill presses, shapers, milling machines and grinders. One hour lecture and five hours laboratory per week. Concurrent: MET 620. 3 q.h.

First Year

First Quarter	Hrs.
Math. 502 Algebra II	5
Comm. 525 Communications I	4
ME 500 Drawing Fundamentals	3
Chem. 501 Survey of Chemistry	4
	16

Second Quarter	Hrs.
Math. 503 Trigonometry	5
Comm. 526 Communications II	4
ME 501 Engineering Drawing	3
Physics 501 Fundamentals of Physics	4
MET 510 Manufacturing Procedures	3
	19

Third Quarter	Hrs.
Math. 550 Introduction to Calculus	5
Physics 502 Fundamentals of Physics	3
MET 520 Mechanics	5
ME 502 Descriptive Geometry	3
	16

Second Year

Fourth Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
Physics 503 Fundamentals of Physics	3
Physics 503L Fundamentals of Physics Laboratory	1
CET 605 Strength of Materials	3
CET 605L Strength of Materials Laboratory	1
MET 605 Thermodynamics	4
	15

Fifth Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
MET 600 Advanced Drawing	3
CPT 601 Scientific Programming I	4
MET 606 Machine Design	4
MET 610 Mechanical Equipment	3
MET 610L Mechanical Equipment Laboratory	1
	18

Sixth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
MET 607 Machine Design II	4
MET 620 Tool Design	3
MET 621 Machine Tools	4
H. & P.E. 509 Health Education	3
	17
Total Credit Hours	101

METALLURGICAL ENGINEERING TECHNOLOGY

Assistant Professor Terlecki (supervisor).

500. *Introduction to Metallurgy (Extractive).* Principles of mineral beneficiation, pyrometallurgical process for smelting ores and refining crude metal. The functions of fluxes, slags, and refractories in these processes. Prereq.: Chem. 506. 3 q.h.

501. *Foundry and Metal Casting.* Mechanism and solidification of metals, stress-strain relations in castings mold materials; reaction at refractory metal interface mold design, optimization of casting design and processing method, mold production and pattern construction. Prereq.: Chem. 506. 2 q.h.

501L. *Foundry and Metal Casting Laboratory.* Elementary foundry practice; molding simple aluminum, copper, and titanium castings; crucible furnace and induction furnace melting; selection and control of melting process. Three hours of laboratory per week. Taken concurrently with MTT 501. 1 q.h.

600. *Spectroscopy.* The nature of light, the atom and the electromagnetic spectrum as related to the study of spectrographic emission equipment. Theory and practice of photography of the spectrum and film, calibration, qualitative and quantitative analysis of alloys. Use of carbon analysis. Prereq.: Physics 502, Chem. 506. 3 q.h.

600L. *Spectroscopy Laboratory.* Analysis of metallic specimens (alloys of various composition). Calibration of equipment, standardized spectrum film. Identification of the alloys spectrum range. Correlation of spectra and alloy composition and construction of table. Three hours of laboratory per week. Taken concurrently with MTT 600. 1 q.h.

602. *Non-Destructive Inspection.* A study of principles and techniques of non-destructive testing with liquid penetrant, ultrasonic, eddy current, magnetic particle for the detection of structural defects in ferrous and non-ferrous and non-metallic materials in cast, weld, and in mechanically deformed conditions. Prereq.: MTT 600, Physics 503. 3 q.h.

602L. *Non-Destructive Inspection Laboratory.* Develop techniques of operating tester (magna-glow, portable sonic, spark testing) on metallic specimen with and without structural and internal defects, classification of surface and internal defects on various processed non-ferrous metals. Utilization of spark testing for identification of carbon analysis in ferrous metals including simple alloys. Three hours of laboratory per week. Taken concurrently with MTT 602. 1 q.h.

604. *Physical Metallurgy (Mechanical Adaptive I).* Study of crystalline nature of metals (iron and steel), the crystalline nature of mechanical phenomena. Mechanical concepts in deformation i.e. elastic vs. plastic deformation, strain, yield; failure vs. fracture and hot-working vs. cold-working. Prereq.: MTT 500. 3 q.h.

