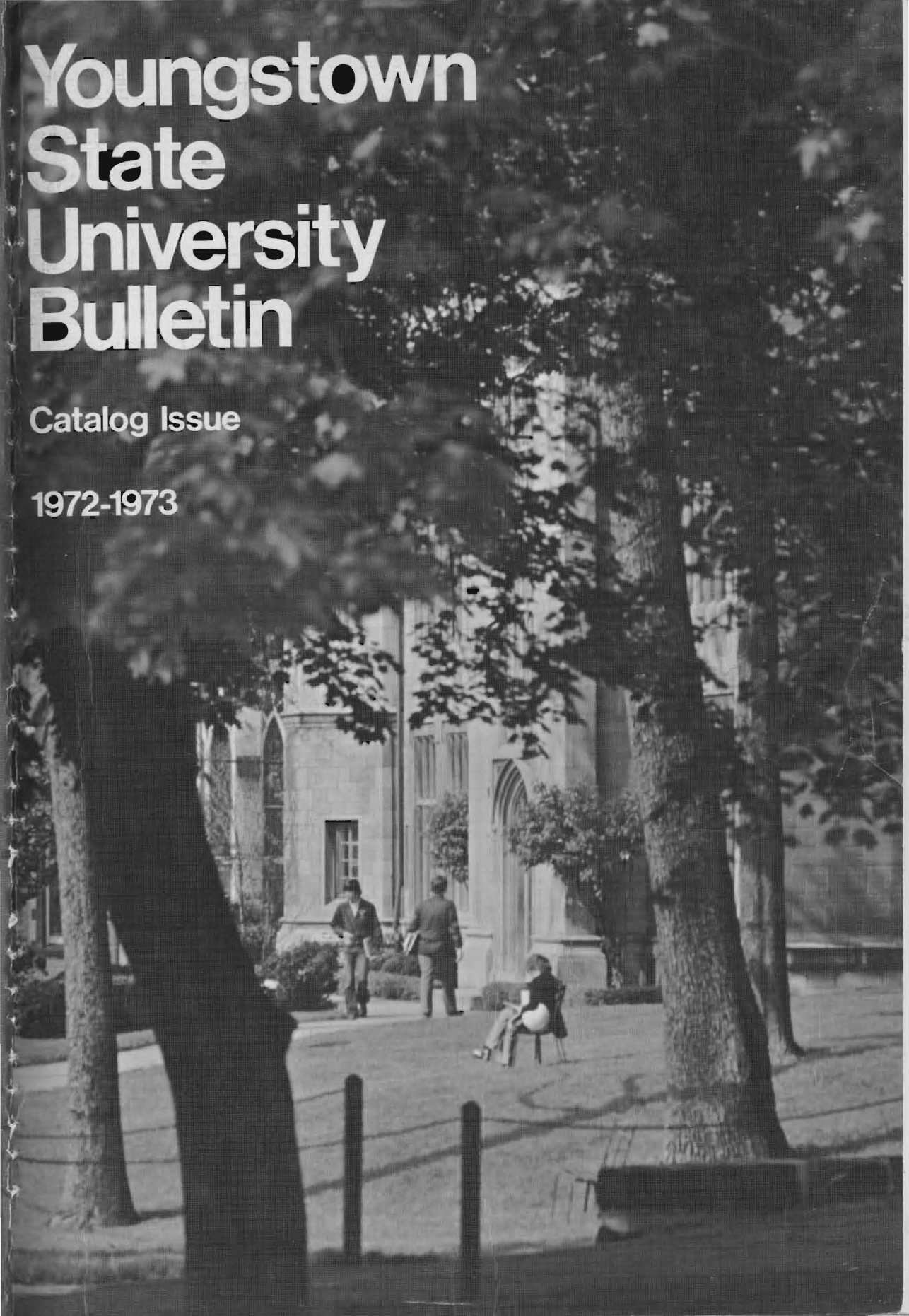
Youngstown State University Bulletin

Catalog Issue

1972-1973



Youngstown State University

Bulletin 1972-1973

YOUNGSTOWN STATE UNIVERSITY BULLETIN
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CATALOG ISSUE

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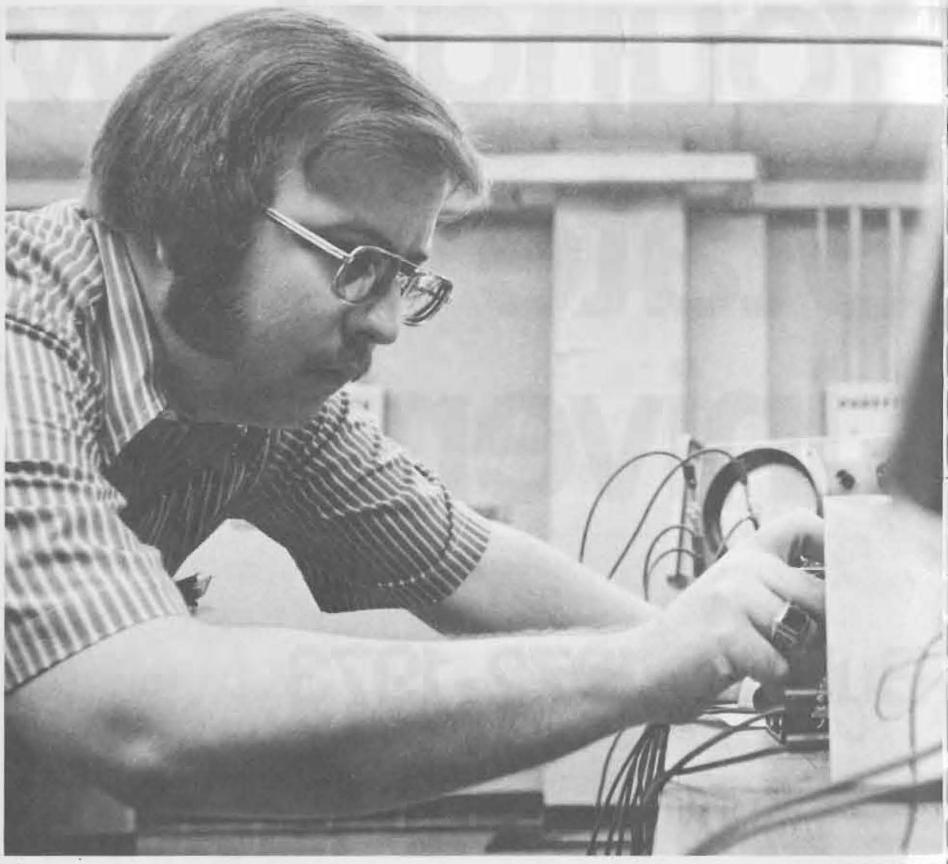
YOUNGSTOWN, OHIO



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Accreditation

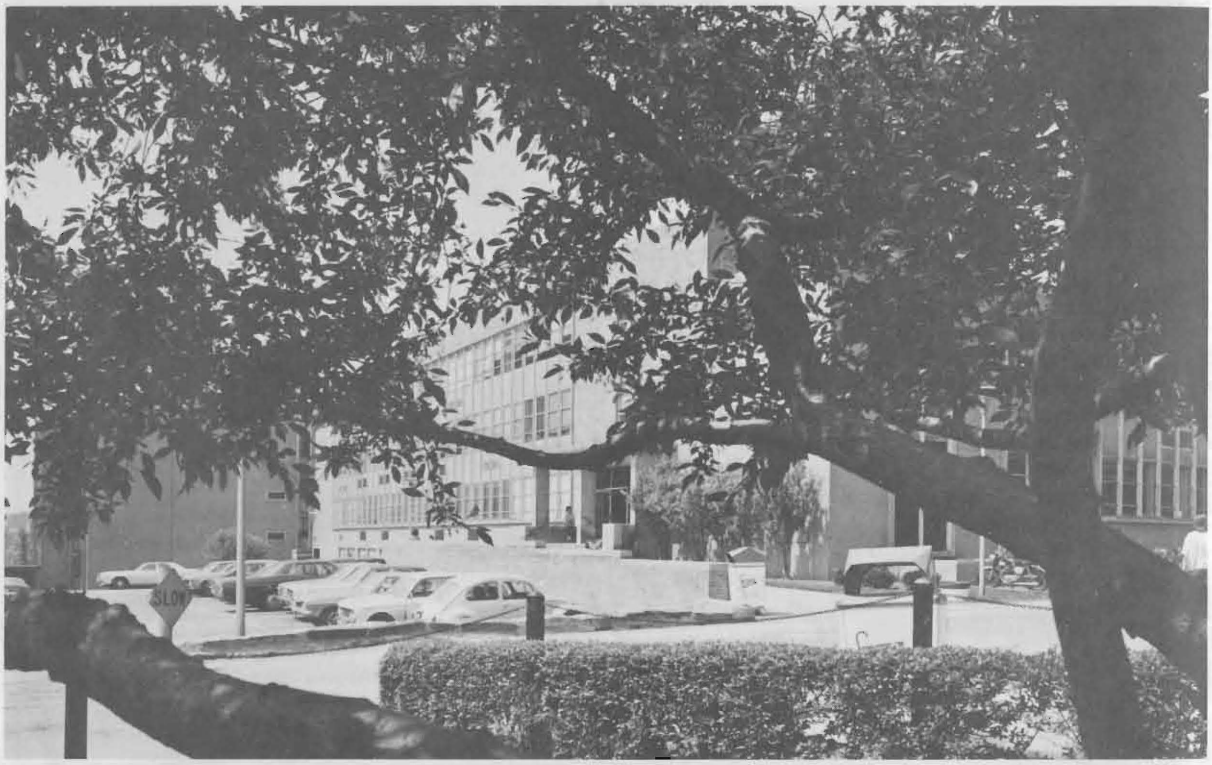
Youngstown State University is accredited by the North Central Association of Colleges and Secondary Schools, by the Department of Education of the State of Ohio as a teacher education institution, and by the National Council for Accreditation of Teacher Education. It is on the approved list of the American Medical Association, the American Dental Association, and the American Chemical Society. The William Rayen School of Engineering is accredited by the Engineers' Council for Professional Development for its day and evening curriculums for civil, electrical, metallurgical, 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.), Master of Business Administration (M.B.A.), 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.).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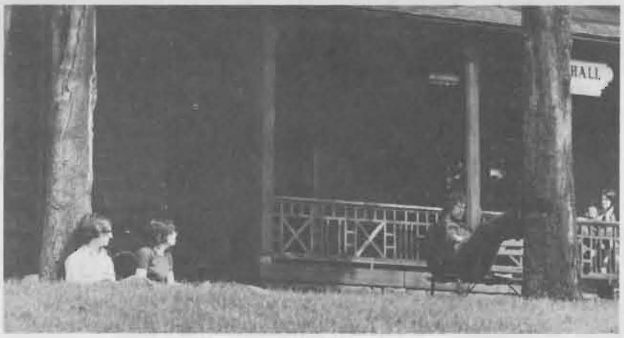

HALL

The Academic Calendar 1972-1973

FALL QUARTER 1972

Sept. 21	Thurs.	0800	Classes Begin
Sept. 27	Wed.	1900	Last day to add a class
Sept. 30	Sat.	1100	Last day to apply for Fall Quarter Graduation
Nov. 1	Wed.	1900	Last day for withdrawing with a W
Nov. 22	Wed.	2300	Thanksgiving Vacation Begins
Nov. 27	Mon.	0800	Thanksgiving Vacation Ends
Dec. 4	Mon.	0800	Final Examinations Begin
Dec. 9	Sat.	1430	Final Examinations End

WINTER QUARTER 1973

Jan. 2	Tues.	1650	Classes Begin
Jan. 8	Mon.	1900	Last day to add a class
Jan. 13	Sat.	1100	Last day to apply for Winter Quarter Graduation
Feb. 12	Mon.	1900	Last day for withdrawing with a W
Mar. 12	Mon.	1700	Final Examinations Begin
Mar. 17	Sat.	1430	Final Examinations End
Mar. 24	Sat.	1000	Winter Commencement

SPRING QUARTER 1973

Mar. 26	Mon.	0800	Classes Begin
Mar. 31	Sat.	1100	Last day to add a class
Mar. 31	Sat.	1100	Last day to apply for Spring Quarter Graduation
May 5	Sat.	1100	Last day for withdrawing with a W
May 28	Mon.		Legal Holiday—No Classes
June 4	Mon.	0800	Final Examinations Begin
June 9	Sat.	1430	Final Examinations End
June 16	Sat.	1000	Spring Commencement

SUMMER QUARTER 1973

June 14	Thurs.	0800	Classes Begin—Entire Summer Quarter and First Term
June 18	Mon.	1900	Last day to add a class—First Term
June 20	Wed.	1600	Last day to add a class—Entire Summer Quarter
June 25	Mon.	1900	Last day to apply for Summer Quarter Graduation
July 3	Tues.	1900	Last day for withdrawing with a W—First Term Classes
July 4	Wed.		Legal Holiday—No Classes
July 19	Thurs.	2200	First Term Ends (Final Examinations for First Term Classes are given during Last Scheduled Class Period)
July 23	Mon.	0800	Second Term Begins
July 25	Wed.	1600	Last day for withdrawing with a W—Entire Summer Quarter Classes
July 27	Fri.	1600	Last day to add a class—Second Term
Aug. 10	Fri.	1600	Last day for withdrawing with a W—Second Term Classes
Aug. 22	Wed.	0800	Final Examinations Begin—Entire Summer Quarter Classes (Final Examinations given during Last Scheduled Class Period)
Aug. 24	Fri.	0800	Final Examinations Begin—Second Term Classes (Final Examinations given during Last Scheduled Class Period)
Aug. 24	Fri.	2200	Second Term and Entire Summer Quarter Ends
Aug. 31	Fri.	1000	Summer Commencement

classes start Thurs. Sept 20

Times provided above are based on the 24-hour system, in which the day begins at midnight and hours are numbered consecutively through 2400. Thus, 8:00 a.m. is 0800, and 8:00 p.m. is 2000.

All registration is by appointment only and is concluded prior to the beginning of classes for each quarter.

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, sex, 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 co-educational, non-sectarian, and non-profit organization: it is open to anyone of good character with the proper academic qualifications. Efforts are made to give all necessary guidance and assistance to war veterans of military service.

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

The Graduate School
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 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.

THE GRADUATE SCHOOL

The Graduate School offers programs in economics, English, and history leading to the Master of Arts degree; programs in biology, chemistry, and mathematics leading to the Master of Science degree; programs in accounting, management, and marketing leading to the Master of Business Administration degree; programs in music education, applied music, theory and composition, musicology, and woodwind 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.

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 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 combined major in the sciences, social studies, or the humanities. Courses are also offered in astronomy, the Bible, communication (written and oral expression), ancient Greek, journalism, and military science.

THE SCHOOL OF BUSINESS ADMINISTRATION

The School of Business Administration offers courses leading to the degree of Bachelor of Science in Business Administration, with a major in accounting, advertising and public relations, advertising art, financial management, general administration, industrial management, retail or industrial marketing, 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, with the Dana School of Music for the Bachelor of Music degree with the major in public school music, and with the Technical and Community College in the preparation of business education and home economics teachers. The departments of the school are Foundations of Education; Elementary Education; Guidance, Counseling, and Pupil Personnel; 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 courses leading to the Bachelor of Science degree in corrections, home economics, law enforcement administration, and nursing; to the degree Associate in Arts; to the degree Associate in Applied Business in accounting technology, advertising technology, business management technology, commercial art technology, general administration technology, marketing technology, public administration technology, secretarial studies, and transportation management technology; and to the degree Associate in Applied Science in child care technology, civil engineering technology, computer technology, electrical engineering technology, food service technology, mechanical engineering technology, metallurgical engineering technology, nursing, and police science technology. In cooperation with the School of Education it prepares secondary school teachers in business education and home economics.

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

SPECIALIZED STUDIES

BLACK STUDIES

The Black Studies Program was established to provide an opportunity in the University for the systematic investigation of the Black man, his heritage, culture, and social struggle. The purpose of such investigation is to achieve an objective but sensitive awareness of positive resolutions for some of the many problems we face in a multiracial world.

The Black Studies Program is interdisciplinary and draws its course offerings from a broad but closely related variety of established disciplines. The program is open to all students in the University.

THE CENTER FOR URBAN STUDIES

The Center for Urban Studies is a research and community service institute. The Center was established by the University Board of Trustees in recognition of the obligations of the University for the continuous development and progress of the region. The primary objective of the Center, therefore, is to relate the resources of the University to the problems and processes associated with urbanization in our region, through the development of an ongoing program of urban extension and assistance to public and private organizations in 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 23 major buildings already in use on the campus, the University is currently engaged in a six-year multimillion dollar campus development program. Recently opened is a new health and physical education building with an indoor Olympic-size swimming pool. Now under construction is a new Library capable of housing one-half million volumes, 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 main part of the University campus extends from Wick Avenue to Fifth Avenue, bounded by Spring Street on the north and Lincoln Avenue on the south side. In this area are the buildings which house most of the College of Arts and Sciences, the School of Business Administration, the School of Engineering, the Technical and Community College, and the Graduate School. The principal building of the Dana School of Music is on Wick Avenue north of Spring Street; the Dana Recital Hall is on Spring and the Dana Studio on Bryson Street. The School of Education building is on Elm Street. Pollock House, used in part by the College of Arts and Sciences, and Ford Hall are opposite the Dana School of Music on Wick Avenue. Rayen Hall, on Wick Avenue near Rayen Avenue, houses classrooms and part of the Technical and Community College.

THE CENTRAL CAMPUS

The prominent building in the central campus 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 Administrative Annex, located on Lincoln Avenue south of Jones Hall, houses the offices of Student Financial Aids and the Placement Service.

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 the campus, and all departments are served in this centralized facility. At present it contains more than 275,000 volumes and 3,200 periodical subscriptions, as well as 275,000 units in microform. The Library is constantly growing to serve the need for materials for instruction, recreation, cultural advancement, and research.

The Library has open stacks with study carrels alternating with each row of book stacks which permits 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.

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 many of our library purchases.

JOHN TOD HALL

John Tod Hall, a wing at the north end of the Library building, contains classrooms. 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 research 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 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, equipping, 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.

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 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.

KILCAWLEY CENTER

The first building constructed as part of the University's Campus Development Plan was the Kilcawley Center. The Center includes a dining room, lounges, and meeting rooms. The first floor of its residence wing houses the offices of Student Affairs, Student Government, and various student organizations. 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.

Ground was broken in 1971 for a 92,000-square-foot addition to the Center to be completed in 1973.

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 $5,000,000 Engineering Science Building is 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 six departments—Economics, English, History, Philosophy and Religious Studies, Political Science, and Speech and Dramatics; the office of the dean of the College of Arts and Sciences; and the studios of WYSU, the University's FM stereo radio station.

THE LINCOLN PROJECT

A recent addition to the Youngstown State University physical plant is the $1.62-million Lincoln Project, located on the southeast corner of Lincoln and Phelps avenues. Of strikingly contemporary architecture, the structure contains some 59,000 square feet of floor space. It houses the School of Business Administration and the offices of the Graduate School, the Department of Sociology and Anthropology, Black Studies, and Campus Planning.

BEEGHLY PHYSICAL EDUCATION CENTER

The newest of the University's major structures, this building was completed early in 1972. It contains some 198,000 square feet of floor space and houses the Department of Health and Physical Education and the Athletic Department. Its facilities include a gymnasium with spectator seating for nearly 6,000 and an Olympic-size swimming pool. There are 17 classrooms including laboratories for health research and kinesiology; separate gymnasiums for wrestling, weight lifting, gymnastics, and physical education for the handicapped; handball

and squash courts; and a rifle range. This building is located on Spring Street between Fifth Avenue and Elm Street.

THE ALUMNI OFFICE

An up-to-date record of the more than 19,000 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, as well as other information. The Alumni Office is located in the Executive Office Building.

The Youngtown State University Alumni Association is the official organization of the institution's alumni. Membership in it is extended to all graduates of the University.

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 with modern instruments necessary for the study of molecular biology, physiology, cellular processes, microbiology and ecology. A reference collection of nearly 5,000 native and exotic plants is available for student use, and the department has an extensive collection of mounted insects. Liquid scintillation counting, autoradiography and other techniques are applied for studies involving radioactive isotopes. Field studies are carried out at the YSU Arboretum, Mill Creek Park, Meander Creek Reservoir and the William Holmes McGuffey homesite farm.

The *chemistry* laboratories have equipment for a range of experiments in all major areas of chemistry. The wide scope of instructional and research instrumentation allows students to learn current and significant methods and includes capabilities in nuclear magnetic resonance, spectrometry, mass spectrometry, infrared, visible and ultraviolet spectrophotometry, gas chromatography, X-ray diffraction, and electrochemistry.

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 *advanced geology* laboratory is equipped with research instrumentation to teach the techniques and applications of mass spectrometry, X-ray diffraction and differential thermal analysis as applied to geologic problems plus a specialized research microscope designed for the study of metallic ores and coal petrography.

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 textbooks 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 Beeghly Physical Education Building provides offices, classrooms, laboratories, activity areas, gymnasium, natatorium, locker and shower facilities for health and physical education activities. The University also uses the facilities of Harrison Field, east of Wick Avenue; the well-equipped sports centers in Mill Creek Park; and the McGuffey Bowling Lanes on North Garland Avenue. Varsity teams use the gymnasium,

natatorium, gymnastics room, and the rifle range in the Beeghly Physical Education Center; Campbell Stadium; Stambaugh Field, the gift of Mr. Arnold Stambaugh, for practice; municipal tennis courts; Mill Creek sports fields; and the Avalon Golf Course.

THE BOOKSTORE

The Youngstown State University Bookstore, temporarily located at 570 Fifth Avenue, sells 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 students, faculty and staff.

PARKING AREAS

Parking facilities for students include a parking deck between Lincoln and Arlington streets, and a large open lot between Arlington and Spring streets. Other major lots are located on the north side of Grant Street behind the Physical Education Center, across from Jones Hall on Wick Avenue, and on the west side of Wick Avenue at the expressway ramp. There is a total of fourteen lots available for students. Please consult the map for locations.

Parking facilities for University employees are so marked.

Between 5:30 p.m. and 7:00 a.m., students, faculty and staff may park in any University parking lot. (For information concerning registration of vehicles and applicable fees, see the *Fees and Expenses* section of catalog.)

NEIGHBORING FACILITIES

A number of community facilities have been made available for University use. Mill Creek Park is exceptionally favorable for biological study; and through the social agencies of the city, sociology students may do practical social work. 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 cooperation 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 personal 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 Associate and Assistant Deans of Student Affairs, Director of Student Activities, University Counseling Center, International Student Office, and Kilcawley Center.

Under the Youngstown State University Code of Student Rights, Responsibilities,

and Conduct, the Dean of Student Affairs is charged with primary responsibility for student conduct and discipline at the University.

OFFICE OF THE ASSOCIATE DEAN OF STUDENT AFFAIRS

The Associate Dean of Student Affairs is responsible for the welfare of the women students of the University and for other duties assigned by the Dean of Student Affairs. In addition, she serves as advisor to Panhellenic Council and supervises the social sororities and other University-affiliated organizations. Scheduling of all events by the Calendar and Coordination Committee is centered in this office. Information on housing for women is also available. The office is located on the first floor of Kilcawley Hall.

OFFICE OF THE ASSISTANT DEAN OF STUDENT AFFAIRS

The Assistant Dean of Student Affairs is responsible for student personnel aspects of Kilcawley Men's Residence Hall, off-campus housing, and other duties as assigned by the Dean of Student Affairs. He also assists the Dean of Student Affairs in discipline and is a member of the University Disciplinary Committee. His office is located in Room 115, Kilcawley Hall.

COUNSELING, GUIDANCE, AND TESTING

The Counseling Center staff includes several counseling psychologists and a testing director. All are experienced professionals who specialize in working with college students who might be concerned with adapting to college life, academic progress, career choice, drugs, family, marriage or problem pregnancies.

The Counseling Center administers the American College Test (ACT), the Graduate Record Examination, the Miller Analogies Test, the Law School Admission Test, Medical College 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.

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.

INTERNATIONAL STUDENTS

The International Student is a most welcome member of the Youngstown State University community. His contribution to the University community is to enrich and to share with others knowledge, understanding, and appreciation of his culture.

It is expected that an International Student will have attained a certain degree of proficiency in the use of English at the time he arrives on the campus, so that he will be able to engage in academic endeavor with benefit to himself. The University affords its International Students the same opportunity to be participants in University affairs as all other students.

A full-time advisor to International Students is available to provide assistance and counsel to all who come to our campus from other lands. Each student is provided guidance and direction in as many areas as possible in order that he may derive the greatest profit and personal satisfaction from his stay at Youngstown State University. All International Students should make an appointment to meet with the advisor as soon as possible after their arrival in Youngstown.

Citizens of the United States who wish to study abroad also may seek advice from this office.

Students from abroad, whether initial or transfer students, are governed by the directives contained in the brochure entitled "Information for Prospective International Students."

HEALTH SERVICE

A Health Service Office is maintained by the University for the purpose of providing emergency medical care to students while they are on campus. The cost of the service is included in the general fee; however, all additional treatment by non-University physicians, clinics, or hospitals must be paid for by the student. Any accident which results in injury to the student involved should be reported to the Health Service Office within twenty-four hours.

A voluntary, group accident and sickness

insurance program specifically written to meet the needs of University students is available at the time of initial registration for each academic year. The program is underwritten by the Continental Casualty Company of Chicago, Illinois, and administered by the McElroy-Minister Company of Columbus, Ohio. A brochure explaining this program is available at the Student Affairs Office and at the Bursar's Office. All foreign students who are not permanent residents of the United States and all residents of the Kilcawley Men's Residence Hall are required to participate in this or a comparable program of Health and Accident Insurance during their entire period of enrollment at Youngstown State University.

PLACEMENT SERVICE

With the cooperation of the Bureau of 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 the Administrative Annex on Lincoln Avenue. 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.

STUDENT HOUSING

Admission to the University does not obligate the University to secure living accommodations for the student. The University, however, 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.

On-Campus Housing—The University has residence hall facilities for two hundred men. 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 Assistant Dean of Student Affairs.

Off-Campus Housing — The University provides a list of approved off-campus housing for men and women. The housing has been inspected and has met minimum University standards. The University does not place students in off-campus housing; therefore, personal arrangements must be made for these facilities. Only those facilities which appear on the University's approved housing lists are recommended.

Women students not living at home should obtain approval from the Associate Dean of Student Affairs for their housing arrangements. An approved housing list for men students may be obtained in the office of the Assistant Dean of Student Affairs.

FOOD SERVICE

Any student not residing in Kilcawley Men's Residence Hall may purchase a meal ticket on a quarterly basis. Arrangements may be made through the Office of the Assistant to the Vice President for Financial Affairs. The cafeteria in Kilcawley 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 extracurricular activities. While studies are of primary concern, an extensive program of extracurricular activities is available to assist students in developing leadership, initiative, personal interest, and skills. A varied social and cultural program, including recognized musical groups, performers, lecturers, and dramatic groups, is available to students attending Youngstown State University. Social fraternities and sororities, honor societies, service groups,

and special interest clubs offer additional opportunities for social and intellectual growth. An intramural athletic program for men and women provides an opportunity for organized physical activity on both a recreational and competitive basis.

The Director and Assistant Director of Student Activities are located in Kilcawley Hall and are readily available to individual students, as well as to organized student groups. They are responsible for the development and direction of all student activity programs and for ensuring that these programs remain responsive to the needs and desires of students and serve to satisfy these needs and desires within the University.

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 Associate Dean of Student Affairs. Extracurricular points are counted only up to the number matched by earned academic points, and academic points only up to the number matched by earned extracurricular points.

STUDENT GOVERNMENT

The student body of Youngstown State University is represented by the Student Government, which operates under constitutional powers granted by the University. The government is composed of representatives from six undergraduate units, the College of Arts and Sciences, the School of Business Administration, the School of Education, the School of Engineering, the Dana School of Music, and the Technical and Community College, 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 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 athletics, music organizations, other cultural, social, and recreational 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 University Publications Board, a student-faculty-administration committee.

The *Jambar*, a newspaper published twice a week; the *Neon*, the University yearbook; and *The Penguin Review*, a literary magazine, are published by student staffs. All three are supported from student activity fees; the *Jambar* accepts advertising, which accounts for a large part of its budget. The *Jambar* also serves as a laboratory for those students enrolled in the English Department's journalism courses.

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 all University students. Pi Kappa Delta is the national honorary fraternity for the forensic participants who achieve distinction in forensics.

THEATRE

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 Speech and Dramatics Department 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 *A Clearing in the Woods, Mary Stuart, A Thousand Clowns, Camino Real, Madwoman of Chaillot,* and *The Lower Depths.*

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

The Department of Speech and Dramatics 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 to 60 performances are given during the academic year before various clubs and organizations in the area.

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 4,000,000 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 badminton, basketball, camping, canoeing, field hockey, football, foul shooting, golf, horseback riding, skiing, soccer, 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.).

VARSITY RIFLE TEAM

The Youngstown State University Varsity Rifle Team, coached by the Military Science Department, 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 or to Room 59, Beeghly Physical Education Center.

UNIVERSITY-RECOGNIZED STUDENT ORGANIZATIONS

Youngstown State University has over 100 student organizations established on its campus, representing almost every possible area of social, recreational, or professional interest.

Each one must be chartered by Student Council and have at least one faculty advisor appointed by the President of the University. A copy of the organizational constitution must be placed on file with the Student Activities Office.

In addition, the organization must file an "Application for University Recognition" at the beginning of the fall quarter of each academic year with the Student Activities Office. The names of officers and advisors and signatures of the president and faculty advisor of the organization are required on the application.

Student organizations which satisfy the above requirements are entitled to use the name of the University in the conduct of organization activities, to participate fully in University and Student Government-sponsored programs and activities, and may be granted use of University facilities according to the classification and priority listed in the Student Handbook.

An organization may sever its affiliation with the University at any time by submitting a letter stating its intent to do so to both the Student Council and Sudent Activies Office, or by failing to submit the annual "Application for University Recognition" at the beginning of an academic year.

An organization which declines to continue its affiliation with the University under the terms of these regulations will be responsible only to its own membership and/or national organization and will have no continuing responsibility to the University for adherence to University policies and regulations. Neither will they have the privilege of using the University facilities or participating in University-sponsored activities (e.g., intramural athletics, campus queen elections, and homecoming and major weekend activities). In the case of national chartered organizations, the University is obligated to inform the national office whenever a change of status of the local chapter or group occurs.

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 Epsilon is a national honorary society for economics majors.

Omicron Lambda is an honorary fraternity of outstanding biology students. It strives to promote life sciences, and to achieve this goal the members serve as judges of high school science fairs, participants in science open house, and as lecturers to high school classes.

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.

PROFESSIONAL ORGANIZATIONS

Alpha Delta Sigma is a national professional advertising fraternity.

Alpha Kappa Psi is a national business administration fraternity.

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 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.

The National Society of Pershing Rifles, an honorary military society, was organized in 1894 by Gen. John J. Pershing, then a 2nd lieutenant instructor at the University of Nebraska. Membership is drawn from the Basic Course students except for officers of the organization, who are Advanced Course students. The unit at Youngstown State University, organized in 1952, is Company P, First Regiment. One of the primary objectives of the organization is excellence in close order and exhibition drill. A few of the activities that the unit participates in are:

(a) platoon, squad, and individual drill competition with other colleges and universities in Ohio, Kentucky, and West Virginia.

(b) parades, civic and University functions.

(c) Honor Guards

(d) Social affairs

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.

The objectives of the R.O.T.C. Rangers Program is to promote the development of cadet leadership and provide realistic field training in Ranger-type operations. Membership in the Rangers is open to all R.O.T.C. cadets in "good standing."

The mission of the ranger program is accomplished by (a) developing the leadership traits of its cadet members, (b) instilling self-discipline, determination, resourcefulness, and self-confidence in each cadet to increase his effectiveness as a future leader, whether it be as a civilian or as a soldier, (c) provide realistic training associated with Ranger-type operations, and (d) develop interest in and respect for a career in the profession of arms through activity and instruction not available as part of the regular military science curriculum.

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

Cooperative Campus Ministry
Inter-Varsity Christian Fellowship
Jewish Student Fellowship
Newman Club

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 Delta Theta (Colony)
Phi Kappa Tau
Phi Sigma Kappa
Sigma Alpha Epsilon
Sigma Alpha Mu
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
Phi Mu
Sigma Sigma Sigma
Zeta Tau Alpha

SERVICE ORGANIZATIONS

Alpha Phi Omega*
Circle K*
Gamma Sigma Sigma†
Rotaract Club*

OTHER STUDENT ORGANIZATIONS

African-American Student Union
Alpha Kappa Delta
American Institute of Biological Sciences
Arab Student Organization
Art Club
Association of Political Scientists
Campus Ecology Group
Community of Concern
Future Secretaries Association
History Club
Intercollegiate Karate Club
International Student Organization
Italian Club
Leadership Society
Les Bon Vivants (French Club)
Little Sisters of Alpha Kappa Psi
Little Sisters of Athena
Little Sisters of Delta Chi
Little Sisters of Kappa Alpha Psi
Little Sisters of Minerva
Little Sisters of the Pearl
Little Sisters of Scabbard and Blade
Little Sisters of the White Carnation
Little Sisters of the White Rose
Los Buenos Vecinos (Spanish Club)
Music Educators National Conference
NAACP
Order of Diana
Pearls of Octogon

*Men Only.
†Women Only.

Penguin Ski Club
Philiatric Society
Russki (Russian Club)
Senior Women's Honorary Society
Sisters of Alpha Phi Delta
Sisters of Delta Sigma Phi
Sisters of the Golden Heart
Sisters of the Laurel
Sisters of Theta Chi
Sisters of TTT
Soccer Club
Sociology Club
Student Democrats
Student Education Association
Student Nurse Association
Women's Recreation Association
YSU Chess Association
YSU Commandants
YSU Geological Society
YSU Liberterian Society
YSU Mathematics Club
YSU Men's HPE Majors Club
YSU Men's Pre-Law Association
YSU Rifle Club
YSU Young Republicans
Zero Population Growth

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 three representatives from each active social sorority and has a faculty advisor 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 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 Kappa Psi Key. Eta Xi chapter of Alpha Kappa Psi, a national professional business fraternity, awards annually the Alpha Kappa Psi Scholarship Key to the male senior student pursuing a degree in the School of Business Administration, who has the highest scholastic average.

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 Elec-

trical 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 presents an award to the graduating senior in the School of Business Administration completing his courses in management with the highest point average.

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

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 otustanding graduate in mechanical engineering.

The American Society of Metals Awards. The American Society of Metals, YSU Committee, grants awards to an outstanding senior and an outstanding junior in metallurgical engineering and materials science, and to an outstanding student for leadership in ASM activities.

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 Frank M. Clark Memorial Award. An award is presented annually to the graduating senior in physics who has the highest cumulative point index and who has been admitted to graduate study. The award is made to honor the memory of Frank M. Clark, associate professor of physics, who taught at the University from 1957 until his death in 1965.

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 Marketing and the Dean of the School of Business Administration.

The Mosure-Fok and Syrakis Company, Limited, Award in Civil Engineering Technology. The Mosure-Fok and Syrakis Company, Limited, grants an annual award to the graduate in civil engineering technology who is deemed by the faculty to represent the best overall graduate completing his degree on a part-time basis while employed on a full-time basis. Such award recognizes the diligence of students with economic responsibilities who yet complete their formal education requirements for graduation.

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 annually presents a $25 cash award to an outstanding graduating biology student who has distinguished himself scholastically and in extracurricular activities. This distinguished student is generally an active member of Omicron Lambda, but membership is not a necessary criterion of selection. The name of the recipient of the cash award is inscribed on a permanent plaque located in the Biology Department.

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 Charles G. Watson Awards in Mathematics. Two awards of $100 each are made annually to two seniors graduating with a major in mathematics. The students are selected by the Chairman of the Mathematics Department after consultation with other members of the department. The awards are named in honor of Charles G. Watson, local industrialist and former Chairman of the Board of Trustees of Youngstown University.

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.

Daughters of the American Revolution Award. The Mahoning Chapter, Daughters of the American Revolution, annually awards a Gold Medal to the graduating cadet in the top 25 per cent of his R.O.T.C. and academic class who has demonstrated qualities of loyalty, good character, leadership and support of the R.O.T.C. program.

Daughters of Founders and Patriots of America (DFPA) Award. The Ohio Chapter of the Daughters of Founders and Patriots of America annually awards a Gold Medal to the sophomore cadet who is in the top 25 per cent of his class and who has demonstrated a high degree of leadership and patriotism.

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.

FINANCIAL AIDS

The University has a comprehensive program of financial assistance developed to aid primarily the student with ability to succeed in college who needs financial aid to help pay his educational costs. It recognizes also 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.

Entering freshmen and enrolled students seeking financial assistance for the next academic year should apply prior to April 1. Most awards are made in June. One-third of the total amount awarded may be used by the recipient for payment of University fees and other educational costs each quarter beginning with the fall quarter. A new Financial Aid Request is required each year. All forms that should be submitted are available in the University Office of Student Financial Aids.

To assure equality in distribution of financial assistance awards based upon established financial need, the University utilizes the need analysis services of the College Scholarship Service. The parents or guardian of each applicant for financial assistance should submit a "Parents' Confidential Statement" form to the College Scholarship Service not later than April 1, or if the student applicant is completely independent of parental or guardian support, he should submit a "Student's Confidential Statement" form to the College Scholarship Service not later than April 1.

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.

The Edith Howard Graham Fund. Income from this fund is available as a loan to worthy students in the School of Business Administration.

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 per cent 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 made to full-time students of exceptional financial need who are permanent Ohio residents and in good standing academically. The amount of the award will vary depending upon the family's adjusted effective income and the number of dependent children in the family. Applications are available in the University Office of Student Financial Aids. Upon completion these applications are submitted to the Ohio Board of Regents in Columbus, Ohio, for processing.

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. This scholarship was established in 1950. A grant of $500 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 financial need.

The American Business Women's Scholarship. The 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 education 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 for Women Accountants. This scholarship, established in 1963, is awarded to a woman majoring in accounting or secretarial accounting.

Amerital Veterans and Civic Association Scholarship. This $300 scholarship established in 1970 by the Amerital Veterans and Civic Association is an annual award for a freshman male of paternal Italian descent living in the metropolitan Youngstown area in Ohio who needs financial assistance.

The Builders Association of Eastern Ohio and Western Pennsylvania Scholarship. This tuition scholarship is awarded each year by the Builders Association of Eastern Ohio and Western Pennsylvania to an entering freshman in civil engineering technology. The recipient must be a full-time student and will continue to receive tuition for two years through graduation with the associate degree as long as academic standards are met and full-time student status is maintained.

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 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 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 Harry K. Graebing Athletic Scholarship. This scholarship was established in 1969 by Mildred N. Graebing in memory of her husband, Harry K. Graebing. The income from an endowment of $15,000 makes possible annual awards to deserving Ohio or Pennsylvania student participants in University athletics.

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 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 Nellie P. Nick Music Scholarship. This scholarship was established in 1971 by Mildred N. Graebing in memory of her mother, Nellie P. Nick, in recognition of her 100th birthday anniversary. The income from an endowment of $5,000 makes possible annual awards to deserving women students who are enrolled in the Dana School of Music.

Postal Church Service, Inc., Scholarship Plan. These four-year scholarships were established by Postal Church Service, Inc., 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.

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 $100 a month. High school seniors are eligible to apply. Selection is made by the Department of the Army.

Army R.O.T.C. Three-Year Scholarships. These scholarships are the same as the Army R.O.T.C. four-year scholarships, except that their duration is for three years

and that an applicant must be a University freshman enrolled in the first year of the four-year R.O.T.C. program to apply.

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

Army R.O.T.C. One-Year Scholarships. These scholarships are the same as the two-year scholarships, except that their duration is for one year and that an applicant must be a junior enrolled in the third 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 Georgene M. Smith Scholarship. This scholarship was established in 1972 with funds bequeathed by Georgene M. Smith for awards to YSU students in botany, geology and forestry in recognition of service performed by the Trumbull Arboretum and Conservation Association.

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 Szabo Memorial Scholarship Fund. This fund, established by the Szabo family in 1972, provides a scholarship for a needy and deserving student of Hungarian background. The scholarship provides a stipend of $200 annually and is not renewable. Selection of the recipient will be made by a scholarship committee.

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 the 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 Associate in Applied Business degree.

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.

Youngstown Inner-City Student Scholarship Fund. This scholarship fund, established in 1971 by the Black Studies Program, is designed to assist minority students from the Youngstown inner-city schools who demonstrate ability to complete a college degree at Youngstown State University, but due to economic positions lack adequate financial support.

It is used to enable minority students to help themselves. Recipients of awards from this fund will be selected by the director of the Black Studies Program.

The Youngstown Sheet and Tube Company Scholarships. These scholarships 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 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 Cora E. Emerson Memorial Scholarship. This scholarship was founded in 1972 under the will of Cora E. Emerson. It provides an annual award to a deserving and needy full-time female student attending Youngstown State University.

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 William F. Maag, Jr.-Vindicator Scholarship. This scholarship was established in 1971 by the Youngstown *Vindicator* as a memorial to Mr. William F. Maag, Jr., whose leadership was instrumental in the development of the communication media, higher education, and civic affairs in the Youngstown area. Revenue from invested capital makes possible annual awards to worthy students based upon financial need and academic excellence, especially those majoring in the humanities.

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 Pember-

ton. 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.

Joseph E. Smith Scholarship. This scholarship, established in 1971 by friends of Dr. Joseph E. Smith as a memorial to him, provides funds for a worthy and needy student to attend Youngstown State University.

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.

The Isadore Zobel Scholarship. This scholarship, established in 1966 under the will of Mr. Isadore Zobel, provides annual awards to needy students of Jewish faith.

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 frequently be arranged by the YSU Placement Office of the State Employment Service.

GRADUATE SCHOLARSHIPS

The Graduate School of Youngstown State University makes available a certain number of assistantships and scholarships each year to 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 Associate Dean of Student Affairs. Current notices are posted on the Scholarship bulletin board adjacent to the latter office and on departmental bulletin boards. Four 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, Dr. W. L. Miner.

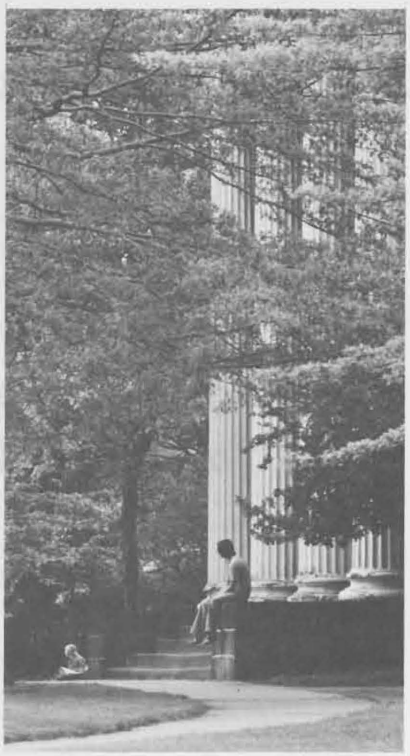
Danforth Graduate Fellowships. These are available to college seniors or recent graduates preparing to teach or do admin-

istrative work on the college level. Further information may be obtained from the campus representative, Dr. C. T. Hankey.

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. Further information may be obtained from the campus representative, Dr. W. L. Miner.

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.

General Requirements and Regulations

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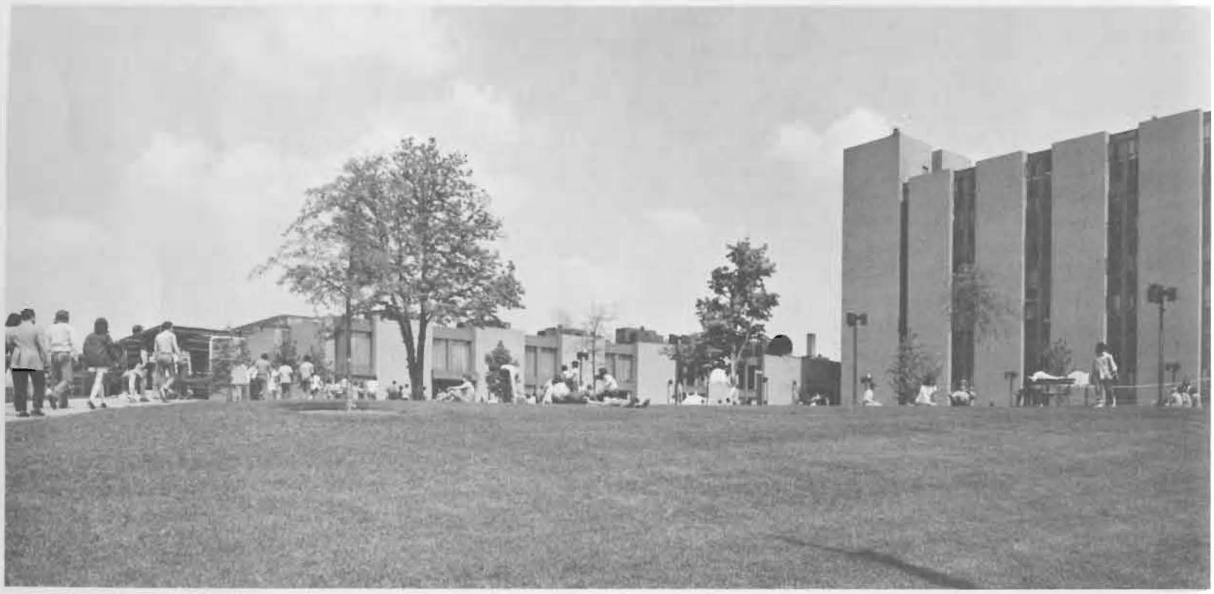

ADMISSION REQUIREMENTS

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 1972	August 18, 1972	September 21, 1972
Winter 1973	December 1, 1972	January 2, 1973
Spring 1973	February 23, 1973	March 26, 1973
Summer 1973	May 18, 1973	June 13, 1973

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 those guidelines will supersede those shown in this catalog.)