604L. *Physical Metallurgy (Mechanical Adaptive I) Laboratory.* Preparation of test specimens for tension testing, hardness testing in the cast, hot rolled, cold rolled and the annealed and normalized conditions. Three hours of laboratory per week. Taken concurrently with MTT 604. 1 q.h.

606. *Physical Metallurgy (Adaptive II).* Polycrystalline pure metals, freezing of pure metals, nucleation and growth of crystals, grains and grain boundaries, grain size and grain growth. Solid metallic recrystallization after plastic deformation. Introduction to the iron-iron carbide system. Prereq.: MTT 604. 4 q.h.

606L. *Physical Metallurgy (Adaptive II) Laboratory.* The micro-examinations of prepared metallographic, specimens of ferrous metals and alloys; sketches made of microstructures, written interpretations and correlations made with the known history of

each specimen. Six hours of laboratory per week. Taken concurrently with MTT 606. 2 q.h.

608. *Physical Metallurgy (Adaptive III).* Continuation of MTT 606, non-equilibrium transformation in iron-iron carbide system; iso-thermal transformation curves; heat treatment and theory; applications of heat treatment of common ferrous metals and alloys and non-ferrous metals and alloys. Prereq.: MTT 606. 4 q.h.

608L. *Physical Metallurgy (Adaptive III) Laboratory.* Micro-examination of prepared specimens of non-ferrous metals and their alloys of known compositions and prior physical treatments. Sketches made of each with interpretations and correlation to the known history of each specimen. Six hours of laboratory per week. Taken concurrently with MTT 608. 2 q.h.

First Year

First Quarter	Hrs.
Math. 502 Algebra II	5
Chem. 501 Survey of Chemistry	4
Comm. 525 Communications I	4
ME 500 Drawing Fundamentals	3
	16

Second Quarter	Hrs.
Math. 503 Trigonometry	5
Chem. 502 Survey of Chemistry	4
Comm. 526 Communications II	4
Physics 501 Fundamentals of Physics	4
	17

Third Quarter	Hrs.
Math. 550 Introduction to Calculus	5
Physics 502 Fundamentals of Physics	3
MET 510 Manufacturing Procedures	3
MET 520 Mechanics	5
	16

Second Year

Fourth Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
Physics 503 Fundamentals of Physics	3
Physics 503L Fundamentals of Physics Laboratory	1
CET 605 Strength of Materials	3
CET 605L Strength of Materials Laboratory	1
MTT 500 Introduction to Metallurgy (Extractive)	3
MTT 604 Physical Metallurgy (Adaptive I)	3
MTT 604L Physical Metallurgy (Adaptive I) Laboratory	1
	18

Fifth Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
MTT 501 Foundry and Metal Casting	2
MTT 501L Foundry and Metal Casting Laboratory	1
MTT 600 Spectroscopy	3
MTT 600L Spectroscopy Laboratory	1
MTT 606 Physical Metallurgy (Adaptive II)	4
MTT 606L Physical Metallurgy (Adaptive II) Laboratory	2
	16

Sixth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
MTT 608 Physical Metallurgy (Adaptive III)	4
MTT 608L Metallurgy (Adaptive III) Laboratory	2
MTT 602 Non-Destructive Inspection	3
MTT 602L Non-Destrcctive Inspection Laboratory	1
H. & P.E. 509 Health Education	3
	16
Total Credit Hours	99

DEPARTMENT OF NURSING

Assistant Professor DeCapita (chairman); Instructors Engelhardt, Fitzgerald, Goard, Gorton, Kennedy, Miller, Scheetz, and Shields.

Advisement for the undergraduate degree program for registered nurses currently enrolled is provided by the Sociology and Anthropology Department.

TWO-YEAR NURSING PROGRAM

The two-year program leading to the Associate in Applied Science degree in nursing provides a proportionate balance of general education and nursing courses. The North and South Units of the Youngstown Hospital Association, the Woodside Receiving Hospital, and other health agencies in the community are utilized for clinical laboratory experiences.

Graduates of this program will be eligible to take the Ohio licensing examination for registered nurses and will be prepared to give bedside nursing, to serve as staff nurses in hospitals and clinics, as private duty nurses, and in doctors' offices.

The associate degree nursing program has approval by the Ohio State Board of Nursing Education and Nurse Registration and is a member of the Council of Associate Degree Programs of the National League for Nursing.

501. *Introduction to Nursing I.* Orientation of the student to nursing as a health service, and to the role of the nurse in the promotion of human needs and their signifi-

cance for nursing care. Provides the principles and application of basic nursing skills. 5 q.h.

502. *Introduction to Nursing II.* The presentation and practice of more complex nursing skills with experience in patient care. Field visits to related health agencies. Prereq.: Nursing 501 with a grade of "C" or better; Biol. 551. 6 q.h.

503. *Nursing Care of Adults and Children I.* Orientation to the processes of growth and development, the maintenance of health and the impact of illness upon individuals of all age groups. Practice of nursing care and field trips to related agencies. Prereq.: Nursing 502 with a grade of "C" or better; Biol. 552. 8 q.h.

601. *Nursing Care of Adults and Children II.* Study of maternal health including factors affecting the developmental task of propagation of species. Physical and psychological problems of the handicapped individual. Clinical experience in maternal health, medical and surgical units, and field trips to related agencies. Prereq.: Nursing 503 with a grade of "C" or better; Biol. 560. 10 q.h.

602. *Nursing Care of Adults and Children III.* The theory and practice of nursing and health care of patients with physical and/or mental illness with emphasis on the individual's biological and psychosocial reactions. Experience in clinical nursing units and field trips to related agencies. Prereq.: Nursing 503 with a grade of "C" or better; Biol. 560. 10 q.h.

603. *Nursing Care of Adults and Children IV.* Major health problems encountered by children and adults including the biological and psychosocial effects of physical illness. Orientation to world health problems. Clinical experience in the care of patients of all age groups. Prereq.: Nursing 503 with a grade of "C" or better; Biol. 560. 10 q.h.

613. *Role of the Registered Nurse.* A study of the roles of the associate degree nurse graduate as a registered nurse practitioner, a citizen and an individual. Content includes contemporary nursing trends, career opportunities, and the legal, moral, and ethical responsibilities of the nurse. Prereq.: Nursing 503 with a grade of "C" or better; Chem. 501, Physics 500. 2 q.h.

First Year

First Quarter	Hrs.
Biol. 551 Anatomy and Physiology of Man	4
Home Ec. 501 Food and Nutrition	3
Comm. 525 Communications I	4
Nurs. 501 Introduction to Nursing I	5
	16

Second Quarter	Hrs.
Biol. 552 Anatomy and Physiology of Man	4
Soc. Sci. 501 Introduction to Social Science	3
Comm. 526 Communications II	4
Nurs. 502 Introduction to Nursing II	6
	17

Third Quarter	Hrs.
Biol. 560 Paramedical Microbiology	5
Psych. 501 Introduction to Psychology	3
Nurs. 503 Nursing Care of Adults and Children I	8
	16

Second Year

Fourth Quarter	Hrs.
Chem. 501 Survey of Chemistry I	4
Electives (Art, Music, Philosophy, Economics, History, or Political Science)	3
Nurs. 601 Nursing Care of Adults and Children II	10
	17

Fifth Quarter	Hrs.
Physics 500, Introduction to Physics	4
Electives (Art, Music, Philosophy, Economics, History, or Political Science)	3
Nurs. 602 Nursing Care of Adults and Children III	10
	17

Sixth Quarter	Hrs.
Soc. 600 Principles of Sociology	5
Nurs. 603 Nursing Care of Adults and Children IV	10
Nurs. 613 Role of the Registered Nurse	2
	17
Total Credit Hours	100

DEPARTMENT OF SPECIAL STUDIES

Instructor Foley.