1. A dependent student shall be considered to be a resident of Ohio if his or her parents or legal guardian have resided in Ohio for 12 consecutive months or more immediately preceding enrollment, or if his or her parents reside in Ohio at the time of enrollment and at least one of the parents is gainfully employed on a full-time basis in Ohio.

2. A student shall be considered to be an Ohio resident regardless of the place of residence of the parents or legal guardian at the time of enrollment if the student resides in Ohio and has resided in the state for 12 consecutive months or more immediately preceding enrollment and if the student presents satisfactory evidence that the parents or legal guardian have not contributed to his or her support during the preceding 12 months and do not claim him or her as a dependent for Federal government income tax purposes.

3. A student shall be considered to be an Ohio resident regardless of the place of residence of the parents or legal guardian at

the time of enrollment if the student is gainfully employed on a full-time basis and resides in Ohio, and is pursuing a part-time program of instruction and if there is reason to believe that the student did not enter Ohio primarily for the purpose of enrolling in an Ohio institution of higher education.

4. The residency status of a married student shall be determined without regard to the residency status of the student's spouse.

5. A person in military service or the dependent of a person in military service shall be considered to be a resident of Ohio during the period of time when that person is on active duty status in Ohio and has established a residence in Ohio.

6. A person who enters upon active duty status in the military service as a resident of Ohio and the dependent children of such a person shall be considered to be residents of Ohio if they provide proof of continued domicile in Ohio and of continued eligibility to vote in Ohio.

7. A student classified as a resident of Ohio whose parents or legal guardian move their residence to another state shall be considered to be a resident of Ohio until completion of the degree program in which the student is currently enrolled.

8. A student who at the time of enrollment 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 during the period of continuous enrollment as a full-time student in an Ohio institution of higher education.

9. An alien student admitted to the United States on a student visa or other temporary visa shall be considered to be a nonresident student. An alien holding an immigrant visa may establish Ohio residency in the same manner as a citizen of the United States.

10. A student classified as a nonresident student may appeal the classification to an appropriate officer or administrative panel duly constituted by an institution of higher education and may be reclassified as a resident of Ohio if:

a. the dependent student presents conclusive evidence that his or her parents or legal guardian have established a residence in Ohio and at least one of the parents is gainfully employed on a full-time basis in Ohio;

b. the student, in addition to demonstrating financial independence from parents, presents clear and convincing evidence 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 commitment to enter into gainful employment in Ohio upon completion of a degree program within the ensuing 12 months.

NEW FRESHMAN APPLICANTS

To be admitted, applicants must have graduated from high school or passed the test of General Education Development and obtained a statement of high school equivalence. 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 and obtained a statement of high school equivalence.

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.

*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.

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 POSTGRADUATE 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 postgraduate 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 not later than the application closing date for the quarter for which application is made.

Transcripts

All transfer applicants are required to provide a copy of their high school transcript and a copy of any and all undergraduate transcripts directly from the institutions attended to the Youngstown State University Admissions Office. Postgraduate applicants are not required to submit high school transcripts.

Transfer Student Reference Form

In addition to acceptable academic standings, 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) quarter hours following the term in which the suspension occurred.

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. Transcripts of credits earned will be evaluated by the Admissions Office and a copy of the evaluation will be issued upon acceptance. Distribution of these credits for fulfillment of degree requirements will be determined by the appropriate dean or department chairman.

If the student wishes to receive his degree from Youngstown State University he will be required to complete at this university the last 45 quarter hours for a baccalaureate degree and the last 30 quarter hours for an associate degree.

Applicants who attend any institution during a suspension period will not receive credit for such work completed during the period of suspension.

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.

Credit from a community or junior college will normally be limited to 96 quarter hours. Courses taken at such colleges which correspond to junior- or senior-level courses at this university will not be transferred.

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 one or more quarters, exclusive of summer, must make application for readmission.

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.)

INTERNATIONAL 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 booklet entitled "Information for Prospective International Students" which provides detailed information including policies and procedures governing international students.

SPECIAL, NON-DEGREE APPLICANTS

Applicants wishing to take limited amounts of course work as special non-degree candidates may do so through the Department of Continuing Education.

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.

GENERAL REQUIREMENTS FOR GRADUATION

Any student entering Youngstown State University is entitled to a copy of the University catalog. This catalog shall be a guide to graduation requirements for that student. Any exceptions to requirements must be interpreted by the student's department chairman and/or the dean of the school from which he expects to graduate. Certain general requirements apply to all degrees earned at Youngstown State while other requirements are specific to the degrees earned. A condensed table of courses required for graduation including those high school or other preparatory units required follows.

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]	—	2	2[5]	—	—
Geometry[4]	1	1	—	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	—	—	1[10]
Any Science[4]	—	—	—	—	—	1	—
Total of above units	9 or 10	9 or 10	6	8	8	6	6
Other subjects[7]	8—10	8—10	10	8	8[8]	10[9]	10
Total high school units	16	16	16	16	16	16	16
IN THE UNIVERSITY GENERAL							
Basic	(These figures mean quarter hours of credit)						
English 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]	11	10	10	—‡
Social Studies	20	20	20	20	20	20	9
Science/mathematics	16	Included in the major	16[13]	17	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	120	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. 590.

‡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 Department or appropriate science department without University course-credit, or he may make it up in any other way acceptable to the department concerned. For those whose requirement is one year of algebra, a second year of algebra may be substituted for a year of geometry.

[5]One unit is enough except for a major in chemistry, earth science, engineering, mathematics, or physics, for a major in premedical or allied sciences, or for a minor in mathematics or physics. Such fields require Mathematics 571, 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]The preferred mathematics courses are algebra and geometry and a unit of science. The preferred sciences for nursing students are biology and chemistry.

[11]At least one course in each of two areas of fine arts, philosophy and/or theological studies is required by the State Department of Education for students seeking a high school teaching certificate.

[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 9 hours of mathematics: this is the minimum set by the State Department of Education. Students seeking a high school teaching certificate must have at least one course in mathematics to meet the minimum set by the State Deparment of Education. Candidates for the B.S. in B.A. take Mathematics 542 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. (See *Proficiency in a Foreign Language.*)

[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 minimum is 186 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.

CANDIDACY FOR A DEGREE

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 with the dean of his school after the completion of 70 quarter hours for an associate degree and 165 quarter hours for a baccalaureate degree. (See *Fees and Expenses* further on in this section.)

Residence. The last 30 quarter hours leading to an associate degree and the last 45 quarter hours leading to a baccalaureate 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 additional requirements specific to the associate or bachelor's degree, further details follow.

COMMENCEMENT

There are three graduation ceremonies each year: Winter Commencement, in March, at the end of the second quarter of the academic 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 fall quarter receives his diploma in March and is present, if at all possible, at the Winter Commencement as a member of the graduating class.

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.*

Graduating students for any associate degree who rank high scholastically are awarded special honors at the commencement exercise.

Those who attain a quality point average of 3.7 are granted their degree with high honors.

Those who attain a quality point average of 3.4 are granted their degree with honors.

Transfer students who are baccalaureate degree candidates with at least 90 quarter hours of credit at Youngstown State University or who are associate degree candidates with at least 60 quarter hours of credit at Youngstown State University are eligible for graduation honors. However, 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.

BACCALAUREATE DEGREE

In addition to requirements indicated under *Candidacy for a Degree* the following requirements must also be fulfilled for a baccalaureate degree. Any deficiency in high school units for the desired degree must have been made up. 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.

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.

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

*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.

Chairman of the Department of English is the judge of this proficiency. Ordinarily if a student has received a grade of *C* or better in the final quarter of his required course in Communication, he will be considered to have achieved this proficiency.

This requirement is normally met by taking English 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 590) 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 590 (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 in conformity with guidelines established by the faculty and normally administered by the Director of Admissions.

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. Introduction to Black Studies II is also applicable to this requirement. Candidates for Ohio high school teaching certificates must have at least one course in each of two areas of fine arts, philosophy and/or theological studies.

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. *Introduction to Black Studies I* is also applicable to this requirement. 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 B.A., and Mus.B. must meet the requirement by taking one of the following options:

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.

Candidates for the B.S. in Ed. must meet the following State Department of Education requirements:

In elementary education, 12 quarter hours of science (physical and biological) plus 9 quarter hours of mathematics (Mathematics 515 and Mathematics 516).

Students seeking a high school teaching certificate must have at least one mathematics course in the 16-quarter-hour science/mathematics requirement.

ADDITIONAL REQUIREMENTS FOR EACH DEGREE

A degree requirement is one which applies to all (or, in a few cases, to most)

of the students seeking a particular degree, but is not necessarily a requirement for other degrees. Degree requirements will be found as follows:

Those for the degrees of Bachelor of Arts (A.B.) 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 an associate degree, the requirements of each curriculum of the Technical and Community College must be fulfilled.

For these requirements, 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, 601, 602, and 603, 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 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 30 quarter hours for an associate degree and 45 quarter hours for a baccalaureate degree, 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.

GENERAL REGULATIONS

ORIENTATION NEW AND TRANSFER STUDENTS

An orientation designed to assist the new student in becoming acquainted with Youngstown State University and its student services is conducted prior to the beginning of classes.

SCHEDULING OF COURSES: ADVISEMENT

A student in current attendance at the University makes out his schedule of courses for the next quarter in consultation with a faculty advisor who must sign the student's advisement form.

A student entering for the first time, or a readmitted former student will receive instructions for advisement and registration from the Registrar's Office.

A student planning his program should use the *Schedule of Classes* in order to determine the particular classes offered in a particular quarter. The *Schedule of Classes* is published prior to advisement and registration for each quarter by the Registrar's Office. For information about future offerings, or when a particular course will be offered again, the student should consult the appropriate department chairman.

The advisement process is an attempt by the University to assist the student in meeting his degree requirements. *However,* the ultimate responsibility for meeting any requirement rests with the student himself.

REGISTRATION

Every student registers in person for each quarter by appointment from the Registrar's Office. Registration is concluded on or before the Late and Final Registration date published in the *Schedule of Classes.* Detailed information on registration is contained in the *Schedule of Classes* and in the Directions for Registration received with the registration materials. 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 summer term. Registration is not officially completed until all tuition and fees are paid.

CLASS CLOSING

During the registration period many classes, especially in courses with several sections, are filled to capacity. These classes are called "closed," which means that *no more students will be admitted to them,* either during the registration period or after school begins. Faculty members may not admit to their classes students who are not officially registered for those classes. Only the chairman of the department can admit a student to a closed class or reopen a closed class.

CHANGE OF REGISTRATION

A registered student wishing to alter his schedule must complete a Change of Registration form, have it signed by his advisor, and present it with a properly completed Change of Registration Scan Sheet to the Registrar's Office. Withdrawal from a course must be accomplished through the Change of Registration procedure. Simple failure to attend class or notification to an instructor is insufficient. A grade of *F* will be recorded unless a student officially withdraws. A Change of Registration is not official until a student has presented the Change to the Bursar's Office.

CANCELLATION OF REGISTRATION

Any student who effects a complete withdrawal from courses prior to the first day of classes is considered to have cancelled his registration. A student is not officially enrolled for a particular quarter if he is not registered on the first day of classes. Students who have a break in their attendance must apply for readmission as former students.

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 instructor.
3. Such extra work is done only under the supervision of a full-time instructor.
4. The extra credit may not exceed one hour for each course or one course each quarter.
5. An application form must include the signature of the instructor and the department chairman, and receive the approval of the dean of the appropriate school.

CREDIT BY EXAMINATION

Credit may be granted by examination under special circumstances to students who can demonstrate proficiency in certain subjects. The subjects in which certain examinations may be given and the nature of examinations are determined by the departments concerned and must be approved by

the dean of the appropriate college and the Vice President for Academic Affairs.

CONFERENCE COURSES

Except in very unusual cases, personal or conference work is not offered. In the event an advisor considers conference work essential, the student may apply to the dean of his school to arrange for a conference course. The chairman of the department concerned must also approve or disapprove requests for conference courses. A Conference Course Request form may be secured from the Registrar. Conference courses are open only to seniors with a 3.00 average or above and must be given by full-time instructors. Any exceptions must be approved by the Academic Affairs Committee.

AUDIT

A student may register for and attend any courses on an audit basis. The student is not held responsible for the regular class work, class attendance or preparation of assignments, and receives no credit for the course. He pays the regular fees for the audit course as well as any other applicable fees. Audited courses are carried in a student's load only for fee purposes and require overload approval if the total hours taken (including the audited courses) exceed the normal load. A student who has registered for a course for audit may not change that status to credit after the last day to add a class. (An auditor is not to be confused with a special student; see *Special, Non-Degree Applicants* at the beginning of this section.)

GRADUATE COURSES 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 and 1000-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.

REPETITION OF COURSES

A student may repeat a course once. If the course repeated is a prerequisite to another course, the repetition must be successfully completed before the other course is taken. A course may not 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 as credit toward a student's total academic hours for graduation.

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 an honorable and rewarding education, the University Discipline Committee attempts to discourage academic dishonesty, *e.g.*, cheating and plagiarism.

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 professor.

A teacher may give a failing grade to any student who cheats in a class. The failing grade may be either for the test or paper on which the cheating or plagiarism occurred or for the entire course. The circumstances of the incident should be discussed with the

student prior to giving the failing grade. A report of such action will be filed with the Office of the Dean of Student Affairs for consideration in the event that similar acts of dishonesty should occur at some future time.

In that such grades are in fact disciplinary actions, the student involved may appeal the action to the University Discipline Committee. In the event of an appeal, both the student and the teacher will be invited to appear before the Committee.

Repeated incidents of academic dishonesty or single, flagrant offenses may warrant action beyond a failing grade in the course. These cases will be referred to the Office of the Dean of Student Affairs for consideration by the Discipline Committee.

Offenses which may warrant additional sanctions, *e.g.*, disciplinary probation, suspension, or expulsion, include the following:

a. Cheating, plagiarism, or other forms of academic dishonesty, including the acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff.

b. Furnishing false information to the University with intent to deceive.

c. Forgery, alteration, or misuse of University documents, records, or identification cards.

d. Unauthorized possession or use of property of the University or property of a member of the University community or property of a campus visitor.

Procedures for reporting, investigating, and considering violations of the Code of Student Rights, Responsibilities, and Conduct are found in Article VI, Due Process and Disciplinary Procedures, of the Code.

The complete Code, as well as most other policies and regulations of the University, is published in the Student Handbook. Further information may be obtained from the Dean of Student Affairs.

ABSENCE FROM CLASSES AND EXAMINATIONS

The problem of excessive class absence concerns instructor and student, and consequently requires their mutual effort in solution. The student must realize that for his own welfare he is expected to attend all class meetings of a course in which he is enrolled.

The instructor, however, has the prerogative of determining the relationship between class attendance, achievement, and course grades, and the responsibility for communicating that relationship to his students at the beginning of each quarter.

A student must have the instructor's consent in order to take any examination at a time other than that scheduled. The instructor, if he gives such consent, may waive the fee for irregular examination if such action seems warranted. If the test is to be taken at the Testing Office, the student must present to the Testing Office a letter of permission from the instructor concerned which also indicates whether or not the above-mentioned fee is to be charged.

THE CLASS QUARTER, 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,

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

consisting of at least 150 minutes of class sessions (that is, three class hours†) and six hours of study done out of class. If the course involves laboratory periods, these form a part of the weekly total of nine hours.

Accordingly, the student carrying a 16-hour schedule, for example, should count on devoting 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.

†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.

FULL-TIME STATUS

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

ACADEMIC CLASSIFICATION

All students working for any undergraduate degree conferred by this University are classified 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.

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.

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.

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.

The abbreviations F, W, Sp, and Su in a course description stand for fall, winter, spring, and summer, and indicate the quarter or quarters in which the course is offered.

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.

Freshmen may not 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 competition 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 failure to withdraw officially from a course (see *Changes of Registration* above and *Policy on Withdrawal and Refunds* below).

An incomplete 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 a course. Similarly there is no administratively established period of time within which an *I* must be converted. Instructors may assign time limits if they so desire. An *I* may remain on the record for an unlimited period of time and without penalty, assuming it was appropriately given.

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.

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 or second quarters. This grade is changed at the end of the third quarter. It has no effect on the point average.

Au signifies that the student has attended on an audit basis. This mark indicates the registered status of a student who has begun the course on an audit basis or who has changed status to audit before six weeks of a regular quarter or three weeks of a summer term have elapsed.

A grade of credit, *CR*, is recorded in specific courses that have been determined as inappropriate for the regular achievement grades of A, B, C, and D. A *CR* grade denotes satisfactory completion of the course.

W represents a withdrawal properly

processed during the first six weeks of any quarter (or first three weeks of either summer session). An unofficial withdrawal or an official withdrawal made after the six-week period (three weeks for either split summer session) will be recorded as *F*. If the grade resulted from abnormal circumstances, a student may petition the appropriate dean to change the grade to *W*.

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 given notification (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.

THE POINT AVERAGE AND SCHOLASTIC STANDING

The student's scholastic standing is indicated by his point average (also called "grade average").

For determining this, every grade has a point value for each quarter hour it represents, as follows: A, 4 quality points; B, 3 points; C, 2 points; D, 1 point; F, zero points. For example, an A in a 3-hour course is worth 12 quality points, a D in a 4-hour course, 4 points; and an F in any course, zero points. To find the point index, the total number of quality 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 quality points has a point index of 2.50. Only grades of A, B, C, D, and F are included in the calculation of the point index.

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.

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 means an unspecified period of separation from the University, which assumes the possibility of a greater maturity in judgment and responsibility on the part of a student, qualities which should improve his capacity for academic achievement.

Recognizing that the transition from high school to college may be a difficult one, the University 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.

STATUTE OF LIMITATIONS

A student may petition the dean of his school to exclude from the calculation of his grade point average grades earned five (5) or more calendar years before. If the petition is approved, all grades (not merely *D's* and *F's*) earned during the specified quarter or semester and all previous grades (not merely *D's* or *F's*) will then be removed from the calculation. However, all grades remain on the permanent record.

Excluded course credit (transfer credit as well) will not count toward the total required hours for graduation. However courses passed may fulfill basic curriculum requirements and may satisfy as prerequisites for higher courses where applicable. Courses excluded from the calculation may be taken again, and repeated once without infringing upon repeat privileges spelled out in catalog course descriptions. Courses excluded are not subject to credit by examination. A student whose petition has been approved is ineligible for graduation honors. Only one petition from each student may be approved.

GRADE REPORTS

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

GRADE CHANGES

Application for grade changes may be secured from the office of the dean in which a student is enrolled, or from the Registrar's Office. Applications for grade changes must be completed by the instructor and must contain the signature of the dean unless the change is from Incomplete (I) or a Progress (PR). All grade changes must be submitted to the Recorder by the dean or instructor, and will not be accepted from the student.

THE DEAN'S LIST

The Dean's List for each quarter (except summer) includes those full-time undergraduate students who have earned a 3.4 average for not less than 12 quarter hours credit for the quarter just ended.

Included in the listing for the spring quarter are those part-time students who have maintained a 3.4 average for the fall, winter, and spring quarters, and who have accumulated a minimum of 12 quarter hours of credit for the three quarters.

CLASS HONORS

Undergraduate Class Honors are determined by the accumulated point average attained by students enrolled during the most recently completed winter quarter along with undergraduates who completed their degree requirements during the preceding fall quarter. Both full- and part-time students are included provided they have a minimum accumulated point average of 3.00, and provided they have completed a minimum of 18 quarter hours of credit at this university. A person may receive honors only once at each class level. The number of Honors recipients approximates the top one per cent of the total enrollment of each class in each undergraduate unit of the University, but it may slightly exceed this figure because of ties.

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

(See Commencement)

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.

TRANSIENT PERMISSION

A student desiring to attend another institution as a transient student must secure a Transient Permit Application from the Recorder. This form when approved by both the student's advisor and dean must be returned to the Recorder. After determining that the student is academically and financially clear, the Recorder will forward a Transient Student Authorization to the institution the student wants to attend.

Approved course work completed with grades of *C* or better at another institution may be transferred back to Youngstown upon the receipt of an official transcript from the institution attended. This transcript must be requested by the student concerned.

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 for the specific class.

If a student withdraws from an audit course and/or a course in Continuing Education, the account will be revised and charges prorated in accordance with the regular University withdrawal and refund policies and their exceptions as stated further on in this section.

OTHER FEES

Admission Test Fee for Graduate Study in Business (ATGSB). An aptitude test designed to measure abilities important to the study of business at the graduate level. The test is offered twice a year—fall and summer. The examination fee is $10.00 and registration forms are available at the University Counseling and Testing Center.

American College Test (ACT) Residual Test Fee. A non-refundable fee of $7.00 is charged for those students required to take the American College Test (ACT) on a residual basis.

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.*

Change of Registration Fee. A fee of $2.00 is charged anyone changing his registration unless a class in which the student is registered is cancelled or divided by the administration and/or the student completely withdraws from the University. Appeals will be subject to the supervision of the Finance Committee. (Note: Students with changes in registration necessitating 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.)

Credit by Examination Fee. 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

STUDENT FEES AND TUITION*

	Per Quarter Effective Fall Quarter 1971
FOR FULL-TIME STUDENTS (12-17 quarter hours)	
Instructional Fee	$150.00
General Fee	40.00
Nonresident Tuition Surcharge	160.00
Applied Music Fee per Applied Quarter Hour	25.00
Charges per Quarter Hour above 17 hours:	
Instructional Fee	15.00
Nonresident Tuition Surcharge	19.00
FOR PART-TIME STUDENTS (Below 12 quarter hours)	
Instructional Fee per Quarter Hour	15.00
General Fee	12.00
Nonresident Tuition Surcharge per Quarter Hour	19.00
Applied Music Fee per Applied Quarter Hour	25.00

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

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.*

Food Service Meal Tickets. 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, Monday through Friday, and two meals on Saturday and Sunday, for the entire eleven-week quarter, except holiday periods. (See Food Service under *Student Personnel Services* for further information.)

General Fee. This fee is used for the support of offices, personnel and general institutional services performed for the benefit of enrolled students, construction and operation of various student facilities such as the student center, together with artists and lecture programs, student government, intercollegiate athletics, student publications, extramural women's activities, and other activities benefiting the student body. Beginning with the first day of classes for each term there can be no reduction or proration of this fee nor is it refundable.

Graduate Record Examination Fee. Two Graduate Record Examinations, the Aptitude and Advanced tests, are administered on campus five times a year. Advanced tests are given in twenty (20) different fields. Individual departments specify which test must be taken. The fee for the Aptitude Test is $8.00; one Advanced Test is $9.00. Registration forms are available at the Counseling and Testing Center.

Graduation Fee. A fee of $20.00 is charged anyone who is to receive a degree. The fee, which includes cap and gown and diploma, and which helps to defray the general expense attendant to the commencement exercises, must be paid before the official application for graduation is received by the dean of the school in which the student is enrolled. 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.

Health and Physical Education Locker and Towel Fees. Users of facilities in the Beeghly Physical Education Center who

require clothing change and shower facilities consist of two groups. All users must be enrolled students at YSU, employees of the University, or persons or groups granted permission for use of facilities by the University.

Each student enrolled in a physical education class requiring locker, basket or towel use will be provided this service upon payment of a non-refundable fee of $2.00 for each quarter of such enrollment.

Each other user will be provided towel service and locker or basket service upon payment of a non-refundable fee of $3.00 per person for each quarter of such use.

Loss of locker lock shall result in collection of a replacement fee of $2.00 from the user. Loss of towel shall result in collection of a replacement fee of $1.00 from the user.

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.

Irregular Examination Fee. 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.

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 cutoff 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.

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

Proficiency Examination Fee. 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.

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. This fee is non-refundable.

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.

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 On-Campus Student Housing under *Student Personnel Services.*)

R.O.T.C. Activity Fee. The Military Science Department charges $2.00 each quarter as a special activity fee for all students registered in military science courses. This fee provides funds for the annual Military Ball; awards and recognition for meritorious service to the R.O.T.C. in athletics and extracurricular activities; athletic events and contests; and miscellaneous matters pertinent to the function of the R.O.T.C. Cadet

Corps. The fee is payable at the Bursar's Office in Jones Hall, first floor. This fee is non-refundable.

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 this penalty fee, draw a late registration fee of $15.00. If the student's account, including these penalty charges, is not paid in full within five days after written notice, the student will be withdrawn from all classes for that term, and the account will be revised and charges prorated in accordance with regular University withdrawal and refund policies.

Student Locker Fee. A fee of $1.00 is charged for use of any locker on campus (except those in the Beeghly Center) 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.

Transcript of Credits Fee. A fee of $1.00 is charged for each transcript issued by the University. This fee must be paid at the time of the transcript request. Transcripts will not be issued to anyone owing a balance to the University or any of its agents.

Vehicle Registration Permit (Sticker) Fee. A non-refundable fee of $15.00 is charged each quarter for the purpose of providing access to campus student parking lots, and entrance to such lots is by such sticker affixed to the vehicle in the prescribed manner. A copy of the traffic regulations is issued to all students paying this fee.

Any vehicle not bearing a valid sticker is admitted to an appropriate campus lot on a basis of $1.00 per entrance, collectible at the gate.

POLICY FOR 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 instructor 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 Students Account 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 the Youngstown State University Finance Committee in care of the Bursar.

*Figured from opening date of classes.

†Excludes Sunday, for each specified time period.

College of Arts and Sciences

Bernard J. Yozwiak, Dean

ORGANIZATION AND DEGREES

Two degrees are granted through 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 Foreign Languages
Department of Geography
Department of Geology
Department of Health and Physical Education
Department of History
Department of Mathematics
Department of Military Science
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

MAJOR AND MINOR FIELDS

For the A.B. degree. The major may be in any of the departments listed above (except military science), with French, German, Italian, 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.

For the B.S. degree. Majors are possible in biology, chemistry, geology, mathematics, medical technology, and physics, as well as combined science.

Prospective teachers. Prospective elementary or secondary teachers may work toward an A.B., B.S., or B.S. in Ed. degree. 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.

REQUIREMENTS FOR 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
Biology, chemistry, or physics	1	1

*One is enough except for a science major needing Mathematics 571, or for a mathematics minor.

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)

English 525-526-527 Communication I-II-III	12	12
Health and Physical Education 590 Health Education	3	3
Health and Physical Education activity courses	3	3

AREA COURSES (Same as under General Requirements and Regulations)
See page 45 for specific details.

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

‡Students seeking a high school teaching certificate must take at least one course in each of two areas of fine arts, philosophy and/or theological studies.

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. For the B.S. degree: the language chosen must have the approval of the chairman of the major department. Chemistry majors ordinarily must have a reading knowledge of scientific German. No foreign language study is required of registered nurses or medical technology majors. 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-education courses (high school)	—	—
Education 501, Introduction to Education; 704, Student Teaching Laboratory: High School and Special Field; 706, Principles of Teaching; 708, Educational Sociology; 710, Educational Measurement and Guidance; 800, Special Methods; and 842 or 843, 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 the A.B. and B.S. degrees	41*	41*

*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 the degree requirements are those listed in the *Courses of Instruction* section that follows. In certain cases the chairman of the Department of Foreign Languages is authorized to approve other languages if the appropriate courses have been taken at an accredited American or foreign college or university.

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 Department of Foreign Languages. 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.†

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 (advisor).

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 preprofessional 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.

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

*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 *Fees and Expenses.*)

‡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.

Option I:

A. Required courses:
   1. History 655, 656.
   2. English 613, 614.
   3. A foreign "civilization" course (such as German 712).
   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, 750, 755 or 756
      c. Humanities 834
      d. Philosophy 713, 714, 715, 749, 811, 812, 820 or 830
      e. Art 707, 709, 710 or 711.
   2. American history (Upper Division).
   3. Sociology, anthropology, or economics
      a. Sociology 600, 612, 700, 707, 716, 760, 761, 775, 787, 789 or 822
      b. Economics 500, 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.

Option II:

A student interested in a particular problem within American society defined neither by a conventional major nor by Option I may before the end of his sophomore year work out with the advisor an individual pattern of courses appropriate to the problem. A student must initiate his own proposal and show capability for better than average performance. A senior project, details to be worked out with the advisor, will be accomplished under this option.

ANCIENT LANGUAGES AND LITERATURE

See *Classical Studies.*

ANTHROPOLOGY

See *Sociology and Anthropology.*

ART

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

The Department of Art offers courses which will satisfy major 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 Bachelor of Arts degree, the major in art history is a minimum of 45 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 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.

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

Art History

Major: 45 q.h.

Required Courses — Art 513, 514, 600, (Philosophy 710), and 32 quarter hours of art history electives of which 3 may be in philosophy or history.

Commercial Art

Major: 69 q.h.

Required Courses—Art 510, 513, 514, 602, 611, 623, 624, 625, 705, 716, 717, 770, 727, 728, 729, 750, 814 or 815, and 15 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, 606, 611 or 721 or 821, 623, 716 or 750, 770, 767, 724, 725, 730, 760, 801, 822 or 823, and 19 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, 770, 767, 716 or 750, 724, 725, 730, and 5 or 6 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 I and II.* 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.

611. *Printmaking I.* Experimenting with all kinds of printing media. Block printing, silk screen techniques. 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. *United States Art.* Development of the fine arts in the United States from the Colonial period till the advent of Modern movement (1913). Lectures and slides will include the developments of painting, sculpture, architecture, and the minor arts. Prereq.: Art 514. 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 I, II and III.* (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 I and II.* 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.

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

724. *School Arts (Secondary).* Study of the needs of children from grade eight through twelve and the means of providing desirable art experiences. Required of all art education majors. Prereq.: Art 760. 3 q.h.

725, 726. *Ceramics I and II.* 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 I, II and III.* 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.

740. *Northern Renaissance.* Origin of the Northern Renaissance styles of painting, architecture, and the minor arts in Flanders and Northern Europe. (1300 to 1500.) Prereq.: Sophomore standing. 3 q.h.

742. *African Art.* Study of African tribal art forms and their relationship to the historical period in which they were created. The impact and influence of African Art on the development of contemporary Western art trends. Prereq.: Sophomore standing. 3 q.h.

745. *Pre-Columbian Art.* An examination of the various cultural and tribal arts in the North and South American continents, and in particular Central America. Special emphasis on Pre-Hispanic Mexico, Peru, and North American high cultures such as the Maya, Inca, and Northwest coastal tribes. Prereq.: Sophomore standing. 3 q.h.

750, 751. *Architectural Design I and II.* 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.

760. *School Arts.* Study of the needs of children from kindergarten through grade seven and the means of providing desirable art experiences. Experience with contemporary trends in all aspects of art education. Two hours lecture; four hours lab. Satisfies the teaching of art methods. Required of all elementary education majors and art education majors. 4 q.h.

767. *Arts and Crafts.* 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 majors. 3 q.h.

770. *Jewelry I.* A study of the basic methods of fabrication used in the creation of jewelry. A concentration on design as applied to the hand processes in the shaping of various metals. Prereq.: Art 511. 4 q.h.

771. *Jewelry II.* A study of the casting processes used in the creation of jewelry. Prereq.: Art 511. 4 q.h.

780. *Photography I.* Lecture and lab course in photographic fundamentals, developing, and printing. Discussion of cameras, lenses, and enlargers. Technical and visual knowledge relating to the photograph as an expressive art form. (Student must provide camera.) Prereq.: Art 510 or permission. 4 q.h.

781. *Photography II.* Continuation of Art 780. Concentration on the student's technical ability and visual awareness of fine art photography. (Student must provide camera.) Prereq.: Art 780. 4 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 involves plant facilities, tools, and supplies. Planning individual exhibits. Assembly of comprehensive portfolio. 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 I and II.* 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.

816. *Introduction to Museum Practices.* An exploration of museum history, administration, acquisitions, preservation, conservation, connoisseurship, exhibition procedures, physical plant, and security will be made. Weekly seminars and practical internship experience at the Butler Institute of American Art will be utilized. Two hours of seminar and six hours of museum practices per week. Prereq.: 12 hours of art history and junior standing. 5 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 767. 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 767 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, Peterson, Schroeder, Sobota, Webster, and Worley; Assistant Professors Cannon, Fishbeck, Kreutzer, MacLean, Moritz, Rufh, Sturm, Toepfer, and Yemma; Instructors Brennan, Chuey, Sebastiani, and Staudt.

Courses taken in the Biology Department may be applied toward a Bachelor of Science or Bachelor of Arts degree in biology. The department also offers specialized courses that provide basic information needed by students planning to enter medicine, dentistry, veterinary medicine, nursing, medical technology, numerous other health-related careers, forestry and teaching.

Refer to Graduate Bulletin for a description of the master's program in biology.

REQUIREMENTS FOR MAJOR IN BIOLOGY[1]

	Bacheor of Arts	Bachelor of Science
Required courses in Biology	550, 662, 670, 780, 790, 831	550, 662, 670, 780, 790, 831[2]
Upper Division Electives in Biology[3]	23 q.h.	28 q.h.
Chemistry	Organic recommended	515, 516, 517, 719, 720, 721
Physics	One year recommended	501, 501L, 502, 502L, 503, 503L
Mathematics	Statistics recommended	540, 550
Social Studies	20 q.h.[4]	20 q.h.[4]
English Communication	12 q.h.[4]	12 q.h.[4]
Humanities	10 q.h.[4]	10 q.h.[4]
Language	8 q.h.[4]	8 q.h.[4]
Electives[5]		

[1] Students seeking admission to medically related professional schools should fulfill B.S. requirements in biology.

[2] These courses provide a core of subject matter which should be mastered by all biologists but if a student has already completed 506, 507 and 508 with a *B* average these may be substituted for 550, 662 and 670. 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 780 and 790.

[3] 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.

[4] General University requirements, see page 42 for details.

[5] 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 I, II, III.* 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. (Replaces Biology 500, 501, 502.) 4+4+4 q.h.

550. *Introduction to Life Science.* Foundational concepts of science of biology. Quantitative procedures of biology will be presented in laboratory and independent work is expected of the student. Intended for biology majors. 5 q.h.

551, 552. *Physiology and Anatomy of Man I, II.* Structure and function of the human organism. Prereq.: High school

chemistry and biology or equivalent. Registration by permit only. Lectures and laboratory. 4+4 q.h.

560. *Paramedical Microbiology.* Characteristics, epidemiology, and pathology of virus, rickettsiae, bacteria and protozoa of medical significance. Prereq.: Registration by permit only. 5 q.h.

563, 564. *Principles of Forestry I, II.* An introduction to forestry in the United States. Contribution of forestry to the national economy. Discussion of the principles of forestry management. 563 is prerequisite to 564. 2+2 q.h.

604. *Food Microbiology.* Role of microbes in food preservation, fermentation, spoilage, sanitation, and food poisoning. Prereq.: Home economics major. Registration by permit only. 4 q.h.

661. *Economic Botany.* Enumeration, ecology, culture, distribution, use and biological significance of plants that serve useful purpose for man as food, fiber, wood, drugs and ornament. Designed to fulfill University science requirement. 4 q.h.

662. *Plant Life.* Structure, reproduction, physiology, and phylogenetic relations of plants. Intended for biology majors. Lectures and laboratories. Prereq.: Biology 550. 5 q.h.

670. *Animal Life.* Phylogenetic and adaptive physiological relationships of animals to their environment. Intended for biology majors. Laboratory will demonstrate function of physiological systems. 5 q.h.

Upper Division Courses

700. *Non-Vascular Plants.* A presentation of classification, morphology, reproduction, ecology, and economic aspects of algae, fungi and mosses. Lecture and laboratory. Prereq.: Biology 662 or consent of instructor. 5 q.h.

701. *Invertebrate Zoology.* Essentials of structure, function, and classification of invertebrates. Lecture and laboratory. Prereq.: Biology 508 or 670. 5 q.h.

702. *Microbiology.* Isolation, cultivation, identification, classification, and laboratory study of microorganisms. Prereq.: Biology 790 or permission of instructor. 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. 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 670 or permission 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 670. 3 q.h.

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

762. *Field Botany.* Identification, ecology, and significance of local plants. Lectures and laboratory. Prereq.: Junior standing. Can be used to fulfill University science requirements. 5 q.h.

765. *Vascular Plants.* Structure, function, reproduction, and phylogenetic relationships of representative vascular plants. Lectures and laboratory. Prereq.: Biology 508 or Biology 762. 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 670. 4 q.h.

771. *Entomology.* Zoology, structure, development, habits, identification, economic importance, and control of insects. Prereq.: Junior standing. Can be used to fulfill University science requirements. 5 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. 5 q.h.

780. *Introduction to Ecology.* An introduction to study of principles governing the relationship of organisms to their environment. A holistic approach to ecology framed in the concepts of ecosystems. 4 lectures, one laboratory per week. Prereq.: Biology 670. 5 q.h.

789. *Man and the Technological Society.* An interdisciplinary critical examination of man in the modern technological society from the perspective of engineering, life, and social science. The topics will be (1) history of technology, (2) the world's available energy and material resources, (3)

population dynamics as they interact with nature and the human ecosystem, such as "the green revolution," cybernation, value concepts, and techniques to forecast societal changes. Prereq.: Junior standing. 4 q.h.

790. *Molecular-Cellular Biology.* Chemical-physical functions of cellular structures. Investigative laboratories permit students to test hypothesis independently. Students who have taken Biology 680 will not receive credit for 790. Prereq.: Biology 670, or 508 and Chemistry 719. 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. 5 q.h.

804. *Aquatic Ecology.* Ecological, physical, and chemical aspects of aquatic ecosystems. A study of interaction between aquatic organisms and their abiotic environment. Prereq.: Biology 780 or consent of instructor. 4 q.h.

804L. *Aquatic Ecology Laboratory.* Field and laboratory studies of structure and studies of structure and function of selected aquatic ecosystems in northeastern Ohio. Prereq.: Biology 804 or consent of instructor. 2 q.h.

808. *Embryologic Development of Vertebrates.* Adaptions for progressive embryonic development of representative members of Vertebrata will be considered giving the student an opportunity to observe evolutionary relationships, controlling mechanisms and other experiments that demonstrate controlling mechanisms, chronologic differentiation and molecular messengers. Prereq.: Biology 770. Students who have taken 708 cannot receive credit for this course. 4 q.h.

812. *Mycology.* Morphology, physiology, classification, ecology, economic and medical importance of the fungi. Laboratory will investigate morphology and physiology. Prereq.: Biology 702. 4 q.h.

819. *Taxonomy of Flowering Plants.* Phylogenetics, systematics, geographical distribution and evolutionary development of herbaceous plants. Taxonomic systems based on morphology and biochemistry will be discussed. Extensive field collections will be required as part of laboratory exercises. Students who have taken Biology 719 cannot receive credit for this course. Prereq.: Biology 765. 5 q.h.

821. *Plant Anatomy.* Comparative anatomy and histology of the vascular plants. Lectures and laboratory. Prereq.: Consent of instructor. 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. 4 q.h.

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

825. *Radioisotopes in Biology.* Application of radioactive isotopes as tracers of vital substances within biological systems. Students will apply autoradiography, liquid scintillation and gas flow techniques to study uptake, movement and biosynthesis of substances in biological systems. Prereq.: Biology 780 and 790. 4 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. 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. 5 q.h.

834, 835. *Vertebrate Physiology.* Physical and chemical principles involved in physiology of muscle contraction, nerve conduction, digestion, respiration, circulation, excretion, and endocrine system. Lectures and laboratories. Prereq.: Consent of instructor. 4+4 q.h.

841. *Animal Parasitology.* The biological implications of symbiosis will be presented giving particular attention to parasitism. Principles will be elucidated by examination of parasites of humans and domestic animals. Diagnostic procedures, morphological characteristics and life histories of medically important parasites will be presented in laboratory. Students who have taken Biology 741 cannot receive credit for this course. Prereq.: Biology 701. 4 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.

853. *Biometry*. Collection and treatment of biological data. Lectures and laboratory. (W '72) 4 q.h.

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

873. *Mammalogy*. The vertebrate class, Mammalia, will be covered in detail considering evolutionary development, taxonomic position and characteristics, geographical distribution, ecological interactions, and economic significance. Students will observe mammalian characteristics and make a personal representative collection of mammals as laboratory requirements. Students who have taken Biology 772 cannot receive credit for this course. Prereq.: Biology 770. 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.

Suggested Pre-forestry Program which may be transferred to nearby schools of forestry.

FIRST YEAR	Hrs.
Biology 506, 507, 508	12
Chemistry 515, 516, 517	12
English 525, 526, 527	12
Mathematics 502, 503, 540	15*
	51

SECOND YEAR	
Physics 501, 502, 502L, 503, 503L	12*
History 605, 606	8*
Social Studies 501, 502, 503	9*
Principles of Forestry 563, 564	4
Health	3*
Electives (Humanities, biology, chemistry, mathematics)	12*
	48

*These courses are optional depending on student's background and the graduation requirements of his chosen school of forestry.

BLACK STUDIES

Assistant Professor Bright (director); Franklin (counselor).

The Black Studies Program was established in the fall of 1970 and a major was approved by the University Senate in the winter of 1972. The purpose of this interdisciplinary major is to facilitate the academic investigation and analysis of the historical, social and aesthetic impact of the people of African descent on the American society and the world. It also provides for the systematic study of the problems confronting the modern multi-racial world.

Major in Black Studies

The major in Black Studies is included in a program leading to the Bachelor of Arts degree and students electing this major must satisfy all requirements for the A.B. degree. The major must complete a minimum of *48* total hours from approved Black Studies courses. At least *28* hours must be in Upper Division courses. A grade of C or better is required in each course to be counted toward either the major or minor in Black Studies.

All Black Studies majors must complete the following courses:

I. Core Courses

Black Studies 600 ..... 4 q.h.
Black Studies Introduction I
Black Studies 601 ..... 4 q.h.
Black Studies Introduction II
Black Studies 700 ..... 4 q.h.
Black Studies Seminar
History 663 ..... 4 q.h.
African Civilization
16 q.h.

II. 8-16 hours from among the following social studies courses:

*American Studies 801, 802, 803 ..... 3+3+3 q.h.
Education 879 ..... 4 q.h.
Educational Sociology Seminar
Geography 712 ..... 3 q.h.
Regional Geography of Africa
History 730 ..... 4 q.h.
Black Man in American History I
History 731 ..... 4 q.h.
Black Man in American History II
*History 801 ..... 4 q.h.
Select Problems in American History
*History 860 ..... 4 q.h.
Select Problems in Third World History
Political Science 706 ..... 3 q.h.
Minority Group Politics
Sociology-Anthropology 700 ..... 5 q.h.
Minority Groups
Sociology-Anthropology 726 ..... 4 q.h.
The Black Family

*When applicable and approved by the Director of the Black Studies Program.

Sociology-Anthropology 727 ..... 4 q.h.
The Black Community
Sociology-Anthropology 770 ..... 4 q.h.
Anthropology: African Culture

Or other social studies courses when applicable and approved by the Director of the Black Studies Program.

III. 8-16 hours from among the following humanities courses:

Art 742 ..... 3 q.h.
African Art
*English 699H ..... 4 q.h.
Honors Seminar, Landmarks in Literary History
English 871 ..... 4 q.h.
Black Man in American Literature
Philosophy/Religious Studies 740 ..... 4 q.h.
Black Church in America

Or other humanities courses when applicable and approved by the Director of the Black Studies program.

IV. In addition to the minimum of 32 hours in Black Studies and in courses directly relevant to Black Studies, the major may include as many as 16 hours in any other courses that are approved by the Director of the Black Studies Program.

Suggested Minor

Twenty-one hours in courses in Black Studies and/or courses directly relevant to Black Studies as listed in the catalog.

*When applicable and approved by the Director of the Black Studies Program.

Lower Division

600. *Introduction to Black Studies, I.* The social-historical experience of Black people in Africa and the Americas. This course is applicable to the University requirement in the social sciences. 4 q.h.

601. *Introduction to Black Studies, II.* The cultural and intellectual heritage of Black people in Africa and the Americas as reflected in literature, philosophy, and art. This course is applicable to the University requirement in the humanities. 4 q.h.

Upper Division

700. A seminar in Black Studies focusing on the cultural, economic, educational, political, or social aspects of the experiences of peoples of African descent. Prereq.: Blk. St. 600 or 601 and consent of Black Studies Director. May be repeated once. 4 q.h.