ASSOCIATE IN ARTS PROGRAM

Instructor Foley (supervisor).

This program is designed for any student who seeks a liberal arts, two-year academic program. Any candidate must complete a concentration in a field of his own choosing in the areas of social studies, the humanities, or science. A primary function of Associate in Arts is to provide the basic courses which may be used as transfer courses for any undergraduate degree so long as a student is in good academic standing and has earned

sufficient academic credit hours. The student must be accepted by the dean of the school to which he expects to transfer.

Orientation 501, 502. *Study Skills.* These courses develop study skills which should aid academic achievement. Reading and writing skills are developed with the use of reading machines, visual aids, and skill exercises. Study methods and habits are discussed and analyzed. 3 + 3 q.h.

Orientation 503. *Study Skills.* Reserved for foreign students. 3 q.h.

First Year

First Quarter	Hrs.
*Orientation 501 Study Skills	3
Comm. 525 Communications I	4
Psych. 501 Introduction to Psychology	3
H. & P.E. 509 Health Education	3
	13

Second Quarter	Hrs.
*Orientation 502 Study Skills	3
Comm. 526 Communications II	4
Soc. Sci. 501 Introduction to Social Science	3
Electives	3
	13

Third Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
Hist. 601 The United States I	4
Phil. 600 Introduction to Philosophy	4
Electives	3
	14

Fourth Quarter	Hrs.
Hist. 602 The United States II	5
Soc. Sci. 503 Introduction to Political Science	3
Comm. 527 Communications III	4
	12

Second Year

Fifth Quarter	Hrs.
Science or Math	4 or 5
Electives (Area of Concentration)	10 or 11
Total Credit Hours	14 or 16

* A high school graduate with a less satisfactory high school scholastic record must take two quarters of Study Skills 501-502 and his academic load will be limited. These courses may be waived for well prepared students by the advisor and appropriate electives substituted.

Sixth Quarter	Hrs.
Electives (Area of Concentration)	15

Seventh Quarter	Hrs.
Electives (Area of Concentration)	15
Total Credit Hours	96 to 98

FOOD SERVICE TECHNOLOGY

502. *Nutrition.* The purpose of diet therapy and the policies and procedures for diet modification as it is delegated to a food service supervisor. Modified diet patterns in various types of group care institutions are considered. Three hours of lecture and four hours of laboratory per week. 5 q.h.

504. *Food Purchasing and Storage.* The study of quantity food purchasing policies and procedures; receiving and storage requirements, procedures and controls. Two hours of lecture and six hours of laboratory per week. 5 q.h.

605. *Organization, Management and Supervisory Techniques.* Organizational structure of various types of food service programs. Administration and tools of management; budget and cost analysis emphasized. Basic principles in selecting, training, and supervising personnel. Four hours of lecture and two hours of laboratory per week. 5 q.h.

606. *Quantity Foods.* Quantity food procedures and techniques with emphasis on retention of nutritive value of foods. Kitchen organization and planning of quantity production, use of large and small food preparation equipment; food controls, quality food standards and cost levels. Three hours of lecture and four hours of laboratory per week. 5 q.h.

607. *Food Service Internship.* Experience in food production and service. Continuity in planning, preparing food, and supervising units will be stressed. Group and individual conference periods will be conducted. 9 q.h.

608. *Planning Food Service Systems.* Study and practice of efficient work methods; activity analysis; planning, space, and equipment arrangements for functional flow of work in food service department. Three hours of lecture and four hours of laboratory per week. 5 q.h.

650. *Food Service Seminar.* Trends and job opportunities in food service, community, and other sources of information relating to nutrition and food service supervision. Two hours of class per week. 2 q.h.