Courses offered in various departments that are applicable to the Black Studies major or minor are:*

Am. St. 801, 802, 803. *Perspectives on America.* 3+3+3 q.h.
Art 742. *African Art.* 3 q.h.
Education 879. *Educational Sociology Seminar.* 2–4 q.h.
Engl. 620. *Introduction to African Literature.* 4 q.h.
Engl. 699H. *Honors Seminar, Landmarks in Literary History.* 4 q.h.
Geog. 712. *Regional Geography of Africa.* 3 q.h.
Hist. 663. *African Civilization.* 4 q.h.
Hist. 730. *Black Man in American History, I.* 4 q.h.
Hist. 731. *Black Man in American History, II.* 4 q.h.
Hist. 801. *Select Problems in American History.* 4 q.h.
Hist. 860. *Select Problems in Third World History.* 4 q.h.
Phil./Religion 740. *Black Church in America.* 4 q.h.
Poli. Sc. 706. *Minority Group Politics.* 3 q.h.
Socio. 700. *Minority Groups.* 5 q.h.
Socio. 726. *The Black Family.* 4 q.h.
Socio. 727. *The Black Community.* 4 q.h.
Socio. 770. *Anthropology: African Cultures.* 4 q.h.

*For course descriptions and prerequisites, see respective departmental listings.

BOTANY

See *Biology*.

CHEMISTRY

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

The Bachelor of Science degree is recommended for those who plan to make a career in chemistry; a recommended program which meets the standards of the American Chemical Society is provided after the course descriptions. 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.

Students in two-year pre-professional programs such as pre-pharmacy and pre-optometry may obtain appropriate curriculums and advisement in the Chemistry Department.

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. 4 q.h.

502, 503. *Survey of Chemistry II and III.* Continuation of Chemistry 501, with emphasis on the chemistry of living systems. These courses may be used to fulfill a part of the University science requirement but they are not intended for chemistry majors. Three hours lecture and three hours laboratory with discussion. Prereq.: Chemistry 501 or one unit of high school chemistry. 4+4 q.h.

515, 516, 517. *General Chemistry I, II, III.* A course in the fundamental principles and a study of the more important elements and compounds, including qualitative analysis. Intended for majors in the natural sciences and engineering. Three hours of lecture and a three-hour laboratory with discussions. Prereq.: For Chemistry 515—3 units of high school algebra and geometry and 1 unit of high school chemistry. For Chemistry 516—Chemistry 515 (or Chemistry 502 and math as required for Chemistry 515). For Chemistry 517—Chemistry 516 (or Chemistry 503 and math as required for Chemistry 515). 4+4+4 q.h.

515H, 516H, 517H. *General Chemistry I, II, III.* An honors course for selected students similar to General Chemistry 515, 516, 517, but presented in greater depth. Three hours of lecture and three-hour laboratory with discussions. Prereq.: For 515H, same as General Chemistry 515, plus high ACT or SAT score and *A* or *B* grades in high school chemistry. For 516H, recommendation of the instructor in 515 or 515H. For 517H, recommendation of the instructor in 516 or 516H. 4+4+4 q.h.

603, 604. *Quantitative Analysis I, II.* 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 discussion. Prereq.: Chemistry 720 or 503. 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. 3 q.h.

711, 712. *Biochemistry I, II.* 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, one year of biology. 3+3 q.h.

713. *Clinical Biochemical Techniques.* Advanced clinical techniques designed for medical technology majors. Two three-hour laboratories per week. Prereq.: Chemistry 712. 2 q.h.

719, 720, 721. *Organic Chemistry I, II, III.* 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 IV.* 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 radioactive materials. Prereq.: Chemistry 740 or 801. 3 q.h.

739, 740, 741. *Physical Chemistry I, II, III.* Principles and applications of physical chemistry. Three hours of lecture and a three-hour laboratory. Prereq.: Chemistry 603, Physics 611, 610L and 611L. Mathematics 674 (may be concurrent). 4+4+4 q.h.

801. *Elements of Physical Chemistry.* An introduction to thermodynamics, chemical structure, reaction rates, and other physical properties of chemical systems. Applications in biology and health-related fields are emphasized. Credit will not be given for both Chemistry 801 and 739. Four hours lecture. Prereq.: Chemistry 517, Physics 503, Math 550, plus either senior standing in a science department or consent of the Chemistry Department chairman. 4 q.h.

803, 804. *Chemical Instrumentation I, II.* 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 hours of lecture. Prereq.: Chemistry 741 (may be concurrent) and 722. 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 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. 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

*Must be taken in sequence.

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.

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

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 525-526-527	12
Mathematics 571, 572, 673	14
Health and Physical Education 590	3
Electives (See note 2)	7
	48

SECOND YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 722	2
Chemistry 603, 604	10
Physics 510, 610, 610L, 611, 611L	14
Mathematics 674	4
Electives (See note 2)	3
	45

THIRD YEAR	Hrs.
Chemistry 739, 740, 741	12
Chemistry 729	3
German 501, 502, 503 (See note 1)	12
Health and Physical Education Activity	3
Electives (See note 2)	18
	48

FOURTH YEAR	Hrs.
Chemistry 803, 804	7
Chemistry 829 or 830	2
German 611, 612	8
Electives (See note 2)	28
	45

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

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.

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 525-526-527	12
Mathematics 571, 572	9
Health and Physical Education 590	3
Biology 506, 507, 508	12
	48

SECOND YEAR	Hrs.
Chemistry 603, 604	10
Mathematics 673, 674	9
Biology 770	3
Physics 510, 610, 611, 610L, 611L	14
Electives (See note below)	10
	46

THIRD YEAR	Hrs.
Chemistry 719, 720, 721	12
Biology 775	5
Health and Physical Education Activity	3
Electives (See note below)	26
	46

FOURTH YEAR	Hrs.
Chemistry 739, 740, 741	12
Chemistry 729	3
Biology 721, 721L	4
Biology 708	4
Electives (See note below)	23
	46

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.

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

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 525-526-527	12
Mathematics 571, 572, 673	14
Health and Physical Education 590	3
Electives (See note below)	7
	48

SECOND YEAR	Hrs.
Chemistry 603, 604	10
Mathematics 674	4
Physics 510, 610, 610L, 611, 611L	14
Education 501	3
Psychology 601	5
Electives (See note below)	10
	46

THIRD YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 739, 740, 741	12

Education 704, 706, 708	9
Psychology 709	4
Health and Physical Education Activity	3
Electives (See note below)	8
	48

FOURTH YEAR	Hrs.
Chemistry 729	3
Education 800	3
Education 842	15
Electives (See note below)	23
	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 for a foreign language.

(b): Education 502 may also be required.

MEDICAL TECHNOLOGY

Students majoring in medical technology have a nominal chemistry major and are advised in the Chemistry Department. The B.S. degree with a major in medical technology is awarded upon successful completion of the three-year academic curriculum and one year of training in a hospital school accredited by the American Society of Clinical Pathologists (ASCP). The required courses are those listed in the following curriculum.

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

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 525-526-527	12
Biology 506, 507, 508	12
Health and Physical Education 590	3
Health and Physical Education Activity	1
Electives (See note a)	8
	48

SECOND YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 603, 604	10
Mathematics 540 or 550	5
Biology 551, 552	8
Physics 501	4
Electives (See note a)	9
	48

THIRD YEAR	Hrs.
Chemistry 711, 712 713	8
Biology 702	4
Physics 502, 502L, 503, 503L	8
Health and Physical Education Activity	2
Biology Elective (See note b)	4
Electives (See note a)	18
	44

FOURTH YEAR	Hrs.
Satisfactory completion of the internship in an accredited hospital school of medical technology	46
Total academic credit of 46 q.h. earned in the fourth year is classified as follows:	
Credit towards the University requirement for courses of 600-level and above	46
Credit towards University requirements for Upper Division courses	23
Chemistry credit	3

Note (a): The electives must satisfy the University requirements for Upper Division credit, the social studies (20 q.h.), and the humanities (10 q.h.)

(b): Biology 721 or 741 is highly recommended.

CLASSICAL STUDIES*

Associate Professor Ives (advisor).

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,

*The former Department of Classical Studies is now the Office of Classical Studies.

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 major in Classical Studies is a combined major and 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 Advisor for 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 philosophy/religion/fine arts requirement for teacher certification.

GREEK (ANCIENT)

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

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 and English 631. 3 q.h.

Upper Division Courses

714. *Ancient Art I.* A survey of the art and architecture of the ancient Near East, Crete, and Greece to 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 655, or consent of teacher. 4 q.h.

753. *History of Ancient Rome.* Identical with History 753. Prereq.: History 655, or consent of teacher. 4 q.h.

830. *The Western Tradition: Ancient Drama.* Readings in English from most or all of the following: Aeschylus, Sophocles, Euripides, Aristophanes, *Job*, Aristotle's *Poetics*, Menander, Plautus, Terence, Horace's *Art of Poetry*, Seneca. Prereq.: Classical Studies 631, or any literature course in English or Humanities (except English 608); or junior or senior standing; or consent of the Advisor for Classical Studies. Listed also as Humanities 830 and English 830. 4 q.h.

831. *The Western Tradition: Ancient Prose and Poetry.* Readings in English from such writers as Homer, Herodotus, Thucydides, Plato, Aristotle, Lucretius, Cicero, Virgil. Prereq.: Classical Studies 631, or any literature course in English or Humanities (except English 608); or junior or senior standing; or consent of the Advisor for Classical Studies. Listed also as Humanities 831 and English 831. 4 q.h.

COMMUNICATION

See *English*.

COMPREHENSIVE SCIENCE

A comprehensive science major leading to the degree Bachelor of Science consists of a minimum of 70 q.h. of science courses distributed as follows:

(1) At least 30 q.h. in biology, chemistry, geology or physics, with 12 q.h. in each of two other sciences listed above.

(2) An additional 16 q.h. which may be in any of the sciences listed above, or in

other related courses such as astronomy, mathematics or meteorology.

The student must also satisfy all other requirements for the degree as described under the heading *Requirements for the Degrees* at the beginning of the College of Arts and Sciences section.

Students who elect this major are advised by the science department in which they plan to receive the largest number of quarter hours of credit.

CRIMINOLOGY

See *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.*

Courses for Earth Science Major:

Astronomy
- 504 Descriptive Astronomy 4
- 608 General II 3

Chemistry
- 502 Survey of Chemistry II 4
- 503 Survey of Chemistry III 4

or
- 515 General Chemistry 4
- 516 General Chemistry 4

Geography
- 625 General Meteorology 4

Geology
- 505 Principles of Physical Geology 4
- 506 Principles of Historical Geology 4
- 507 Principles of Geology Laboratory 4
- 602 Introduction to Oceanography 4
- 604 Megascopic Petrography 6
- 701 Geomorphology 6
- 705 Principles of Paleontology 6
- 805 Special Problems in Geology 1
- 811 Environmental Geology 4

and one of any of the following
- 601 Economic Geology 5
- 702 Glacial Geology 5
- 703 Physiography of the United States 6
- 704 Structural Geology 5
- 801 Mineralogy 6

*Interested students should consult with the Geology Department chairman.

Physics
- 501 Fundamentals of Physics 4
- 502 Fundamentals of Physics 3

ECONOMICS

Professors Hahn, Kermani, and Stocks; Associate Professors Mackall (chairman), Long, Mehra, and Niemi; Assistant Professors Bee, Koss, Liu, Milley, Ronaghy, and Smythe; Instructors Morris and Swan.

A major in economics consists of 48 quarter hours. Required courses are 500, 602, 603; 704, 705, 706; 710, 712.

Two of the following courses may be applied toward a major in economics: History 714, 715, 716, 783, 784, 785, and Marketing 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

500. *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.: 500. 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. Study of the techniques of monetary policy with emphasis on its role as a determinant of the level of national income. Prereq.: Economics 603. 4 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 tax-

ation, theories in justification of taxation and government spending; tax reform. Study of the techniques of fiscal policy with emphasis on its role as a determinant of the level of national income. Prereq.: Economics 603. 4 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 for Engineers.* (Formerly 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. (F) 4 q.h.

710. *Intermediate Micro-economic Theory.* A systematic analysis of the theory of demand and the theory of the firm: production input and output choices, and some basic concepts of linear programming. An intensive 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 603 and either Economics 709 or Math. 550. (Sp) 5 q.h.

712. *Intermediate Macro-economics.* A study of the construction of national income and production accounts and the basic determinants of income, output, and employment. 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 603 and either Economics 709 or Math. 550. (W) 5 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. Prereq.: Junior standing. (F) 4 q.h.

802. *Comparative Economic Systems.* A study of a number of major economic systems, including capitalism, socialism, and others, giving particular attention to basic processes such as resource allocation and product distribution. References will be made throughout the study to some of the existing cases such as the U.S., U.S.S.R., Britain, etc. Prereq.: Economics 603. (W) 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. (Sp) 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 712 or consent of the instructor. (Sp) 4 q.h.

806. *History of Economic Thought I.* Ancient beginnings, the Middle Ages, Mercantilism, the Physiocrats, the forerunners of Adam Smith, English classical school, and Utilitarianism. Prereq.: Economics 603. 3 q.h.

807. *History of Economic Thought II.* Early socialist thought, Karl Marx and Revisionism, the German Historical school and the early Marginalist school. Prereq.: Economics 603. 3 q.h.

808. *History of Economic Thought III.* Alfred Marshall, mathematical economics, early American economists, the Institutional school, monetary and welfare economists, the Keynesian school and modern theories of economic development and growth. Prereq.: Economics 603. 3 q.h.

810. *Managerial Economics.* (Formerly Business Economics.) An application of economic analysis to the solution of business problems. Emphasis upon executive decisions for the allocation of resources. Prereq.: Economics 603. 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 603. (F) 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. (W) 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), Hankey, T. Miner, and W. Miner; Associate Professors M. V. Hare, R. Hare, Ives, Kelty, McCracken, Secrist, and Solimine; Assistant Professors Alderman, C. Baird, L. Baird, Baker, Budge, Bunnag, Copeland, Einstein, C. Gay, T. Gay, Henke, Houck, Hwopek, Knapp, Murphy, Rosenthal, Schultz, Sniderman, and Wilkinson; Instructors Brothers, Crites, Hoffmann, Marsyla, Morris, Nitsche, Peterson, Pyle, Rigo, Russal, Schafer, Shale, and van Gorder.

Beyond English 525-526-527, English majors are expected to complete 45 hours including English 755 and 756; a course in advanced composition (English 715, 716, 740, 743, 744, or 745); and two *Survey of English Literature* courses and one *Survey of American Literature* course, or two Upper Division literature courses in the area of any of the survey courses not elected. Upper Division courses in the area of the surveys are as follows:

I. *In the area of English 611:* English 760, 761, 762, 777, 860, 863, 881, 882, 883, 884, 886, 899 (if appropriate); Humanities 832, 834, 880.

II. *In the area of English 612:* English 778, 868, 891, 895, 899 (if appropriate); Humanities 864, 876.

III. *In the area of English 613, 614:* English 770, 775, 815, 865, 868, 871, 899 (if appropriate).

Only those courses for which the student has done *C* or better work will count toward the 45 hours needed for the major, but distribution requirements for the major may be fulfilled with courses for which the student has done D work.

In addition, all English majors must show evidence of having written a satisfactory term paper in an Upper Division English course.

Students who plan to teach high school English should major in English and complete the requirements for certification, including Education 800E and a course in developmental reading. All advising of students working for certification in English is the responsibility of faculty members jointly appointed to the Departments of English and Secondary Education, whose office is Arts and Sciences Office Building, room 319.

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

Literature courses (except 608) satisfy the general course requirement in the area of the humanities, but courses in linguistics and composition do not.

English 527 is prerequisite to all other English courses. Any literature course in English or Humanities (except 608), or junior or senior standing is normally the prerequisite to Upper Division 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.

A *Manual for English Majors* is available at the English Department office.

International Students' 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

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 professor and the approval of the English Honors coordinator. *Does not count toward a major in English.* 3+3+3 q.h.

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

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. 4 q.h.

610. *Introduction to World Literature.* Identical with Humanities 610. 4 q.h.

611. *Survey of English Literature I.* Major works of poetry and prose from the beginnings of English literature through the eighteenth century. Prereq.: English 527 or its equivalent. 4 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. 4 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. 4 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. 4 q.h.

620. *Introduction to African Literature.* Identical with Humanities 620. 4 q.h.

631. *Mythology in Literature.* Identical with Humanities 631. 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.

699H. *Honors Seminar: Landmarks of Literary History.* A critical exploration of a limited topic in literary history. The specific epoch or decade in English or American literature to be treated is announced each time the course is offered. May be repeated once. Prereq.: English 527 or its equivalent, and consent of the English Honors coordinator. 4 q.h.

Upper Division Courses

Prerequisite to the following courses, unless otherwise stated: any literature course in English or Humanities (except 608); or junior or senior standing; or consent of the department chairman.

715. *Journalism I.* Identical with Journalism 715. 4 q.h.

716. *Journalism II.* Identical with Journalism 716. 4 q.h.

721L, 722L, 723L. *Journalism Workshop I, II, III.* Identical with Journalism 721L, 722L, 723L. 3-6, 3-6, 3-6 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 expres-

sion. Offered especially for those who plan to teach English. 4 q.h.

743, 744, 745. *Creative Writing I, II, III.* 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 and Sociology/Anthropology 750. 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 I, II, III.* 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 tradition, realism, or naturalism. 4 q.h.

775. *The American Novel.* The history and development of the novel in the United States during the nineteenth and twentieth centuries. 4 q.h.

777, 778. *The English Novel I, II.* 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. 4+4 q.h.

815. *American Periodicals.* Identical with Journalism 815. 4 q.h.

820. *Literary Criticism.* A survey of the principal works in criticism from antiquity to the present, with special attenton to Aristotle's *Poetics,* Plato, Sidney, Jonson, Dryden, Johnson, the Romantics, Arnold, and Eliot. Prereq.: Two Upper Division courses in English literature. 4 q.h.

830. *The Western Tradition: Ancient Drama.* Identical with Humanities 830. 4 q.h.

831. *The Western Tradition: Ancient Poetry and Prose.* Identical with Humanities 831. 4 q.h.

832. *The Western Tradition: Medieval and Renaissance.* Identical with Humanities 832. 4 q.h.

834. *The Western Tradition: Eighteenth and Nineteenth Centuries.* Identical with Humanities 834. 4 q.h.

859. *Selected Topics in Linguistics.* Identical with Linguistics 859. Prereq.: English 755 or consent of the instructor. 3-5 q.h.

860. *Chaucer.* Reading of Chaucer's principal works, with some study of his immediate predecessors and contemporaries. 4 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. 4 q.h.

864. *Modern Drama.* Identical with Humanities 864. 4 q.h.

865. *American Drama.* The emphasis is mainly on the drama since 1915. 4 q.h.

868. *Modern American and British Poetry.* An intensive study of poetry in English published since 1890. 4 q.h.

871. *The Black Man in American Literature.* Literature by and about the Black Man in America. 4 q.h.

876. *The Modern Novel.* Identical with Humanities 876. 4 q.h.

880. *Medieval Epics and Romances.* Identical with Humanities 880. 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. 4 q.h.

882. *The Seventeenth Century.* Important non-dramatic works in prose and poetry, excluding Milton, with emphasis on Bacon, Donne, Jonson, Brown 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. 4 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), Aliberti, Garcia, and Metzger; Assistant Professors Barna-Gulanich, Linkhorn, Loud, Ryska, Veccia, and Viehmeyer; Instructor Laughlin.

See French, German, Greek, 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 I-II-III.* 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. 4+4+4 q.h.

601. *Intermediate French I.* Grammar reviewed through oral and written exercises. Reading of modern prose and poetry. Prereq.: French 503 or equivalent. 4 q.h.

602. *Intermediate French II.* Continuation of French 601. Prereq.: 601 or equivalent. 4 q.h.

615. *Intermediate French Readings.* Intensive reading of modern authors, intended primarily to prepare students for the survey courses. Prereq.: French 602 or equivalent. 4 q.h.

655. *Conversational French.* Facility in oral expression through exercises on, and discussion of, assigned topics, and through prepared and extemporaneous situational dialogs. Prereq.: French 602 or equivalent. 4 q.h.

675. *French Composition.* Skill in writing developed through directed composition, starting at the intermediate level. Prereq.: French 602 or equivalent. 3 q.h.

Upper Division Courses

705. *Survey of French Literature I.* Middle Ages to 1800. Prereq.: French 615 or permission of instructor. 4 q.h.

706. *Survey of French Literature II.* 1800 to the present. Prereq.: 615 or permission of instructor. 5 q.h.

756. *Practice in French Conversation.* A course designed to maintain oral facility, and based on discussion of contemporary topics. May be taken either before or after 757. Prereq.: French 655 or permission of the instructor. 2 q.h.

757. *Practice in French Conversation.* A course on the same level as 756 but using different materials. May be taken either before or after 756. Prereq.: French 655 or permission of the instructor. 2 q.h.

769. *Applied French Phonetics.* A study of phonetics for application to individual pronunciation problems; elementary linguistic concepts. Prereq.: French 602 or equivalent and sophomore standing. 4 q.h.

771-772. *Advanced French Grammar I-II.* A review in depth of French grammar through analysis of the stylistic devices of

literary works, and through exercises, translation, and original composition. Prereq.: French 675 or consent of the instructor. 4+4 q.h.

773. *Explication de Texte.* Detailed examination of prose and poetry to develop skills in perceptive analysis of literature. Prereq.: French 772 or consent of the instructor. 4 q.h.

774. *Advanced French Composition.* A course designed to develop skills in free composition on assigned topics. Prereq.: French 772 or consent of the instructor. 4 q.h.

810. *16th and 17th Century French Prose.* Readings from Rabelais, Montaigne, Pascal, La Rouchefoucauld, Mme. de Sevigne, La Bruyere, and others. Prereq.: French 705 or consent of the instructor. 4 q.h.

815. *17th and 18th Century French Theater.* Plays of Corneille, Racine, Moliere, Marivaux, Beaumarchais, and others. Prereq.: French 705 or permission of the instructor. 4 q.h.

820. *18th Century French Prose.* The Age of Enlightenment: philosophical and literary works, primarily those of Montesquieu, Voltaire, Diderot, and Rousseau. Prereq.: French 705 or consent of the instructor. 4 q.h.

825. *The French Novel from Its Origin to 1800.* Development of the French novel with emphasis on Mme. de La Fayette, Le Sage, Marivaux, Montesquieu, Diderot, Rousseau. Prereq.: French 705 or consent of the instructor. 4 q.h.

830. *19th Century French Novel.* Works of Balzac, Stendhal, Merimee, Daudet, Zola, Maupassant, and others. Prereq.: French 706 or consent of the instructor. 4 q.h.

835. *19th and 20th Century French Theater.* Romanticism, Naturalism, Symbolism in the theater; Sartre, Camus; Theater of the Absurd, and others. Prereq.: French 706 or the consent of the instructor. 4 q.h.

840. *French Poetry.* Emphasis on the 19th and 20th centuries: the Romantics, Baudelaire, Rimbaud, Verlaine, Valery and selected works of 20th century poets. Prereq.: French 706 or consent of the instructor. 4 q.h.

845. *Twentieth Century French Novel.* Proust, Gide, Camus, the Anti-Roman, and others. Prereq.: French 706 or consent of the instructor. 4 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.* An introduction to the common origin and subsequent developments of the principal Romance languages. Prereq.: French 602. 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.

880, 881. *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. 2-4, 2-4 q.h.

GEOGRAPHY

Associate Professors Klasovsky (chairman) and Laitman; Assistant Professors Anton, Manton, and Matzye; Instructors Costa, Stephens, and 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. An emphasis in Urban Geography can be obtained by taking Geography 802, 804, and 805 together with selected electives including Sociology 701, 707, and 787; Political Science 720, 721, and 722; Economics 804, 820, and 821. Such an emphasis can be arranged in consultation with the Chairman of the Geography Department.

SUGGESTED ELECTIVES:

Science requirement should include Geology 505, 506, and 507. 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. *Introduction to Geography.* An introductory study of causal relationships existing between life activities and the setting, structure and significance of the natural elements of the environment. 4 q.h.

519. *Introduction to Economic Geography.* Geographical study of the world distribution of economic activity, including an introduction to location theory. 4 q.h.

600. *Introduction to Cultural 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. 4 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. 4 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. 4 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. 4 q.h.

Upper Division Courses

701. *Geomorphology.* Identical with Geology 701. Prereq.: Geology 507. 6 q.h.

703. *Physiography of the United States.* Identical with Geology 703. Prereq.: Geology 701. 6 q.h.

Note: Geography 502 or 519 or the consent of the Chairman of the Geography Department is a prerequisite for any of the following 700-level courses.

710. *Regional Geography of Middle America and the Carribean.* A regional approach to the economic and cultural backgrounds of Latin America from the Rio Grande to the continent of South America, stressing the operation of geographic principles in development and behavior. 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. 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. 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. 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. 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. 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 geographical backgrounds. 4 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. 4 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. 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. 4 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.

Note: 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. 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. 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 country-wide 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.

806. *Geography of Human Settlements.* A geographical study of the distribution, structure, and function of urban and rural settlements. Emphasis will be on the morphological structure and growth of settlements. 4 q.h.

807. *Geography of Urbanized Regions.* A geographical study of the change in and the growth of urbanized regions. Emphasis will be upon the factors contributing to changing spatial relationships within urbanized regions as a consequence of changing technology. 4 q.h.

808. *Land Use and Transportation.* A geographical study of the characteristics and patterns of land use, and the interrelationships between land-use and transportation patterns. 4 q.h.

809. *Geographical Aspects of City and Regional Planning.* A study of geographical elements of city and regional planning with emphasis upon use of maps and geographical methods and techniques in planning. 4 q.h.

810, 811, 812. *Special Problems in Geography I, II, III.* A study in depth of specific problems in one of the branches of geography. The problem will be dependent upon the student's interest, competence, and the availability of departmental equipment. 1-4 q.h. each (limit 8 q.h.)

GEOLOGY

Assistant Professors 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 occurrence, and major mining areas of important mineral resources. Five one-hour lectures per 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.

602. *Introduction to Oceanography.* Survey in geological, physical, chemical, and biological oceanography; description and distribution of properties and their relationship

to circulation, shorelines, ocean features, sediments, organisms, and environments. Prereq.: Geology 505, 506. 4 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 occurrence, and constituent minerals. Five hours of lecture and four hours of laboratory work per 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 per 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, transportation 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 work per 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 per 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 per week. Prereq.: Geology 507 or consent of instructor. 6 q.h.

801. *Mineralogy.* A study of the elements of crystallography, physical and chemical properties, occurrence 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 per 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 per 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 occurrence 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.

807, 808, 809, *Earth Science I, II, III.* An integrated course in earth science designed for teachers of earth science and general science courses. A study of the earth and its environment in space, the various physical and chemical processes acting on and within the earth throughout geological time, lunar geology and the solar system. Earth Science Curriculum Project materials will be used. Prereq.: Certification for teaching or permission of the Chairman of the Department of Geology. 3+3+3 q.h.

811. *Environmental Geology.* Study of earth processes, earth resources and properties of earth materials insofar as they relate

to human activities and man as a geological agent. Geological consequences of industrialization. Geological factors in environmental management. Prereq.: Geology 601 and senior standing or permission of the department chairman. 4 q.h.

GERMAN

A major in German consists of 47 quarter hours above the elementary level, including German 740, 745, 800, 815 or 816, 825 or 835, 845 or 846, 866 or 867-868, and at least 4 quarter hours in conversational German. (Conversational German is not required of native speakers who have maintained their fluency.)

Lower Division Courses

501-502-503. *Elementary German I-II-III.* 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. 4+4+4 q.h.

601. *Intermediate German I.* 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. Prereq.: German 503 or high school equivalent. 4 q.h.

602. *Intermediate German II.* A continuation of German 601. Five class meetings. Prereq.: German 601 or equivalent. 4 q.h.

611, 612. *Scientific German I-II.* A basic course designed to develop expeditiously an ability to read scientific literature in German. 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

705. *Survey of German Literature I.* An introduction to the study of German literature intended to acquaint the student with the main works, writers, literary tendencies, and movements from its beginnings to the Romantics. Prereq.: German 602 or equivalent. 4 q.h.

706. *Survey of German Literature II.* Continuation of German 705 from the Romantics to the present. Prereq.: German 602 or equivalent. 5 q.h.

712. *German Civilization.* A study of the geography, history, and traditions of Germany. Prereq.: German 602 or equivalent. 3 q.h.

740. *Advanced Grammar.* Advanced study of German grammar and sentence structure. Prereq.: German 602 or equivalent. 4 q.h.

745. *Advanced German Composition.* Advanced training in written self-expression. Class discussions of student's original compositions in German. Prereq.: German 740 or permission of the instructor. 4 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.

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 705 or permission of the instructor. 3 q.h.

815. *The Age of Goethe.* Intensive study of major writers of the storm and stress, classical, and early romantic movements with stress on the works of Goethe, Schiller, and Lessing. Prereq.: German 705 or permission of the instructor. 4 q.h.

816. *Goethe and Schiller.* A study of the lives and works of Goethe and Schiller with stress on their classical writings. Prereq.: German 705 or permission of the instructor. 4 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 705 or permission of the instructor. 5 q.h.

825. *German Romanticism.* Intensive study of early and late German Romanticism including the reading of belletristic and theoretical writings. Prereq.: German 706 or permission of the instructor. 4 q.h.

835. *German Realism and Naturalism.* Intensive study of German literature from Poetic Realism through Naturalism. Prereq.: German 706 or permission of the instructor. 4 q.h.

845. *Recent German Literature.* Study of German literature since Naturalism, including the writings of Thomas Mann, Hesse, Kafka, Rilke, Hoffmannsthal, George, and others. Prereq.: German 706 or permission of the instructor. 4 q.h.

846. *Recent German Prose.* Study of German novels, Novellen, and plays since Naturalism including works by Thomas Mann, Hermann Hesse, Franz Kafka, Wolfgang Borchert, Max Frisch, Friedrich Duerrenmatt, Bert Brecht, Heinrich Boell, and others. Prereq.: German 706 or permission of the instructor. 4 q.h.

850. *Seminar in German Translation.* Practice in translating from German to English and English to German through a variety of techniques and employment of selected belletristic and non-belletristic writings. Prereq.: German 740 or permission of the instructor. 4 q.h.

866. *History of the German Language.* Prereq.: German 602 or equivalent. 3 q.h.

867, 868. *Comparative Germanic Linguistics.* An introduction to the common origin and subsequent developments of the principal Germanic languages. Prereq.: German 602 or Linguistics 755, or the equivalent of one of these. 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.

880, 881. *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. 2-4, 2-4 q.h.

GREEK (ANCIENT)

A major in Greek is not offered, but credit in Greek may be counted toward a major in *Latin, Classical Studies,* or *Humanities.*

Lower Division Courses

501-502-503. *Elementary Greek I-II-III.* Grammar, syntax, and simple composition; reading selections from various Greek writers and the New Testament. Introduction to Greek literature, history, and civilization; attention to the Greek element in the English language. 3+3+3 q.h.

601. *Intermediate Greek I.* Reading in one or more authors, preceded or accompanied by review of elementary Greek if needed. Prereq.: Greek 503 or equivalent. 3 q.h.

602, 603. *Intermediate Greek II and III.* Continuation of Greek 601. Prereq.: Greek 601. 3+3 q.h.

Upper Division Courses

The normal prerequisite is Greek 603 or its equivalent.

701. *Advanced Readings.* Reading in one or more major Greek writers, selected with consideration of the students' interests. 3 q.h.

702, 703. *Advanced Readings.* Like Greek 701, either as a continuation of it or as separate courses in other authors. 3+3 q.h.

HEALTH AND PHYSICAL EDUCATION

Associate Professors Ringer (chairman), Carson, Marshall, and Philipp; Assistant Professors Barret, Connelly, Kocinski, Laborde, Leahy, Liptak, Loehr, Rosselli, Whitney, and Wright; Instructors Dove, Katerberg, Ramsey, 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.

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 590 (509); 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 Admissions Office.

Members of the varsity baseball, basketball, football, golf, swimming, tennis, and rifle squads may receive physical activity credit through enrollment in 549R, Varsity Competition.

The form of activity is chosen by the student. Activity courses will be listed in

the quarterly class bulletins under the designations: Men, Women, Coeducational, or H&PE Majors (except by departmental consent). The R suffixes for activity courses are used to distinguish course numbers from those used prior to the 1971-1972 catalog.

Locker and towel service is available upon payment of a fee (see fees on page 55). Students must provide their own clothing for activity classes and this attire must be appropriate to the activity. 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 instructor before buying new equipment.

Physical Examinations

The Health and Physical Education Department requires all students enrolled in a physical education activity course to have on file in the University Health Center a completed medical examination form signed by a physician. The medical examination required for enrollment in the University is acceptable in meeting this requirement for a four-year period from the time of entrance into the University. Any student who is involved in a major accident, or has had a major illness during this four-year period of time must submit to the University Health Center another medical examination form completed after such accident or illness. Medical examination forms are available from the University Health Center. Students without the above-mentioned physical examination on file in the University Health Center will not be admitted to activity classes.

Each physical education major is required to have an annual medical examination, the results of which must be on file in the University Health Center. Majors who enter the University in the winter or spring quarter will have the initial medical examination on file and this will meet the department requirements until the following September, at which time they must have another physical examination. Students without the above-mentioned physical examination on file in the University Health Center will not be admitted to activity classes.

Professional Program

Youngstown State University is fully approved by the Ohio State Department of Education for the preparation of health education and physical education teachers for public schools. The degree of Bachelor of Science in Education with a major in health education or 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.

500R. *Field Hockey.* Methods and practice of skills, techniques, rules, and strategy of field hockey. 1 q.h.

501R. *Soccer.* Skills, techniques, strategy, and rules of soccer. 1 q.h.

502R. *Volleyball.* Skills, techniques, rules, and strategy of volleyball. 1 q.h.

503R. *Basketball.* Development of fundamental skills and techniques in basketball. Offensive and defensive team play and strategy. 1 q.h.

504R. *Softball.* Skills, techniques, rules, and strategy of softball. 1 q.h.

505R. *Touch Football.* Skills, rules, and techniques of touch football. 1 q.h.

506R. *Track and Field.* Skills, techniques, rules, and organization of track and field events. 1 q.h.

508. *Ice Skating.* Ice skating instruction for the novice or non-skater. One two (2) hour session per week at Mill Creek Park Skating Rink. 1 q.h.

510R. *Archery.* Techniques of target archery. Selection, care, and repair of equipment. 1 q.h.

511R. *Badminton.* Skills, mechanics, and rules of badminton. 1 q.h.

512R. *Bowling I.* Fundamentals of bowling the straight ball. Equipment selection, correction of errors, and scoring. Prereq.: Beginning bowler. 1 q.h.

513R. *Bowling II.* Intermediate bowling. Refinement of bowling skills and use of the hook delivery. Tournament planning, team strategy, and competition. Prereq.: Bowling I or 100 average. 1 q.h.

514R. *Fencing I.* Fundamentals of foil fencing. Methods of attack and parry, and elements of bouting and judging. 1 q.h.

515R. *Fencing II.* Intermediate techniques and strategy of foil fencing and bouting. Prereq.: Fencing I or consent of instructor. 1 q.h.

516R. *Gymnastics I.* Stunts and tumbling. Fundamentals and methods of stunts and tumbling with gymnastic conditioning. 1 q.h.

517R. *Gymnastics II.* Beginning apparatus. Fundamental techniques and methods of appropriate gymnastic apparatus and routine composition. Prereq.: Gymnastics I or consent of instructor. 1 q.h.

518R. *Gymnastics III.* Intermediate to advanced apparatus. Advanced methods, skills, and techniques of apparatus and floor exercise. Prereq.: Gymnastics II or consent of instructor. 1 q.h.

520R. *Golf I.* Fundamental skills of golf. Includes grip, stance, swing patterns, and putting as well as rules of course play. 1 q.h.

521R. *Golf II.* Intermediate golf. Refinement of swing patterns, methods of instruction, and correction of errors. Emphasis on use of various clubs and types of shots. Prereq.: Golf I or intermediate skill. 1 q.h.

522R. *Tennis I.* Fundamental skills of tennis including forehand and backhand drives and service. Basic rules, strategy, and methods. 1 q.h.

523R. *Tennis II.* Theory and practice of intermediate to advanced tennis skills and play. Prereq.: Tennis I or intermediate skill level. 1 q.h.

524R. *Conditioning and Exercise Programs.* Program designed to meet individualized needs for weight control, relaxation, fitness, conditioning, or corrective activity. Student selects type of program to meet personal needs. 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.

525R. *Wrestling.* Basic techniques of wrestling. Offensive and defensive maneuvers, methods, rules, and officiating. 1 q.h.

526R. *Riflery.* The safety and practice of handling a rifle. Target shooting in prone, kneeling, and standing positions. 1 q.h.

527R. *Weight Conditioning and Handball.* Basic weight training techniques including individual program selection and general safety practices. Handball rules and techniques for singles and doubles play. 1 q.h.

530R. *Aquatics I.* Beginning swimming. Introduction to swimming and personal water safety. Treading, floating, sculling, and the basic strokes. Prereq.: Non-swimmer. 1 q.h.

531R. *Aquatics II.* Intermediate swimming. Instruction in the crawl, sidestroke, breaststroke, and variations. Surface diving, aquatic games, and beginning diving. Emphasis is on form and endurance. Prereq.: Ability to swim in deep water. 1 q.h.

532R. *Aquatics III.* Advanced swimming. Refinement of strokes and variations. Introduction to competitive swimming, synchronized swimming, and springboard diving. Survival techniques, use of mask, snorkle and fins, and elementary lifesaving skills. Prereq.: Ability to swim four strokes well. 1 q.h.

533R. *Competitive Swimming.* Refinement and variations of the four basic strokes used in racing competition. Racing dives and close course turns. Organization and conduct of meets. Prereq.: Advanced swimmer. 1 q.h.

534R. *Synchronized Swimming.* Fundamentals of synchronized swimming, stunts, and aquatic art. Individual and group work on selection and development of swimming and routines. Prereq.: Intermediate swimmer. 1 q.h.

535R. *Diving I.* Fundamentals of springboard diving concentrating on the one-meter board. Prereq.: Intermediate swimmer. 1 q.h.

536R. *Diving II.* Intermediate to advanced springboard diving at one and three meters. Prereq.: Diving I or consent of instructor. 1 q.h.

540R. *Modern Dance I.* Elementary techniques of body movement. Rhythmic fundamentals and improvisation. 1 q.h.

541R. *Modern Dance II.* Intermediate dance techniques, composition, and improvisation. Prereq.: Modern Dance I or consent of instructor. 1 q.h.

542R. *Dance Composition.* Selection of theme, accompaniment, and choreography of the dance. Prereq.: Modern Dance II or consent of instructor. 1 q.h.

545R. *Folk and Square Dance I.* European and Mediterranean folk dances. American square dances, and mixers. Beginning materials and practice. 1 q.h.

546R. *Folk and Square Dance II.* Intermediate and advanced folk and country dances, materials, and practice. Prereq.: Folk and Square Dance I or consent of instructor. 1 q.h.

547R. *Social Dance.* Methods, techniques, and patterns of ballroom dancing and current fad dances. 1 q.h.

549R. *Varsity Competition.* Credit towards the University physical education activity requirement may be obtained through competition in the varsity athletic program. Three credit hours maximum allowable. Prereq.: Consent of the coach. 1 q.h.

555R. *Football.* Methods, skills, techniques, and strategy of touch, flag, and tackle football. Prereq.: HPE major. 1 q.h.

556R. *Baseball-Softball.* Teaching methods and practice of skills, techniques, and strategy of baseball and softball. Rules of each. Prereq.: HPE major. 1 q.h.

560R. *Archery-Badminton.* Fundamental to advanced skills, mechanics, methods, and rules of badminton and target archery. Prereq.: HPE major. 1 q.h.

561R. *Recreational Games and Bowling.* Fundamentals of bowling and the analysis of skills and techniques. Methods, rules, and skills of recreational games such as shuffleboard, paddle tennis, table tennis, tetherball, etc. Prereq.: HPE major or consent of instructor. 1 q.h.

590. *Health Education.* A study of mental health and related problems, family life, chronic and communicable diseases, environmental and consumer health. 3 q.h.

595. *Introduction and Concepts of Health and Physical Education.* An introduction to the related professions for Health and Physical Educators. The concepts, goals, and objectives upon which health and physical education is based. 2 q.h.

601. *First Aid.* Accident prevention and first aid care of injuries and illness. Emphasis on injuries and accidents common to physical activities. American Red Cross Standard, advanced, and instructor's certification available. 3 q.h.

614. *Foundations of Physical Education.* Development of a general knowledge and understanding about physical activity for life. The rules, mechanics, social benefits, and other aspects of a variety of sports. 3 q.h.

630R. *Lifesaving Techniques.* Instruction in lifesaving techniques, water rescue, use of mask, fins and snorkle, poolside first aid, resuscitation, and pool maintenance. Red Cross Lifesaving certificate granted upon satisfactory completion of course. Prereq.: Advanced swimming ability. 3 q.h.

631R. *Water Safety Methods for Instructors.* Techniques for teaching swimming, diving, survival swimming, lifesaving, and skin diving. Poolside first aid and introduction to pool maintenance and management. Red Cross Water Safety Instructor's certificate granted upon satisfactory completion of course. Prereq.: Current Lifesaving certificate. 3 q.h.

632R. *Skin and Scuba Diving.* Basic skin diving with use of mask, fins, and snorkle. Scuba diving skills with use of tank and regulator. Emphasis on diving physics, physiology, lifesaving, first aid, and safety skills related to diving. Prereq.: Lifesaving certificate or consent of instructor. 3 q.h.

633R. *Water Polo.* Skills, organization, rules, and strategy of water polo. Prereq.: Advanced swimming. 1 q.h.

651. *Techniques of Officiating Basketball.* Analysis and interpretation of rules; theory and practice of officiating basketball. 2 q.h.

652. *Techniques of Officiating Field Hockey and Soccer.* Analysis and interpretation of rules; theory and practice of officiating field hockey and soccer. 2 q.h.

653. *Techniques of Officiating Football.* Analysis and interpretation of rules; theory and practice of officiating football. 2 q.h.

654. *Techniques of Officiating Softball.* Analysis and interpretation of rules; theory and practice of officiating softball. 1 q.h.

655. *Techniques of Officiating Track and Field.* Analysis and interpretation of rules; theory and practice of officiating track and field. 1 q.h.

656. *Techniques of Officiating Volleyball.* Analysis and interpretation of rules; theory and practice of officiating volleyball. 1 q.h.

657. *Techniques of Officiating Swimming.* Analysis and interpretation of rules; theory and practice of officiating swimming. 1 q.h.

658. *Techniques of Officiating Gymnastics.* Analysis and interpretation of rules and skills; theory and practice of judging gymnastics. 2 q.h.

659. *Techniques of Officiating Baseball.* Analysis and interpretation of rules; theory and practice of officiating baseball. 2 q.h.

690. *Personal Health Problems.* Personal health information for the future teacher. Emphasis placed upon mental and physical

health-related problems including drug abuse, nutrition, and chronic and communicable disease. Prereq.: HPE 590 and sophomore standing. 3 q.h.

700. *Pre-professional Laboratory Experience.* The student will assist in a YSU activity course under the supervision of a qualified faculty member. The student must attend the activity class regularly and is expected to teach small groups or parts of lessons when appropriate. Prereq.: Sophomore standing and consent of instructor. 1 q.h.

721. *Health Education in the Elementary Grades.* Methods and materials for health instruction; first aid procedures; use and administration of health services; maintenance of healthful living conditions in schools; recognition of common disorders in children. *Not open to Health or Health and Physical Education majors or minors.* Prereq.: HPE 590 and junior standing. 4 q.h.

722. *Physical Education in Elementary Grades for the Classroom Teacher.* Principles, methods, materials, and organization of basic movement activities for the elementary school child. Includes games, rhythmic activities, stunts, and skill development. Active participation required. Prereq.: Third-quarter sophomore standing. 3 q.h.

750. *General Techniques of Coaching.* A study of the science of coaching. Organization, psychology, ethics, conditioning, and general aspects of the coaching profession. Prereq.: 10 activity credits, or junior standing AND consent of instructor. 2 q.h.

751. *Coaching of Baseball.* Theory, methods, organization, and techniques of teaching and coaching baseball. Prereq.: HPE 750. 2 q.h.

752. *Coaching of Basketball.* Theory, methods, organization, and techniques of teaching and coaching basketball. Prereq.: HPE 750. 2 q.h.

753. *Coaching of Football.* Philosophy, theory, methods, techniques, and organization applied to the coaching of football. Prereq.: HPE 750. 2 q.h.

754. *Coaching of Track and Field.* Methods, theory, techniques, and organization of coaching track and field. Prereq.: HPE 750. 2 q.h.

755. *Coaching of Wrestling.* Methods, fundamental techniques of coaching and officiating wrestling; practical application of teaching wrestling maneuvers and interpretation of rules. Prereq.: HPE 750. 2 q.h.

760. *Physical Education for the Elementary Grades.* Principles, methods, materials, and concepts of movement fundamentals and basic skills for the elementary school child. Includes games, rhythmics, curriculum planning, and observational experiences. Prereq.: Junior standing and health and physical education major. 4 q.h.

765. *Physical Education in the Secondary Schools.* Principles, objectives, methods, materials, and curriculum development for the teaching of physical education in the secondary schools. Observational experiences provided. Prereq.: Junior standing. 4 q.h.

780. *Methods of Teaching Dance.* Rhythm and movement fundamentals; methods and materials of teaching folk and square and social dance. Prereq.: HPE 545. 2 q.h.

785. *Teaching of Modern Dance.* Methods and materials of teaching modern dance. Prereq.: HPE 780. 2 q.h.

790. *Advanced Health.* An analysis of the healthy human body and how it is affected by disease. Study includes representative conditions of the cardiovascular, reproductive, nervous, respiratory, excretory, and endocrine areas. Prereq.: HPE 590 and 690. 4 q.h.

791. *Community Health.* A study of the need for organized community health efforts. Emphasis is placed upon the problems including chronic and communicable diseases, environmental health, world health, etc., and the public and private agencies involved in their solutions. Prereq.: HPE 790. 4 q.h.

792. *Teaching of Sex Education: Methods and Materials.* To prepare teachers of sex education in the elementary and secondary schools. Emphasis upon human sexuality, human reproduction, and responsible family living. Prereq.: HPE 590 and junior standing. 3 q.h.

795. *Kinesiology and Applied Anatomy.* Muscular structure and function in relation to physical movement; analysis of fundamental movements. Prereq.: Biology 551 and 552. 4 q.h.

797. *Camping and Outdoor Education.* Theory and practice of primitive to modern camping. Includes: selection, care, and handling of equipment; selection and prepa-

ration of campsites, recognition and preservation of wildlife in its natural habitat. 4 q.h.

850. *History, Principles and Philosophy of Physical Education.* Scientific, sociological, psychological, and philosophical principles of physical education and the historical development of current concepts and programs. Prereq.: Junior standing. 4 q.h.

855. *Organization and Administration of Physical Education.* Study and practice of techniques and methods in the organization and administration of school physical education programs. Prereq.: Junior standing. 3 q.h.

860. *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. Prereq.: Senior standing. 4 q.h.

880. *Organization of Recreation and Intramural Programs.* The function of recreation in society including the personnel, administration, leadership, facilities, and programs. Principles governing participation in intramural activities, their organization and administration. Prereq.: Junior standing. 4 q.h.

885. *International Physical Education.* The study of methods, techniques and administration of physical education of various foreign countries and their influence on physical education in the United States. Prereq.: HPE 850. 2 q.h.

890. *School Health Education.* Principles, planning, teaching methods, organization, and administration of health education in elementary and secondary schools. Prereq.: HPE 790 and Health or PE major. 4 q.h.

891. *Evaluation and Curriculum Development in Health.* Designed for the health education major. The development and organization of a health curriculum, and the evaluation of all aspects of a school health program including education, administration, services, and environment. Prereq.: HPE 790. 4 q.h.

895. *Adapted Physical Education.* The organization of physical education activities selected to meet the individual needs of the atypical student. Evaluation of therapeutic exercises and activities. Prereq.: HPE 795. 3 q.h.

896. *Physiology of Exercise.* Physiological bases and function of the body during exercise, stress, and muscular activity. Prereq.: HPE 795. 4 q.h.

897. *Prevention and Care of Athletic Injuries.* Practical and theoretical aspects of treatment of injuries in an athletic program; supplies, therapeutic equipment, taping and wrapping, and techniques of conditioning. Prereq.: HPE 795 and 750. 2 q.h.

898. *Seminar: Physical Education.* Study of special and current problems in the field of physical education. Prereq.: Senior standing. 2 q.h.

899. *Seminar: Health.* Study of special and current problems in the field of health education. Prereq.: Senior standing and consent of instructor. 2 q.h.

HISTORY

Professors D. M. Behen, Roberts, Skardon, and Slavin; Associate Professors Blue, L. Domonkos, and Huang; Assistant Professors Earnhart (acting chairman), Amadi, Beelen, Berger, Capeci, Darling, Donovan, 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 and Sciences) the following group requirements listed below. It is recommended that the student select his courses with assistance from his advisor. Certain courses are to be preferred to others according to whether one contemplates graduate study, secondary school teaching, or some other career.

GROUP A—History 605, 606, 655, 656.

GROUP B—Select three courses from the following courses:

701, 702, 704, 706, 708, 710, 712, 713, 715, 716, 717, 718, 720, 721, 723, 730, 731, 732, 733, 736, 738, 739, 741, 742, 744, 745, 746, 747, 748, 749, 788, 801.

GROUP C—Select three courses from the following courses:

735, 751, 752, 753, 754, 755, 758, 759, 760, 761, 765, 766, 767, 768, 769, 782, 783, 784, 786, 787, 790, 791, 792, 793, 795, 850, 851.

GROUP D—Select three courses from the following courses:

611, 661, 662, 663, 770, 772, 775, 776, 777, 778, 779, 780, 781, 796, 797, 798, 799, 800, 811, 812, 813, 860.

Students transferring 30 or more quarter hours in history to YSU from another institution must, in addition to meeting the group requirements listed above, select at least five additional courses from either of 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. *History of the United States, I.* A general survey of the political, social, and economic development of the United States to 1877. 4 q.h.

606. *History of the United States, II.* A general survey of the political, social, and economic development of the United States from 1877 to the present. 605 is not a prerequisite. 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. 4 q.h.

655. *History of Western Civilization, I.* The development of Western culture from its earliest appearance in the Near East until 1715. 4 q.h.

656. *History of Western Civilization, II.* The development of Western culture from 1715 to the present. 655 is not a prerequisite. 4 q.h.

661. *Middle Eastern Civilization.* A survey of North Africa, the Middle East, and the Indian subcontinent from ancient times to the present with special emphasis upon nationalist movements in these regions in the past two centuries. 4 q.h.

662. *History of Asian Civilization.* A history of institutions and cultures of East and Southeast Asia from ancient times to date. Emphasis on East Asia. 4 q.h.

663. *African Civilization.* A general survey of the cultural, political, social and economic development of Africa from antiquity to the present. Emphasis will be placed on early Africa, European contact and impact on Africa, nationalism and independence. An attempt will be made to place Africa in the larger context of world history. 4 q.h.

Upper Division Courses

701. *Colonial America.* A thorough examination of the origins and development of English colonization in America to the middle of the eighteenth century. Special emphasis is placed on Colonial social structure, economic patterns, and political behavior. Prereq.: 605. 4 q.h.

702. *The Revolution and the Constitution.* A careful examination of the causes and consequences of the American Revolution taking into account both British imperial policies and Colonial responses to those policies. The origins of the Constitution and the creation of the American Republic are also considered. Prereq.: 605. 4 q.h.

704. *Federal Period.* An intensive study of the Age of Jefferson and Jackson covering the period 1789 to 1840. Prereq.: 605. 4 q.h.

706. *Middle Period of American History.* An intensive study of the deepening sectionalism of the country culminating in the outbreak of the Civil War. Prereq.: 605. 4 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.: 605. 4 q.h.

710. *Emergence of Modern America.* History of the United States from Reconstruction to the Treaty of Versailles, having as its major theme the transformation of this nation from a rural to an urban society and the political role played by immigrant-

ethnic-minority groups in early 20th century political development. Emphasis will be placed on historical interpretation. Prereq.: 606. 4 q.h.

712. *Recent America.* The United States in modern times. This course will deal with domestic and international affairs from World War I through World War II. It will emphasize historical interpretation as seen through selected readings. Prereq.: 606. 4 q.h.

713. *Contemporary America.* The United States in contemporary times. Emphasis will be placed on economic, social, political, and cultural issues of historical significance dividing and uniting the nation in the period from World War II to the present. Prereq.: 606. 4 q.h.

715, 716. *Economic History of the United States, I, II.* An historical examination of the economy of the United States to 1877 and from 1877 to the present. Special emphasis is placed on such areas as agriculture, manufacturing, transportation, and commerce, money and banking, and business and labor organizations. Prereq.: 605 for 715, 606 for 716. 4+4 q.h.

717, 718. *Constitutional History of the United States I, II.* The development of the American Constitutional system from the beginning of the Republic to 1900 and from 1900 to the present time. Treatment emphasizes the formation and evolution of the Constitution by judicial decisions and the influence of political change. Prereq.: 605 for 717, 606 for 718. 4+4 q.h.

720, 721. *Social and Cultural History of the United States, I, II.* An examination of the social and cultural development of the United States through the Civil War and from the Civil War to the present 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 for 720, 606 for 721. 4+4 q.h.

723. *History of Ideas in America.* An examination of intellectual currents in American life touching upon both leading American thinkers and trends of popular culture. Prereq.: 605 or 606. 4 q.h.

730, 731. *Black Man in American History, I, II.* 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 for 730, 606 for 731. 4+4 q.h.

732. *The West in American History, I.* A study of the American frontier from the colonial period to 1800, with special emphasis on the role of the Indians. This course examines the social, political, and economic currents in frontier life. Prereq.: 605. 4 q.h.

733. *The West in American History, II.* A study of the advancing nineteenth century frontier in the United States and its effect on the political, economic, and social conditions of the country as a whole. Special emphasis will be given to the role of the Indian. Prereq.: 605. 4 q.h.

735. *Urban History.* A survey of the history of cities in Western Europe to the Industrial Revolution. Prereq.: 655. 4 q.h.

736. *Urban History in the United States.* The history of cities in the United States from 1607 to the present. Prereq.: 605 or 606. 4 q.h.

738, 739. *The South in American History I, II.* Origins and development of local institutions, ideology, culture, economics, politics, and racial difficulties from Colonial times through the Civil War and from Reconstruction to the present. Emphasis is on the nineteenth century prior to the Civil War and the problems faced by the southern regional attitude following Reconstruction. Special attention is given, in the second half, to the difficulty the South faced in the twentieth century. Prereq.: 605 for 738, 606 for 739. 4+4 q.h.

741, 742. *Diplomatic History of the United States I, II.* A study of American foreign relations as determined by interaction between domestic and international pressures since the beginning of American independence to 1900 and from 1900 to the present time. Prereq.: 605 for 741, 606 for 742. 4+4 q.h.

744. *The History of American Business.* A study of business enterprise and its historical setting from 1800 to the present. The course emphasizes the interaction of economic and political forces as a factor helping to explain the position occupied by business enterprise in late 20th-century American society. Prereq.: 605. 4 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 instructor. 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 the United States history from the Civil War to the present. Prereq.: 18 hours of history or the consent of instructor. 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.

748. *History of Ohio.* A study of the important events and movements that have shaped Ohio history in the social, economic, religious, and political areas. Prereq.: 605 or 606. 4 q.h.

749. *Philosophy of History.* The same as Philosophy 749. 4 q.h.

751. *Byzantine History.* A study of the eastern Roman Empire from its origins as a Greek trading outpost in the 8th century B.C.E. to its conquest by Mehmet Faith in 1453. The course will concentrate upon church problems, dynastic disputes, and the impact of invaders from the north and south. Prereq.: 655. 4 q.h.

752. *History of Greece.* Aegean Civilization from the third millennium B.C.E. through the Diadochi. Lectures focus upon archaeology, the culture of Crete and Mycenae, the Dorian Invasions, the Clash of Athenian and Spartan cultures, Persia, and Macedonian hegemony in the time of Alexander. Prereq.: 655. 4 q.h.

753. *History of Rome.* The Roman World from its mythological foundations in the 8th century B.C.E. through the Principate. Special emphasis upon Italian archaeology in the second millennium, Etruscan civilization, the Carthaginian Wars, the Julian Civil War, and the Five Good Emperors. Prereq.: 655. 4 q.h.

754. *Early Middle Ages.* History of Western Europe from the decline of Rome to the tenth century. This course begins with an examination of the theories concerning the decline of Rome and the beginning of the Middle Ages and concludes with an analysis of the economic, social, and cultural forces following the Viking invasions. Especially highlighted will be the Carolingian Renaissance, Caesaropapism, Benedictine Monasticism, and early feudalism. Prereq.: 655. 4 q.h.

755. *Late Middle Ages.* History of Western Europe from the tenth century to the Waning of the Middle Ages. This course will study the following themes: the renaissance of the 12th century, Scholasticism, introduction of Aristotelianism in the West, the rise of cities, nationalism, and the decline of Europe in the 13th and 15th centuries. Prereq.: 655. 4 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. This course will examine the humanism of Bude, Erasmus, and Vires; the political theories of Macchiavelli and Thomas More; the aesthetics of DaVinci, Michelangelo, etc.; and the contributions of the Italian cities. Prereq.: 655. 4 q.h.

759. *The Reformation Era.* The history of Europe from the Lutheran Revolt to the peace of Westphalia in 1648. This course will treat the following themes: the causes of the Protestant Reformation; the impact of Luther, Wycliffe, Calvin, and Huss; the Counter Reformation; and the Council of Trent. Prereq.: 655. 4 q.h.

760. *From Westphalia (1648) to the French Revolution (1789).* This course introduces the rise of modern states, mercantilism, diplomatic and military struggles, Gallicanism and Jansenism in religion, and the classical and baroque in art and literature. The emphasis is on France under Louis XIV and then the Old Regime of Louis XV and Louis XVI. The 18th century is examined with its Machiavellian politics, its court intrigues, but also its stimulating intellectual life reflected in the term, The Enlightenment. Prereq.: 656. 4 q.h.

761. *French Revolution and Napoleon (1789-1815).* The French Revolution is examined in detail especially from its outbreak to the fall of Robespierre. The political role of urban crowds, the revolt of peasants and bourgeoisie, the rise of political clubs, efforts at founding a civic religion, party struggles, the fall of the Bourbon monarchy and the birth of the first French Republic are examined and analyzed. The last portion of the course deals with the rise

of Napoleon, his political role, his military campaigns, the reconstruction of Europe, and his fall at Waterloo. Prereq.: 656. 4 q.h.

765. *Europe from the Congress of Vienna to the Franco-Prussian War (1815-1871).* Such movements as nationalism, the impact of the Industrial Revolution, Marxism, the growth of democracy, liberalism, and conservatism, romanticism and realism, reform and revolution, form the main themes of this period. The course is divided into two historic periods, from 1815 to the revolutions of 1848 and from 1848 to 1871 with the emphasis on the unification of Italy and of Germany and the new Europe that arose as a consequence. Prereq.: 656. 4 q.h.

766. *Europe from the Franco-Prussian War to World War I.* The impact of the Paris Commune; revolutionary movements and their contradictions; imperialism, political antisemitism, and the images of war; the Bismarckian international order and its suicide. Prereq.: 656. 4 q.h.

767. *Europe from World War I to the Present.* War, revolutions, and the European order; Versailles and its contradictions; the Fascist response to Communism and Depression; the interaction of democracies, Fascisms, and Stalinism in the making of the Cold War and World War II. Prereq.: 656. 4 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.: 656. 4+4 q.h.

770. *The Far East.* Arts and philosophy, economic development, social, and political institutions, and international relations from ancient times to the beginning of modernization, including China, Japan, and Korea. Prereq.: 662 or consent of instructor. 4 q.h.

772. *History of Modern China.* China's history from the mid-19th century to date, with emphasis on western impact, industrialization, intellectual trends, the revolution of 1911, national reconstruction, student movements, the rise of communism, and the contemporary scene. Prereq.: 662 or consent of instructor. 4 q.h.

775. *History of South and Southeast Asia in the 19th and 20th Century.* Patterns of Western colonialism, revolutionary forces of nationalism and communism, and current problems in Burma, Ceylon, Cambodia, India, Indonesia, Laos, Malaysia, Pakistan, the Philippines, Thailand, and Vietnam. Prereq.: 662 or consent of instructor. 4 q.h.

776. *History of Modern Japan.* An analysis of Japan's history from the Meiji Restoration to date, including industrialization, the party movement, intellectual development, the rise and fall of militarism, postwar reconstruction, and current problems. Prereq.: 662 or consent of instructor. 4 q.h.

777, 778. *History of the Russian Empire I, II.* A concise study of the history of Russia from the rise of Muscovy to 1825 and from 1825 to the dissolution of the Russian Empire with special attention devoted to the Russian Revolution. Prereq.: 655 for 777, 656 for 778. 4+4 q.h.

779. *History of the Soviet Union.* A survey of Soviet history, diplomacy and tactics from the Bolshevik Revolution to the present. Great stress is placed on the achievements and shortcomings of Communism in Russia, its satellites, as well as the non-Russian nations that make up the Soviet Union. Prereq.: 656. 4 q.h.

780, 781. *History of Eastern Europe, I, II.* An intensive study of the histories of the varying nations that make up Eastern Europe from earliest times to 1600 and from 1600 to the present. The course examines the developments and contributions of Lithuania, Poland, Rus-Ukraine, Russia, Slovakia, as well as the Caucasian nations to world civilization from the earliest to most recent times. Prereq.: 655 for 780, 656 for 781. 4+4 q.h.

782. *History of the Balkans.* A study of the history of Southeastern Europe from the fourth century to the present. Examined also are the Byzantine and Ottoman Empires, and their influences on this area. Great stress is placed on development prior to and since World War I. Prereq.: 656. 4 q.h.

783, 784. *Economic History of Europe I, II.* A study of the economic development of Europe to 1780 and from 1780 to the present. Emphasis will be placed on rural and town economy in the Middle Ages, the transition to capitalism and the development of modern industrial society. Prereq.: 655 for 783, 656 for 784. 4+4 q.h.

786. *The Expansion of Europe.* Lectures and readings on the expansion of Europe overseas 1415 to 1815: the oceanic discoveries, the colonial systems of the European

countries, the influence of European expansion on non-European peoples and on Europe itself. Prereq.: 655. 4 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+4 q.h.

790. *English History, I.* The history of England from earliest times to 1714. Emphasis is on the political and cultural evolution of the English people in early times, the expansion of interests in the Elizabethan Age, and the establishment of parliamentary government in the Stuart Era. Prereq.: 655. 4 q.h.

791. *English History, II.* Great Britain from the accession of the Hanovers to the present. The emphasis is on domestic affairs of Great Britain and Ireland—the intellectual impact of Newton and Darwin, commercial and industrial developments and the attendant social and political problems. Prereq.: 656. 4 q.h.

792, 793. *British Empire and Commonwealth I, II.* A study of the development of the British Empire from the collapse of the Old Empire in 1783 to 1867 and from 1867 to the present day. Areas stressed include the West Indies, Africa, Australia, Canada, and India. Movements emphasized are the development of colonial institutions, the formation of colonial policy, the struggle to suppress the slave trade, the expansion of the empire, the growth of colonial nationalism, and the evolution of the Commonwealth. Prereq.: 656. 4+4 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.: 665. 4 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 1908-09. 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.

800. *Jewish History.* An overview of Jewish History in the past twenty centuries. Emphasis will be given to achievements in the arts, sciences, and politics, as well as to precedents for the Holocaust. Prereq.: 655, 656. 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 instructor. 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 instructor. 4 q.h.

812. *History of South America.* The Spanish American republics and Brazil are considered. Prereq.: Consent of instructor. 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 instructor. 4 q.h.

850. *European Area Study.* A course in Western European history and geography with emphasis on intellectual and artistic development. 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 Europe 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 instructor. 4 q.h.

860. *Select Problems in Third World History.* A study in depth of specific issues in African, Asian, Latin American, or Middle Eastern histories in such specific areas as economics, political theory, and cultural and intellectual history. May be repeated once for credit. Prereq.: Consent of instructor. 4 q.h.

HOME ECONOMICS

The Department of Home Economics offers several baccalaureate degree programs. For details see *Home Economics,* Technical and Community College section.

HUMANITIES

Associate Professors M. V. Hare, Ives, Kelty, Solimine; Assistant Professors L. Baird, Einstein, Henke, Sniderman, and Wilkinson; English Department staff.

The Humanities courses study works of many literatures, chosen for their literary or philosophical relevance to contemporary culture. Works not written in English are read in translation. In particular, the material of Humanities 830, 831, 832 and 834 is drawn from the great writings of the Western world; these courses have the purpose of acquainting students with a body of writing which has been extremely influential in the development of Western culture and relating that material to the society in which it was produced and to our present society.

The University offers a minor and a combined major in Humanities. For detailed requirements of the combined major, the student should consult Professor Ives.

Full credit in all Humanities courses is acceptable toward a major in English and toward the general course requirement in the area of the humanities. 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. Humanities 631, 830, or 831 may also be counted as equivalents of philosophy courses in the philosophy/religion fine arts requirement for teacher certification.

A prerequisite for any Humanities course is English 527 (Communication III), or its equivalent.

Lower Division Courses

610. *Introduction to 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. Listed also as English 610. 4 q.h.

620. *Introduction to African Literature.* A survey of the literature of modern Africa and the influence on it of the oral tradition with emphasis on such Black writers as Mphalele, Soyinka, Senghor, Achebe, and Tutuola. Reading in English. Prereq.: English 527 or its equivalent. Listed also as English 620. 4 q.h.

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. Prereq.: English 527 or its equivalent. Listed also as Classical Studies 631 and English 631. 3 q.h.

Upper Division Courses

Prerequisite to the following courses: Any literature course in English or Humanities (except 608); or junior or senior standing; or consent of the English Department chairman.

830. *The Western Tradition: Ancient Drama.* Readings in English from Greek and Roman drama and dramatic criticism and *The Book of Job,* with emphasis on Greek tragedy. Listed also as Classical Studies 830 and English 830. 4 q.h.

831. *The Western Tradition: Ancient Prose and Poetry.* Readings in English from such writers of the Greek and Roman period as Homer, Herodotus, Thucydides, Plato, Aristotle, Lucretius, Cicero and Virgil. Listed also as Classical Studies 831 and English 831. 4 q.h.

832. *The Western Tradition: Medieval and Renaissance.* Readings in English from writers of these periods, with emphasis on Dante, Machiavelli, More, Montaigne, Cer-

vantes and Shakespeare. Listed also as English 832. 4 q.h.

834. *The Western Tradition: Eighteenth and Nineteenth Centuries.* Readings in English from writers of these periods with emphasis on Locke, Voltaire, Rousseau, Goethe, Balzac, Dostoevsky and Nietzsche. Listed also as English 834. 4 q.h.

864. *Modern Drama.* A study of the modern drama, excluding American, with emphasis on continental writers such as Ibsen, Strindberg, Chekhov, Pirandello, Sartre, Ionesco, Brecht and Beckett. Listed also as English 864. 4 q.h.

876. *The Modern Novel.* A study of the twentieth-century novel, excluding American, with emphasis on continental writers such as Kafka, Mann, Hesse, Gide, Camus, Proust. Listed also as English 876. 4 q.h.

880. *Medieval Epics and Romances.* A comparative study of English and European literature before 1500 with emphasis on the *Volsungasaga,* the *Nibelungenlied,* the *Roman de la Rose,* and the *Chanson de Roland.* Reading in translation. Listed also as English 880. 4 q.h.

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 I-II-III.* 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. 4+4+4 q.h.

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

602. *Intermediate Italian II.* A continuation of Italian 601. 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.* Facility 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

Associate Professor R. Hare; Assistant Professor Alderman; English Department staff.

The University does not offer a major in journalism, but enables a student, with the advice and approval of his major advisor, to minor in journalism; to complete a 30-hour program leading to certification in journalism on the secondary school level; or to complete a 14-hour program which satisfies the journalism distribution for certification in communications on the secondary level. All three programs include practical experience with the University's laboratory newspaper, the *Jambar.* The journalism student who plans a professional career should get a broad liberal arts education, with emphasis on the social sciences and the humanities.

All journalism courses give full credit in English.

Upper Division Courses

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

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

721L, 722L, 723L. *Journalism Workshop I, II, III.* Application through student publications of the principles of Journalism 715, 716. Students register for 3 hours unless specially authorized by the instructor. Each course may be repeated once. Prereq. or concurrent: Journalism 715, or consent of the instructor. Listed also as English 721L, 722L, 723L. 3-6, 3-6, 3-6 q.h.

815. *American Periodicals.* The origins and development of the American periodical press, with emphasis on its contributions to American literature. Prereq.: Any literature course in English or Humanities (except 608); or junior or senior standing; or consent of the department chairman. 4 q.h.

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 department chairman. The inclusion of at least 9 hours of ancient Greek is strongly recommended.

Students who plan to teach high school Latin must complete 30 hours of Latin beyond elementary Latin, including 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.

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.

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 English and modern language majors as well as for students planning to continue 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. 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. 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. 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. 3 q.h.

Upper Division Courses

The prerequisite for any 700-level Latin course is Latin 603 (or in certain cases 602). The prerequisite for any 800-level course is at least one 700-level Latin course.

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."* Reading 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. 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. 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

Professor Hankey; Associate Professor Secrist; Assistant Professors Bunnag and Knapp; English Department staff.

The University does not offer a major in linguistics, 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 Sociology/Anthropology 602 or 612. Listed also as English 750 and Sociology/Anthropology 750. 4 q.h.

752. *Anthropology: Historical Linguistics.* Identical with Sociology/Anthropology 752. 4 q.h.

753. *Anthropology: Field Methods in Linguistics.* Identical with Sociology/Anthropology 753. 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.

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 instructor. 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. 3 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 German Linguistics.* Identical with German 867, 868. 3+3 q.h.

MATHEMATICS

Professors Dillon and Malak; Associate Professors G. Mavrigian (acting chairman), Barger, Ciotola, Demen, Hurd, Jonas, and Santos; Assistant Professors Altinger, Biles, Brown, Buoni, Burden, Faires, Goldstein, Helling, Klein, Knauf, Kozarich, Rodfong, Subramanian, and Whipkey; Instructors Cleary, 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. degrees. 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 Mathematics 502. 5 q.h.

515, 516. *Mathematics for Elementary Teachers I, II.* Concepts needed in understanding mathematics taught in elementary schools. The number system, its structure and algorithms, using concepts of set, operation, relation, and proof. Informal geometry; selected topics from Euclidean, non-Euclidean, coordinate, finite, and projective geometry. Additional topics may include algebra, number theory, probability and statistics. Mathematics 515 is a prerequisite for Mathematics 516. 5+4 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 516 or consent of teacher. 4 q.h.

523, 524. *Survey of Mathematics I and II.* 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 Mathematics 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 Mathematics 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 Mathematics 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 Mathematics 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 Mathematics 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 Mathematics 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. 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. 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.

705, 706. *Differential Equations I, II.* Introduction to theory and solution of ordinary differential equations with applications; partial differential equations, Fourier series; boundary value problems; Laplace transform; vector analysis. Prereq.: Mathematics 674. 4+4 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, estimations, 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, 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.

843, 844. *Theory of Probability I, II.* The nature of probability theory; combinatorial analysis; conditional probability; stochastic independence; binomial, Poisson, and normal distributions; laws of large numbers; limit theorems; generating functions; introductory topics of stochastic processes; applications. Prereq.: Mathematics 740 or consent of teacher. 4+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.

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 teacher. 4 q.h.

861. *Advanced Numerical Analysis.* Application of numerical methods and computer analysis in the solution of ordinary and partial differential equations. Prereq.: Mathematics 760 and a course in FORTRAN programming, or consent of teacher. 4 q.h.

871, 872. *Advanced Calculus I and II.* An introduction to the theory of functions of real variables with 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 674 and 4 quarter hours of mathematics at 700- or 800-course level, 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 flow-charting 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 Mathematics 531 or Computer Technology 502 or consent of teacher. 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 and one year of training in an accredited hospital, they will be granted a Bachelor of Science degree. Consult Chemistry Department section for curriculum.

MILITARY SCIENCE

Lt. Colonel Fisher (chairman), professor; Major Williams, Captain Minney, Captain Neglia, and Captain Goodell, assistant professors; Master Sergeant Fairchild, Staff Sergeant McElroy, Staff Sergeant Shultz, other Army Staff.

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.

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 $100.00 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 6 cents 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 School 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 an 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 6 cents 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.

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).* Military in Society; R.O.T.C. on campus, military-industrial complex, classified military research and the university, civil-military relations in theory and practice. One hour of lecture and one hour of leadership laboratory. 1 q.h.

502. *First-Year Basic (Military Science I).* Introduction to the Technological Development in Warfare; a study of the evolution of weapons with emphasis on the present generation of weapons and equipment. One hour of lecture and one hour of leadership laboratory. 1 q.h.

503. *First-Year Basic (Military Science I).* U.S. Army and National Security; mission, capabilities and interdependence of the Armed Forces. The Army as a profession; code of an officer, code of conduct, and Branches of the Army. One hour of lecture and one hour of leadership laboratory. 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.

601. *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.

602. *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.

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).* 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. 3 q.h.

702. *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. One hour of lecture and one hour of leadership laboratory (drill). Prereq.: Military Science 603, or active military service. 1 q.h.

703. *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 battalion. 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.

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).* Army Management; Management procedures at the normal level of assignment for the newly commissioned officer to include administration, supply operations, motor maintenance, personnel management, personal affairs and other related subjects. Lecture and case studies are utilized. One and one-half hours lecture and one hour of leadership laboratory. 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. Human Relations; a survey of social problems and how they relate to the Modern Army. World Changes and Military Implications; 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-half 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 and 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.

NURSING

Students wishing to enter either the two-year associate degree program, or Registered Nurses enrolling in the baccalaureate program should consult with the chairman of the Nursing Department in the Technical and Community College.

Details are listed in the Technical and Community College section of the catalog.

Registered Nurses enrolled in the baccalaureate program prior to September 1971, may continue to be advised in the Office of the Dean of Arts and Sciences, although they are urged to consider the advantages of transferring to the new program.

PHILOSOPHY AND RELIGIOUS STUDIES

Professor Greenman (chairman); Associate Professors Lucas, Reid, and Riley; Assistant Professors Cohen, Eminhizer, and Shipka.

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, 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.: English 527 or 507H. 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.

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.

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 655 or 656 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.

804. *Classical Metaphysics.* The concept of being and reality in pre-Socratic naturalism and Parmenides. Its reformulation in Plato and its resolution in Aristotle. Scholastic metaphysics and the Analogy of Being. The fate of metaphysics after Descartes and the rise of empirical science. Its rejection in the "critical turn" of Hume and Kant. Its re-emergence in Hegel. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

805. *Contemporary Metaphysics.* The course of Western metaphysics since Hegel. Its resurrection within the naturalistic perspectives of Bergson, Alexander, Whitehead. Its relation to contemporary analysis and phenomenology. Its transformation in the sociological and psychological categories of Feuerbach and Marx, Schopenhauer and Nietzsche. Its relation to 20th century technological rationality in Heidegger and others. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

807. *Social Philosophy.* Philosophical analysis of the social concepts of freedom, power, authority, conflict, equality, alienation, and others. Emphasis on the extra-political dimensions of these concepts. Prereq.: Philosophy 600 or junior or senior standing. 4 q.h.

808. *Political Philosophy.* Analysis of the metaphysical, epistemological, and axiological presuppositions of selected political theories. 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. 4 q.h.

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

740. *The Black Church in America.* A survey of the development of religion among blacks in America from colonial times to the present. Various leaders will be discussed and the importance of the Black Church to the community will be examined. Prereq.: Black Studies 600 or 601, or History 730 or 731, or Religious Studies 612. 4 q.h.

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 527 or 507H. 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 English 527 or 507H. 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.: English 527 or 507H or junior or senior standing. 4 q.h.

760. *Old Testament Literature.* A critical review of the religious and historical factors involved in the formation of the Old Testament canon. Prereq.: English 527 or 507H or junior or senior standing. 4 q.h.

761. *Intertestamental Literature.* The Dead Sea Scrolls and other apocryphal literature. Prereq.: English 527 or 507H or junior or senior standing. 4 q.h.

762. *New Testament Literature.* The development and canonization of Christian literature. Prereq.: English 527 or 507H or junior or senior standing. 4 q.h.

765. *Primitive and Ancient Religions.* 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.: English 527 or 507H or junior or senior standing. 4 q.h.

766. *Living Oriental Religions.* A continuation of Religious Studies 765, historically comparing the religions of China, Japan, India, and the Near East. Prereq.: English 527 or 507H 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 605 and 606. 4 q.h.

831. *The Psycho-Social Dynamics of Religion.* An objective examination of religious institutions and practices in relation to the human problems to which they correspond. A comparative appraisal of their effectiveness in meeting the psychic and environmental needs of their adherents. Reasons for their success or failure, in terms of depth psychology, sociology, and anthropology. Present day religious cults will be examined. Prereq.: One other course in religious studies or consent of the instructor. 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) and McLennan; Associate Professors Dalbec and Young; Assistant Professors Bishop, Cochran, Fisher, Hanzely, Henkel, Mooney, Moorhead, and Zetts.

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 I, II, III.* 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 I, II.* Two hours per week. Taken concurrently with Physics 502 and 503. 1+1 q.h.

510. *General Physics I.* A calculus concurrent course in mechanics; the kinetics and dynamics of masses in translation; Newton's Laws; the conservation laws of energy and momentum. Prereq. or concurrent: Mathematics 571. 4 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.

610. *General Physics II.* A study of the properties of wave motion, reflection, refraction, diffraction, interference, polarization; as exemplified by mechanical and electromagnetic waves; energy transferred by wave motion; simple harmonic motion. Prereq.: Physics 510. Prereq. or concurrent: Mathematics 572. 4 q.h.

611. *General Physics III.* A study of static electric and magnetic fields; direct current circuits; induced currents and electromagnetic forces; inductance and capacitance and their transient effects on direct current circuits. Prereq.: Physics 510 and 610. Prereq.: or concurrent: Mathematics 673. 4 q.h.

610L, 611L. *General Physics Laboratory II, III.* Three hours per week taken concurrently with Physics 610 and 611. These laboratories are elective courses for engineering students. 1+1 q.h.

*Must be taken in sequence.

Upper Division Courses

Note: Satisfactory completion of the general physics sequence 510, 610, 611 and Mathematics 674 is the minimum 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 I, II, III.* 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 611. Prereq. or concurrent: Mathematics 705. 3+3+3 q.h.

704, 705.* *Introduction to Modern Physics I, II.* Selected topics in atomic, nuclear physics, special relativity, and nuclear reactions. Prereq.: Physics 611 and Mathematics 674. 3+3 q.h.

704L, 705L. *Modern Physics Laboratory I, II.* 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 laboratory per week taken concurrently with Physics 704, 705. 1+1 q.h.

706. *Electronics Laboratory.* The course is designed to promote a working familiarity 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 Department or consent of instructor. 4 q.h.

710. *Thermodynamics.* An elementary-level course in the principles and theorems of thermodynamics which are derived from the observable macroscopic quantities, of mass, pressure, volume, and temperature. Prereq.: Physics 611 and Mathematics 673. 3 q.h.

710L. *Heat Lab.* Experiments to aid the understanding of pressure, volume, temperature relations, specific heats, kinetic theory, and energy relations. Prereq. or concurrent; Physics 710. 1 q.h.

*Must be taken in sequence.

711, 712. *Thermodynamics and Statistical Mechanics I, II.* An advanced undergraduate-level course in the principles and theorems of thermodynamics which are based upon the statistical treatment of non-observable microscopic quantities, atomic and subatomic particles. Prereq.: Physics 710 and Mathematics 706. 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 611 and Mathematics 674. 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 I, II, III.* 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 611 and Mathematics 705. 3+3+3 q.h.

730L, 731L, 732L. *Intermediate Level Electricity and Magnetism I, II.* Laboratory work in A.C. circuits, steady state and transients, non-linear, circuit elements, and transducers. Three hours laboratory 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 the area of field theory. Prereq.: Physics 702 and Mathematics 706. 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 I, II, III.* 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 I, II.* The postulates of wave mechanics, the Schroedinger wave equation, and solutions for elementary problems in quantum theory. Prereq.: Physics 702 and 705; Mathematics 706. 3+3 q.h.

822. *Electricity and Magnetism.* Time dependent fields and currents; Maxwell's equations; electromagnetic radiation; vector methods are used extensively. Prereq.: Physics 732 and Mathematics 706. 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 705. 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. 2-5 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.

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FIRST YEAR

FALL QUARTER	Hrs.
Physics 510 General Physics I	4
Soc. Sci. 501 Introduction to the Social Sciences	3
Math. 571 Analytic Geometry and Calculus I	5
Chem. 515 General Chemistry	4

WINTER QUARTER	Hrs.
Physics 610 and 610L General Physics II	5
Soc. Sci. 502 Introduction to Economics	3
Math. 572 Analytic Geometry and Calculus II	4
Chem. 516 General Chemistry	4

SPRING QUARTER	Hrs.
Physics 611 and 611L General Physics III	5
Soc. Sci. 503 Introduction to Political Science	3
Math. 673 Analytic Geometry and Calculus III	5
Chem. 517 General Chemistry	4

SECOND YEAR

FALL QUARTER	Hrs.
Physics 710 and 710L Thermodynamics	4
English 525 Basic Course I	4
Math. 674 Analytic Geometry and Calculus IV	4
Foreign Language	4
Health and Physical Education Activity	1

WINTER QUARTER	Hrs.
Physics 704 and 704L Introduction to Modern Physics	4
English 526 Basic Course II	4
Math. 705 Differential Equations I	4
Foreign Language	4
Health and Physical Education Activity	1

SPRING QUARTER	Hrs.
Physics 705 and 705L Introduction to Modern Physics	4
English 527 Basic Course III	4
Math. 706 Differential Equations II	4
Health and Physical Education 590 Health Education	3
Health and Physical Education Activity	1

Minimum requirements for the B.A. degree in physics with a minor in mathematics: Physics courses, 47 q.h.: 510, 610+L, 611+L, 710+L, 704+L, 705+L, 701, 702, 703, 730+L, 731+L, 732+L. Mathematics courses, 22 q.h.: 571, 572, 673, 674, 705.

Minimum requirements for the B.S. degree in physics with a minor in mathematics: Physics courses, 68 q.h.: same as the B.A. above plus courses 711, 712, 750, 805, 806, 807, 810, 811. Mathematics courses 26 q.h.: same as above plus course 706.

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

Associate Professor Young (supervisor) and Assistant Professor 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 504 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 or 611. 3+3+3 q.h.

800, 801, 802. *Observational Astronomy I, II, III.* Observational techniques in astronomy. The University telescopes and auxiliary equipment will be used. Prereq.: Mathematics 674 and Physics 603 or 611. 3+3+3 q.h.

POLITICAL SCIENCE

Professor Sterenberg; Associate Professor Boyer (chairman); Assistant Professors Binning, Dale, Eichenberger, Esterly, Gonzalez, and Redburn; Instructors Haushalter, Hudzik, Kuhlman, McKean, and K. Miller.

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, geography 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

*Note: These courses may be used to complete a physics minor.

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 poltical 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. 4 q.h.

640. *Elements of Comparative Government.* An inquiry into comparative politics, using as case studies the British and Soviet political systems. Prereq.: Political Science 601 or Social Science 503. 4 q.h.

660. *Elements of International Relations.* An introduction to basic principles of international politics, law, and organization. Prereq.: Political Science 601 or Social Science 503. 4 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.: Poltical 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 or Black Studies 600. 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, or Social Science 503. 3 q.h.

714. *Public Opinion.* A descriptive and quantitative analysis of public opinion in terms of its origin and location, content, interpretation and effects, within the American political system. Included is a practicum in opinion polling, requiring field collection of data, statistical analysis, and evaluative summary. Prereq.: Political Science 600 or 601, or Social Science 503. 4 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 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 640. 3 q.h.

751. *Government and Politics — Latin America.* Prereq.: Political Science 640. 3 q.h.

752. *Government and Politics — Asia.* Prereq.: Political Science 640. 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 (including the United Nations) and regional organizations that foster political integration. Prereq.: Political Science 660, or junior standing and consent of instructor. 3 q.h.

766. *Latin American Foreign Affairs.* A systematic study of the inter-American system. Attention will focus on the structure and function of the Organization of American States. Recent U.S. policy toward Latin America will be examined, as will the foreign policies of major Latin American countries. Prereq.: Political Science 751 or consent of instructor. 4 q.h.

767. *Asian Foreign Affairs.* A study of the foreign policies of selected countries of Asia. Prereq.: Political Science 660, 752, or consent of instructor. 4 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 STUDIES

Department of Political Science, Supervision.

The program for the combined major in social studies provides appropriate foundation for the study of law, for graduate work in the disciplines which it includes, and for

entry into the civil service field. It can also fulfill requirements for teacher certification in the social sciences.

In addition to the major requirements of Social Science 501, 502, 503 and History 605, 606, 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;*

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.

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.

*The student seeking teacher certification must choose history as one of his category A options, must complete History 655-56, and must have a total of 90 hours in combined major disciplines.

PRE-FORESTRY

Pre-forestry students are advised by the Biology Department which maintains close liaison with neighboring forestry schools in order to plan programs of study at YSU which will transfer toward forestry majors elsewhere. See Biology, page 67, for a suggested program.

PRE-LAW STUDY

Department of Political Science, Advisement.

Pre-law advisement is available at the beginning of the student's college study to acquaint him with the various fields of legal practice which require specialized undergraduate study, and in his junior year to arrange for law school entrance examinations and interviews.

There are no prescribed majors for the pre-law student. He has the options of a single discipline major, the American studies major, or the combined major in social studies. A maximum of 38 quarter hours of study in an approved law school will be accepted toward completion of the combined social studies major if the last 45 hours prior to these are taken at Youngstown State University. The student is cautioned, however, that the majority of accredited law schools accept only students who have completed the bachelor's degree.

Law school admission standards generally require an undergraduate point average of at least 2.8 and placement above the 60th percentile in the Law School Aptitude Test, which is designed to measure capacity for analytic thought and for precision in the use of language. Regional and national law schools may have more rigorous requirements.

PRE-MEDICAL, PRE-DENTISTRY, PRE-OSTEOPATHY, AND PRE-VETERINARY

See Advisors in the Biology or Chemistry Departments for details of these programs.

The primary aim of these pre-professional students will be to satisfy entrance requirements for their respective professional schools. These requirements are listed in bulletins from those schools and should be carefully studied. The American Association of Medical Colleges publishes a book entitled *Medical School Admission Requirements* which summarizes entrance requirements for medical schools in United States

and Canada. Copies of this book are on reserve in the library or in the Biology Department.

Pre-medical students may elect either of the following programs:

(1) a biology major with a chemistry minor

(2) a chemistry major with a biology minor

Program (1) or (2) is taken by the majority of students accepted into Medical School. A student may elect any other major and minor if he wishes. However, the latter is recommended only for students who can maintain extremely high grade averages.

Careers Related to Medical Profession

More than 200 technical careers exist in areas related to delivery of medical services. Medical secretary, microbiologist, medical illustrator, dental assistant, physician assistant, physical therapist, inhalation therapist and cytologist are but a few of these. See advisors in the Biology Department for information concerning training for these careers.

PSYCHOLOGY

Professors S. N. Hotchkiss (chairman) and Beckman; Associate Professor Sweeney; Assistant Professors Atkinson, Cunningham, Dobrich, Graf, Guterba, S. M. Hotchkiss, Letchworth, Masaki, Morrison, Schafer, and E. Watkins; Instructors Quinby and Werbner.

Psychology offers appropriate majors for students seeking: (1) a general liberal arts degree; (2) a terminal degree for paraprofessional employment; (3) certification with an A.B. degree to teach psychology in the secondary schools; and (4) preparation for graduate study in psychology. A basic major consists of 48 quarter hours of psychology which must include Psychology 601, 613, 615, and 723 plus an additional 33 quarter hours in psychology selected from courses designated as being applicable to the major. Students contemplating graduate study should consult this department to determine which courses will best meet their individual 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 is not a prerequisite for Psychology 601, is not recommended for the minor, and is not applicable to the major.)

Students seeking certification to teach psychology in the secondary schools should consult with the School of Education for details regarding certification.

Following each course description is a notation telling when that course will be scheduled during the academic year in the day program. To the fullest extent possible evening program scheduling will be the same. Courses may appear with added frequency by student demand.

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.* (F,W,Sp) 3 q.h.

505. *Personal Adjustment.* Based upon a survey of the primary psychobiological, psychosocial, environmental, and experiential factors important to the development of the unique individual, this course seeks to help the student gain a greater understanding of himself, more self-awareness, self-acceptance and by this, a better understanding of others and greater capacity to work with others to achieve a realistic level of attainment. *Not applicable to the psychology major.* Prereq.: None. (F,W,Sp) 3 q.h.

520. *Cross-Cultural Patterns of Individual Development.* A comparative study contrasting the effects of different cultural and psychological influences upon the develop-

ment of the individual and his way of perceiving, understanding, and coping with his environment; comparison of the customs, habits, and social mores of foreign cultures and American sub-cultures as they influence the development of the individual in each. *Not applicable to the psychology major.* Prereq.: None. (W) 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. (F,W,Sp) 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) (F,W) 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. (W,Sp) 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. (F,W,Sp) 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. (Sp) 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. (F,W,Sp) 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. (F) 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. (F,W,Sp) 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. (F) 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. (F,W,Sp) 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. (F) 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 psy-*

chology major. Prereq.: Psychology 601, 613 and junior standing or Psychology 501, junior standing and consent of instructor. (F,W) 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. (W) 3 q.h.

723. *Statistical Methods in Psychology I.* A review of the basic principles of description 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. (W,Sp) 4 q.h.

724. *Statistical Methods in Psychology II.* A continuation of inferential statistics including complex analysis of variance and non-parametric 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. (Sp) 4 q.h.

735. *Psychology and Group Dynamics.* An historical survey and review of the group dynamics in psychology starting with the originator, Kurt Lewin, and including a discussion of the major theoretical works, research, and application to the behavior of the individual. *Applicable to the psychology major.* Prereq.: 15 hours of psychology including Psychology 601, 613, and 700. (W) 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) (F,W) 4 q.h.