First Year

First Quarter	Hrs.
Comm. 525 Communications I	4
Home Ec. 501 Food and Nutrition	3
Home Ec. 501L Food and Nutrition Laboratory	1
Chem. 501 Survey of Chemistry I	4
H. & P.E. 509 Health Education	3
	15

Second Quarter	Hrs.
Comm. 526 Communications II	4
FST 502 Nutrition	5
FST 504 Food Purchasing and Storage	5
Chem. 502 Survey of Chemistry II	4
	18

Third Quarter	Hrs.
Home Ec. 601 Principles of Food Preparation	5
Biol. 560 Para-Medical Microbiology	5
Math. 531 Mathematics of Business	5
	15

Second Year

Fourth Quarter	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
FST 605 Organization and Management	5
FST 606 Quantity Foods	5
Acctg. 601 Elementary Accounting I	3
	16

Fifth Quarter	Hrs.
Soc. Sci. 502 Introduction to Economics	3
FST 607 Food Service Internship	9
Elective (Technical)	3
	15

Sixth Quarter	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
Acctg. 602 Elementary Accounting II	3
FST 650 Food Service Seminar	2
FST 608 Planning Food Service Systems	5
Electives (Non-Technical)	3
	16
Total Credit Hours	95

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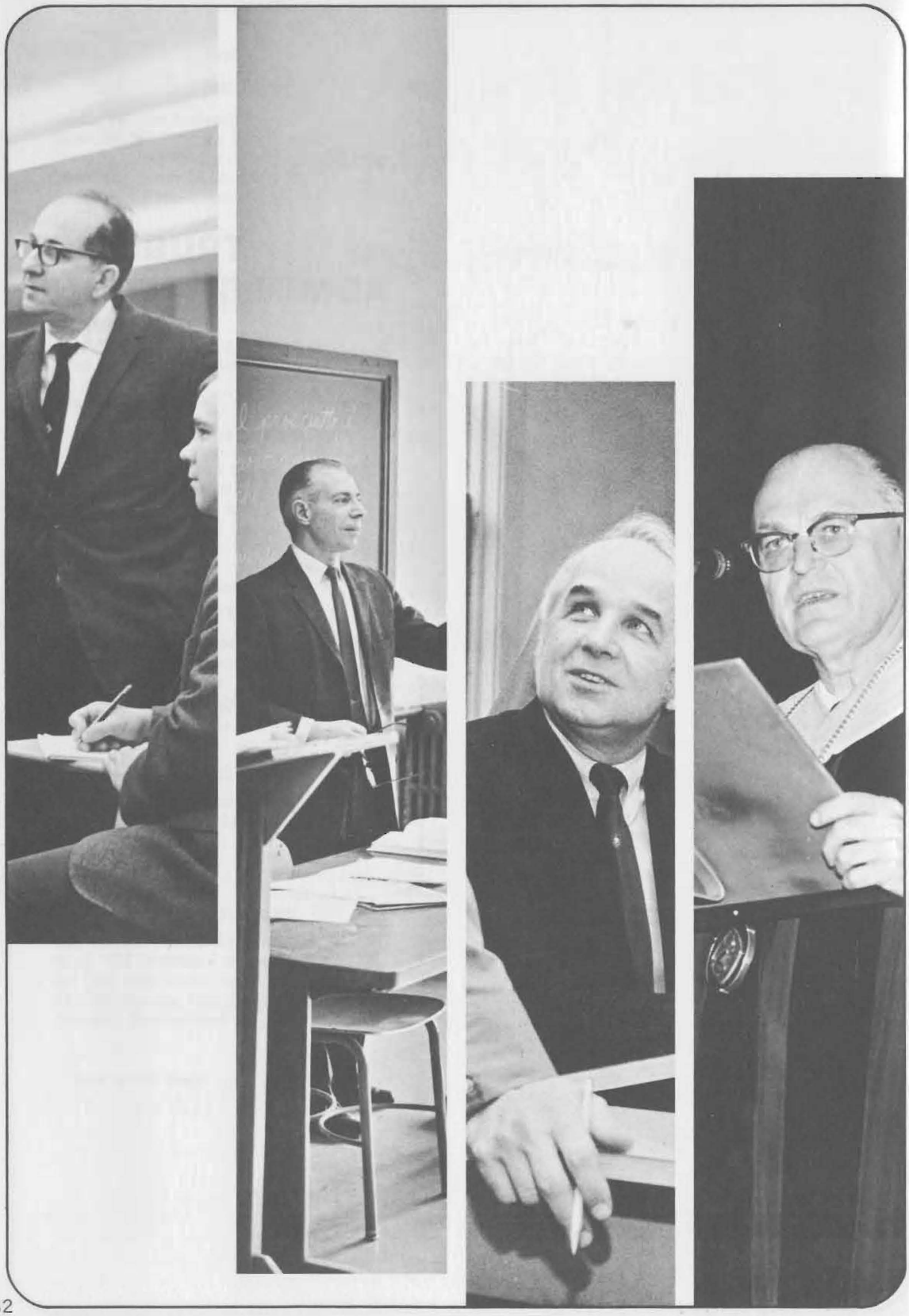