745. *The Minority Individual.* An extensive review of the psychological research on minority membership and its effect upon individual development and behavior. *Applicable to the psychology major.* Prereq.: 15 hours in psychology including Psychology 601, 613 and 700. (Sp) 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) (F,W,Sp) 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) (F,Sp) 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. (Sp) 4 q.h.

760. *Perception.* A consideration of the various theories and experimental evidence concerning how an organism increases its ability to extract information from the environment. *Applicable to the psychology major.* Prereq.: Psychology 601, 613, 615, and 723 (may be concurrent). (F) 4 q.h.

761. *Cognition.* This course explores the experimental methods, research findings, and current theories which attempt to explain the means by which the living organism identifies and gives meaning and understanding to perception (visual, auditory, olfactory, kinesthetic, etc.) and the ways by which the resulting act of cognition differs from the basic act of perception. *Applicable to the psychology major.* Prereq.: Psychology 601, 613, 615, and 723 (may be concurrent). (W) 4 q.h.

762. *Verbal Learning & Memory.* This course provides an overview of the problems, methods, experimental findings and theories stemming from current and classical research on verbal learning and the retention of that learning in temporary and long-range memory registers. *Applicable to the psychology major.* Prereq.: Psychology 601, 613, 615, and 723 (may be concurrent). (Sp) 4 q.h.

765. *Experimental Social.* Examination of problems, principles, methods, and techniques underlying the investigation and de-

velopment of theories of social psychology, participation in demonstrations, experimentation plus report writing. Will require two hours lecture and four hours laboratory per week. *Applicable to the psychology major* Prereq.: Psychology 601, 613, 700, 723 (may be concurrent). (Sp) 4 q.h.

790. *Field Work in Psychology.* Supervised placement with a community agency or organization under direction of a psychologist, social worker, psychiatrist or other mental health or educational professional to attain personal growth with respect to some area of psychology within which the student might plan a career or graduate work and to make classwork more meaningful and relevant. Students will be required to write a paper integrating work experience with background reading, and will be rated by their supervisors *in situ. A maximum of 3 q.h. may be applied to the psychology major.* One q.h. credit is given for each 4 hours/week of field work for 10 weeks of the quarter. May be repeated up to 6 q.h. credit. Prereq.: 12 hours in psychology and permission of instructor. (F, W,Sp) 1-3 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. (F) 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. (F, Sp) 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. (F) 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. (W) 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. (Sp) 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. (W) 4 q.h.

808. *Psychology of Training & Supervision.* Application of psychological theory and research to the problems of on-the-job training and leadership behavior. Will include such topics as motivation and involvment of employees in organization objectives, individual differences in learning and vigilance, and the supervisor's role in problems of *personal adjustment* and conflict in the work organization. *Applicable to the psychology major only with permission of chairman.* Prereq.: Senior standing including Psychology 712 or consent of instructor. (Sp) 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. (F) 4 q.h.

814. *Individual Testing.* Administration, scoring, and interpretation of selected widely used individual tests of aptitude and achievement, exclusive of those covered in Psychology 815. *Applicable to the psychology major.* Prereq.: Senior psychology majors with 20 q.h. including Psychology 740 plus permission of instructor. (F) 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. (W) 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. (Sp) 4 q.h.

820. *Survey Research.* A study of the concepts and techniques used for the sampling and measurement of attitudes and opinions. *Applicable to the psychology major.* Prereq.: 20 q.h. of Psychology including Psychology 601, 613, 700, and 723 or consent of instructor. (W) 4 q.h.

823. *Practicum in Survey Research.* An application of the methods of survey research to field problems. Students will plan an actual survey; design the instrument; select the respondents; conduct the survey; and analyze and interpret the results. *Applicable to the psychology major.* Prereq.: Psychology 820 or consent of instructor. (Sp) 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. (F) 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.

833. *Principles of Operant Behavior.* An introduction to the experimental analysis of behavior from an operant viewpoint, emphasizing simple and complex schedules of reinforcement and stimulus control. *Applicable to the psychology major.* Prereq.: Psychology 601, 613, 615, and 723 or concurrently. (W) 4 q.h.

834. *Applied Reinforcement Theory.* The second course in a two-course sequence in the experimental analysis of behavior; extends the results of laboratory findings to human behavior with emphasis on development, maintenance, and extinction of behaviors; institutional, industrial, home and educational settings will be considered. Prereq.: Psychology 833 or permission of instructor. (Sp) 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) (F) 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. (W) 3 q.h.

838. *Psychology of the Exceptional Child: Gifted.* A detailed investigation of the psychological characteristics of the gifted; problems of accommodation and adjustment of the gifted, the creative child. *Applicable to the psychology major.* Prereq.: Psychology 755, 756 and senior standing or consent of instructor. (Sp) 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) (F) 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) (W) 3 q.h.

845. *Issues in Psychology.* A consideration of issues and controversies in psychology both current and long-standing including a thorough review of ethical standards and obligations of the practitioner and/or teacher of psychology at the sub-professional, mid-professional and full professional levels. *Applicable to the major.* Prereq.: Senior standing and consent of instructor. (Sp) 3 q.h.

850. *Seminar.* Major topics in psychology not covered in *listed* courses. Offered each quarter with a *different topic. Applicable to the psychology major to a total of 3 q.h. but may be repeated twice as elective hours.* Prereq.: Senior major in psychology or consent of instructor. (F,W,Sp) 3 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) (F,W,Sp) 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.

Lower Division Courses

501-502-503. *Elementary Russian I-II-III.* 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. 4-4-4 q.h.

601. *Intermediate Russian I.* Continuation of inductive grammar. Emphasis on readings in prose and poetry. Oral and written practice based on readings. Prereq.: *C* or better in Russian 503 or in second-year high school Russian. 4 q.h.

602. *Intermediate Russian II.* A continuation of Russian 601. 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. 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

Associate Professors Kiriazis (chairman), Dobbert, Ducey, and Muntean; Assistant Professors Cooper, Fry, Kassees, Markides, McDonald, Moore and White; Instructor Gartland.

The Department of Sociology and Anthropology offers a major in sociology, anthropology, or social work. It also offers minors in all three fields.

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 services in public administration, social security and its allied programs, recreation and health services.

The departmental courses are classified below. All majors must take Social Statistics 701, Social Research 751, and History of Social Theory 760 or History of Anthropological Thought 801.

Lower Division Courses

500. *Fundamentals of Sociology.* An introduction to the principles of the science of human societies and groups. The structures, functions and processes bringing about changes in societies, groups, communities, classes, and institutions will be analyzed. 4 q.h.

600. *Principles of Sociology.* A continuation of Sociology 500 with greater emphasis on illustrative material and problem areas. Consideration will be given to socialization, demography and ecology, and social deviance. Prereq.: Soc.-Anth. 500. 4 q.h.

601. *Social Problems.* A sociological overview of various contemporary social issues, analyzing significant discrepancies between social standards of expectations and actual social behavior. An attempt will be made to ascertain possible causes, discuss trends, and alternative organizational and possible institutional changes. Prereq.: Soc.-Anth. 500. 4 q.h.

602. *Anthropology.* An introduction. An explanation of the past and present horizons of anthropology. Specific attention is given to the emergence of man; prehistory and human social and cultural systems. 4 q.h.

612. *Cultural Anthropology.* An approach to the science of culture; its primitive origins. 4 q.h.

630. *Criminology.* Identical with Criminal Justice 630. 4 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 Blacks. Prereq.: Soc.-Anth. 500. 5 q.h.

701. *Social Statistics I.* Measurement and interpretation of social data by the use of descriptive techniques. Prereq.: Soc.-Anth. 600. 4 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.: Soc.-Anth. 701. 4 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.: Soc.-Anth. 500. 3 q.h.

705. *The Family.* Family and kinship systems as a major institution; their development, functions, and relation to other basic

institutions as found in different cultures and social strata. Prereq.: Soc.-Anth. 500 or 602. 4 q.h.

706. *Industrial Sociology.* The study of industrial social organizations and change processes which have developed in modern urban societies, with special emphasis on American society. Attention will be given to the repercussions of technological change on groups in society, using a comparative point of view. Prereq.: Soc.-Anth. 600. 4 q.h.

707. *Urban Sociology.* A comparative study of cities of pre-industrial and industrial societies, historical and contemporary. Special emphasis will be placed upon the process of urbanization and changing urban structure and functions. Prereq.: Soc.-Anth. 600. 5 q.h.

708. *Political Sociology.* An analysis of the social conditions that affect government and politics and which may help to determine political order and regulate struggles for power. There is a focus on associations and movements leading to stability or change in a society. Prereq. Soc.-Anth.: 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.: Soc.-Anth. 500. 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.: Soc.-Anth. 602. 4 q.h.

713. *Social Anthropology.* The origin, diffusion, and continuity of primitive social institutions with their relation to contemporary social phenomena. Prereq.: Soc.-Anth. 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 Soc.-Anth. 602. 3 q.h.

715. *Physical Anthropology II.* A continuation of 714. The distribution of man into races and cultural groups as disclosed by paleontology and archaeology. Prereq.: Soc.-Anth. 714. 3 q.h.

716. *Anthropology: Maya, Aztec, and Inca Cultures.* The origins, cultures, and achievements of the classical civilizations of the New World: Aztec, Inca, and Maya. Prereq.: Soc.-Anth. 602. 3 q.h.

720. *Introduction to Social Services.* A historical survey of the origins and nature of social services in Western civilization with emphasis on the United States. Prereq.: Soc.-Anth. 500. 3 q.h.

721. *Social Policy.* A survey of the programs, organization, functions, and inter-relationships of the various public and private social services in the United States. Visits to local agencies. Prereq.: Soc.-Anth. 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.: Soc.-Anth. 721. 3 q.h.

723. *Introduction to Social Group Work Methods.* Analysis of the major processes employed in social group work; relation to social group work methods to other fields, such as teaching, recreational leadership committee work, and participation in civic and community affairs. Prereq.: Soc.-Anth. 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.: Soc.-Anth. 721. 3 q.h.

725. *Field Work in Social Services.* Supervised practice in approved social agencies under the direction of professional social workers, designed to give the student a controlled educational experience in social work. The student is required to spend 14 hours weekly in the agency, and 2 hours in seminar with faculty. Prereq.: Senior standing with 25 q.h. in social work and sociology. 6 q.h.

726. *The Black Family.* A sociological study of the Black Family. Consideration will be given to the origins of the Black Family in the Americas and the factors pertaining to class, economics, politics,

religion, education and law that have affected the pattern of functional and social behavior of the Black Family. Prereq.: Black Studies 600 or Soc.-Anth. 600. 4 q.h.

727. *Black Community.* The Black community will be viewed as part of a larger social system, but which has a uniqueness growing out of the Black Experience in American society. Population, cultural forms and institutional structures will be explored in terms of their uniqueness and in relationship to their social and physical survival functions. An analysis will be made of how the dominant social system restricts or facilitates the self-determination of the Black community. Prereq.: Black Studies 600 or Soc.-Anth. 600. 4 q.h.

735. *Juvenile Delinquency.* Identical with Criminal Justice 735. 4 q.h.

736. *Criminological Theory.* Identical with Criminal Justice 736. 4 q.h.

740. *Complex Organization.* A survey of theory and research on structures and processes of large-scale organizations; leaderships, control techniques, tensions, bureaucratic pathologies and organizational change. Consideration of industrial-commercial, governmental, religious, military, and educational organizations. Prereq.: Soc.-Anth. 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.: Soc.-Anth. 600. 4 q.h.

742. *Small Group Processes.* A study of small group behavior; influence, attitudes, and values of social microsystems. Prereq.: Soc.-Anth. 600. 4 q.h.

743. *Social Stratification.* A comparative analysis of social stratification systems with a major emphasis on modern Western societies. Prereq.: Soc.-Anth. 600. 4 q.h.

744. *Social Deviance.* A survey of the problems of drug abuse, sexual deviation, crime, and other forms of deviance. Emphasis on various approaches or perspectives to deviant behavior formulated in sociological theory; the study of etiologies and of the methods of social control. Prereq.: Soc.-Anth. 600. 4 q.h.

750. *Language and Culture.* Identical with Linguistics 750 and English 750. 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.: Soc.-Anth. 600. 5 q.h.

752. *Anthropology: Historical Linguistics.* A survey of the theory and techniques of comparative linguistics with an emphasis on the establishment of genetic relationships, procedures for sub-grouping, internal reconstruction, and glottochronology. Prereq.: Soc.-Anth. 602 or 612 or 750. Listed also as Linguistics 752. 4 q.h.

753. *Anthropology: Field Methods in Linguistics.* An introduction to elementary linguistic theory from an anthropological viewpoint with practical work in phonetics, phology, morphology, syntax, and transformational grammar. Prereq.: Soc.-Anth. 602 or 612 or 750. Listed also as Linguistics 753. 4 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.: Soc.-Anth. 600 or 602. 5 q.h.

761. *Modern Sociological Theory.* An analysis of key schools of sociological theory of the present. Prereq.: Soc.-Anth. 600 or 602. 4 q.h.

770. *African Cultures.* An anthropological analysis of contemporary cultures in Africa. Prereq.: Soc.-Anth. 602. 4 q.h.

771. *Middle Eastern Cultures.* An anthropological analysis of contemporary cultures found in the Middle East. Prereq.: Soc.-Anth. 602. 4 q.h.

772. *Asian Cultures.* An anthropological analysis of ancient and contemporary cultures in Asia. Prereq.: Soc.-Anth. 602. 4 q.h.

773. *Australian and Oceanic Cultures.* An anthropological analysis of ancient and contemporary cultures found in Australia and Oceania. Prereq.: Soc.-Anth. 602. 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.: Soc.-Anth. 600 or 602. 5 q.h.

775. *North American Indians.* The culture and achievements of the North American Indians. Prereq.: Soc.-Anth. 602. 4 q.h.

776. *South American Indians.* The culture and achievements of the South American Indians. Prereq.: Soc.-Anth. 602. 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.: Soc.-Anth. 712. 4 q.h.

778. *Archaeological Techniques.* An introduction to archaeological field methods including surveying, mapping, excavation, and artifact analysis; 220 hours per quarter. Prereq.: Soc.-Anth. 712. 6 q.h.

779. *Primate Ethology.* Survey of the behavioral patterns of contemporary living primates emphasizing the relationships with the behavior patterns of early and modern man. Prereq.: Soc.-Anth. 602. 4 q.h.

780. *Human Paleontology.* A detailed survey of the fossil evidence for human evolution including techniques of measurement and description of human skeletal remains. Prereq.: Soc.-Anth. 602. 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.

789. *Man and the Technological Society.* An interdisciplinary critical examination of man in the modern technological society from the perspectives of engineering, life, and social science. The topics will be (1) history of technology, (2) the world's available energy and material resources, (3) population dynamics as they interact with nature and the human ecosystem, such as "the green revolution," cybernation, value concepts, and techniques to forecast societal changes. Listed also as Chemical Engineering 789 and Biology 789. Prereq.: Junior standing or consensus of instructors. 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.: Soc.-Anth. 602 and 705. 4 q.h.

801. *History of Anthropolgical Thought.* An analysis of the anthropological theories and methodology of the major contributors to contemporary anthropological thought, such as the evolutionist, diffusionist, functional, and multi-linear school. Prereq.: Soc.-Anth. 600 or 602. 4 q.h.

815. *Anthropology: Primitive Religion.* A survey of anthropological approaches to the study of religion, illustrated by a critical consideration of past and present contributions to the field. Included will be a study of selected religious systems, areally and topically. Prereq.: Soc.-Anth. 602 or 612. 4 q.h.

820. *Anthropology: African Prehistory.* A survey of the prehistoric development of African cultures south of the Sahara. Prereq.: Soc.-Anth. 712. 4 q.h.

821. *Anthropology: Near Eastern Prehistory.* A survey of the prehistoric and early historic development of Near Eastern cultures with an emphasis on the rise and spread of plant and animal domestication and civilization. Prereq.: Soc.-Anth. 712. 4 q.h.

822. *Anthropology: North American Prehistory.* A survey of the prehistoric development of North American Indian cultures from the Arctic to Northern Mexico. Prereq.: Soc.-Anth. 712. 4 q.h.

823. *Anthropology: European Prehistory.* A survey of the prehistory of Europe from the Lower Palaeolithic through the Iron Age. Prereq.: Soc.-Anth. 712. 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 705, 706, and any two of the following courses: 715, 716, 835, 836, 837.

Lower Division Courses

501-502-503. *Elementary Spanish I-II-III.* 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. 4+4+4 q.h.

601. *Intermediate Spanish I.* Review of grammar through oral and written exercises. Reading of modern prose and poetry. Prereq.: Spanish 503 or equivalent. 4 q.h.

602. *Intermediate Spanish II.* A continuation of 601. Prereq.: Spanish 601 or equivalent. 4 q.h.

615. *Intermediate Spanish Readings.* An introductory course on the reading of literary texts for their linguistic, stylistic, and literary aspects. Prereq.: Spanish 602 or equivalent. 4 q.h.

655. *Conversational Spanish.* A course in oral Spanish, with the teacher using the direct conversational approach to help the student speak the language fluently. Topics leading to the use of Spanish in practical everyday situations. Prereq.: Spanish 602 or permission of the instructor. 4 q.h.

Upper Division Courses

705, 706. *Survey of Spanish Literature.* An introduction to the study of Spanish literature, aimed at acquainting the student with the main works, writers, and the principal literary tendencies and movements. First quarter: From the beginnings to 1700. Second quarter: From 1700 to the present. Prereq.: Spanish 615 or permission of the instructor. 4+5 q.h.

715, 716. *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: From 1888 to the present. Prereq.: Spanish 615 or permission of the instructor. 4+5 q.h.

725, 726. *Advanced Spanish Grammar and Composition.* A review in depth of Spanish grammar through analysis of stylistic devices of literary works and through exercises, translation, and original composition. Prereq.: Spanish 602 or equivalent. 4+4 q.h.

729. *Explicacion de Textos.* Detailed examination of poetry and prose to develop skill in perceptive analysis of literature. Prereq.: Spanish 615 or permission of the instructor. 4 q.h.

740. *Hispanic Civilizations.* A survey of the traditions, history, and geography of the Hispanic nations, and of their chief cultural characteristics as seen in their way of life, the evolution of their institutions, their social and political structures. Prereq.: Spanish 602 or permission of the instructor. 4 q.h.

756. *Practice in Spanish Conversation.* A course designed to maintain oral facility and based on discussions of contemporary topics. May be taken either before or after Spanish 757. Prereq.: Spanish 655 or permission of the instructor. 2 q.h.

757. *Practice in Spanish Conversation.* A course designed to maintain oral facility and based on discussion of contemporary topics. May be taken before or after Spanish 756. Prereq.: Spanish 655 or permission of the instructor. 2 q.h.

800. *Medieval Spanish Literature.* The literature of the 12th, 13th, 14th and 15th centuries with concentration in *Poema del Cid, Libro de Buen Amor, La Celestina.* Prereq.: Spanish 705 or consent of the instructor. 4 q.h.

805. *The Prose of the Golden Age.* A special concentration on *Don Quixote* with general reference to other prose genres of the epoch. Prereq.: Spanish 705 or consent of the instructor. 4 q.h.

806. *The Drama of the Golden Age.* A study of the drama with special emphasis on Lope de Vega, Tirso de Molina, Calderon, Alarcon. Prereq.: Spanish 705 or consent of the instructor. 4 q.h.

807. *The Poetry of the Golden Age.* The evolution of poetry from Marques de Santillana to Gongora. Prereq.: Spanish 705 or consent of the instructor. 4 q.h.

815. *Nineteenth Century Spanish Drama.* Development of the drama in Spain starting with the end of neo-classicism. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

816. *Nineteenth Century Spanish Prose.* Study of fiction in Spain during the 19th century. Special emphasis on the renaissance of the novel. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

820. *The Generation of '98.* The principal writers of the early twentieth century: Unamuno, Azorin, Baroja, Valle-Inclan, Machado and others. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

825. *Twentieth Century Spanish Prose.* Study of post-modernist and contemporary Spanish prose writers. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

826. *Twentieth Century Spanish Drama.* The dramatic production in Spain starting with Benavente. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

827. *Twentieth Century Spanish Poetry.* Principal poetic movements from Becquer to the present. Prereq.: Spanish 706 or consent of the instructor. 4 q.h.

835. *Modern Spanish-American Prose.* Literary prose in Spanish-America from the middle of the 19th century to the present. Prereq.: Spanish 716 or consent of the instructor. 4 q.h.

836. *Modern Spanish-American Drama.* Study of the 20th-century dramatists. Prereq.: Spanish 716 or consent of the instructor. 4 q.h.

837. *Modern Spanish-American Poetry.* Intensive study of Modernismo and the literary movements of Spanish-American poetry during the 20th century. Prereq.: Spanish 716 or consent of the instructor. 4 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 2,000 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.* An introduction to the common origin and subsequent developments of the principal Romance languages. Prereq.: Spanish 602. 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.

880, 881. *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. 2-4, 2-4 q.h.

SPEECH AND DRAMATICS

Associate Professors Elser (chairman), H. Crites, and Hulsopple; Assistant Professor O'Neill; Instructors Castronovo and Grcevich.

Speech and Dramatics 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 Principles of Speech 553 or Business and Professional Speaking 652, or preparation satisfactory to the teacher or department chairman.

Lower Division Courses

553. *Principles of Speech.* This course is designed to improve spech skills through the application of rhetorical and communication principles to varying audience situations. Speakers, audience, and message variables will be examined. The student will be expected to relate these principles to the demands of the speech-communication situations. Prereq.: None. 3 q.h.

560. *Introduction to Theatre.* A study of the theory, the history, the cultural role, and the physical characteristics of the theatre as an institution in human society. Prereq.: None. 4 q.h.

561. *Stagecraft.* A study and application of the technical elements of play production, with emphasis on stage mechanics, construction, and scene painting. Laboratory hours will be arranged in order to insure adequate practical experience in the scenic arts and crafts. Prereq.: None. 4 q.h.

580. *Principles and Practices of Broadcasting.* A survey course designed to familiarize students with the principles and practices involved in radio and television broadcasting. Required of majors. Prereq.: 553 and 560. 3 q.h.

605. *Voice and Diction.* A fundamental study of the voice mechanism; breath control, enunciation, articulation, vocal variety. Prereq.: None. 4 q.h.

606. *Speech Correction.* A survey of the various types of speech disorders and of the various types of correctional methods that have been and are being employed. Laboratory hours will be arranged in order to insure adequate practical experience. Prereq.: None. 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.

652. *Business and Professional Speaking.* A study of the principles of speaking in

business, education, industrial, and professional situations. Primarily for students enrolled in Business Administration. Prereq.: None. 3 q.h.

653. *Principles of Discussion and Conference.* Principles and practice of small group discussion. This course will teach the theory and techniques of small group interaction as the techniques of interviewing. (This is helpful as a second speech course for students enrolled in Business Administration.) Prereq.: 553 or 652. 3 q.h.

654. *Argumentation and Debate.* Principles and practices of formal argumentation including analysis of issues, evidence, reasoning and refutation. Prereq.: 553 or 652. 4 q.h.

655. *Parliamentary Procedure.* A study of the proper procedure in the conduct of business meetings, the formation of organizations, the writing of constitutions. Prereq.: None. 2 q.h.

658. *Advanced Public Speaking.* This course is designed to further develop speech-communication skills and amplify the principles considered in speech. Sophistication in speech preparation and persuasion strategies will be emphasized. Prereq.: 553 or 652. 4 q.h.

661. *Play Production.* An introduction to the process of analyzing, directing, staging, and producing plays; demonstration and practice. Laboratory hours by arrangement. Prereq.: It is recommended that, when possible, students elect Speech 561 before taking this course. 4 q.h.

668. *Fundamentals of Acting.* A study of the fundamental theories and techniques of acting. Major emphasis will be placed upon theatre acting, but consideration will be given to radio and television acting. Laboratory hours by arrangement. Prereq.: 661 or permission of the instructor. 4 q.h.

670. *Oral Interpretation.* A study of the fundamental problems involved in oral interpretation. Emphasis will be placed upon developing poise and ease before an audience, a clear and forceful voice, and flexibility and discrimination in converting thoughts from the printed page into oral communication. Selections will be prepared and presented in class. Prereq.: None. 4 q.h.

680. *Radio and Television Announcing.* A study of the announcer's role in radio and television stations. Basic principles and practices of announcing and broadcast operation. Class and laboratory. Prereq.: 553 or 652, 580, and 605. 3 q.h.

682. *Radio and Television Station Writing.* Fundamentals of broadcast writing, emphasis on the theory analysis, and practices in the preparation of station and program continuity, news, and documentaries. Prereq.: Junior standing or consent of the instructor. 4 q.h.

Upper Division Courses

705. *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. Prereq.: None. 3 q.h.

750. *Speech Criticism.* This course will explore approaches to the critical evaluation of significant speeches past and present. Rhetorical, literary, historical, linguistics, and quantitative methods of criticism will be analyzed. Prereq.: 553 or permission of the instructor. 4 q.h.

751. *Greek and Roman Public Address.* This course will explore the rhetorical techniques of the major Greek and Roman orators, such as Demosthenes, Isocrates, Gorgias, Cicero, Hannibal, St. Augustine, and St. Ambrose. Prereq.: 553 or 652. 4 q.h.

752. *British Public Address.* This course will explore the major speakers and movements in British Public Address. Speakers and speeches will be studied in relation to time of cultural, economic, and political upheaval as Great Britain won and lost an empire. Prereq.: 553 or 652. 4 q.h.

754. *Persuasive Speaking.* This course will concentrate on the rhetorical and socio-psychological theories of persuasion. Students will prepare and present a series of persuasive speeches throughout the quarter. Prereq.: 553 or 652. 4 q.h.

758. *Oral Communication Theory.* A survey of oral communication from the behavioral science literature. The communication process will be related to the Shannon and Weaver model of source, message, receiver, and channel. Prereq.: 553 or 652. 4 q.h.

760. *Dramatics for Elementary Grades.* Major emphasis is placed on the theory and techniques of creative dramatics. Consideration is also given to the production of children's plays. Practical experience will be provided when possible through cooperation with our schools. Prereq.: Sophomore standing. 4 q.h.

761. *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.: 561 and 661 or permission of the instructor. 3 q.h.

762. *Play Direction.* An intensive study of the process of directing plays. Whenever possible, students in the course will direct the equivalent of a one-act play for public presentation. Laboratory hours by arrangement. Prereq.: 661 or permission of the instructor. 4 q.h.

763. *Scene Design.* Includes the history of design in terms of stage scenery, an investigation of current trends, techniques, and media of scene design, and the practical execution of models and sketches by the student. Prereq.: 561 and 661 or consent of the instructor. 3 q.h.

764. *History of Stage Costuming.* An historical survey of costumes for the stage based upon styles of the Western World from the Ancient Egyptians (4000 B.C.) through contemporary times. Emphasis will be placed upon specific periods and differences in design. Prereq.: 611 or permission of the instructor. 4 q.h.

765. *Stage Lighting.* This course includes a study of historical development, basic electrical theory, switchboards and lighting instruments; color theory, principles and practices in stage lighting. Laboratory hours to be arranged. Prereq.: 561 and 661 or consent of the instructor. 3 q.h.

770. *Advanced Oral Interpretation.* A study of the problems involved in presenting oral readings of some length and difficulty in fiction, poetry, and drama. When possible, opportunities will be given members of the class to present programs outside the classroom. Prereq.: 670. 4 q.h.

780. *Advanced Radio and TV Announcing.* Prereq.: 680. 3 q.h.

781. *Radio Production.* Study of the concepts of radio production and programming. Production of various types of radio programs. Prereq.: 580 and 680, or permission of the instructor. 4 q.h.

782. *Television Production.* Study of the many elements of television production-equipment lighting, scene design, graphics, special effects, video tape, film, and creative camera work. Prereq.: 580 and 680 or permission of the instructor. 4 q.h.

783. *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.: 580 or permission of the instructor. 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.

850. *Early American Public Address.* This course will explore speakers and rhetorical movements from Colonial times through the Reconstruction period. The course will concentrate on such orators as Jonathan Edwards, John Adams, Daniel Webster, Stephen Douglas, Andrew Johnson, and Thaddeus Stevens. Prereq.: 553 or 652. 4 q.h.

851. *Contemporary American Public Address.* This course will explore speakers and rhetorical movements from Reconstruction through the mid-twentieth century. The course will analyze the rhetorical efforts of such figures as Booker T. Washington, Henry Grady, Woodrow Wilson, Wm. J. Bryan, Franklin Roosevelt, and John Kennedy. Prereq.: 553 or 652. 4 q.h.

852. *The Process of Group Interaction.* This course is a correlate to 653 Principles of Discussion and Conference. The primary focus of the course is a description of communication variables in the small group setting. In addition, the course will survey the literature related to communication in the small-group situation. Prereq.: 653. 4 q.h.

861. *History of the Theatre.* A history of the physical theatre and the written drama from antiquity to the present. Emphasis on theatre architecture and stagecraft, including scenery, costumes and lighting. Prereq.: Sophomore standing or consent of the instructor. 5 q.h.

862. *Dramatic Writing and Criticism.* Includes a study of the history of dramatic criticism and outstanding critics as well as a study of the elements of dramatic structure and the writing of dramas. Prereq.: 661 or English 743 or permission of the instructor. 4 q.h.

863. *Advanced Acting.* A study of specific theories, techniques, and the various important styles of acting. Prereq.: 661 and 658. 4 q.h.

864. *Advanced Directing.* A study of specific theories, techniques, and various important styles in play directing. Prereq.: 661 and 762. 4 q.h.

897. *Seminar in Broadcasting.* This course is designed to provide the student with opportunities to investigate contemporary problems in radio and television. Prereq.: Senior standing in Speech-Radio or permission of the instructor. 3 q.h.

898. *Seminar in Public Address.* This course is designed to provide the student with opportunities to explore the areas in public address not covered in the regular course offerings. Prereq.: Senior standing in Public Address or permission of the instructor. 3 q.h.

899. *Seminar in Theatre.* This course is designed to provide the student with opportunities to explore areas in theatre not covered in the regular course offerings. Specific course offerings under this course title will include: Advanced Scene Design, Advanced Stage Lighting, Theatre Styles, Theatre Organization and Management, and Modern Techniques and Procedures in the Contemporary American Theatre or permission of the instructor. 3 q.h.

UNIVERSITY HONORS SEMINAR

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

Robert LaVelle Miller, Dean

ORGANIZATION AND DEGREES

The School of Business Administration has four departments: Accounting, Advertising and Public Relations, Management, and Marketing.

Majors are offered in accounting, advertising and public relations, advertising art, financial management, general administration, industrial management, industrial or retail marketing, public administration, transportation management, and secretarial studies. Minors are offered in accounting, advertising, management (except when the majors are financial management, general administration, industrial management, public administration, or transportation management), and marketing.

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 most 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 for advertising and public relations, industrial marketing, or retail marketing and 194 hours for accounting, advertising art, financial management, general administration, industrial management, public administration, transportation management, and secretarial studies, 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

SUBJECT	Requirements High School Units
English	3
United States history and civics	1
Algebra	2
Geometry	1
Science or additional mathematics	1
Others	8
	16

IN THE UNIVERSITY

COURSE REQUIREMENTS (Other Than the Major and Minor)

UNIVERSITY CORE COURSES		Quarter Hours of Credit
English 525-526-527 Communication I-II-III		12
Humanities elective:		11
English: 600-level literature course	4	
Philosophy and Religious studies elective OR Humanities elective	4	
Elective	3	
Social Studies electives:		20
Economics 500 Fundamentals of Economics	3	
Economics 602, 603 Principles II, III	6	
Psychology 501 Introduction to Psychology OR Psychology 601 General Psychology	3 or 5	
Electives*	8 or 6	
	Requirements	
Science electives:		17 or 22
Science electives	12	
Mathematics 542 Special Topics of Algebra	5	
AND		

*Social Studies electives may be satisfied by acceptable courses for the degree in the following departments: Geography, History, Political Science (including the Social Science sequence courses), Psychology, and Sociology and Anthropology.

Mathematics 500 Introduction to Calculus (where applicable to a specific curriculum)	5
Health and Physical Education 590 Health Education	3
Health and Physical Education activity courses	3
	66-71

SCHOOL OF BUSINESS ADMINISTRATION CORE COURSES	Quarter Hours of Credit
Accounting 605, 606 Elementary Accounting I, II	10
Economics 704 Economics and Social Statistics I	4
Management 511 Introduction to Business	3
Management 715 Business Law I	4
Management 720 Business Finance	4
Management 725 Fundamentals of Management	4
Management 750 Human Behavior in Organization	4
Marketing 624 Fundamentals of Marketing	5
	38

REQUIREMENTS IN ADDITION TO COURSES	Quarter Hours of Credit
Completion of the number of quarter hours required for degree	186 to 194
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.	

NOTE: Students taking courses to satisfy high school deficiencies must take additional credit hours to complete the requirements for the degree.

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 marketing, and transportation management are stated in the announcements of the Accounting, Advertising and Public Relations, Management, and Marketing Departments. The combined major in advertising 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 Management 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. A grade of *C* or better is required in each course counted toward the major and minor.

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 marketing.

ACCOUNTING

Associate Professors Magner (chairman), Chuey, Evans, and Jenkins; Assistant Professors Arnold, Fortunato, Petrych, 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 48 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.

A suggested minor in accounting consists of 22-24 quarter hours and includes Accounting 605, 606, 701, and 713, plus 3-5 additional hours.

A grade of *C* or better in Accounting 603 is prerequisite to all more advanced courses in accounting.

Lower Division Courses

605. *Elementary Accounting I.* Fundamentals of accumulating accounting data and the development of the complete accounting cycle with emphasis upon working papers and classified financial statements for service, merchandising, and manufacturing operations. Problems supplement the theory, principles, and management applications. 5 q.h.

606. *Elementary Accounting II.* Develop an understanding of how the accumulated accounting data are effectively used by students who will make accountancy a career, as well as for students who will use accounting as a tool in other fields of specialization or in carrying on their personal affairs. A practice set and problems supplement the theory, principles, and management applications. Prereq.: Accounting 605. 5 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 606. 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. Flowcharting, the universally accepted language of business (COBOL), and business applications are included. Prereq.: Junior standing, if non-accounting major. 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 606. 3 q.h.

713. *Basic Cost Accounting.* The principles of cost-finding for manufacturing accounts, including the three-fold division 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 606. 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 606. 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, gift 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. 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. 3 q.h.

820. *Funds Accounting.* The principles and standards, terminology, and classification of accounts for governmental and nonprofit 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 606. 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 801 and 807. 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. 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. 3 q.h.

ADVERTISING AND PUBLIC RELATIONS

Associate Professors Flad (chairman), Lang, and Seibold; Assistant Professors Braden, Mamula, and Sekeres; Instructors M. Taylor and R. Taylor.

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 advertising art is also offered and consists of a minimum of 74 quarter hours in the advertising and public relations sequences, art and marketing as outlined in the curriculum printed in the Curriculums section.

A student majoring in advertising and public relations or advertising 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.

A suggested minor in advertising consists of 23 quarter hours in the advertising sequence and includes Advertising and Public Relations 627, 628, 629, 725, and 727 plus six 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, trademarks, 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. Analysis 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 727. 3 q.h.

824. *Industrial Advertising.* The analysis, discussion, planning, and preparation of various types of industrial advertising and promotional material. This includes advertisements for industrial and business magazines and trade papers, catalogs, booklets, sales literature, direct mail, purchasing directories, and business reference annuals. Also studied in this course are trade shows, industrial displays and exhibit designing, slide films, motion pictures, and corporate publicity. Presented from the interest-viewpoint of industrial equipment buyers, management executives, and purchasing agents. Prereq.: Advertising and Public Relations 727. 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. 3 q.h.

BUSINESS EDUCATION

For the major in business education, see the School of Education.

MANAGEMENT

Professors Teodorescu (chairman) and Hovey; Associate Professors Curran, Kohn, Krishnan, and Shuster; Assistant Professors Boland, Dastoli, Grim, Lacich, Long, Provance, Schneider, Walsh, and Wolanin; Instructor Moore.

The Department of Management 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 management.

The majors in management and their requirements in management courses are: financial management, a total of 48 quarter hours; industrial management, a total of 46 quarter hours; and transportation management, a total of 48 quarter hours. The combined major in general administration consists of a minimum of 75 quarter hours in accounting, management, and marketing. The combined major in public administration consists of a minimum of 70 quarter hours in accounting, management 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 Management Department.

A suggested minor in management consists of 21-24 quarter hours and includes Management 720, 725, and 750 plus 9-12 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.: Management 605. 3 q.h.

Upper Division Courses

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. 4 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.: Communication 508 or 527. 3 q.h.

715. *Business 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, carriers are analyzed. The provisions of the Uniform Commercial Code are studied with reference to the sales contract, transfer of titles, warranties, duties, liabilities, rights, and remedies of the parties. Federal Consumer Credit Protection Act (Truth-in-lending) is discussed. Prereq.: Junior standing. 4 q.h.

716. *Business Law II.* Aspects of commercial paper, requisites and meaning of negotiability, rights and liabilities, defenses and discharge under the Uniform Commercial Code. Bank deposits and collections, personal property and public rights in private property are covered. 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.: Management 715. 4 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.: Management 715. 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.: Management 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.: Accounting 606. 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.: Management 715. 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.: Management 715. 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 606 and Management 715. 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. 4 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 security market. Practices, procedures, and regulations relating to the listing of securities and to the buying and selling of securities are covered. Prereq.: Management 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.: Junior standing. 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.: Management 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.: Management 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.: Management 705. 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.: Management 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.: Management 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.: Management 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.: Management 725 and 750. 4 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.: Management 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.: Management 725 and 750. 2 q.h.

860. *Comparative Management.* Comparative study of organization, managerial styles, and leadership in foreign countries based on historical and environmental factors. Analyzing the reasons why managerial activity and the effectiveness of management vary among different business systems. Prereq.: Management 725 and 750. 4 q.h.

MARKETING

Professor Almond (chairman); Associate Professors Burkholder, Hanks, and Roussos; Assistant Professors Braden, Deiderick, Liber, and Mathews; Instructor Davis.

Marketing 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 marketing may be in either industrial marketing or retail marketing. A major in industrial marketing consists of 47 quarter hours and a major in retail marketing consists of 45 quarter hours as outlined in the curriculum printed in the Curriculums section. A student majoring in industrial marketing or in retail marketing must have a minor of at least 21 quarter hours in a related field or in a field approved by the Chairman of the Marketing Department.

A suggested minor in marketing consists of 21-24 quarter hours and includes Marketing 624 and 625 and 13-16 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 marketing technology curriculum only for the Technical and Community College.) 5 q.h.

624. *Fundamentals of 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 the 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.: Marketing 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.: Marketing 624. 3 q.h.

715. *Management of the Sales Force.* An analysis of the problems facing marketing management in the planning, organizing, and control of the sales force. Cases and problems are used to sharpen analytical techniques in the sales force management areas of organizational structure, selection of salesmen, training, compensation plans, expense plans, morale, stimulation, budgets, quotas, sales territories, routing, analysis and evaluation of sales performance. Prereq.: Marketing 624 and 625. 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.: Marketing 624. 3 q.h.

726. *Effective Motivation.* Timely data generated by current sources of motivational theory and application results, are surveyed

and analyzed with the purpose of strengthening the student's ability to recognize and then deal with personal goals. This is done with the aim that personal goals may then be viewed in the light of business objectives as they may be planned, organized, and controlled in the business firm. Special emphasis is placed on the motivational characteristics of marketing executives which permit them to move effectively toward clearly defined goals. 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. 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. 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.: Marketing 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.: Marketing 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.: Marketing 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.: Marketing 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.: Marketing 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.: Marketing 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.: Marketing 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.: Marketing 709 or 720 or consent of the teacher. 3 q.h.

847. *Physical Distribution.* A consideration of the problems likely to arise in the planning for and movement of goods through channels of distribution from producer to end user. Elements of the logistical system, including transportation modes, plant and warehouse location, and inventory size determinations, are introduced and discussed. Cases and problems are used to sharpen analytical techniques. Final attention turns to the total cost approach of physical distribution analysis and decision making. Prereq.: Economics 704. 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 marketing. 1 q.h.

ADVERTISING ART

For the combined major in advertising art, see Advertising and Public Relations.

FINANCIAL MANAGEMENT

For the major in financial management, see Management.

GENERAL ADMINISTRATION

For the combined major in general administration, see Management.

INDUSTRIAL MANAGEMENT

For the major in industrial management, see Management.

PUBLIC ADMINISTRATION

For the combined major in public administration, see Management.

TRANSPORTATION MANAGEMENT

For the major in transportation management, see Management.

School of Business Administration

CURRICULUMS

Required Curriculums for the Degree of Bachelor of Science in Business Administration with the Major as indicated.

The following curriculums all lead to the degree of Bachelor of Science in Business Administration. Each curriculum contains all the courses prescribed for a major in the field indicated, and enables the student to complete a minor in a specified or related field. It also provides the 186 to 194 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 194 hours.

FIRST YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Mgt. 511 Introduction to Business	3
Science electives	12
Health and Physical Education 590 Health Education	3
	50

SECOND YEAR	Hrs.
Acctg. 701, 702 Intermediate Accounting I, II	10
Acctg. 710 Basic Concepts of Data Processing or Computer Sci. 600 Intro. to Programming	3-4
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Mktg. 624 Fundamentals of Marketing	5
Psych. 601 General Psychology	5
Social Studies electives	6-8
Speech 652 Business and Professional Speech	3
Health and Physical Education activity courses	3
	48-51

THIRD YEAR	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting	4
Acctg. 801 Advanced Accounting	5
Mgt. 712 Business Letters	3
Mgt. 715, 716 Business Law I, II	8
Mgt. 720 Business Finance	4
Mgt. 725 Fundamentals of Management	4
Econ. 704, 705 Economics and Social Statistics I, II	7
Philosophy and Religious Studies elective or Humanities elective	4
Elective	4
	47

FOURTH YEAR	Hrs.
Acctg. 807 Auditing	4
Acctg. 813 Federal Tax Theory	4
Acctg. 814 Federal Tax Practice	4
Accounting elective (Upper Division)	3
Economics elective (Upper Division)	4
Mgt. 722 Insurance Fundamentals	3
Mgt. 750 Human Behavior in Organization	4
Mgt. 819 Production Management or Mgt. 850 Development of Executive Ability	4
Electives (Upper Division)	11
Electives	8-5
	49-46

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
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Science electives	12
Social Studies electives	6-8
Health and Physical Education 590 Health Education	3
	45-47

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Adv. PR 627, 628, 629 Advertising Principles I, II, III	9
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Mktg. 624 Fundamentals of Marketing	5
Mktg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Health and Physical Education activity courses	3
	48

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 Makeup	3
Art 623 Advertising Art I	3
Econ. 704 Economic and Social Statistics I	4
Mgt. 712 Business Letters	3
Mgt. 715 Business Law I	4
Mgt. 725 Fundamentals of Management	4
Speech 652 Business and Professional Speech or Humanities elective	3
Elective	4
	45

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 or Adv. PR 824 Industrial Advertising	3
Mgt. 720 Business Finance	4
Mgt. 750 Human Behavior in Organization	4
Mktg. 815 Marketing Research	4
Mktg. 820 Sales Promotion or elective (Upper Division)	3
Philosophy and Religious Studies elective or Humanities elective	4
Electives (Upper Division)	2-4
Electives	9-5
	48-46

ADVERTISING ART

The advertising art curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
Art 510 Color and Design I	4
Art 513 Survey of Art or Humanities elective	3
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Psych. 501 Introduction	3
Science electives	8
Social Studies electives	8
Health and Physical Education 590 Health Education	3
	49

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Adv. PR 627, 628, 629 Advertising Principles I, II, III	9
Art 602 Drawing	3
Art 611 Printmaking	4
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
Mktg. 624 Fundamentals of Marketing	5
Science elective	4
Health and Physical Education 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
Art 606 Painting I	4
Art 623 Advertising Art I	3
Art 624, 625 Advertising Art II and III	6
Art 705 Advanced Drawing	3
Econ. 704 Economics and Social Statistics I	4
English 600-level literature elective	4
Mgt. 712 Business Letters	3
Mgt. 715 Business Law I	4
Mgt. 725 Fundamentals of Management	4
Philosophy and Religious Studies elective or Humanities elective	4
	50

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
Mgt. 720 Business Finance	4
Mgt. 750 Human Behavior in Organization	4
Mktg. 733 Furnishings	3
Mktg. 745 Textile Fabrics or Mktg. 750 Industrial Textile Products	5
Mktg. 820 Sales Promotion or Merchandising elective (Upper Division)	3
Elective (Upper Division)	7
Electives	7
	48

FINANCIAL MANAGEMENT

The financial management curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Mgt. 511 Introduction to Business	3
Mktg. 624 Fundamentals of Marketing	5
Science electives	12
Soc. 500 Fundamentals of Sociology	4
Health and Physical Education 590 Health Education	3
	49

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 601 American National Government	4
Psych. 601 General Psychology	5
Speech 652 Business and Professional Speech	3
Electives	7
Health and Physical activity courses	3
	49

THIRD YEAR	Hrs.
Acctg. 710 Basic Concepts of Data Processing or Computer Science 600 Introduction to Programming	3-4
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or Acctg. 813 Federal Tax Theory	4
Econ. 701 Money and Banking	4
Econ. 704, 705 Economics and Social Statistics I, II	7
Mgt. 712 Business Letters or Mgt. 713 Report Writing	3
Mgt. 715, 716 Business Law I, II	8
Mgt. 720 Business Finance	4

Mgt. 722 Insurance Fundamentals	3
Mgt. 725 Fundamentals of Management	4
Mgt. 750 Human Behavior in Organization	4
	48-49

FOURTH YEAR	Hrs.
Acctg. 810 Statement Analysis	3
Adv. PR 710 Basic Public Relations	3
Econ. 712 Intermediate Macro-Economic Theory	5
Mgt. 717 Real Estate Principles	3
Mgt. 723 Life Insurance	3
Mgt. 730 Investment Analysis and Management	3
Mgt. 731 The Stock Market	3
Mgt. 835 Advanced Business Finance	4
Mgt. 850 Development of Executive Ability	4
Mgt. 855 Business Ethics	2
Mktg. 815 Marketing Research	4
Electives	11-10
	48-47

GENERAL ADMINISTRATION

The general administration curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Mtkg. 624 Fundamentals of Marketing	5
Science electives	12
Social Studies electives	6-8
Health and Physical Education 590 Health Education	3
	46-48

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Adv. PR 627, 628, 629 Advertising Principles I, II, III	9
Computer Science 600 Introduction to Programming	4
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Mktg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Speech 652 Business and Professional Speech or Humanities elective	3
Health and Physical Education activity courses	3
	50

THIRD YEAR	Hrs.
Acctg. 713 Basic Cost Accounting	4
Accounting elective	3-4
Adv. PR 710 Basic Public Relations	3
Econ. 704 Economics and Social Statistics I	4
Mgt. 712 Business Letters or Mgt. 713 Report Writing	3
Mgt. 715, 716 Business Law I, II	8
Mgt. 720 Business Finance	4
Mgt. 722 Insurance Fundamentals	3
Mgt. 725 Fundamentals of Management	4
Mgt. 750 Human Behavior in Organization	4
Mtkg. 709 Retail Marketing or Mktg. 720 Industrial Marketing	3
Electives	6-4
	49-48

FOURTH YEAR	Hrs.
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	4
Mgt. 705 Principles of Transportation	4
Mgt. 724 Credit Management	3
Mgt. 730 Investment Analysis and Management	3
Mgt. 804 Personnel Management	4
Mgt. 819 Production Management or Mgt. 850 Development of Executive Ability	4
Mgt. 855 Business Ethics	2
Marketing electives (Upper Division)	6
Philosophy and Religious Studies elective or Humanities elective	4
Electives	7-6
	49-48

INDUSTRIAL MANAGEMENT

The industrial management curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Math. 550 Introduction to Calculus	5
Mgt. 511 Introduction to Business	3
Mktg. 624 Fundamentals of Marketing	5
Science electives	12
Soc. 500 Fundamentals of Sociology	4
Health and Physical Education 590 Health Education	3
	49

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 601 American National Government	4
Psych. 601 General Psychology	5
Speech 652 Business and Professional Speech	3
Electives	6
Health and Physical Education activity courses	3
	48

THIRD YEAR	Hrs.
Acctg. 713 Basic Cost Accounting	4
Acctg. 714 Advanced Cost Accounting or Acctg. 813 Federal Tax Theory	4
Econ. 704, 705 Economics and Social Statistics I, II	7
Mgt. 705 Principles of Transportation	4
Mgt. 713 Report Writing	3
Mgt. 715, 716 Business Law I, II	8
Mgt. 720 Business Finance	4
Mgt. 722 Insurance Fundamentals	3

Mgt. 725 Fundamentals of Management	4
Mgt. 750 Human Behavior in Organization	4
Elective (Upper Division)	3
	48

FOURTH YEAR	Hrs.
Accounting elective	4
Econ. 712 Intermediate Macro-Economic Theory	5
Mgt. 730 Investment Analysis and Management	3
Mgt. 804 Personnel Management	4
Mgt. 819 Production Management	4
Mgt. 820 Production Control	4
Mgt. 850 Development of Executive Ability	4
Mgt. 851 Problems in Industrial Management	3
Mgt. 855 Business Ethics	2
Mktg. 720 Industrial Marketing	3
Mktg. elective (Upper Division)	3
Elective (Upper Division)	3
Electives	7
	49

MARKETING

The marketing curriculums require a total of 186 hours.

FIRST YEAR	Hrs.
English 525-526-527	12
Geog. 519 Economic Geography	4
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Mtkg. 624 Fundamentals of Marketing	5
Science electives	8
Social Studies electives	6-8
Health and Physical Education 590 Health Education	3
	46-48

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Adv. PR 627, 628, 629 Advertising Principles I, II, III	9
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Mktg. 625 Salesmanship	3
Psych. 601 General Psychology	5
Science electives	4
Health and Physical Education activity courses	3
	47

Specialization in Industrial Marketing

THIRD YEAR	Hrs.
Acctg. 713 Basic Cost Accounting	4
Adv. PR 710 Basic Public Relations	3
Econ. 704 Economics and Social Statistics I	4
Mgt. 712 Business Letters	3
Mgt. 715 Business Law I	4
Mgt. 725 Fundamentals of Management	4
Mgt. 746 Industrial Traffic Management	3
Mktg. 720 Industrial Marketing	3
Mktg. 726 Effective Motivation or Marketing elective	3
Mktg. 750 Industrial Textile Products	5
Humanities elective	3
Electives	6
	45

FOURTH YEAR	Hrs.
Acctg. 810 Statement Analysis or Mgt. 724 Credit Management	3
Mgt. 720 Business Finance	4
Mgt. 750 Human Behavior in Organization	4
Mtkg. 815 Marketing Research	4
Mtkg. 825 Marketing Management	3
Mktg. 840 Blueprint Reading	3
Mtkg. 841, 842 Industrial Purchasing I, II	6
Mtkg. 845 International Marketing	3
Mktg. 847 Physical Distribution	6
Marketing electives	6
Philosophy and Religious Studies elective or Humanities elective	4
Electives	5-3
	48-46

Specialization in Retail Marketing

THIRD YEAR	Hrs.
Adv. PR 710 Basic Public Relations	3
Adv. PR 725 Advertising Copywriting	4
Econ. 704 Economics and Social Statistics I	4
Mgt. 712 Business Letters	3
Mgt. 715 Business Law I	4
Mgt. 725 Fundamentals of Management	4
Mktg. 709 Retail Marketing	3
Mktg. 711 Management of Retail Buying	3
Mktg. 726 Effective Motivation or Marketing elective	3
Mktg. 731 Non-Textiles: Apparel Accessories or Mktg. 733 Furnishings	3
Mktg. 745 Textile Fabrics	5
Humanities elective	3
Electives	6
	48

FOURTH YEAR	Hrs.
Mgt. 724 Credit Management	3
Mgt. 720 Business Finance	4
Mgt. 750 Human Behavior in Organization	4
Mktg. 811, 812 Merchandising Techniques I, II	6
Mktg. 815 Marketing Research	4
Marketing electives	10
Philosophy and Religious Studies elective or Humanities elective	4
Electives	10-8
	45-43

PUBLIC ADMINISTRATION

The public administration curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
Econ. 500 Fundamentals of Economics	3
English 525-526-527 Communication I-II-III	12
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Mktg. 624 Fundamentals of Marketing	5

Science electives	12
Soc. 500 Fundamentals of Sociology	4
Health and Physical Education 590 Health Education	3
	47

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Art 709, 710 or 711 History and Appreciation of Art and Music	4
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Pol. Sci. 601 American National Government	4
Psych. 601 General Psychology	5
Soc. 612 Cultural Anthropology	4
Speech 652 Business and Professional Speech	3
Health and Physical Education activity courses	3
Electives	6
	49

THIRD YEAR	Hrs.
Acctg. 820 Funds Accounting	4
Econ. 702 Public Finance	4
Econ. 704 Economics and Social Statistics I	4
Mgt. 712 Business Letters or Mgt. 713 Report Writing	3
Mgt. 715 Business Law I	4
Mgt. 720 Business Finance	4
Mgt. 725 Fundamentals of Management	4
Philosophy and Religious Studies elective or Humanities elective	4
Pol. Sci. 706 Minority Group Politics	3
Pol. Sci. 720 Public Administration	3
Electives (Upper Division)	7
Electives	5
	49

FOURTH YEAR	Hrs.
Econ. 803 Business and Government	4
Econ. 831 Labor Markets	4
Mgt. 750 Human Behavior in Organization	4
Mgt. 804 Personnel Management	4
Mgt. 833 Public Utilities or Mgt. elective (Upper Division)	3
Mgt. 850 Development of Executive Ability	4
Mgt. 855 Business Ethics	2
Mgt. 860 Comparative Management or Mgt. elective (Upper Division)	4
Pol. Sci. 721 Urban Government	3
Pol. Sci. 722 State and Local Government	3
Electives (Upper Division)	8
Electives	6
	49

TRANSPORTATION MANAGEMENT

The transportation management curriculum requires a total of 194 hours.

FIRST YEAR	Hrs.
English 525-526-527 Communication I-II-III	12
Geog. 519 Economic Geography	4
Math. 542 Special Topics of Algebra	5
Mgt. 511 Introduction to Business	3
Mktg. 624 Marketing	5
Science electives	12
Soc. 500 Fundamentals of Sociology	4
Health and Physical Education 590 Health Education	3
	48

SECOND YEAR	Hrs.
Acctg. 605, 606 Elementary Accounting I, II	10
Computer Science 600 Introduction to Programming	4
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Philosophy and Religious Studies elective or Humanities elective	4
Psych. 601 General Psychology	5
Speech 652 Business and Professional Speech or Humanities elective	3
Health and Physical Education activity courses	3
Electives	6
	48

THIRD YEAR	Hrs.
Acctg. 713 Basic Cost Accounting	4
Accounting elective (Upper Division)	4
Econ. 704, 705 Economics and Social Statistics I, II	7
Mgt. 705 Principles of Transportation	4
Mgt. 707 Commercial Motor Transportation	5
Mgt. 712 Business Letters or Mgt. 713 Report Writing	3
Mgt. 715 Business Law I	4
Mgt. 720 Business Finance	4
Mgt. 725 Fundamentals of Management	4
Mgt. 746 Industrial Traffic Management	3
Mktg. 720 Industrial Marketing	3
Electives	5
	50

FOURTH YEAR	Hrs.
Econ. 803 Business and Government	4
Econ. 811 Theory of International Trade or Economics elective	3
Mgt. 722 Insurance Fundamentals	3
Mgt. 740 Office Management and Methods or Mgt. 730 Investment Analysis and Management	3
Mgt. 750 Human Behavior in Organization	4
Mgt. 804 Personnel Management	4
Mgt. 808 Water Transportation	3
Mgt. 816 Problems in Transportation	3
Mgt. 833 Public Utilities	3
Mgt. 855 Business Ethics or elective	2
Mktg. 847 Physical Distribution	3
Marketing elective	3
Electives	10
	48

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 194 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 Advertising Principles I	3
Econ. 500 Fundamentals of Economics	3
Econ. 602, 603 Principles of Economics II, III	6
English 600-level literature elective	4
Mktg. 624 Fundamentals of Marketing	5
Mktg. 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
	47

FOURTH YEAR	Hrs.
Acctg. 810 Statement Analysis*	3
Adv. PR 710 Basic Public Relations	3
Econ. 704 Economics and Social Statistics I	4
Mgt. 720 Business Finance	4
Mgt. 724 Credit Management	3
Mgt. 725 Fundamentals of Management	4
Mgt. 750 Human Behavior in Organization	4
Mgt. 804 Personnel Management	4
Management elective (Upper Division)	2-4
Mktg. 709 Retail Marketing or Mktg. 720 Industrial Marketing	3
Electives (Upper Division)	9-7
Electives	7
	50

*The student's qualifications for entering these courses will be determined by the Chairman of the Department of Accounting.

School of Education

Donald W. Robinson, Dean

ORGANIZATION AND DEGREES

The School of Education is primarily an Upper Division school and has five departments: Foundations of Education; Elementary Education; Guidance, Counseling, and Pupil Personnel; Secondary Education; and Special Education. With the cooperation of the College of Arts and Sciences, the School of Business Administration, the Technical and Community College, 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, special education, 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 with courses leading to certification for teaching of the educable mentally retarded.

Prospective teachers may also be certified on the basis of degrees conferred by the College of Arts and Sciences, School of Music, School of Business Administration, and the Technical and Community College, 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.

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 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.

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 usually 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. Candidates who desire certification in secondary education as well as special education must meet the courses required for certification as prescribed by the Department of Secondary Education as well as the course requirements of the Department of Special Education. Information about double majors or additional teaching fields may be obtained through the Department of Secondary Education. 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.

3. Under certain conditions a student may earn a Bachelor of Arts degree with a major in foundations of education *but this program does not lead to a teaching certificate.*

4. A combined program in elementary education and special education leads to certification in both fields of certification (Elementary and Special Education). Information concerning this program is available from the Department of Special Education. The degree earned is the Bachelor of Science in Education.

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 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 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. The degree Bachelor of Science in Education is the degree earned by all students enrolled in the School of Education. It will be awarded only to the student who qualifies for a teaching certificate.

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 Educable Mentally Retarded)
4. *Special Education-EMR*
   (if working toward a major in special education and certification in the field of the educable mentally retarded)

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 Educable Mentally Retarded certification. THUS—Secondary-Social Studies-EMR.

Category III—*Special Subject*

Use word *Special* followed by subject area, THUS—*Special-Art or Special-Health and Physical Education.*

NOTE: Since music students enroll in the School of Music rather than School of Education, this does not apply to them.

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 for each candidate in order to qualify for Upper Division status in the School of Education. English competence may be shown by a satisfactory score on a standardized English test, or by satisfactory completion of a three-hour course in English proficiency.

Education 501, Introduction to Education, includes a thorough discussion of requirements for admission to the School of Education, and issues relating to certification. Therefore, this course should be taken during the student's freshman year. It is a prerequisite to any other course in education unless waived by the Dean of the School of Education.

Admission to the University does not guarantee admission to the School of Education or to candidacy for a teaching certificate. 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:

‡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.

*Students in other schools may elect Education 708, 873, 874, or 879 with the permission of the School of Education.

All B.S. in Education candidates are enrolled in the School of Education, regardless of major. Candidates 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. 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. 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, health education, 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 and professional education courses.

ELEMENTARY EDUCATION

Professors Chrisp (chairman) and Vanaman; Associate Professors Ameduri, Braden, Roderick, and Steele; Assistant Professors Betres, Hughes, Imlay, Nichols, and Scott; Instructors Battin and Steines.

Lower Division Course

630. *Pre-school Curriculum.* Organization and administration of the educational program of the nursery school. Particular attention given to curriculum and program planning. Implications drawn from the works of Piaget, Gesell, and Montessori. 3 q.h.

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 methods of teaching reading in the elementary school. 3 q.h.

813. *Language Arts II.* Teaching oral and written communication through consideration of listening, speaking, handwriting, spelling, creative and formal writing in the elementary school. 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 procedures, methods, and materials used on the kindergarten level. Areas of curricular investigation include social studies, science, language arts, numbers, and music. 3 q.h.

856. *Diagnosis and Treatment of Reading Disability: Part I.* Selection, administration, and scoring of various individual tests; techniques for evaluating the child with a reading disability. Prereq.: Ed. 881 or consent of instructor. 4 q.h.

857. *Diagnosis and Treatment of Reading Disability: Part II.* Instructional techniques and procedures for meeting specific needs of the child with reading disabilities. Work with specialized materials, machines, and other equipment used in reading improvement. Prereq.: Ed. 856 or consent of the instructor. 4 q.h.

874. *Audio-Visual Media.* A synthesis of the theory, practice, and values of communicating with audio-visual media. Demonstrations utilizing filmstrips, slides, audio tapes, overhead transparencies, motion pictures, opaque visuals, graphics, models, displays, and closed circuit television. Laboratory experiences in the preparation of materials and the use of modern media in teaching. 4 q.h.

881. *Corrective Techniques in Reading.* A basic course in corrective reading for classroom teachers. Emphasis on the administration and interpretation of group tests and the evaluation and correction of reading difficulties. Note: This course should be taken only by students who are not seeking certification in reading. Credit will not be given for both 881 and 856. 4 q.h.

882. *Developmental and Content Area Reading.* A study of the development of comprehension skills, word attack skills, study skills, and related problems in the content areas from kindergarten through grade 12. Prereq.: Consent of the instructor. 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.

FOUNDATIONS OF EDUCATION

Associate Professors Swan (chairman), Baldino, Kirschner, and Watkins; Assistant Professors Beckett and LaBay; Instructor 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. This course is required on all programs leading to teacher certification, unless waived on the basis of a suitable score on the A.C.T. 3 q.h.

Upper Division Courses

Students who have not been admitted to Upper Division status in the School of Education, or who are not working toward teacher certification may be admitted to Education 708, 873, 874, or 879 by permission of the department chairman. All other courses are open only to students who have been admitted to Upper Division status in the School of Education.

708. *The Sociological Foundations of Education.* The school as a social institution. An examination of the various institutions which serve American society, *e.g.:* home, religion, state, economic system, and the interaction of the school with them. Stress will be placed on achieving an understanding of minority cultures, their institutions, and their attitude toward the school as an instrument of enculturation. 4 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. Required of all candidates for teaching certificates. 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. 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. 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. 3 q.h.

873. *Comparative Education.* A survey of the national school systems of selected foreign countries to facilitate comparisons with the U.S. structure. 3 q.h.

875, 876, 877. *Seminar in Foundations of Education.* Various topics of current interest in the Foundations area selected by the staff. 1-4 q.h. each, maximum 15 q.h.

879. *Educational Sociology Seminar.* Each student will be required to participate in an extensive field project designed to give him an understanding of minority groups in our population and their cultures. This field experience coupled with seminar sessions will be the basis for a written paper. 2-4 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.

GUIDANCE, COUNSELING AND PUPIL PERSONNEL

Associate Professors DiRusso (chairman), DiGiulio, and Schoenhard; Assistant Professors Convery, Little, and Richards.

The department offers work toward the M.S. in Education degree with specialization in various pupil personnel services, visiting teacher, guidance, and counseling. Students may qualify for State certification in: elementary counseling, secondary counseling, and visiting teacher. Program and course descriptions are presented in the YSU Graduate School Catalog.

SECONDARY EDUCATION

Professor Swartz; Associate Professors Hill (chairman), Feldmiller, Marshall, McCracken, Philipp, Sample, Schoenhard, Solak, and Turner; Assistant Professors Babisch, Boggess, Bronstrup, Connelly, Donovan, Hwopek, Knauf, Liptak, and McKinley; Instructor Haushalter.

Youngstown State University offers courses leading to high school certification in many fields. Courses and advisors for the major are provided by the Arts and Sciences College department of the same name except in the fields of Data Processing, Driver Education, Reading and Science Comprehensive, for which advisement is provided entirely by the School of Education.

Secondary Education Graduates must major in a *teaching field.* The required professional education courses are designed to meet minimal Ohio State requirements for certification and do satisfy the minor field for graduation but *do not constitute a major* for graduation purposes. They may be expanded into a second major by the addition of elective education courses at the option of the student, but will not be permitted to replace the teaching field major for graduation.

Since State requirements in teaching fields are frequently lower in credit hours than the University requirements for a major, it is possible to expand teaching field credentials by adding to the major area certain other minimal preparation areas. Such areas are referred to below as "Additional Teaching Fields" and may supplement the major but not substitute for it. Availability of the teaching areas as majors or Additional Fields, or both, is indicated below.

Art (available as Major for Special Certificate for grades K-12 or High School Teaching Major or Additional Teaching Field)

Biological Science (Major or Additional Teaching Field)

Bookkeeping-Basic Business (Accounting or General Business Major, School of Business Administration or Additional Teaching Field)

Business Education (Major only)

Chemistry (Major or Additional Teaching Field)

Communications (Major only, English or Speech)

Data Processing (Additional Teaching Field only, advisement in the Department of Secondary Education)

Driver Education (Additional Teaching Field only, Department of Secondary Education)

Earth Science (Major or Additional Teaching Field)

Economics (Major or Additional Teaching Field)

English (Major only)

French (Major only)

General Science (Additional Teaching Field only)

Geography (Major or Additional Teaching Field)

German (Major only)

Health Education (Special certificate for grades K-12 or Additional Teaching Field)

Physical Education (Special certificate for grades K-12 or Additional Teaching Field)

History (Major only)

Home Economics (Major only)

Italian (Major only)

Journalism (Additional Teaching Field only, English)

Latin (Major or Additional Teaching Field)

Mathematics (Major or Additional Teaching Field)

Music (Major for Special Certificate for grades K-12, Bachelor of Music in the School of Music)

Physics (Major or Additional Teaching Field)

Political Science (Major or Additional Teaching Field)

Reading (Additional Teaching Field only, Department of Secondary Education)

Russian (Major only)

Salesmanship-Communication (Advertising and Public Relations or Marketing Major, School of Business Administration or Additional Teaching Field)

Science Comprehensive (Major only, advisement in the Department of Secondary Education)

Social Psychology (Major or Additional Teaching Field)

Social Studies Comprehensive (Major only)

Sociology (Major or Additional Teaching Field)

Spanish (Major only)

Speech (Special Certificate for grades K-12 or High School Teaching Major)

Stenography-Typing (Additional Teaching Field only)

Typing (Additional Teaching Field 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.

750. *Driver Education I.* A consideration of factors pertaining to driver and general traffic safety education. Required for certification of driver education teachers in Ohio. 4 q.h.

751. *Driver Education II.* Consideration of techniques, materials, organization, and evaluation of driver education programs. Includes laboratory experiences with driving simulators and road experiences. Required for certification of driver education teachers in Ohio. 5 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 possible, students should register in the special methods of their teaching field. Education 800B for Business Education will be offered winter and summer quarters. Education 800E for English will be offered fall, winter, and spring quarters. Education 800L for foreign languages will be offered in the fall quarter. Education 800M for mathematics will be offered in the fall quarter. Education 800S for social studies will be offered in fall and winter quarters.) This course is prerequisite to Education 842, Student Teaching. Prereq.: Education 706 and senior standing. 3 q.h.

874. *Audio-Visual Media.* A synthesis of the theory, practice, and values of communicating with audio-visual media. Demonstrations utilizing filmstrips, slides, audio tapes, overhead transparencies, motion pictures, opaque visuals, graphics, models, displays, and closed circuit television. Laboratory experiences in the preparation of materials and the use of modern media in teaching. 4 q.h.

882. *Developmental and Content Area Reading.* A study of the development of comprehension skills, word attack skills, study skills, and related problems in the content areas from kindergarten through grade 12. Prereq.: Consent of instructor. 3 q.h.

883. *Survey of Major Issues in Reading.* A review of the major problems confronting the teacher and supervisor of reading instruction. Emphasis will be placed on development of models in reading and language arts; the implications of various learning theories for the learning and teaching of reading, the inherent problems of developing and changing new programs. Prereq.: Ed. 882 or consent of instructor. 4 q.h.

891, 892, 893. *Seminar in Secondary Education.* Various topics of current interest in the secondary education area as selected by the staff. Prereq.: Admission to Upper Division status in the School of Education or Graduate School. 1-4 q.h. (15 maximum)

SPECIAL EDUCATION

Associate Professors Hoops (chairman), Dunsing, and Smith.

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.

858. *Education of Gifted or Superior Students—Their Characteristics and Educational Needs.* A course to acquaint the prospective teacher with knowledge of the identification of gifted students, their developmental characteristics, the problems they present and encounter in the usual curriculum pattern, and how the needs of gifted and superior students can be and are being met. Prereq.: Education 732 and Education 833. 3 q.h.

861. *Education of the Emotionally Disturbed Child.* A course to acquaint the prospective teacher with the multiple origins of disturbed behavior, the identification of manifest patterns indicating disturbed behavior, the educational implications of emotional disturbance, and how the needs of emotionally disturbed children can be met. Prereq.: Education 732 and Education 833. 3 q.h.

862. *Clinical Teaching of Children with Behavior Disorders.* A course to acquaint the prospective teacher with methods of managing and instructing children who present behavioral disorders which interfere with the learning process. Prereq.: Education 732 and Education 833. 3 q.h.

863. *Education of the Child with Learning Disabilities.* A course to acquaint the prospective teacher with the etiology of learning disabilities, the identification of

the manifest patterns indicating possible neurological involvement, the educational implications of learning disability, and how the needs of children who have learning disabilities may be met. Prereq.: Education 732 and Education 833. 3 q.h.

864. *Teacher-Parent Consultation.* A course to acquaint the prospective teacher with the special problems faced by a parent of an exceptional child, techniques of reporting to parents, and gaining cooperation without antagonizing the parent. Prereq.: Education 732 and Education 833. 3 q.h.

865. *Workshop or Independent Study in Special Education.* This course would provide the opportunity for individual work under staff guidance in the area of special education, *e.g.,* curiculum development or assignment to community agencies or to schools to work with individual problems. Prereq.: Education 732 and Education 833. 3-9 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 student may tutor pupils as a major in-school activity. Other in-school activities and experiences may include observation of all age-grade and ability levels, observation of the non-teaching functions in the building, assisting with instructional materials, assisting with some classroom and homeroom routine, and assisting with the preparation of some classroom materials. The student will be scheduled by and under the immediate supervision of the building principal or his designee. The minimum time is to be six hours weekly in a school, 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, a seminar is required weekly. This course should be scheduled during the first quarter following admission to Upper Division status (after 90 quarter hours earned) and must precede or be scheduled concurrently with Education 706. Required of all regular high school and special field candidates. Prereq.: Admission to Upper Division status in the School of Education, or consent of the Dean of the School of Education or his designee. 3 q.h.

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 children in the elementary school and (b) some level of personal confidence for the task of teaching in an organized and functioning classroom. The student may tutor pupils as a major in-school activity. Other in-school activities and experiences may include observation of all age-grade and ability levels, observation of the non-teaching functions in the building, assisting with instructional materials, assisting with some classroom and homeroom routine, and assisting with the preparation of some classroom materials. The student will be scheduled by and under the immediate supervision of the building principal or his designee. The minimum time is to be six hours weekly in a school, 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, a seminar is required weekly. This course should be scheduled during the quarter following admission to Upper Division status (after 90 quarter hours earned) and must 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 or his designee. 3 q.h.

The practicum portion of student teaching (fifteen quarter hours), Education 841, 842, 843 or 860, has the following in common:

Actual classroom teaching under the direction of experienced cooperating teachers and campus supervisors. The course is to be scheduled during one of the senior year quarters, except that student teaching is not offered during the summer quarter.

Application to take student teaching should be filed by March 1st of the year preceding the academic year (either fall, winter, or spring quarter) in which student teaching is to be completed. In addition to the application the student must register for student teaching (Ed. 841, 842, 843, or 860) during the open registration period preceding the quarter in which student teaching is to be experienced.

A student teaching experience of high quality is the most important factor in the assignment of student teachers. Assignments are made on the basis of many factors. The key factor is the availability of a cooperating teacher who satisfies the Youngstown State University "Criteria to Identify Cooperating Teacher. . . ." Other factors include the competition with other schools of education, the school districts' established policies on accepting student teachers, the pupil enrollment in a school, the extent of the program for pupils and the student's anticipated certificate area.

Student teachers usually will not be assigned into schools wherein close relatives are employed or attend. Secondary student teachers are not usually assigned to the school from which they graduated.

The purpose for student teaching is to provide opportunity for the student teacher to apply techniques and methods learned in prerequisite courses to actual classroom teaching situations with responsibility to pupils on an increasing load assignment as the quarter progresses.

The goal of student teaching is to have developed behavior patterns and skills necessary to function as a teacher on initial professional employment.

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 seminars are required and attendance is mandatory. (Students failing to attend the first regularly scheduled seminar by choice will be dropped.) Additional individual conferences with the campus supervisor, the seminar instructor, or with the regular classroom teacher may follow the 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.

841. *Supervised Student Teaching: Elementary.* Required of all elementary candidates. Prereq.: 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 a candidate have a better than average grade point index. An average of 2.5 or higher is desired.); satisfactory completion of the English competency requirement; and the approval of the head (or his designee) of the Elementary Education Department. 15 q.h.

842. *Supervised Student Teaching: High School.* Required of all candidates for high school certificates. Prereq.: 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 prerequisite will normally not be allowed except to postgraduate 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); a grade average 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 approval of the chairman (or his designee) of the department of the student's major. 15 q.h.

843. *Supervised Student Teaching: Special Field or Special Education.* Required of all candidates for Special Certification in Art, Health Education, Physical Education, and Music which apply to grades K-12; and for Special Education (EMR) if the certificate candidate also is to earn a provisional elementary or a provisional high school certificate as a second certificate.

Assignments for Special Certificate candidates will be half-time in both elementary and secondary schools or full-time in a middle school or junior high school. The student teaching day is the full school day in the assigned school. Half-time may be five weeks each elementary and secondary or ten weeks of half-days in each elementary and secondary.

Assignments of candidates for special education certificates (*e.g.*, EMR or LD/BD) and elementary or secondary teaching certificates must be for at least part of the experience in the special certificate area.

Prereq.: Admission to Upper Division status in the School of Education (see Education 841 for requirements): completion of Education 704, 706, and the appropriate special methods courses (*i.e.*, H.E. 700, 792, 890 for health education candidates; P.E. 750 [men], 760, 765, 780, 785 [women], 890 for physical education candidates; Music 823, 824, 825 for music candidates; Art 724 for art candidates; Education 705, 732, 833, 851, 852, 853 for EMR candidates.) If the student is also a candidate for either a certificate to teach in the elementary school or the high school, the prerequisites in 841 or 842 must be satisfied. The approval of the department chairman (or his designee) in the departments in which certificates are to apply must be obtained.

15 q.h.

860. *Supervised Student Teaching: Educable Mentally Retarded (EMR) and Learning Disabilities/Behavioral Disabilities (LD/BD).* Required of all candidates for special education certificates except, if the candidate is also a candidate for an elementary or secondary certificate, then student teaching will be elected as Education 843 (Special Field or Special Education).

Prereq.: 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.

15 q.h.

Students desiring to qualify for both elementary and secondary certification should follow the sequence required for either an elementary or secondary certificate. These students should include in their free electives as many courses required for the "retraining certificate" as their degree program will permit. The balance of the "retraining certificate" courses may be taken as a postgraduate to qualify for the additional certificate. The respective department heads (elementary or secondary education) will advise on the "retraining certificate" courses.

The William Rayen School of Engineering

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 Hall.

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 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; spectraphotometers; spectrographs; 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 radioisotope 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; darkroom 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 of the catalog.

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.

School of Engineering

The curriculums leading to this degree require a minimum of 198 quarter hours of credit. The program can be completed in four academic years by those who are capable of successfully completing the study loads outlined. 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 Management 715, 716.

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 198 quarter hours in addition to the 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 requirements.

Application for graduation.

COURSE REQUIREMENTS (Other Than the Major and Minor) BASIC COURSES	Quarter Hours
English 525-526-527 Basic Course I-II-III	12
Health and Physical Education 590 Health Education	3
Health and Physical Education Activity Courses	3
Science:	
Chemistry 515-516 General Chemistry	8
Physics 510 General Physics	4
Mathematics 571, 572, 673, 674, Calculus I, II, III, IV	18
ENGINEERING COURSES:	
See Specific Department Requirements	
UNIVERSITY GENERAL COURSE REQUIREMENTS	
Social Studies	20
Humanities	10

COURSES OF INSTRUCTION AND CURRICULUMS†

CHEMICAL ENGINEERING AND MATERIALS SCIENCE

Professors Slawecki (chairman) and Ahmed; Associate Professors Sheng and Stevens; Assistant Professors Jones, Perkins, and Szirmay.

Chemical Engineering

555. *Introduction to Modern Technology.* A comprehensive survey of present and projected future status of modern technology following a brief historical account of technological progress since the industrial revolution. Broad familiarization with technical terminology and major breakthroughs. Jointly taught with all other engineering departments. 4 q.h.

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.

681R. *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 572, Chemistry 516. 4 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.

685R. *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, or Ch.E. 681R. 4 q.h.

686R. *Industrial Pollution 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, or Ch.E. 681R. 3 q.h.

687. *Elementary Nuclear Reactor Engineering.* Basic engineering science to serve background material for nuclear reactor design. Nuclear fission as an energy source. Reactor use and classification. Comprehensive discussion of reactor design problems such as neutron distribution in the core, type of moderator, heat removal and radiation protection. Prereq.: Mathematics 674, Physics 603, Ch.E. 681R, or Chemistry 517. 3 q.h.

780, 781, 782. *Thermodynamics.* Macroscopic approach of the first and second laws of thermodynamics 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. 3+3+3 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.

785. *Transport Phenomena.* A study of the basic theory, calculation, measurement, and control involved in the transport of fluids and the transfer of heat. The application of the principles inherent in these two areas to the design of equipment used for their implementation is the main objective. Prereq.: Ch.E. 684, Math. 674. 4 q.h.

†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.

785L. *Transport Phenomena.* Experimentation with various types of measurement and control devices for transport of fluids and heat transfer. Correlation of effect of physical properties of fluids on their flow characteristics. Observation and comparison of various heat exchanger designs and their relative performance in most effectively utilizing process stream enthalpies. Prereq.: To be taken concurrently with 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 such as crystallization, filtration, distillation, extraction, mixing, and material handling will be discussed. Prereq.: Chemical Engineering 785-785L. 4+4+4 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.

789. *Man and the Technological Society.* An interdisciplinary critical examination of man in the modern technological society from the perspectives of engineering, life, and social science. The topics will be (1) history of technology, (2) the world's available energy and material resources, (3) population dynamics as they interact with nature and the human ecosystem, such as "the green revolution," cybernation, value concepts, and techniques to forecast societal changes. Prereq.: Junior standing, or consent of all instructors. Identical with Sociology 789 and Biology 789. 4 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 department chairman. Three bound copies are required: specifications are available on request. 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 705. 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 705. 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 705. 3 q.h.

884, 885. *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 "scaleups." Prereq.: Chemical Engineering 880, Chemical Engineering 787-787L. 3+3 q.h.

886. *Nuclear Reactor Design.* The steady state reactor core; four-factor equation, resonance escape probability, neutron flux distribution in various geometrics, two-group and multigroup theories. Transient reactor behavior and control; effect of delayed neutrons, fission product poisoning, nuclear fuels, nuclear heat transfer and burnout problems, reactor economy; fuel burnup and power cost. Thermal breeder and fast reactors. Neutron flux distribution measurements. Radiation detection and monitoring. Prereq.: Ch.E. 687. 4 q.h.

Materials Science

601R. *Introduction to Materials Science I.* Discussions of the basic electronic structure and properties of materials, theory of binding in solids—metals, alloys, semiconductors, ceramics, and plastic materials; electrical and magnetic properties of materials. Electron emission: electronic specific heat. Tutorial and computations. Prereq.: Chemistry 515 or consent of instructor. 4 q.h.

602R. *Introduction to Materials Science II.* Discussion of crystallography, the elastic and plastic properties of materials, ductile

and brittle behavior of metals, plastic deformation, imperfections in crystals, elementary ideas of point defects, dislocations and their basic properties, strain hardening. Recovery, recrystallization, and grain growth. Tutorial and computations. Prereq.: Met. Engr. 601 or consent of instructor. 4 q.h.

603R. *Introduction to Materials Science III.* Discussions of phase equilibria and phase diagram. Kinetics of phase changes, diffusionless and diffusion controlled phase transformation. Industrial metallurgy. Principles of heat treatment. Structural materials. Tutorial and computations. Prereq.: Met. Engr. 602 or consent of instructor. 4 q.h.

614, 615. *Structure and Properties of Materials I and 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.: Consent of instructor. 2+2 q.h.

620R, 621. *Chemical Principles of Materials Science I, II.* Discussion of the application of physiochemical principles to metallurgical or materials problems. Lecture and laboratory. Computations. Prereq.: Chemistry 515 or consent of instructor. 4+3 q.h.

621L. *Chemical Principles of Materials Science Lab.* Laboratory experiments to illustrate the theoretical concepts discussed in Met. Engr. 620 and 621. Prereq.: Met. Engr. 620 or consent of instructor. 1 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 515. 3+3+3 q.h.

650R. *Atomic and Molecular Structure of Materials.* Discussion of the atomic structure and molecular structures of materials with particular emphasis on the energy levels and material properties. Nuclear materials and alloy structures and their atomic structure changes in the alloy state. Prereq.: Chemistry 515, Mathematics 673, or consent of instructor. 4 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. *Mechanical Working and Its Effect on Materials.* 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. Prereq.: Metallurgical Engineering 632. 2 q.h.

741R. *Evaluation of Materials.* Discussion on the evaluation of materials by destructive and non-destructive testing methods. (3 lecture + 3 lab. hrs.) Prereq.: Metallurgical Engineering 740 or consent of instructor. 4 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 650R. 3 q.h.

791R, 792R, 793R. *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. Diffusion controlled and diffusionless phase transformation; theoretical treatment of nucleation and growth processes; diffusion. Lecture and laboratory. Tutorial and computations. Prereq.: Metallurgical Engineering 621L, 631, or consent of instructor. 4+4+4 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 650R, 791R. 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 793R. 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 793R. 1 q.h.

851. *Introduction to Polymer Science.* Discussions of polymer materials with particular emphasis on their characteristics. Bonding mechanisms and composition. Prereq.: Metallurgical Engineering 793R. 3 q.h.

852, 853, 854. *Advanced Engineering Materials (Non-Metallic) I, II, III.* Discussions on ceramic materials, composites and ceramets with special emphasis on atomic bonding; structure of crystalline and non-crystalline solids; diffusion; grain growth; sintering and microstructure. Different types of glasses. Physical and mechanical properties; structure; volume and shear flow; glass-metal interface. Prereq.: Metallurgical Engineering 793R. 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 793R, 741R 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 793R. 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 650R, Mathematics 709, or consent of instructor. 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 793R. 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 793R. 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 793R. 3 q.h.

890. *Metallurgy and Materials Colloquium.* Review of current metallurgical and materials research papers. Prereq.: Consent of instructor. (May be repeated up to a maximum of 4 q.h.) 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.

CIVIL ENGINEERING

Professor Cernica (chairman); Associate Professors Householder and Williamson; Assistant Professors Bakos, Bellini, and Ritter.

555. *Introduction to Modern Technology.* A comprehensive survey of present and projected future status of modern technology following a brief historical account of technological progress since the Industrial Revolution. Broad familiarization with technical terminology and major breakthroughs. Jointly taught with all other engineering departments. 4 q.h.

601. *Mechanics I.* Principles of mechanics as applied to statics with vector applications to resultants of forces, centroids, and centers of gravity, distributed loads, equilibrium and friction. Prereq.: Math. 572. 4 q.h.

602. *Mechanics II.* Moments of inertia of areas and masses, and methods of virtual work and energy. Elementary theory and relationships between load, stress, and strain in tension, compression, torsion, and bending. Combined stresses in members. Prereq.: Civil Engineering 601. 4 q.h.

603. *Mechanics III.* Deflection of beams, indeterminate beam analysis, column theory, and connections. Experimental verification of theories of strength of materials. Prereq.: Civil Engineering 602. 4 q.h.

710. *Surveying I.* The theory of surveying and the use of instruments. Problems in leveling, traversing, and topography. Introduction to circular curves, spirals, and vertical curves. Course includes a laboratory to acquaint the student with field surveying principles and techniques. Prereq.: Math. 572, Mechanical Engineering 503. 5 q.h.

711. *Surveying II.* A study involving the location, design, and construction of transportation systems, including route selection, horizontal and vertical alignment, earthwork calculations and layout. Course includes a laboratory to illustrate the field and office techniques used in route location, mapping, and layout. Prereq.: Civil Engineering 710. 4 q.h.

716. *Fluid Mechanics.* 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 viscous flow in pipes. Course includes a laboratory to illustrate the fluid mechanics principles of incompressible fluids. Prereq.: Mechanical Engineering 641 or concurrent; IE 642. 4 q.h.

717. *Hydraulic Engineering.* Civil engineering application of fundamental fluid mechanics principles to open and closed channel flow, distribution, systems, storage requirements, economics, extreme value theory, and basic concepts of hydraulic structures. Prereq.: Civil Engineering 716. 4 q.h.

749. *Structural Analysis I.* The determination of shears, moments, and stresses in statically determinate beams, frames, and trusses. Consideration of dead, live, moving, and wind loads. Elastic deflections of simple structures. Introduction to the analysis of statically indeterminate structures using numerical and energy methods. Prereq.: Civil Engineering 603. 5 q.h.

810. *Transportation I.* Principles of highway and traffic engineering, to include administration, economic studies, finance, highway design standards, traffic characteristics, accidents, traffic studies, signalization, traffic markings and markers, highway capacity, long range and route planning, and construction planning and supervision. Laboratory provided for field studies of traffic speeds, volumes, intersection delays, intersection operations, and signalization. Prereq.: Civil Engineering 710. 4 q.h.

811. *Transportation II.* Design methods for flexible, rigid, and other wheel-supporting pavements to include investigation, testing, and preparation of subgrade, base course materials and selection, and characteristics of various pavement mixtures. Laboratory provided for the design, proportioning, preparation, and testing of various paving mixtures. Prereq.: Civil Engineering 810. 4 q.h.

834. *Environmental Engineering I.* A study of the elements of water purification systems and sewage treatment plants, including discussions of physical, chemical, and biological treatment processes. Laboratory studies are used to demonstrate certain aspects of water chemistry. Prereq.: Chem. 516. 4 q.h.

835. *Environmental Engineering II.* A study of certain aspects of environmental problems; including discussions on air pollution control, industrial waste treatment, and selected topics in public health. Prereq.: Civil Engineering 834 or consent of instructor. 4 q.h.

849. *Structural Analysis II.* Analysis of statically indeterminate beams, trusses, bents and multistory frames, utilizing concepts of strain energy, virtual work, slope-deflection, and moment distribution. Introduction to matrix methods of analysis using force and displacement methods. Prereq.: Civil Engineering 749. 4 q.h.

853. *Design I.* An introduction to the design of reinforced concrete and structural steel. Included are the design of beams, columns, footings, and connections. Prereq.: Civil Engineering 749. 4 q.h.

854. *Design II.* The application of structural analysis theory to the design of reinforced concrete and steel structures including beams, girders, slabs, walls, frames, and truss members, in accordance with assigned specifications, for elastic and ultimate strength (plastic) design. Prereq.: Civil Engineering 853. 4 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.

873. *Transportation III.* 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 811. 4 q.h.

875. *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 717. 4 q.h.

877. *Systems Engineering.* System approach to engineering design and operations involving deterministic and probabilistic models; linear programming, critical path scheduling, and competitive strategies and their application to construction planning and other engineering problems. Prereq.: Math. 706. 4 q.h.

879. *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 854. 4 q.h.

880. *Advanced Structural Analysis.* Matrix formulation and solution of complex structural problems; force and displacement methods using flexibility and stiffness-coefficient matrices. Prereq.: Civil Engineering 849. 4 q.h.

881. *Soil Mechanics.* Properties of soil, classification, capillarity, permeability, stress and strain, consolidation and compressibility, seepage. The laboratory includes typical procedures and physical testing of soil samples. Prereq.: Math. 674; Civil Engineering 749. 4 q.h.

882. *Soil and 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 881. 4 q.h.

ELECTRICAL ENGINEERING

Associate Professors Kramer (chairman) and Siman; Assistant Professors Foulkes, Hankey, Rost, Skarote, and Zuckerwar.

555. *Introduction to Modern Technology.* A comprehensive survey of present and projected future status of modern technol-

ogy following a brief historical account of technological progress since the industrial revolution. Broad familiarization with technical terminology and major breakthroughs. Jointly taught with all other engineering departments. 4 q.h.

700, 701R, 702R. *Circuit Analysis I, II, III.* Kirchhoff's Laws, interconnection diagrams, topology, linear algebraic equations, matrix algebra of networks, cut sets, 2-port parameters, tree and loop models. Laplace transform, matrix solution of simultaneous differential equations and state solution, inductive 2-ports. Fourier techniques. Each class consists of 3 hrs. of class and 3 hrs. of laboratory. Prereq.: Electrical Engineering 714R or Electrical Engineering 715R. 4+4+4 q.h.

703R. *Control Analysis I.* Continuous-time systems, discrete-time systems, state variables, classical and state variable compensation. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 702R. 4 q.h.

704R. *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. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Physics 610, Math. 705. Concurrent: Math. 706. 4 q.h.

705R. *Field Theory II.* Ferromagnetic materials, time changing electric and magnetic fields, Maxwell's equation, relations between field and circuit theory, plane waves, poynting vector energy relations, boundary value problems. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 704R. 4 q.h.

706R. *Transmission and Propagation.* Transmission theory, infinite line, terminated line, impedance transformation, waveguide, simple antenna systems, group and phase velocity, impedance of waveguide. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 705R. 4 q.h.

707R. *Physical Electronics.* Physical theory of electron devices, terminal characteristics; large and small signal analysis of electron devices and circuit components; applications to rectification and to amplification; equivalent circuits. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 700. Concurrent: Electrical Engineering 704R. 4 q.h.

708R. *Electronic Circuit Theory II.* Transistor amplifier models, feedback analysis, stability, frequency characteristics, transient and steady state analysis of electronic devices and circuits. Coupled amplifiers. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 707R. 4 q.h.