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Instructor Emeritus in Education
A.B., Manchester College
M.Ed., University of Pittsburgh.
Retired 1970.

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Associate Professor Emeritus of Ancient and Modern Languages
B.A., Aurora College;
M.A., University of Chicago;
Docteur de l'Universite, Grenoble.
Retired, 1966.

EUGENE DODD SCUDDER, Ph.D.
Professor Emeritus of Chemistry
A.B., M.A., Ph.D., Indiana University.
Retired, 1968.

JOSEPH EARL SMITH, Ph.D.
Professor Emeritus of Economics and Dean of the University.
A.B., Oxford University;
M.A., University of Nebraska;
Ph.D., Wallas College, London.
Retired, 1967.

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FEBRUARY

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MARCH

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APRIL

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JUNE

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SEPTEMBER

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OCTOBER

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NOVEMBER

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JANUARY

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FEBRUARY

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AUGUST

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NOVEMBER

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UNIVERSITY DIRECTORY

DEPARTMENT or OFFICE	BLDG.	FLR.
ACCOUNTING	KMRH	2nd
ACCOUNTING OFFICE	JH	1st
ADMISSIONS OFFICE	JH	1st
ADVERTISING & PUBLIC RELATIONS	KSC	2nd
ALPHA DELTA SIGMA	KMRH	2nd
ALPHA PHI OMEGA	KMRH	1st
ALUMNI OFFICE	KMRH	1st
ART	CWH	1st
ASSOCIATE in ARTS	ESB	2nd
ATHLETIC BUSINESS OFFICE	KMRH	1st
ATHLETIC OFFICE	TH	Bsmt
AUDITOR'S OFFICE (STATE)	WBSH	Ground
BAND ROOM	CH	2nd
BIOLOGY	WBSH	4th
BOOKSTORE	BS	1st
BUDGET OFFICE	JH	2nd
BURSAR'S OFFICE	JH	1st
BUSINESS ORGANIZATION	KMRH	1st
BUSINESS TECHNOLOGY	ESB	1st
CAMPUS NURSE	CH	2nd
CAMPUS SECURITY	KMRH	1st
CENTRAL SERVICES	BS/CH	Bsmt/ 1st
CHEMICAL ENGINEERING	ESB	2nd
CHEMISTRY	WBSH	2nd, 3rd
CIRCLE K	KMRH	1st
CIVIL ENGINEERING	ESB	2nd
COLLEGE of ARTS & SCIENCES	ASO	
COMPTROLLER'S OFFICE	JH	1st
COMPUTER CENTER	ESB	2nd
CONTINUING EDUCATION	ESB	2nd