709R. *Communications Systems I.* Signal analysis. Power density spectra. Communications systems; amplitude modulation, angle modulation, pulse modulation systems. Introduction to information transmission. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 708R. 4 q.h.

714R. *Circuits and Electronics.* Basic circuit analysis; steady state circuit analysis, electric networks, transient response, passive network and transfer functions. Electronic circuits; diodes and power conversion, tube and transistor models, linear equivalent circuit, special amplifier circuits, wave shaping and instrumentation. Prereq.: or concurrent: Mathematics 674 and Physics 510. 4 q.h.

715R. *Electrical Devices.* Introduction to the basic principles of analysis of electromechanical devices, study of automatic feedback control, instrumentation, and analog computers. Prereq. or concurrent: Mathematics 674 and Physics 610. 4 q.h.

800. *Seminar.* Special topics, new developments. Prereq.: Senior standing. 1-4 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.

805R. *Quantum Electronics.* Electronic energy levels in quantum electronic devices; energy transitions in crystalline and gaseous media. Applications to semiconductors, maser, and lasers. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 706R, Electrical Engineering 708R, Met. Engr. 650R. 4 q.h.

807R. *Pulse, Digital, and Switching Circuits.* The generation and processing of non-sinusoidal waveforms in active and passive devices and circuits. (Pulse, digital, and switching waveforms). Prereq.: Electrical Engineering 708R, Electrical Engineering 702R. 4 q.h.

808R. *Electronic Circuits Signals and Systems.* A continuation of Electrical Engineering 709R 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 709R. 4 q.h.

810R, 811R. *Electrical Energy Conversion I and II.* An examination of lumped parameters electromechanics as related to Electromagnetic Field Theory; uses transducers and rotating machines to present fundamental concepts in engineering practice. Magnetic diffusion and charge relaxation fields and moving media. Each class consists of 3 hrs. lecture and 3 hrs. laboratory. Prereq. or concurrent: Electrical Engineering 705R. 4+4+4 q.h.

812R. *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. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 706R, Mechanical Engineering 641, Met. Engr. 650R. 4 q.h.

813R. *Logic Circuit Theory.* Synthesis of switching circuits using Boolean algebra, coding, sequential switching circuits. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 708R. 4 q.h.

815R. *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. 3 hrs. lecture and 3 hrs. laboratory. Prereq.: Electrical Engineering 706R. 4 q.h.

817. *Control Analysis II.* Linear and nonlinear 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 703R. 4 q.h.

819R. *Plasma Dynamics.* Plasmakinetic theory; charged particle interaction; waves in plasma; plasma oscillation; magnetic fluid dynamics; plasma gyrations. Prereq.: Electrical Engineering 706R, Mechanical Engineering 641, Met. Engr. 650R. 4 q.h.

820. *Modern Control Theory.* Introduction to the design of linear feedback control systems for minimum time response. Design of feedback system 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 703R. 4 q.h.

850. *Communications Systems II.* Signal detection in noise. Averages, sampling, spectral analysis, shot noise, the Gaussian process, linear systems, noise figures, optimum linear systems, nonlinear devices. The direct method. Nonlinear devices: the transform method, detection of signals. Prereq.: Electrical Engineering 709R. 4 q.h.

INDUSTRIAL ENGINEERING

Associate Professors Sorokach (chairman) and Kearns; Assistant Professor Driscoll.

555. *Introduction to Modern Technology.* A comprehensive survey of present and projected future status of modern technology following a brief historical account of technological progress since the industrial revolution. Broad familiarization with technical terminology and major breakthroughs. Jointly taught with all other engineering departments. This course will be cross-listed in all five departments of the School of Engineering. 4 q.h.

642. *Engineering Computations.* Flow diagramming and problem layout of elementary engineering problems. Solutions will be obtained when possible using programmable desk calculators. Fortran language will be employed to solve a wider variety of more complex engineering problems on a digital computer. Prereq. or concurrent: Mathematics 674 and Physics 510. (F, W, Sp) 4 q.h.

700. *Industrial Organization and Management.* The general principles of industrial organization and management. Prereq. or concurrent: Mathematics 740 or consent of department chairman. (W) 5 q.h.

705. *Value Engineering.* The application of fundamental engineering techniques and learned skills to a variety of product designs, with objective of identifying the unnecessary costs in the designs. Prereq.: Junior standing. (W) 4 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 700. (W) 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. (Sp) 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 700. (F) 3 q.h.

800. *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. Prereq.: Industrial Engineering 700. (W) 4 q.h.

820. *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. or concurrent: Mathematics 741. (Sp) 5 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 673. (W) 4 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. (Sp) 4 q.h.

827. *Industrial Engineering Analysis.* The use of algorithmic and simulation languages in the solution of complex engineering problems. Intended to provide background and techniques for the solutions of such problems numerically. Deterministic models of linear and non-linear systems will be considered. Simulation of inventory, queueing, and material handling systems will be examined. Prereq.: Industrial Engineering 642 and Mathematics 741. (Sp) 5 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.

850. *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, replacement, transportation, and assignment models will be considered. Prereq.: Industrial Engineering 700, and Mathematics 741. (F) 4 q.h.

851. *Linear Programming.* Model formulation and the development of algorithms for the solution of linear type problems encountered in industrial engineering. The Simplex technique, revised Simplex technique, duality, and degeneracy will be considered. Decomposition techniques will be introduced. Prereq.: Industrial Engineering 700. (W) 4 q.h.

MECHANICAL ENGINEERING

Professors D'Isa (chairman), Charignon (dean), and Tarantine; Associate Professors Pejack and Petrek; Assistant Professors Arnett, Lovas, Morris, and Torok.

500. *Drawing Fundamentals.* Instruction in the use of drafting instruments. Introduc-

tion to blueprint 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.* Applications of orthographic projection, auxiliary and oblique views, and sections and conventions: dimensioning: detail and assembly drawings. Graphs and graphic computations. 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 or equivalent. 3 q.h.

503. *Graphic Science.* Basic descriptive geometry, including points, lines, planes, curved surfaces, intersections and developments. Conventions and techniques used in preparing working drawings. Graphs and graphic computation. (For nonmechanical engineering majors.) Prereq.: Mechanical Engineering 500 or equivalent. 4 q.h.

555. *Introduction to Modern Technology.* A comprehensive survey of present and projected future status of modern technology following a brief historical account of technological progress since the industrial revolution. Broad familiarization with technical terminology and major breakthroughs. Jointly taught with all other engineering departments. (Identical with Chemical Engineering 555, Civil Engineering 555, Electrical Engineering 555, Industrial Engineering 555, and Materials Science 555.) 4 q.h.

580. *Introduction to Engineering.* An introduction to the engineering career and its role as a profession. Discussion of the preparation of an engineering career, including some of the tools of analysis such as slide rule, error analysis, sketching, and computers. Introduction to the various aspects of the engineering design process and problem solving. 3 q.h.

603. *Thermodynamics I.* Thermodynamic properties of gases and vapors and their relationships in energy transformations. The first law; equations of state; compression and expansion processes; entropy; the second law. Introduction to thermodynamic cycles and efficiencies of power plants and other devices. Prereq.: Mathematics 673, Physics 510. 4 q.h.

604. *Thermodynamics II.* Availability and irreversibility in thermodynamic processes and cycles; relations among thermodynamic properties. Mixtures and solutions; psychometry. Introduction to phase and chemical equilibrium. Prereq.: Mechanical Engineering 603. 4 q.h.

641. *Dynamics.* Basic relationships of the kinematics of particles and rigid bodies. Kinetics of particles, groups of particles, and rigid bodies using Newton's laws of motion, work-energy and impulse-momentum techniques. Vector notation used where applicable. Prereq.: Civil Engineering 601. 4 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. Three hours lecture and two hours laboratory per week. Prereq.: Mathematics 706 and Industrial Engineering 642. Prereq. or concurrent: Mechanical Engineering 604. 4 q.h.

721. *Heat Transmission.* The fundatals of heat transfer by conduction, convection, and radiation, followed by investigations of combinations of these modes of heat transfer. (Not intended for students having Mechanical Engineering 720.) Prereq.: Mathematics 705. 4 q.h.

750. *Strength of Materials III.* Analysis (including Mohr circle representation) of stresses and strains at a point. Introduction to classical elasticity; boundary value problems in rectangular Cartesian and cylindrical polar coordinates. Energy method of Castigliano. Prereq.: Civil Engineering 603, Mathematics 706. 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. Optimization and design of thermal systems. Prereq.: Mechanical Engineering 604. 4 q.h.

804L. *Applied Thermodynamics Laboratory.* Experiments involving basic measurement techniques, power and refrigeration cycles, and other thermodynamic phenomena. Analysis of fossil fuels. May be taken concurrently with Mechanical Engineering 604 or 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. Three hours lecture and two hours laboratory per week. 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, emissions, and the effect of supercharging on internal combustion engine performance. Prereq.: Mechanical Engineering 604, Mathematics 706. 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 604. 3 q.h.

830. *Fluid Mechanics.* 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 716, Mathematics 706. 4 q.h.

830L. *Fluid Mechanics Laboratory.* Experiments on compressible fluid flow in the subsonic and supersonic regions. Taken concurrently with Mechanical Engineering 830. 1 q.h.

842. *Dynamics of Machinery.* Application of analytical mechanics with particular emphasis on machines. Gyroscopic motion analysis and other advanced topics. Prereq.: Mechanical Engineering 641. 4 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, and welded connections. Prereq.: Mechanical Engineering 750. 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 brakes, clutches, belts; 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 603, Mechanical Engineering 641, Mathematics 706. 4 q.h.

870L. *Mechanical Vibrations 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.* An integration of the fundamental facts, principles, and laws of mathematics, science and engi-

neering, and their utilization in a rigorous training in methods of analysis and solutions of engineering problems. Prereq.: Mathematics 705, Mechanical Engineering 641, senior-level standing. 4 q.h.

882. *Mechanical Engineering Problems.* Modeling, design, and analysis of mechanical engineering devices or systems utilizing modern methods and techniques. Solution of problems by use of analytical, numerical, and statistical techniques. Prereq.: Industrial Engineering 642, Mathematics 706, senior-level standing. 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. Prereq.: Mathematics 706. 4 q.h.

Curriculum for the Degree of Bachelor of Engineering with the Major in Chemical Engineering

FIRST YEAR	Hrs.
Math. 571, 572 and 673 Calculus I, II, III	14
Chem. 515-515L, 516-516L, 517-517L General Chemistry	12
Physics 510 and 610, General Physics	8
English 525-526 Communication I, II	8
Health and Physical Education	
Health Education	3
Physical Activities	2
Ch.E. 555 Introduction to Modern Technology	4
M.E. 503 Graphics	4
	55

SECOND YEAR	Hrs.
Math. 674 Calculus IV, and 705 Diff. Eq. I	8
English 527 Communication III	4
C.E. 601 Mechanics I	4
C.E. 602 Mechanics II or M.E. 641 Dynamics	4
Chem. 603 Quantitative	5
Chem. 719-719L, 720-720L Organic	8
Ch.E. 680 Techniques of Ch.E.	3
Ch.E. 682, 683, 684 Ch.E. Principles I, II, III	9
Ch.E. Elective	3
L.A. Elective	6
Health and Physical Education Physical Activities	1
	55

THIRD YEAR	Hrs.
Chem. 739-739L, 740-740L, 741-741L Physical Chemistry	12
Ch.E. 780, 781, 782 Thermodynamics I, II, III	9
Ch.E. 785-785L Transport Phenomena	5
Ch.E. 786-786L, 787 Unit Operations I, II	9
Ch.E. Elective	3
I.E. 642 Engineering Computations	4
Econ. 707 Economics for Engrs.	4
Soc. 789 Man and the Technological Society	4
L.A. Electives	3
	53

FOURTH YEAR	Hrs.
E.E. 714R Circuits and Electronics	4
Ch.E. 787L Unit Oper. II Lab.	1
Ch.E. 788-788L Unit Oper. III	5
Ch.E. 880, 881 Kinetics I, II	5
Ch.E. 882 Process Dynamics	4
Ch.E. 884, 885 Plant and Process Design	6
Ch.E. 801, 802, 803 Thesis I, II, III	6
Ch.E. Elective	4
L.A. Elective	13
	48

Basic or Service Courses Offered by Chemical Engineering Department	Hrs.
Ch.E. 555 Introduction to Modern Technology	4
Ch.E. 681R Ind. Stoichiometry (for non-Chemical Engineers)	4
Ch.E. 685R Corrosion Control Engineering	4
Ch.E. 687 Elementary Nuclear Reactor Engineering	3
Ch.E. 789 Man and the Technological Society	4

Department Technical Electives	Hrs.
Ch.E. 685R Corrosion Control Engineering	4
Ch.E. 686R Industrial Pollution Control	3
Ch.E. 687 Elementary Nuclear Reactor Engineering	3
Ch.E. 783 Engineering Plastics	3
Ch.E. 789 Man and the Technological Society	4
Ch.E. 883 Mathematical Methods in Chemical Engineering	3
Ch.E. 886 Nuclear Reactor Design	4

Note: The thirty (30) hours of liberal arts electives are to be divided as follows:

SOCIAL STUDIES—20 HOURS

Social Sciences	Psychology
Economics	Sociology

HUMANITIES—10 HOURS

Philosophy	Art or Music
Language	History
Literature	

Curriculum for the Degree of Bachelor of Engineering with the Major in Civil Engineering

FIRST YEAR	Hrs.
CE 555 Intro. to Modern Technology	4
Math. 571 Calculus I	5
ME 503 Graphic Science	4
Health and Physical Education 590 Health Education	3
Math. 572 Calculus II	4
Physics 510 General Physics I	4
Chem. 515 General Chemistry I	4
Math. 673 Calculus III	5
Physics 610 General Physics II	4
CE 601 Mechanics I	4
Chem. 516 General Chemistry II	4
	45

SECOND YEAR	Hrs.
Math. 674 Calculus IV	4
CE 602 Mechanics II	4
Soc. Sci. 501 Intro. to the Soc. Sciences	3
English 525 Communication I	4
Health and Physical Education Activity Course	1
Math. 705 Differential Equations I	4
CE 603 Mechanics III	4
Soc. Sci. 502 Intro. to Economics	3
English 526 Communication II	4
Health and Physical Education Activity Course	1
Math. 706 Differential Equations II	4
CE 710 Surveying I	5
Soc. Sci. 503 Intro. to Political Science	3
English 527 Communication III	4
Health and Physical Education Activity Course	1
	49

THIRD YEAR	Hrs.
CE 810 Transportation I	4
IE 642 Engineering Computations	4
ME 641 Dynamics	4
Humanities Elective	5
CE 716 Fluid Mechanics	4
CE 749 Structural Analysis I	5
IE 824 Engineering Economy	4
Humanities Elective	5
CE 717 Hydraulic Engineering	4
CE Selective Course I*	4
Ch.E. 681R Industrial Stoichiometry	4
ME 603 Thermodynamics I	4
	51

FOURTH YEAR	Hrs.
Social Science Elective	4
CE 860 Thesis	2
CE 834 Environmental Engineering I	4
Technical Elective†	4
CE 853 Design I	4
Social Science Elective	4
CE 861 Thesis	2
CE 881 Soil Mechanics	4
CE Selective Course II*	4
Technical Elective†	4
Social Science Elective	3
CE 862 Thesis	2
CE 882 Soil and Foundation Engineering	4
EE 714R Circuits and Electronics	4
Technical Elective†	4
	53

*Civil Engineering Selective Courses.

The student must take the following selective courses depending upon his Area of Concentration within the Civil Engineering curriculum:

Selective Course	Area of Concentration Transportation	Structures	Environmental
I	CE 711	CE 849	Tech. Elec.†
II	CE 811	CE 854	CE 835

†Out-of-Department Technical Electives.

A student may choose any 700- or 800-level technical course from engineering, mathematics, science and business administration, for which the student has prerequisites and his advisor's approval. At least one technical elective must be taken out of the Civil Engineering Department.

Curriculum for the Degree of Bachelor of Engineering with the Major in Electrical Engineering.

FIRST YEAR	Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Physics 510, 610 General Physics I, II	8
English 525, 526 Communication I, II	8
Chemistry 515, 515L; 516, 516L General Chemistry and Lab.	8
Engr. 555 Introduction to Modern Technology	4
Chem. Engr. 681R Ind. Stoichiometry	4
Mech. Engr. 501 Drawing	3
Health and Physical Education Activity	3
	52

SECOND YEAR	Hrs.
Soc. Sci. 501, 502 Introduction to Social Science I, II	6
Ind. Engr. 642 Computers II	4
Math. 674 Calculus IV	4
Math. 705, 706 Differential Equations I, II	8
Civil Engr. 601 Mechanics I	4
Mech. Engr. 641 Dynamics	4
Met. Engr. 601R Materials I	4
E.E. 714R Circuits and Electronics	4
E.E. 715R Electrical Devices	4
E.E. 700 Circuits Analysis I	4
English 527 Communication III	4
Humanities Electives	4
Health and Physical Education Health 590	3
	57

THIRD YEAR	Hrs.
E.E. 701R, 702R Circuit Analysis II, III	8
E.E. 703R Control Analysis I	4
E.E. 704R, 705R Field Theory I, II	8
E.E. 706R Transmission and Propagation	4
E.E. 707R Physical Electronics I	4
E.E. 708R Electronic Circuit Theory II	4
E.E. 709R Communications Systems I	4
E.E. 810R Electrical Energy Conversion I	4
Met. Engr. 650R Atomic and Molecular Structure of Materials	4
Soc. Sci. 503 Introduction to Social Science III	3
Social Studies Electives	3
	50

FOURTH YEAR	Hrs.
Technical Electives	20
E.E. 811R Electrical Energy Conversion II	4
Humanities Electives	6
Social Studies Electives	8
Mech. Engr. 603 Thermodynamics or Met. Engr. 863 Thermo. of Materials	4
E.E. 801, 802, 803 Thesis I, II, III	6
	48

Department Technical Electives	Hrs.
EE 800 Seminar	1-4
EE 805R Quantum Electronics	4
EE 807R Pulse, Digital and Switching Circuits	4
EE 808R Electronic Circuits Signal and Systems	4
EE 812R Molecular Engineering	4
EE 813R Logic Circuit Theory	4
EE 815R Energy Radiation and Propagation	4
EE 817 Control Analysis II	4
EE 819R Plasma Dynamics	4
EE 820 Modern Control Theory	4
EE 850 Communication Systems II	4

Curriculum for the Degree of Bachelor of Engineering with the Major in Industrial or Management Engineering

Industrial Engineering Curriculum

FIRST YEAR	Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Physics 510, 611 General	8
English 525-526-527, Communication I, II, III	12
Social Studies Electives	12
Health and Physical Education 590 Health	3
Health and Physical Education Activity	2
	51

SECOND YEAR	Hrs.
Chem. 515, 516 General	8
ME 501 Engineering Drawing	3
CE 601, 602 Mechanics I, II	8
ME 641 Dynamics	4
ME 603 Thermodynamics	4
IE 642 Engr. Computations	4
Math. 674 Calculus IV	4
Math. 705 Diff. Equations	4
Health and Physical Education Activity	1
Humanities Electives	10
	50

THIRD YEAR	Hrs.
Math. 740, 741 Statistics I, II	6
IE 700 Indust. Org. and Mgnt.	5
IE 711, 712 Methods I, II	6
IE 721 Job Evaluation	3
EE 714R, 715R Electrical Engr.	8
IE 824 Engineering Economy	4
IE 705 Value Engineering	4
Social Studies Electives	4
Engineering Electives	9
	49

FOURTH YEAR	Hrs.
IE 841, 842, 843 Thesis I, II, III	6
IE 851 Linear Programming	4
IE 850 Intro. Oper. Research	4
IE 800 Production Planning	4
IE 820 Quality Control	5
IE 825 Adv. Engr. Economy	4
IE 827 Indust. Engr. Analysis	5
Social Studies Elective	4
Engineering Electives	12
	48

Management Engineering Curriculum

FIRST YEAR	Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Physics 510, 611 General	8
English 525-526-527 Communication I, II, III	12
Health and Physical Education 590 Health	3
ME 501 Engr. Drawing	3
Merchandising 624	4
Sociology 600	5
Social Science 501	3
	52

SECOND YEAR	Hrs.
Chem. 515, 516 General	8
Math. 674 Calculus IV	4
IE 642 Engr. Computations	4
ME 641 Dynamics	4
ME 603 Thermodynamics	4
Acctg. 604, 605 Elementary	10
CE 601, 602 Mechanics I, II	8
Health and Physical Education Activity	1
Humanities Electives	6
	49

THIRD YEAR	Hrs.
Acctg. 713, 714 Cost	8
Merchandising 720	4
Econ. 704, 705, 706 Social Statistics	10
Econ. 601, 602, 603 Princ.	9
IE 705 Value Engr.	4
IE 824 Engr. Econ.	4
IE 800 Production Planning	4
IE 700 Indust. Org. and Mgnt.	5
EE 714R Elect. Engr.	4
Health and Physical Education Activity	1
	53

FOURTH YEAR	Hrs.
IE 841, 842, 843 Thesis	6
IE 711, 712 Methods I, II	6
IE 820 Quality Control	5
IE 850 Intro. Oper. Res.	4
IE 851 Linear Programming	4
Bus. Org. 850 Dev. of Exec. Ability	3
Bus. Org. 851 Problems in Indust. Management	3
IE 825 Adv. Engr. Economy	4
Econ. 710 Intermediate Micro Econ.	3
Bus. Org. 701	3
Bus. Org. 804 Personnel Mgnt.	4
Humanities Elective	4
Health and Physical Education Activity	1
	50

Curriculum for the Degree of Bachelor of Engineering with the Major in Mechanical Engineering

FIRST YEAR	Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Physics 510, 610 General Physics	8
English 525-526-527 Communication I-II-III	12
ME 501, 502 Engineering Drawing, Descriptive Geometry	6
IE 642 Engineering Computations	4

ME 580 Introduction to Engineering	3
or ME 555 Introduction to Modern Technology	4
Health and Physical Education 590 Health Education	3
	50-51

SECOND YEAR	Hrs.
Math. 674 Calculus IV	4
Math. 705, 706 Differential Equations I, II	8
CE 601, 602, 603 Mechanics I, II, III	12
ME 603, 604 Thermodynamics I, II	8
ME 641 Dynamics	4
Chem. 515, 516 General Chemistry	8
Ch.E. 681R Industrial Stoichiometry	4
Health and Physical Education Health Activity	3
	51

THIRD YEAR	Hrs.
ME 750 Strength of Materials III	3
ME 860, 860L Machine Design I, Lab.	4
EE 714R, 715R Circuits and Electronics, Electrical Devices	8
CE 716 Fluid Mechanics	4
ME 720 Heat Transfer I	
or ME 721 Heat Transmission*	4
Elective (700-level Physics)	3
Mt.E. 601R Introduction to Material Science I	4
Elective (Humanities)	10
Elective (Social Studies)	4
Elective (Mechanical Engineering)	5
	49

FOURTH YEAR	Hrs.
ME 801, 802, 803 Thesis	6
Electives (Social Studies)	16
Electives (Mechanical Engineering)	27-28
	49-50

ELECTIVES

Departmental Electives	Hrs.
804 Applied Thermodynamics	4
804L Applied Thermodynamics Lab.	1
821 Heat Transfer II	4
821L Heat Transfer II Lab.	1
822 Internal Combustion Engines	3
823 Refrigeration and Air Conditioning	3
830 Fluid Mechanics	4
830L Fluid Mechanics Lab.	1
842 Dynamics of Machinery	4
851 Strength of Materials IV	4
851L Strength of Materials IV Lab.	1
861 Machine Design II	3
861L Machine Design II Lab.	1
870 Mechanical Vibrations	4
870L Mechanical Vibrations Lab.	1
881 Engineering Analysis	4
882 Mechanical Engineering Problems	4
892 Control Theory	4

At least four M.E. laboratory courses are required as electives.

*Students electing M.E. 720 are expected to take M.E. 821 as an M.E. elective.

AREAS OF SPECIALIZATION

Three general areas of specialization are offered: mechanics of rigid and deformable solids, heat and fluid flow, and environmental studies. A student wishing to specialize in one of these areas is expected to select electives as follows: M.E. 851, M.E. 851L, M.E. 861, M.E. 861L, M.E. 870 and M.E. 870L for the mechanics of solids area; M.E. 804, M.E. 804L, M.E. 821, M.E. 821L, M.E. 830 and M.E. 830L for the heat and fluid flow area; and M.E. 804, M.E. 804L, M.E. 822 and M.E. 823 for the environmental studies area. The department is in the process of developing additional courses of interest in the environmental area.

Curriculum for the Degree of Bachelor of Engineering with Major in Materials Science.

The section offers three options:

a. Metallurgical Engineering
b. Materials Science
c. Nuclear Metallurgy

FIRST YEAR	Hrs.
English 525-526-527 Communication I, II, III	12
Chemistry 515, 516	8
Math. 571, 572, 673	14
Engineering Electives	4
Physics 510, 611	8
Health and Physical Education 590	3
Health and Physical Education Activities	2
	51

SECOND YEAR	Hrs.
Math. 674, 705, 706	12
Met. Engr. 601R, 602R, 603R	12
Met. Engr. 614, 615	4
Met. Engr. 630, 631, 632	9
Met. Engr. 650R	4
Soc. Sci. 501, 502, 503	9
Engineering Electives	8
Health and Physical Education Activity	1
	59

THIRD YEAR	Hrs.
Met. Engr. 620R, 621, 621L	8
Met. Engr. 740, 741R	6
Met. Engr. 791R, 792R, 793R	12
Engineering Electives	8
Electives (Met. Engr.-General)	6
Electives (Met. Engr.-Options)	3
Electives (Liberal Arts)	12
	55

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)	6
Electives (Liberal Arts)	9
	41

ELECTIVES

I. Out of Section

A. Engineering

The student must take 20 hours from the following courses in accordance with department requirements.

Civil Engineering 601, 602, 603
Mech. Engineering 503, 641
Chem. Engr. 681, 685
Electrical Engr. 704R, 707, 714R, 715R, 812R, 850
Ind. Engr. 642, 705, 824

B. Technical

Math. 725, 740, 741, 742, 760
Chemistry 719, 720, 721
Physics 701, 702, 703, 704, 705, 750, 810, 811, 830

II. General (in section)

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 Materials	3
Met. Engr. 866 Special Topics	3

III. Mat. Sci. Options

The student must choose at least nine 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

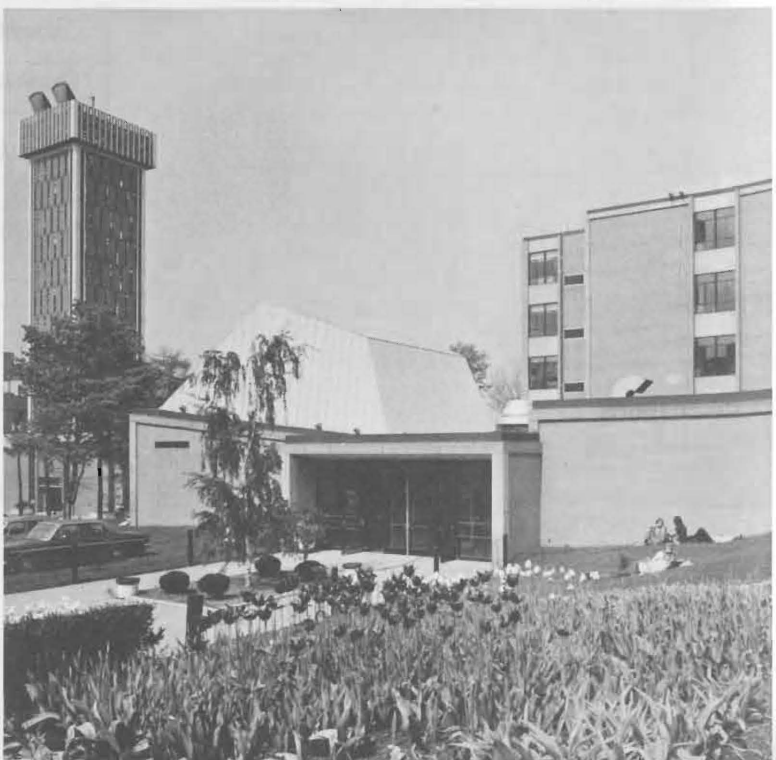
Met. Engr. 782 Phase Diagrams	3
Met. Engr. 851 Intro. to Poly. Sci.	3
Met. Engr. 852 Adv. Engr. Mat'l I	3
Met. Engr. 853 Adv. Engr. Mat'l II	3
Met. Engr. 854 Adv. Engr. Mat'l III	3

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


THE DANA SCHOOL OF MUSIC



The Dana School of Music

Charles Henry Aurand, Jr., 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 School is temporarily housed in five buildings on the campus, with the main administrative offices and classrooms located on Wick Avenue. This building, the former Charles S. Thomas mansion, is a block north of the main campus. Construction is presently underway on a new $5.5-million structure which will house the facilities to meet music needs under one roof. When completed, this building will contain choral and instrumental rehearsal facilities, a record and score listening center, 30 teaching studios, administrative and clerical space, a 400-seat auditorium, numerous specialized classrooms, and over 60 practice rooms, including six pipe organ studios.

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.

School of Music

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 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, or music education. It also provides the courses for the major in the history and literature of music, music theory, and applied music, for the degree of Bachelor of Arts.

With the cooperation 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 contains the administrative offices, 13 studios, four classrooms, four 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 two 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 22 Steinway pianos, 36 other pianos, harpsichords by William Dowd and Kurt Sperrhake, a five-stop portative organ by Hermann Schlicker, two practice organs, consorts of recorders and krummhorns, a cornetto, and a comprehensive collection of standard band and orchestra instruments. The organs of St. John's Episcopal Church (Schlicker, 3 manuals, 49 ranks), and First Presbyterian Church (Austin, 4 manuals, 75 ranks) are available for teaching and practice.

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 Loans and Scholarships 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 Orches-

tra 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.

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 *Men's Chorus* is a select group performing the finest of male chorus literature. It is open to any man in the University who can qualify by audition.

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 qualify. Twirlers for this group are auditioned and selected in the spring quarter prior to a new season. After marching season the band is divided into two performing concert bands.*Concert Band* is primarily for music majors, although qualified students may audition for placement in this organization, which performs a wide range of works from the wind band literature. *University Band* is open to any University student, by audition, and also presents programs of various types of band music. For further information contact the Director of Bands.

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 choral concerts and the opera productions. 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 ADMISSION 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).

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 major in composition should present evidence of his ability to handle the materials of music by placing at or above the seventieth (70th) percentile on both parts of the Dana School of Music Theory Entrance Examination; and the student should demonstrate, by jury examination of the appropriate applied faculty, proficiency on a musical instrument sufficient to admit him to the Freshman level of applied music in the Music Education Curriculum (Music 504).

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.

*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

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.

*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	
English 525-526-527 Basic Course I-II-III	12
Health and Physical Education 590 Health Education	3
Health and Physical Education activity courses	3
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 Dramatics, 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 570-571-572 Theory I	12
Music 610-611-612 Theory II	12
Music 738-739 Vocal and Instrumental Conducting and Ensemble	8
Music 770-771-772 History of Music	12
Advanced theory (Counterpoint, Analytical Technique, etc.)	6
Music ensembles	12
Recital	N.C.

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, or composition, 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, Pellegrini, Raridon, Sample, Spiro, and Vogel; Assistant Professors Conable, Fleming, Hailstork, Holsteen, Kagarice, Largent, Mayhall, Mould, Orr, Rosenberg, Starkey, and Wisler; Instructors Badal, Harris, and Lapinski.

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:

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.

JUNIOR RECITAL: In the performance degrees, a public recital is required in the junior year.

†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.

SENIOR RECITAL: A 30- to 60-minute public performance of senior-level literature. Prereq.: Completion of junior-level major instrument proficiency.

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 and organ majors follow the ensemble requirements specified in their curriculums.

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.

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.

Men's Glee Club. Open to male students 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 requirements. 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 the 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.

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. 1 q.h.

Piano

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; Mo-

*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 University Chorus and Concert Choir.

zart, Haydn, or early Beethoven concertos; less difficult etudes of Chopin; romantic and modern compositions. Half-hour recital. 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

701, 702, 703. All major and minor scales and tonic, dominant seventh, and diminished seventh arpeggios, hands together, three octaves. Bach, *Little Preludes,* and selected suite movements. Clementi, *Sonatinas.* Romantic and contemporary compositions. Prereq.: Music 662 or Piano Functional Examination. 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. 1, 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 arias will be required. A public recital is 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; Schradick, 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, Schradick 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. 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.

Guitar

500. Intended for those who do not qualify for Guitar 504 or 507. The course may be repeated. 1 q.h.

Major Courses

507, 508, 509. Scale patterns through all strings up to and including the ninth position. One study from numbers 1-5 by Segovia; 20 Studies for the Guitar by F. Sor; plus a similar study by Giuliani, Carelli, or Carcassi. Preludes 1, 3, and 4, H. Villa-Lobos; Etudes by Carcassi and Giuliani; music from Twelve Compositions, F. Tarrega; studies by Aquado, Villa-Lobos, Coste, and Almeida; simple ensembles from the works of Handel, Corelli, Scarlatti, and others of the same period; F. Sor Studies 1-10. 3+3+3 q.h.

607, 608, 609. Bach preludes; F. Sor studies 11-15; the music of English composers such as Dowland; *Prelude number 5,* H. Villa-Lobos; solo works by Granados (Spanish Dances); chamber music of Paganini, Boccherini, and Giuliani. 3+3+3 q.h.

707, 708, 709. Lute suites, J. S. Bach; solo works of Ponce, Scarlatti, Granados, Albeniz, B. Henze, Sor, Tarrega, Ravel, etc.; Sor studies 16-20; *Concerto in A Major,* M. Giuliani; *Grosse Sonata* and other works by Paganini; ensembles from the works of Paganini, L. DeCall, Matiegka, and J. Kreutzer. Bachelor of Music-Applied students must present a public recital. 3+3+3 q.h.

807, 808, 809. The J. S. Bach suites and fugues for lute; the Castelnuevo-Tedesco *Concerto;* solo works by B. Britten, deFalla, L. Almeida, Albeniz, etc.; *Prelude Number 2* and *Etudes* by H. Villa-Lobos; ensembles from the works of Ibert, Paganini, Boccherini, Haydn, and Schubert. Senior recital required. 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 Guitar 507, 508, 509. 2+2+2 q.h.

604, 605, 606. See Guitar 607, 608, 609. 2+2+2 q.h.

704, 705, 706. See Guitar 707, 708, 709. 2+2+2 q.h.

804, 805, 806. See Guitar 807, 808, 809. 2+2+2 q.h.

Minor Courses

501, 502, 503. Technical studies: Scale Pattern Studies—Shearer, through D# harmonic minor; slur, ornament and reach exercise—Shearer; 120 Arpeggios for the right hand—Giuliani; Volume I—Shearer; All ditonic scales—Segovia. Sample repertoire: (6) Aquado Studies; 20 Etudes for Guitar, F. Sor; Etudes by Carcassi; Supplemental variations—Soleares; Malaguena and Bolero Rhythms—Kalal. 1+1+1 q.h.

601, 602, 603. Studies and Solos of the level indicated for Guitar 507, 508. 1+1+1 q.h.

701, 702, 703. Studies and Solos of the level indicated for Guitar 509, 607. 1+1+1 q.h.

801, 802, 803. Studies and Solos of the level indicated for Guitar 608, 609. 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; Berbiguier, *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; Hughes, *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. 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 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 1; 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; Jancourt; Milde Op. 24; *Pares, Scales;* Hindemith, *Sonata;* Bordeau, *Premiere Solo;* David, *Concertino.* 3+3+3 q.h.

607, 608, 609. Studies and solos such as Milde Op. 26; Pierne, *Prelude de Concert;* Mozart, *Concerto K. 191;* Vogel, *Concerto;* Phillips, *Concert Piece.* 3+3+3 q.h.

707, 708, 709. Studies and solos such as Piard, *Orchestral Studies;* Giampieri, *Daily Studies;* Weber, *Concerto;* Vivaldi, *Concerti.* 3+3+3 q.h.

807, 808, 809. Studies and solos such as Jacobi, *6 Caprices;* Orefici, *Melodic Studies;* Saltzenhofer, *24 Studies;* Saint-Saens, *Sonata;* Jacob, *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 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 Rubank series; Weissenborn, Op. 8, Book I; Selected Baroque Sonatas; Boerlin, *Soliloquy.* 1+1+1 q.h.

601, 602, 603. Studies and solos such as Weissenborn; Pares, *Scales;* Rochut, *Melodius Etudes Book I.* 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; Bona, Rhythmical and Articulation Studies; tone studies, vibrato

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, *Exercices 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. 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, *Exercices Journaliers;* H. Klose, *Etudes Genre et Mechanisme;* 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-Elert, *26 Capricen und Sonate;* 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 Forme de Valse;* E. Bozza, *Piece Breve;* L. E. Larson, *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 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;* Hovey, *Daily Exercises for Saxophone;* Hovey, *Daily Exercises for Saxophone;* Hovey, *First Book of Practical Studies;* Pares-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 production, embouchure, breath control, flexibility, and legato and staccato articulations, using Arban's *Method for Cornet, Etudes* by Hering; *Daily Drills and Studies* by Schlossberg. Major and minor scales and chords, introduction to transposition, sight reading, and the study of cantabile solos. 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;* Orchestra 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;* Petit, *Studies;* Sachse, *Transposition Studies;* Orchestral Studies from the Symphonic Repertoire. Sight reading. Solos by Fitzgerald, Vidal, Barat, Goeyens, Deboeck, Busser, and others. Performance of brass chamber literature required. 3+3+3 q.h.

807, 808, 809. Advanced studies by Clarke, Pietzsch, 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. Performance of brass chamber literature required. 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. Performance of brass chamber literature required. 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. Performance of brass chamber literature required. Senior recital. 3+3+3 q.h.

Major Courses for 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 adcanced 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, Hindemith, 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 Kopprasch. 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, Vaughn Williams, and horn solos by Strauss and Mozart. Performance of brass chamber literature required. 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. Performance of brass chamber literature required. Senior recital. 3+3+3 q.h.

Major Courses for 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. Performance of brass chamber literature required. 3+3+3 q.h.

807, 808, 809. Advanced studies by Rochut, emphasis on band and orchestral excerpts. Solos of grade V and VI difficulty including works by Bach, Handel, Serocki, Hartley, Beasley, and White. Performance of brass chamber literature required. 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 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. 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; malleting, 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 pedal, 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, Book 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

520. *Materials of Music.* An overview of musical styles, listening concepts, and harmonic technics as they relate to the literature of music. Meets four times a week. 4 q.h.

570, 571, 572. *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. Prereq.: Music 520. 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 572 with a grade of *C* or better. 4+4+4 q.h.

504, 505, 506. *Composition A*

604, 605, 606. *Composition B*

704, 705, 706. *Composition C*

804, 805, 806. *Composition D*

Organized on a progressive basis, beginning with exercises in the creative use of 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 single 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 570-571-572, 610-611-612. 2 q.h. each

750. *Analytical Techniques.* Analysis of representative repertoire from the Renaissance, Baroque, Classical, Romantic, and Contemporary periods. Prereq.: Music 612. 4 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.

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 612. 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.

840. *Instrumentation.* Study of ranges, transposition, technical characteristics and tonal features of the instruments. Scoring for large and small ensembles which are available as laboratory reading groups. Prereq.: Music 612. 4 q.h.

MUSIC HISTORY AND LITERATURE

709, 710, 711. *History and Appreciation of Art and Music: General.* Identical with Art 709, 710, 711. 4+4+4 q.h.

740. *Piano Literature.* A chronological investigation of solo piano works by major composers from Bach to Cage. 4 q.h.

770, 771, 772. *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. 4+4+4 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.

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. Prereq.: Music 612 and 772. 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 Monte-

verdi to Handel; keyboard and instrumental works; significant choral and orchestral works, etc. Prereq.: Music 612 and 772. 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 772. 3 q.h.

874. *Nineteenth 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 772. 3 q.h.

875. *Contemporary Music.* Study of musical conditions existing at the end of the nineteenth century; new aesthetics, impressionism, expressionism, and neo-classicism, 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 772. 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. Prereq.: Music 612 and 772. 3 q.h.

CONDUCTING

738. *Vocal Conducting Methods Ensemble.* Vocal conducting technics and ensemble methods as they apply to choral group; rehearsal practices; 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. Four classes a week. Practical work with chorus. Prereq.: Music 611 with a grade of *B* or better or Music 612. 4 q.h.

739. *Instrumental Conducting Methods Ensemble.* Instrumental conducting technics and ensemble methods as they apply to bands, orchestras and chamber ensembles; rehearsal practices; special instrumental 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. Four classes per week. Students perform on minor instruments providing an ensemble for practice in conducting. Prereq.: Music 611 with a grade of *B* or better or 612. 4 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.

560, 561, 562. *Piano Class.* Elements of keyboard technique, with emphasis on sight-reading, accompanying, and improvisation. All major and minor scales and chords, hands separately. Required for all non-piano majors. 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 studied as a reflection of its social and cultural milieu. For non-music majors. Prereq.: Music 521. 3 q.h.

660, 661, 662. *Piano Class.* A continuation and intensification of the studies begun in Music 560, 561, 562, preparing the student for the Piano Functional Examination, which is the examination for Music 662. Prereq.: Music 562. 1+1+1 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.

730. *Woodwind Methods.* Basic instruction in flute, oboe, clarinet, alto saxophone, and bassoon. School music methods are emphasized and members of the class are asked to meet a required level of performance. Meets five hours a week. 3 q.h.

731. *String Methods.* The student receives instruction in each of four string instruments. He is examined on his basic understanding and performance. The problems of teaching strings are the point of concentration. Meets five hours a week. 3 q.h.

732. *Brass Methods.* Brass Methods will meet five days per week for one quarter. Each student will learn the playing fundamentals of the trumpet, French horn, trombone, baritone, and tuba. Basic theories

and physical aspects will be stressed in the playing of brass instruments. Brass materials and teaching technics will also be incorporated in the lecture portion of this course. 3 q.h.

734, 735, 736. *String Pedagogy.* An examination of the problems of studio teaching. Survey of grades and levels of teaching, string literature, psychological aspects of individual instruction, and teaching devices. Demonstration with students in a teaching situation. 1+1+1 q.h.

733. *Percussion Methods.* The demonstration, teaching, and playing techniques of all percussion instruments. 3 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. *Music Teaching in the Middle School.* Music, materials and methods of instruction in middle schools and junior high schools with emphasis on the general music class and the adolescent voice. 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.

858, 859. *Piano Pedagogy.* A survey of methods and study of materials involved in teaching of piano. Pedagogical considerations include fundamentals of technic as well as repertoire. Supervised practice teaching. 2+2 q.h.

880, 881. *Vocal Pedagogy.* A comparative study of physiological and psychological approaches to voice instruction and their application to private and class teaching. In the second quarter, supervised teaching of selected beginning singers will be required. Prereq.: Music 603, 606,or 609. 2+2 q.h.

885. *Brass Pedagogy.* Designed to study the various teaching approaches to each of the brass instruments. Basic concepts of tone production will be emphasized on each brass instrument, stressing common features as well as differences. Brass study materials will be introduced and analyzed. Teaching demonstrations by faculty members and students will be included. Prereq.: Music 606 or 609. 3 q.h.

PIANO ENSEMBLE

590, 591, 592. *Sight-Reading at the Piano.* Laboratory experience to develop skill in reading music *prima vista.* Prereq.: Music 662 or Piano Functional Examination. 1+1+1 q.h.

690, 691, 692. *Accompanying I.* A study of techniques useful in playing the piano for vocalists, with supervised studio and recital experience. May be repeated for credit. Prereq.: Music 592. 1+1+1 q.h.

693, 694, 695. *Accompanying II.* A study of techniques useful in playing the piano for instrumentalists, with supervised studio and recital experience. May be repeated for credit. Prereq.: Music 592. 1+1+1 q.h.

790, 791, 792. *Piano Duet- and Duo-Playing.* Investigation and performance of works for four hands at one or two pianos, such as Mozart, *Sonata,* K. 448; Schubert, *Fantasy,* Op. 103; Debussy, *En blanc et noir;* and Stravinsky, *Sonata.* Prereq.: Music 592. 1+1+1 q.h.

890, 891, 892. *Chamber Music with Piano.* Preparation of trios, quartets, and quintets including string and wind instruments. Analysis of problems encountered in ensemble performance. May be repeated for credit. Prereq.: Music 695. 1+1+1 q.h.

CURRICULUMS

Curriculum for the Degree of Bachelor of Music with Major in Piano or Organ

FIRST YEAR	Hrs.
Applied Major 507, 508, 509	9
Applied Minor 501, 502, 503*	3
Piano 701, 702, 703†	3
Materials of Music 520	4
Music Theory 570, 571	8
Sight-Reading at the Piano	3
English Communication 525, 526, 527	12
Social Studies electives	8
Health and Physical Education 590	3
Health and Physical Education Activity	1
	51

*Piano majors only. †Organ majors only.