COUNSELING CENTER	FH	1st
CRIMINAL JUSTICE	ESB	1st
DANA SCHOOL OF MUSIC	DSM	
DEANS		
Admissions and Records	JH	2nd
College of Arts & Sciences	ASO	2nd
Dana School of Music	DSM	1st
Graduate School	ASO	2nd
Men	JH	1st
Student Affairs	JH	1st
Women	JH	2nd
School of Business Administration	KMRH	2nd
School of Education	SE	2nd
Technical & Community College	ESB	2nd
William Rayen School of Engineering	ESB	2nd
ECONOMICS	ASO	2nd
EDUCATIONAL FOUNDATIONS	SE	2nd
ELECTRICAL ENGINEERING	ESB	2nd
ELEMENTARY EDUCATION	SE	2nd
ENGINEERING TECHNOLOGY	ESB	2nd
ENGLISH	ASO	3rd
FINANCIAL AIDS	EH	1st
FOREIGN LANGUAGES	JH	3rd
GAMMA SIGMA SIGMA	KMRH	1st
GEOGRAPHY	SE	Bsmt
GEOLOGY	WBSH	Ground
GRADUATE SCHOOL	ASO	2nd
HEALTH & PHYSICAL EDUCATION	JH	3rd
Women's HPE	SE	1st
HISTORY	ASO	2nd
HOME ECONOMICS	CWH	1st
INDUSTRIAL ENGINEERING	ESB	2nd
INSTITUTIONAL RESEARCH	EO	2nd
INTER-FRATERNITY COUNCIL	KMRH	1st
INTERNATIONAL STUDENT ORGANIZATION	EH	1st
JAMBAR	SP	1st
LIBRARY	UL	1st
MATHEMATICS	ESB	2nd
MECHANICAL ENGINEERING	ESB	2nd
MERCHANDISING	KMRH	2nd
METALLURGICAL ENGINEERING	ESB	2nd
MILITARY SCIENCE	PH	3rd
NEON	EH	3rd
NURSING	RH	1st
PANHELLENIC COUNCIL	KMRH	1st
PENGUIN REVIEW	EH	3rd
PERSONNEL	EH	1st
PHILOSOPHY & RELIGIOUS STUDIES	ASO	1st
PHYSICAL PLANT OFFICE	JH	1st
PHYSICS & ASTRONOMY	WBSH	1st
PLACEMENT	EH	2nd
PLANETARIUM	WBSH	Ground
PLANNING OFFICE	ESB	2nd
POLITICAL SCIENCE	ASO	1st
POST OFFICE	BS	Bsmt
PRESIDENT	EO	1st
PRINTING OFFICE	CH	1st
PSYCHOLOGY	FH	1st
PURCHASING	JH	1st
RECORDS OFFICE	JH	2nd
REGISTRAR'S OFFICE	JH	2nd
RESIDENCE HALL (Men)	KMRH	3rd to 7th
SCHOOL OF BUSINESS ADMINISTRATION	SBA	2nd to 6th
SCHOOL OF EDUCATION	SE	2nd
SECONDARY EDUCATION	SE	2nd
SECRETARIAL STUDIES	RH	2nd
SOCIOLOGY & ANTHROPOLOGY	ASO	3rd
SPECIAL EDUCATION	SE	2nd
SPEECH & DRAMATICS	ASO	3rd
STROUSS AUDITORIUM	JH	1st
STUDENT ACCOUNTS	JH	1st
STUDENT COUNCIL	KMRH	1st
STUDENT HOUSING	KMRH	1st
STUDENT LOUNGE	KSC	2nd
TECHNICAL & COMMUNITY COLLEGE	ESB	2nd
UNIVERSITY RELATIONS	EO	2nd
VETERAN'S OFFICE	EH	1st
VICE PRESIDENTS		
Academic Affairs	EO	1st
Administrative Affairs	EO	2nd
Financial Affairs	JH	1st
WILLIAM RAYEN SCHOOL OF ENGINEERING	ESB	
WYSU (FM)	ASO	3rd
YOUNGSTOWN EDUCATIONAL FOUNDATION	PH	1st

A UNIVERSITY RELATIONS PUBLICATION