SECOND YEAR	Hrs.
Applied Major 607, 608, 609	9
Applied Minor 601, 602, 603*	3
Piano 801, 802, 803†	3
Music Theory 572, 610, 611	12
Music History 770, 771, 772	12
Social Studies electives	12
Accompanying I	3
Health and Physical Education Activity	1
	52

THIRD YEAR	Hrs.
Applied Major 707, 708, 709	9
Music Theory 612	4
Science electives	12
Physics of Sound	4
Conducting	4
Music History elective	4
Analytical Techniques	4
Counterpoint I	3
Piano Duet- and Duo-Playing*	3
Chorus†	3
Accompanying II	3
Health and Physical Education Activity	1
	51

FOURTH YEAR	Hrs.
Applied Major 807, 808, 809	9
Piano Pedagogy	4
Piano Literature*	4
Organ Literature†	3
Theory electives	6
Counterpoint II	3
Chorus	3
Chamber Music*	3
Music elective†	4
General electives	8
	40

Curriculum for the Degree of Bachelor of Music with Instrumental Major

FIRST YEAR	Hrs.
Applied Major 507, 508, 509	9
Class Piano 560, 561, 562	3
Materials of Music 520	4
Music Theory 570, 571	8
Ensembles: Major	3
English Communication 525, 526, 527	12
Social Studies electives	8
Health and Physical Education 590	3
Health and Physical Education Activity	1
	51

SECOND YEAR	Hrs.
Applied Major 607, 608, 609	9
Class Piano 660, 661, 662	3
Music Theory 572, 610, 611	12
Music History 770, 771, 772	12
Ensembles: Major	3
Social Studies elective	4
Science elective	4
Physics of Sound 608	4
Health and Physical Education Activity	1
	52

THIRD YEAR	Hrs.
Applied Major 707, 708, 709	9
Applied Minor 701, 702, 703	3
Theory 612	4
Theory: Anal. Tech., Count. I and II	10
Conducting: Vocal and Instrumental	8
Ensembles: Major	3
Music elective	4
Social Studies electives	8
Health and Physical Education Activity	1
	50

FOURTH YEAR	Hrs.
Applied Major 807, 808, 809	9
Applied Minor 801, 802, 803	3
Theory: Orchestration, Band Arrang., Comp. 820, 821, 822	12
Music History electives	8
Ensemble: Major	3
Science electives	8
Elective	4
	47

*Piano majors only.
†Organ majors only.

Curriculum for the Degree of Bachelor of Music with Major in Voice

Designed for the student primarily interested in performance and/or 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.

FIRST YEAR	Hrs.
Applied Major 507, 508, 509	9
Class Piano 560, 561, 562	3
Materials of Music 520	4
Music Theory 570, 571	8
English Communication 525, 526, 527	12
Italian	12
Health and Physical Education Activities	3
Ensemble: Major	3
	54

SECOND YEAR	Hrs.
Applied Major 607, 608, 609	9
Class Piano 660, 661, 662	3
Music Theory 572, 610, 611	12
French	12
Music History 770, 771, 772	12
Ensemble: Major	3
	51

THIRD YEAR	Hrs.
Applied Major 707, 708, 709	9
Applied Minor 701, 702, 703	3
German	12
Science	8
Physics of Sound 608	4
Social Studies Electives	8
Music Theory 612	4
Ensemble: Major	3
	51

FOURTH YEAR	Hrs.
Applied Major 807, 808, 809	9
Applied Minor 801, 802, 803	3
Ensemble: Major	3
Social Studies electives	12
Science	4
Theory: Anal. Tech.	4
Health and Physical Education 590	3
Music Hist. Elective	4
Conducting: Vocal	4
Vocal Literature	3
Vocal Pedagogy	4
	53

Curriculum for the Degree of Bachelor of Music with Major in Composition*

FIRST YEAR	Hrs.
Music: Comp. 504, 505, 506	6
Music: Applied Piano 560, 561, 562	3
English Communication 525, 526, 527	12
Major Ensemble	3
Theory 570, 571, 572	12
Soc. Studies electives	12
Health and Physical Education Activities	2
	50

SECOND YEAR	Hrs.
Music: Comp. 604, 605, 606	6
Music: Applied Piano 660, 661, 662	3
Music: History 770, 771, 772	12
Music: Methods W.W., Strings, Brass, Perc.	12
Music: Theory 610, 611, 612	12
Music: Major Ens.	3
Elective: Unspecified	3
	51

THIRD YEAR	Hrs.
Music: Comp. 704, 705, 706	6
Music: Applied Piano 701, 702, 703	3
Music: Methods W.W., Brass, String	3
Elective	4
Music: Theory-Counterpoint I, II, Anal. Tech	10
Music: Conducting 738	4
Music: Major Ensemble	3
Social Studies Electives	8
Health and Physical Education 590	3
Activity	1
Music History elective	3
Music elective	3
	51

FOURTH YEAR	Hrs.
Music: Comp. 804, 805, 806	6
Music: Applied Piano 801, 802, 803	3
Music: Percussion 501	1
Voice Methods	3
Major Ensemble	3
Music elective	2
Orchestration	3
Band Arranging	3
Modern Harmony	3
Conducting 739	4
Science: Sound 608	4
Electives	12
Music Elective	2
	49

*See *Music Proficiency*, p. .....

Music Education Major: Instrumental, Vocal, Piano, or Organ

The following curriculums meet the requirements for the special provisional teaching certificate in Ohio. The certification requirements of the various states differ greatly, and if a student wishes to be certified in another state, it is his responsibility to 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: Instrumental

FIRST YEAR	Hrs.
Applied Major 504, 505, 506	6
Class Piano 560, 561, 562	3
Theory: Materials 520, 570-571	12
English Communication 525, 526, 527	12
Social Studies electives	8
Ensemble: Major Instrumental	3
Ensemble: Choral	3
Health and Physical Education 590	3
	50

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Class Piano 660, 661, 662	3
Music Theory 572, 610, 611	12
Music History 770, 771, 772	12
Intro. to Ed. 501	3
Soc. Studies electives	9
Ensemble: Major Instrumental	3
Science: Physics of Sound	4
	52

THIRD YEAR	Hrs.
Applied Major 704, 705, 706	6
Applied Minor 501	1
Applied Minor 501	1
Music Theory 612	4
Science electives	8
Music Methods	9
Education 704, 706, 708	9
Music Education 823, 824, 825	9
Ensemble: Major Instrumental	3
	50

FOURTH YEAR	Hrs.
Applied Major 804, 805, 806	6
Applied Minor 501	1
Applied Minor 501	1
Science elective	4
Music Theory: Anal. Tech.	4
Conducting: Vocal and Instrumental	8
Music Methods	3
Education 709, 843	18
Ensemble: Major Instrumental	2
Music elective	3
Health and Physical Education Activities	3
	53

Curriculum for the Degree of Bachelor of Music with the Major in Music Education: Voice

FIRST YEAR	Hrs.
Applied Major 504, 505, 506	6
Class Piano 560, 561, 562	3
Theory: Materials 520, 570, 571	12
Ensemble: Choral	3
English Communication 525, 526, 527	12
Social Studies electives	8
Health and Physical Education 590	3
Health and Physical Education Activities	3
	50

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Piano Class 660, 661, 662	3
Music Theory 572, 610, 611	12
Ensemble: Choral	3
Science elective	4
Physics of Sound 608	4
Intro. to Ed. 501	3
Social Studies electives	4
Music Hist. 770, 771, 772	12
	51

THIRD YEAR	Hrs.
Applied Major 704, 705, 706	6
Conducting: Vocal	4
Conducting: Instrumental	4
Music Theory 612	4
Music Theory Anal. Tech.	4
Psych. 601	5
Music Methods: Woodwind, Strg., Brass, Percsn.	12
Music Educ. 823, 824, 825	9
Ensemble: Choral	3
Education 704	3
	54

FOURTH YEAR	Hrs.
Applied Major 804, 805, 806	6
Ensemble: Choral	2
Vocal Literature	3
Education: 706, 708, 709, 843	24
Vocal Pedagogy	4
Science electives	8
	47

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 501, 502, 503	3
Theory: Materials 520, 570, 571	12
Sight Reading at the Piano 590, 591, 592	3
English Communication 525, 526, 527	12
Social Studies electives	8
Health and Physical Education 590	3
Health and Physical Education Activities	3
	50

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Theory 572, 619, 611	12
Accompanying I, 690, 691, 692	3
Social Studies electives	4
Psych. 601	5
Education 501	3
Music History 770, 771, 772	12
Percussion Methods	3
Ensemble	3
	51

THIRD YEAR	Hrs.
Applied Major 704, 705, 706	6
Theory 612, and Anal. Tech.	8
Woodwind Methods	3
Conducting: Vocal and Instrumental	8
Science electives	12
Music Ed. 823, 824, 825	9
Accompanying II 693, 694, 695	3
Education 704	3
Ensemble	3
	55

FOURTH YEAR	Hrs.
Applied Major 804, 805, 806	6
String Methods	3
Brass Methods	3
Piano Literature	4
Piano Pedagogy	4
Physics of Sound 608	4
Education 706, 708, 709	10
Ensemble	2
Student Teaching	15
	51

Curriculums for the Degree Bachelor of Arts with Majors in 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.

Bachelor of Arts with Major in History and Literature of Music

FIRST YEAR	Hrs.
Applied Major 504, 505, 506	6
Theory: Materials 520, 570, 571	12
English Communication 525, 526, 527	12
Social Studies electives	12
Ensemble: Major	3
Health and Physical Education Activity	3
	48

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Theory 572, 610, 611	12
History 655, 656	8
Music History and Lit. 770, 771, 772	12
Ensemble: Major	3
Science: Sound 608	4
Art 513, 514	6
	51

THIRD YEAR	Hrs.
Theory: 612, Anal. Tech. Ctrpnt.	11
Science electives	12
Ensemble: Major	3
Elective: 700-level	4
Foreign Language	9-20
Health and Physical Education 590	3
	42-53

FOURTH YEAR	Hrs.
Music Hist. and Lit. elective	12
Theory electives	6
English elective 600 or above	3
Music elective: Cond.	4
Electives: 700- or 800-level	24
	52

Bachelor of Arts with Major in Applied Music

FIRST YEAR	Hrs.
Applied Major 504, 505, 506	6
Theory: Mat. 520, 570-571	12
English Communication 525, 526, 527	12
Social Studies electives	8
Ensembles: Major	3
Health and Physical Education 590	3
Health and Physical Education Activities	3
	47

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Theory 572, 610, 611	12
Music Hist. and Lit. 770, 771, 772	12
Foreign Language	9-20
Ensembles: Major	3
Physics of Sound 608	4
	46-57

THIRD YEAR	Hrs.
Applied Major 704, 705, 706	6
Theory 612	4
Theory Electives	6
Social Studies electives	12
Science electives	12
Ensemble: Major	3
English elective: 600 or above	3
Elective: 700- or 800-level	6
	52

FOURTH YEAR	Hrs.
Applied Major 804, 805, 806	6
Music Hist. or Lit. elective	3
Music Cond. elective	4
Electives	32
	49

Bachelor of Arts with Major in Music Theory

FIRST YEAR	Hrs.
Applied Major 504, 505, 506	6
Theory 520, 570, 571	12
English Communication 525, 526, 527	12
Social Studies electives	8
Ensemble: Major	3
Health and Physical Education 590	3
Health and Physical Education Activities	3
Science elective	4
	51

SECOND YEAR	Hrs.
Applied Major 604, 605, 606	6
Theory 572, 610, 611	12
Social Studies electives	12
Foreign Language	9-20
Ensemble: Major	3
Science: Sound 608	4
Elective	4
	50-61

THIRD YEAR	Hrs.
Music History 770, 771, 772	12
Theory 621, electives	10
Science elective	4
Ensemble: Major	3
English elective: 600 or above	3
Elective: 700- or 800-level	16
	51

FOURTH YEAR	Hrs.
Music Lit. electives	6
Music: Cond. elective	3
Theory electives	10
Elective: 700- or 800-level	28
	47

OFFERINGS IN MUSIC—1972-1973

CONDUCTING:

738 Vocal . . . . . Fall
739 Instrumental . . Winter

MUSIC EDUCATION:

521 Intro. El. Teachers each quarter
528 Clarinet . . . . . Fall
Cello . . . . . Winter
540 Voice . . . . . Fall and Winter
541 Voice . . . . . Winter and Spring
542 Voice . . . . . Fall and Spring
550 Trumpet . . . . . Spring
560 Piano . . . . . Fall and Winter and Summer
561 Piano . . . . . Winter and Spring
562 Piano . . . . . Fall and Spring
621 Appreciation . . . each quarter
660 Piano . . . . . each quarter
661 Piano . . . . . each quarter (except summer)
662 Piano . . . . . each quarter (except summer)
721 El. Teaching . . . each quarter
730 Woodwinds . . . . Fall and Spring
731 Strings . . . . . Fall and Winter
732 Brass . . . . . each quarter (except summer)
733 Percussion . . . . Winter and Spring
823 Elem. Music . . . Fall and Spring
824 Middle Music . . Winter and Spring
825 Secondary Music . Fall and Winter
858 Piano Pedagogy . Fall
859 Piano Pedagogy . Winter
885 Brass Pedagogy . Spring
971 Foundations . . . Summer
979 Psychology . . . Winter
975 Humanities . . . Fall
977 Comparative . . . Spring

PHYSICS:

608 Sound . . . . . Winter and Spring

MUSIC HISTORY AND LITERATURE:

709 Art and Music . . Fall
710 Art and Music . . Winter
711 Art and Music . . Spring
740 Piano Literature . Spring
770 History of Music . Fall and Winter
771 History of Music . Winter and Spring
772 History of Music . Fall and Spring
879 19th Century . . Fall
875 Contemporary . . Summer
940 Middle Ages . . . Winter
941 Renaissance . . . Spring

THEORY:

520 Materials . . . . each quarter (except summer)
570 Theory I . . . . . each quarter (except summer)
571 Theory II . . . . . each quarter (except summer)
572 Theory III . . . . each quarter (except summer)
610 Theory IV . . . . each quarter (except summer)
611 Theory V . . . . . each quarter (except summer)
612 Theory VI . . . . each quarter (except summer)
750 Anal. Tech. . . . . Winter
753 Counterpoint I . Spring
820 Composition . . . Fall
821 Composition . . . Winter
822 Composition . . . Spring
913 Pedagogy . . . . Summer
920 Seminar . . . . . Fall

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 by:

1. providing technical education to meet the needs of the area through a variety of two-year programs and higher degree programs in those areas where duplicate programs are not available elsewhere in the University;

2. providing certain developmental programs through specialized courses not available in any other departments in the University and through comprehensive advisement service; and

3. providing a continuing education program of conferences, institutes, seminars, workshops, and non-credit courses in cooperation with all departments of the University to meet the needs of the community.

The Technical and Community College has eight departments: Business Education and Secretarial Studies, Business Technology, Continuing Education, Criminal Justice, Engineering Technology, Home Economics, 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, marketing technology, public administration technology, secretarial studies, and transportation man-

agement technology leading to the degree of Associate in Applied Business; and in child care technology, 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 of Science degree with majors in corrections, home economics, law enforcement administration, and nursing. Also, in cooperation with the School of Education, programs are available leading to the Bachelor of Science in Education with majors in business education and home economics. Students may earn the Bachelor of Science in Business Administration degree with a major in secretarial studies through the School of Business Administration.

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†

BUSINESS EDUCATION AND SECRETARIAL STUDIES

Associate Professor Turner (chairman); Assistant Professor Boggess; Instructors Hille, Phillips, Potts, 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.

†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.

A student working toward the Associate in Applied Business degree with a major in secretarial studies should complete the suggested curriculum (listed after course descriptions), electing to concentrate in a specialized area.

Specialized areas include: executive secretary, legal secretary, technical secretary, and general secretary.

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. 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 section.

Curriculum sheets for each area may be obtained from the Business Education and Secretarial Studies Office or from your advisor.

Lower Division Courses

510. *Office Procedures.* Overview of employer expectations and requirements. Includes basic secretarial and clerical procedures: telephone techniques, behavioral problems, basic filing principles, use of reference material, and job application basics. Must be taken in first or second quarter of program. Prereq.: BE & SS 520 or equivalent. (F, W, Sp) 4 q.h.

520. *Typewriting I.* The basic principles of touch typewriting. (Students who take this course must add two quarter hours to degree requirements.) Five hours laboratory. (F, W, Sp, Su) 2 q.h.

521. *Typewriting II.* Business letters, outlines, manuscript writing, technical papers, and business reports. Five hours laboratory. Prereq.: BE & SS 520 or equivalent. (F, W, Sp) 2 q.h.

522. *Typewriting III.* Tables, business forms, and executive communications. Five hours laboratory. Prereq.: BE & SS 521 or equivalent. (F, W, Sp) 2 q.h.

530. *Shorthand I.* The fundamental principles of the Gregg system of shorthand are presented. (Students who take this course must add four quarter hours to degree requirements.) (F, W, Sp) 4 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 proprietorships, partnerships, and corporations. 3+3+3 q.h.

604L. *Secretarial Accounting Lab I.* Actual accounting problem practice to parallel BE & SS 604. 1 q.h.

617. *Business Machines I.* The operation of typical calculators with application to business problems. (F, W, Sp, Su) 3 q.h.

618. *Business Machines II.* Building of skill in the operation of special typewriters, and transcribing, duplicating, and bookkeeping machines. Prereq.: BE & SS 522. (F, W, Sp) 3 q.h.

620. *Typewriting IV.* Advanced typing in professional offices. Five hours laboratory. Prereq.: BE & SS 522. (F, W, Sp, Su) 2 q.h.

621. *Typewriting V.* Specialized typewriting in the technical, medical, legal, or executive office. Five hours laboratory. Prereq.: BE & SS 620. (F, W, Sp) 2 q.h.

622. *Typewriting VI.* Advanced specialized typewriting in the technical, medical, legal, or executive office. Five hours laboratory. Prereq.: BE & SS 621. (W, Sp) 2 q.h.

630. *Shorthand II.* Beginning transcription and dictation. A dictation speed of 70 words a minute should be attained. Four hours laboratory. Prereq.: BE & SS 521 and 530, or equivalent. (F, W, Sp) 4 q.h.

631. *Shorthand III.* Emphasis on dictation speed and transcription. A dictation speed of 90 words a minute should be attained. Four hours laboratory. Prereq.: BE & SS 630 or equivalent. (F, W, Sp) 4 q.h.

Upper Division Courses

704. *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. (F, W, Sp) 4 q.h.

706. *Business Law.* The role of law in business. Basic fundamentals of business law designed to meet the needs of business education and secretarial students. (F, W, Sp) 4 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. (F, Sp, Su) 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 522. (F, W, Sp, Su) 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.: Sophomore standing or permission. (F, W, Sp) 4 q.h.

730. *Shorthand IV.* Emphasis on dictation speed and transcription and refinement of transcription skills. A speed of 110 words a minute should be attained. Four hours laboratory. Prereq.: BE & SS 621 and 631 or equivalent. (F, W, Sp) 4 q.h.

731. *Specialized Dictation.* Dictation and transcription in specialized fields: law, medicine, etc. Includes machine transcription. Four hours lecture, four hours laboratory. Prereq.: BE & SS 618 and 621. (W, Sp) 4 q.h.

805. *Office Practicum.* A terminal course for refinement of secretarial skills and techniques in simulated office procedures. Includes communication systems, records management, training and supervision problems, specialized typing and reports, and specialized secretarial functions. Prereq.: BE & SS 618 and 620. (W, Sp) 4 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 620 and junior standing. (Sp) 1 q.h.

850. *Business and Office Education Programs.* Analysis of the organization, implementation and evaluation of various vocational business and office education programs in secondary schools. Prereq.: Ed. 706. (Su) 3 q.h.

851. *Cooperative Office Education.* Organization, administration, and supervision of cooperative office education programs in the secondary school. Selection, instruction, placement, and evaluation of students. Prereq.: Ed. 706. (Offered as needed.) 3 q.h.

CURRICULUM

Suggested Curriculum leading to the Degree of Associate in Applied Business

FIRST YEAR	Hrs.
English 525-526-527	12
BE & SS 510 Office Procedures	4
BE & SS 521, 522 Typewriting	4
Math. 531 Mathematics of Business	5
BE & SS 630, 631 Shorthand	8
BE & SS 617 Business Machines	3
Social Science 501, 502, 503	9
Health and Physical Education 590 Health Education	3
Psychology 501 General Psychology	3
	51

SECOND YEAR	Hrs.
BE & SS 704 Business Communications	4
BE & SS 604, 604L Secretarial Accounting or Accounting 605*	4
BE & SS 730, 731 Shorthand	8
BE & SS 805 Office Practicum	4
BE & SS 706 Business Law	4
BE & SS 618 Business Machines	3
BE & SS 710 Data Processing	3
BE & SS 720 Personal Relations in Business	4
Bus. Org. 740 Office Management and Methods	3
BE & SS 620, 621, 622 Typewriting	6
Elective	3
	46
Total Credit Hours	97

*Students who plan to complete a four-year program should add BE&SS 605 and 606 or Accounting 606.

BUSINESS TECHNOLOGY

Associate Professor C. Painter (chairman).

500. *Survey of American Business.* An outline of the nature and scope of American business with emphasis upon the needs of supervisory management personnel. Analysis of business formation and business management in general. Functional division of businesses and industry with discussions of legal, societal, and environmental factors related to overall operational success.

(F, W, Sp) 4 q.h.

501. *Introduction to Transportation.* A survey course of the development of all modes of transportation. Analysis of the role of transportation in the national and international economic development.

(F only) 4 q.h.

635. *Visual Presentation.* The theoretical and practical application of the principles involved in interior, industrial, and window display of various types of merchandise. Also studied is the importance of and placement of the display department in both a retail and industrial setting. The organization, functions, and management of display departments is also studied. Prereq.: Mktg. 624, Mktg. 625, and Advt. 629.

(Sp only) 3 q.h.

All other 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.
English 525 Communication I	4
Mgt. 511 Introduction to Business (or) Bus. Tech. 500 Survey of American Business	3-4
Soc. Sci. 501 Introduction to Social Science	3
Health and Physical Education 590 Health Education	3
	13-14

SECOND QUARTER	Hrs.
English 526 Communication II	4
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Psychology	3
Math. 502 Algebra II (or) Math. 542 Special Topics of Algebra	5
	15

THIRD QUARTER	Hrs.
Econ. 500 Fundamentals of Economics	3
Acctg. 605 Elementary Accounting I	5
Soc. Sci. 503 Introduction to Political Science	3
Mktg. 624 Fundamentals of Marketing	5
	16

FOURTH QUARTER	Hrs.
Acctg. 606 Elementary Accounting II	5
Econ. 602 Principles of Economics II	3
CPT 607 Business Programming I	4
	12

SECOND YEAR

FIFTH QUARTER	Hrs.
Econ. 603 Principles of Economics III	3
Mgt. 712 Business Letters	3
Mgt. 715 Business Law I	4
Acctg. 701 Intermediate Accounting I	5
	15

SIXTH QUARTER	Hrs.
Acctg. 713 Basic Cost Accounting	4
Mgt. 720 Business Finance	4
Mgt. 725 Fundamentals of Management	5
Elective (Bus. Adm.)	3
	16

SEVENTH QUARTER	Hrs.
Acctg. 712 Distribution Cost Accounting (or) Elective (Acctg.)	3
Acctg. 813 Federal Tax Theory	4
Electives (Bus. Adm.)	3-4
Electives (Bus. Adm.)	3
	13-14
Total Credit Hours	100-102*

ADVERTISING TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Bus. Tech. 500 Survey of American Business	4
Art 510 Color and Design	4
	12

SECOND QUARTER	Hrs.
English 526 Communication II	4
Soc. Sci. 501 Introduction to Social Science	3
Adv. 627 Advertising Principles I	3
Health and Physical Education 590 Health Education	3
	13

THIRD QUARTER	Hrs.
Adv. 628 Advertising Principles II	3
Soc. Sci. 502 Introduction to Economics	3
Math. 502 Algebra II (or) Math. 531 Mathematics of Business	5
Psych. 501 Introduction to Psychology	3
	14

FOURTH QUARTER	Hrs.
Adv. 629 Advertising Principles III	3
Mktg. 624 Fundamentals of Marketing	5
Soc. Sci. 503 Introduction to Political Science	3
Speech 652 Business and Professional Speech	3
	14

SECOND YEAR

FIFTH QUARTER	Hrs.
Adv. 710 Basic Public Relations	3
Adv. 725 Advertising Copywriting	4
Econ. 500 Fundamentals of Economics	3
Mktg. 625 Salesmanship	3
Art 623 Advertising Art I	3
	16

SIXTH QUARTER	Hrs.
Adv. 727 Advertising Layout	4
Adv. 753 Introduction to Journalism	3
Elective (Bus. Adm.)	3
Econ. 602 Principles of Economics II	3
Art 624 Advertising Art II	3
	16

*Special Studies 501 and 502 may also be required.

SEVENTH QUARTER	Hrs.
Econ. 603 Principles of Economics III	3
Adv. 811 Direct Mail Advertising (or) Adv. 815 Radio and Television Advertising	3
Mgt. 715 Business Law I	4
Acctg. 605 Elementary Accounting I	5
	15
Total Credit Hours	100*

BUSINESS MANAGEMENT TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Mgt. 511 Introduction to Business or Bus. Tech. 500 Survey of American Business	3-4
Math. 502 Algebra II or Math. 542 Special Topics of Algebra	5
Soc. Sci. 501 Introduction to Social Science	3
	15-16

SECOND QUARTER	Hrs.
English 526 Communication II	4
Psych. 501 Introduction to Psychology	3
Mktg. 624 Fundamentals of Marketing	5
Soc. Sci. 502 Introduction to Economics	3
	15

THIRD QUARTER	Hrs.
Acctg. 605 Elementary Accounting I	5
Econ. 500 Fundamentals of Economics	3
Soc. Sci. 503 Introduction to Political Science	3
Speech 652 Business and Professional Speech	3
	14

FOURTH QUARTER	Hrs.
Econ. 602 Principles of Economics II	3
Health and Physical Education 590 Health Education	3
Mgt. 713 Report Writing	3
Acctg. 606 Elementary Accounting II	5
	14

SECOND YEAR

FIFTH QUARTER	Hrs.
Econ. 603 Principles of Economics III	3
Mgt. 715 Business Law I	4
Mktg. 720 Industrial Marketing	3
Acctg. 713 Basic Cost Accounting	3
	13

SIXTH QUARTER	Hrs.
Econ. 704 Economics and Social Statistics I	4
Mgt. 720 Business Finance	4
Mgt. 725 Fundamentals of Management	5
	13

*Special Studies 501 and 502 may also be required.

SEVENTH QUARTER	Hrs.
Mgt. 705 Principles of Transportation	4
Mgt. 722 Insurance Fundamentals (or) Mgt. 730 Investment Analysis	3
Elective (Mgt.)	3
Mgt. 750 Human Behavior in Organization	4
	14
Total Credit Hours	98-99*

COMMERCIAL ART TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Art 510 Color and Design	4
Art 601 Drawing	3
Soc. Sci. 501 Introduction to Social Science	3
	14

SECOND QUARTER	Hrs.
English 526 Communication II	4
Art 602 Drawing Techniques	3
Psych. 501 Introduction to Psychology	3
Art 623 Advertising Art I	3
Soc. Sci. 502 Introduction to Economics	3
	16

THIRD QUARTER	Hrs.
Adv. 627 Advertising Principles I	3
Art 611 Printmaking I	4
Art 624 Advertising Art II	3
Soc. Sci. 503 Introduction to Political Science	3
	13

FOURTH QUARTER	Hrs.
Art 705 Advanced Drawing	3
Art 625 Advertising Art III	3
Adv. 628 Advertising Principles II	3
Math. 502 Algebra II (or) Math. 531 Mathematics of Business	5
	14

SECOND YEAR

FIFTH QUARTER	Hrs.
Art 727 Advanced Advertising Art I	3
Adv. 629 Advertising Principles III	3
Art 716 Interior Design	3
Mktg. 624 Fundamentals of Marketing	5
	14

SIXTH QUARTER	Hrs.
Art 728 Advanced Advertising Art II	3
Adv. 725 Advertising Copywriting	4
Art 780 Photography I	4
Mktg. 625 Salesmanship	3
	14

*Special Studies 501 and 502 may also be required.

SEVENTH QUARTER	Hrs.
Art 729 Advanced Advertising Art III	3
Adv. 727 Advertising Layout	4
Health and Physical Education 590 Health Education	3
Elective (Non-Technical)	4
	14
Total Credit Hours	99*

GENERAL ADMINISTRATION TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Mgt. 511 Introduction to Business (or) Bus. Tech. 500 Survey of American Business	3-4
Soc. Sci. 501 Introduction to Social Science	3
Health and Physical Education 590 Health Education	3
	13-14

SECOND QUARTER	Hrs.
English 526 Communication II	4
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Economics	3
Geog. 519 Economic Geography	4
	14

THIRD QUARTER	Hrs.
Math. 502 Algebra II (or) Math. 531 Math. of Business	5
Mktg. 624 Fundamentals of Marketing	5
Soc. Sci. 503 Introduction to Political Science	3
Speech 652 Business and Professional Speech	3
	16

FOURTH QUARTER	Hrs.
Mktg. 625 Salesmanship	3
Mgt. 712 Business Letters	3
Econ. 500 Fundamentals of Economics	3
	9

SECOND YEAR

FIFTH QUARTER	Hrs.
Acctg. 605 Elementary Accounting I	5
Mgt. 715 Business Law I	4
Econ. 602 Principles of Economics II	3
Mgt. 713 Report Writing (or) Mgt. 740 Office Management and Methods	3
	15

SIXTH QUARTER	Hrs.
Acctg. 606 Elementary Accounting II	5
Mgt.. 725 Fundamentals of Management	5
Econ. 603 Principles of Economics III	3
Electives (Bus. Adm.)	3
	16

SEVENTH QUARTER	Hrs.
Mgt. 720 Business Finance	4
Mgt. 722 Insurance Fundamentals (or) Mgt. 724 Credit Management	3

*Special Studies 501 and 502 may also be required.

Mgt. 750 Human Behavior in Organization	4
Electives (Bus. Adm.)	3
	14
Total Credit Hours	97-98*

MARKETING TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Mgt. 511 Introduction to Business (or)	
Bus. Tech. 500 Survey of American Business	3-4
Math. 502 Algebra II (or)	
Math. 531 Math. of Business	5
	12-13

SECOND QUARTER	Hrs.
English 526 Communication II	4
Soc. Sci. 501 Introduction to Social Science	3
Geog. 519 Economic Geography	4
Health and Physical Education 590 Health Education	3
	14

THIRD QUARTER	Hrs.
Speech 652 Business and Professional Speech	3
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Psychology	3
Mktg. 624 Fundamentals of Marketing	5
	14

FOURTH QUARTER	Hrs.
Adv. 627 Advertising Principles I	3
Econ. 500 Fundamentals of Economics	3
Mktg. 625 Salesmanship	3
Soc. Sci. 503 Introduction to Political Science	3
	12

SECOND YEAR

FIFTH QUARTER	Hrs.
Acctg. 605 Elementary Accounting I	5
Econ. 602 Principles of Economics II	3
Adv. 628 Advertising Principles II	3
Bus. Tech. 635 Visual Presentation (or)	
Electives (Mktg.)	3
	14

SIXTH QUARTER	Hrs.
Acctg. 606 Elementary Accounting II	5
Adv. 629 Advertising Principles III	3
Econ. 603 Principles of Economics III	3
Mgt. 715 Business Law I	4
	15

SEVENTH QUARTER	Hrs.
Mktg. 709 Retail Marketing (or)	
Mktg. 720 Industrial Marketing	3
Mktg. 711 Management of Retail Buying	3
Mktg. 726 Effective Motivation	3

*Special Studies 501 and 502 may also be required.

Mktg. 731 Non-Textiles (or)	
Mktg. 733 Furnishings	3
Elective (Mktg.)	3
	15
Total Credit Hours	96-97*

PUBLIC ADMINISTRATION TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Mgt. 511 Introduction to Business (or)	
Bus. Tech. 500 Survey of American Business	3-4
Math. 502 Algebra II (or)	
Math. 531 Mathematics of Business (or)	
Math. 542 Special Topics of Algebra	5
Soc. Sci. 501 Introduction to Social Science	3
	15-16

SECOND QUARTER	Hrs.
English 526 Communication II	4
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Psychology	3
Geog. 519 Economic Geography	4
	14

THIRD QUARTER	Hrss.
Speech 652 Business and Professional Speech	3
Soc. Sci. 503 Introduction to Political Science	3
Mktg. 624 Fundamentals of Marketing	5
Econ. 500 Fundamentals of Economics	3
	14

FOURTH QUARTER	Hrs.
Econ. 602 Principles of Economics II	3
Pol. Sci. 600 Elements of Politics	3
Health and Physical Education 590 Health Education	3
Pol. Sci. 601 American National Government	4
	13

SECOND YEAR

FIFTH QUARTER	Hrs.
Acctg. 605 Elementary Accounting I	5
Econ. 603 Principles of Economics III	3
Pol. Sci. 704 American Political Parties	3
Pol. Sci. 722 State and Local Government	3
	14

SIXTH QUARTER	Hrs.
Acctg. 606 Elementary Accounting II	5
Mgt. 725 Fundamentals of Management	5
Mgt. 715 Business Law I	4
	14

SEVENTH QUARTER	Hrs.
Mgt. 720 Business Finance	4
Mgt. 750 Human Behavior in Organization	4
Pol. Sci. 720 Public Administration	3
Pol. Sci. 721 Urban Government	3
	14
Total Credit Hours	98-99*

*Special Studies 501 and 502 may also be required.

TRANSPORTATION MANAGEMENT TECHNOLOGY

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Bus. Tech. 500 Survey of American Business (or) Bus. Tech. 501 Introduction to Transportation	4
Math. 502 Algebra II (or) Math. 542 Special Topics of Algebra	5
Soc. Sci. 501 Introduction to Social Science	3
	16

SECOND QUARTER	Hrs.
English 526 Communication II	4
Mgt. 605 Transportation Rates I†	3
Soc. Sci. 502 Introduction to Economics	3
Psych. 501 Introduction to Psychology	3
	13

THIRD QUARTER	Hrs.
Speech 652 Business and Professional Speech	3
Soc. Sci. 503 Introduction to Political Science	3
Mgt. 606 Transportation Rates II†	3
Health and Physical Education 590 Health Education	3
Econ. 500 Fundamentals of Economics	3
	15

FOURTH QUARTER	Hrs.
Acctg. 605 Elementary Accounting I	5
Mktg. 624 Fundamentals of Marketing	5
Econ. 602 Principles of Economics II	3
	13

FIFTH QUARTER	Hrs.
Acctg. 606 Elementary Accounting II	5
Mgt. 715 Business Law I	4
Mgt. 712 Business Letters	3
Econ. 603 Principles of Economics III	3
	15

SIXTH QUARTER	Hrs.
Mgt. 705 Principles of Transportation	4
Mgt. 725 Fundamentals of Management	5
Econ. 704 Economics and Social Statistics I	4
	13

SEVENTH QUARTER	Hrs.
Mgt. 707 Commercial Motor Transportation	5
Mgt. 746 Industrial Traffic Management	3
Mgt. 750 Human Behavior in Organization	4
Elective (Bus. Adm.)	3
	15

Total Credit Hours.....100*

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, 712, and 810; Adv. P.R. 753, 755, 757, and 810; Mgt. 716, 705, 712, 717, 720, 724, 750, and 804.

†Offered winter and spring quarters ONLY.

*Special Studies 501 and 502 may also be required.

CONTINUING EDUCATION

Associate Professor Looby (chairman); Instructor Huntley.

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.

The Department of Continuing Education was established to make available to the citizens of Northeastern Ohio the various resources of the University. Its function is seen as an integral part of Youngstown State University's effort to serve the educational needs of the adults in this geographical area.

The goal of the department is to serve the citizens of Northeastern Ohio by providing adult educational programs which would otherwise not be available. The department is concerned with organizing and administering credit and college-level non-credit courses. It also provides such activities as workshops, conferences, seminars, and community lecture series. These programs are intended to make it possible for adults to advance in their profession, to become better citizens, and to pursue their own educational objectives and intellectual interests. Transcripts are not required for admission into the non-credit programs.

New courses and programs are constantly being considered, and individuals or groups are encouraged to call the Department of Continuing Education to request specific courses.

CRIMINAL JUSTICE

Associate Professors J. Foster (chairman) and Sumpter; Assistant Professors Boland, Cress, DeGarmo, I. Domonkos, Lateef, Semberger, 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.

Associate in Applied Science Degree

The *police science technology* program is considered appropriate training for persons preparing for employment in most municipal, state, private, and some federal law enforcement agencies. The program consists of 94 quarter hours, 44 quarter hours of which are in the 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 police science technology curriculum is given below.

Bachelor of Science Degree

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, or as instructors in police education programs. The program in *corrections* is offered for students preparing for a career in probation, parole, or institutional services with either adults or juveniles.

All Bachelor of Science students are required to complete a minimum of 45 quarter hours of criminal justice courses, of which 20 quarter hours or more must be from the Upper Division courses listed below. The students must also meet the general degree requirements for the Bachelor of Science degree as specified elsewhere in the Bulletin. Requirements for each program are as follows:

Department Core Requirements: 501, 605, 630, 735 or 736, 825.

Additional courses required for those majoring in *law enforcement administration:* 613, 613L, 614, 614L.

Additional courses required for those majoring in *corrections:* 701, 702, 703, 705, 706.

Additional courses may be elected by all majors within the department upon approval of the student's advisor.

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. (F,W,Sp,Su) 4 q.h.

605. *Criminal Justice.* An overview of the American criminal justice process with special emphasis upon the nature of the criminal law, constitutional limits upon police power, the trial process, and sentencing structure. (F,W,Sp,Su) 4 q.h.

613. *Criminal Investigation.* A general introduction to methods of criminal investigation and crime scene search; interviewing of suspects, victims and witnesses; sources of information; presentation of evidence in court. Prereq.: 10 q.h. criminal justice classes. (F,W,Sp) 4 q.h.

613L. *Criminal Investigation Practicum.* Demonstrations of the use of technical investigative aids, latent print techniques, photography, ballistics, plaster casting, and the polygraph. Prereq.: Must be taken concurrently with 613. (F,W,Sp) 1 q.h.

614. *Criminal Identification.* An introduction to the available means of identifying criminals through trace evidence with stress on the proper techniques for collection and preservation of trace evidence for crime laboratory analysis. Prereq.: 613. (F,W,Sp) 3 q.h.

614L. *Criminal Identification Lab.* Laboratory demonstrations of trace evidence analysis involving body fluids, elementary toxicology, dangerous drugs, hairs and fibers, handwriting, and number restoration. Intended to acquaint students with crime laboratory procedures. Prereq.: Must be taken concurrently with 614. (F,W,Sp) 2 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.: 605. (F,W,Sp) 4 q.h.

621. *Evidence.* 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.: 605. (F,W,Sp) 4 q.h.

630. *Criminology.* Crime statistics; ecological, cultural, and social patterns of criminal behavior; methods of treatment including probation and parole; crime prevention. (F,W,Sp,Su) 4 q.h.

645. *Police Skills.* Practice and theory of the use of technical equipment in law enforcement; firearm 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; 2 hours lecture, 2 hours laboratory per week. Prereq.: 10 q.h. Criminal Justice classes. (F,Sp,Su) 3 q.h.

651. *Traffic Law & Control.* A study of the traffic laws of the various states with emphasis upon the laws of Ohio and adjacent states; the engineering and mechanical features of traffic control with emphasis on techniques of traffic control; traffic control in emergencies; area and point control; congestion relief; enforcement philosophy. (F,W,Sp) 4 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 investigation; civil aspects in police accident investigations. (F,W,Sp) 3 q.h.

665. *Human Relations in Criminal Justice.* Methods of coping with conflicts arising out of intervention for law violations; improvement of understanding of public reactions to enforcement of law; methods of helping people in conflict with each other; and programs for improving interpersonal relationships between police and the people they serve. Three hours of lecture and 3 hours of practicum per week. Prereq.: Sociology 600 and Psych. 501 or 601. (F,W,Sp) 4 q.h.

670. *Community Intervention Resources.* Community based resources which are designed to prevent, control, or rehabilitate the delinquent or adult offender. Prereq.: Criminal Justice 630. (F,W,Sp) 4 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. (F,Su) 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. (Sp) 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 3 hours of practicum per week. Prereq.: Junior standing. (W) 4 q.h.

705, 706. *Correctional Internship.* Observational and participatory experiences in correctional agencies under the direction of experienced and qualified correctional personnel. The student will spend eight hours weekly in the agency. In addition attendance at a two-hour weekly seminar is required. Prereq.: Permission of instructor. (F,Sp) 5+5 q.h.

710. *Social Statistics I.* Identical with Sociology 701. 4 q.h.

711. *Social Statistics II.* Identical with Sociology 702. 4 q.h.

712. *Social Research.* Identical with Sociology 751. 4 q.h.

735. *Juvenile Delinquency.* Social and psychological factors underlying delinquency; the juvenile court and probation; treatment and preventive measures. Prereq.: Sociology 600. (F,W,Sp,Su) 4 q.h.

736. *Criminological Theory.* The psychological and social factors underlying crime, criminal behavior, and prevention. Prereq.: Sociology 600 and Psychology 601 or 501. (F,W,Sp,Su) 4 q.h.

748. *Commercial and Industrial Security.* Plant protection and industrial security; merchandising safety and security; credit and insurance investigative procedures. (W,Sp) 3 q.h.

750. *Operational Intelligence.* Concepts and theory of intelligence functions in law enforcement; constitutional restrictions on intelligence-gathering devices; administration of intelligence operations. Prereq.: Criminal Justice 613. (F,Sp) 4 q.h.

770. *Municipal Police Administration.* Detailed examination of police organization and management; tactics and budgeting, supervision, record systems; discipline, promotion, communications, public relations. Prereq.: 501. (F,Sp) 4 q.h.

775. *Contemporary Problems in Criminal Justice.* Lectures on selected topics dealing with contemporary issues in the criminal justice area. Specific topics will be announced prior to enrollment. Prereq.: Senior standing and permission of instructor. (F,Sp) 4 q.h.

776. *American Judicial Process.* Identical with Political Science 702. 3 q.h.

777. *American Constitutional Law.* Identical with Political Science 703. 3 q.h.

800. *Readings 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. (W) 4 q.h.

810. *Readings 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.: 735, 736 and senior standing. (F) 4 q.h.

815. *Police Management Concepts.* Modern police management theory; an analysis of organization development, systems management, executive decision making, organizational behavior, supervision problems, and the role of technology in law enforcement administration. Prereq.: 770. (Sp) 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.: 735, 736. (Sp) 4 q.h.

825. *Constitutional Issues in Criminal Law.* Examination in depth of the constitutional foundations of the American criminal justice process with special emphasis upon recent Supreme Court decisions, state and federal legislation affecting criminal law. (W) 4 q.h.

POLICE SCIENCE TECHNOLOGY CURRICULUM

DEPARTMENTAL REQUIREMENTS	Q.H.
501 Intro to Law Enforcement	4
605 Criminal Justice	4
613 Criminal Investigation (P)	4
613L Practicum (P)	1
614 Criminal Identification (P)	3
614L Laboratory (P)	2
620 Criminal Procedure (P)	4
621 Evidence (P)	4
630 Criminology	4
665 Human Relations in Criminal Justice	4
Electives in Criminal Justice	10

GENERAL DEGREE REQUIREMENTS	Q.H.
English:	
525 Communication I	4
526 Communication II (P)	4
Health and Physical Education:	
509 Health Education	3
601 Safety and First Aid	3
Social Studies:	
Electives in two or more of the following departments: Economics, Geography, History, Political Science (including the Social Science sequence courses), Psychology, Sociology, and Black Studies	16
Science:	
Astronomy, Biology, Chemistry, Geology or Physics	8
Other:	
SS & BE 500 Typing for Beginners	3
Electives	9

ENGINEERING TECHNOLOGY

Professor Richley (chairman); Associate Professor Crum; Assistant Professors Barsch, Chrobak, Gardner, Herndon, and Terlecki; Instructor Ciminero.

Education in engineering technology is a planned sequence of classroom and laboratory experiences designed to prepare graduates for a cluster of job opportunities in specialized fields of technology. The programs include the study of the underlying sciences and supporting mathematics inherent in a technology; and of the methods, skills, materials, and processes commonly used and services performed in that technology.

The Associate in Applied Science degree is awarded to graduates of the programs following.

CIVIL ENGINEERING TECHNOLOGY

Associate Professor Crum (supervisor).

The Civil Engineering Technology Program prepares technicians to support civil engineers in structural design, public works, construction, transportation and environmental engineering. Most graduates are hired by local, state, and federal governments, consulting engineers, and contractors.

604. *Properties and Strength of Materials.* Introduction to the physical and chemical structures of materials and their relationship to the behavior of materials under load.

Introduction to the concepts of stress and strain. Instruction in use and care of testing equipment and standard tests. Methods of data retrieval and reduction and report preparation. Three hours of lecture, three hours of laboratory per week. Prereq.: Chem. 501, MET 516 (or concurrently). (F,Sp) 4 q.h.

607. *Solid Mechanics.* Elementary theory in resistance of solids to external loading. Relationships among load, deformation, stress and strain in tension, compression, torsion, and bending. Physical demonstration and verification of theories. Prereq.: CET 604. (F,W) 4 q.h.

610. *Structural Analysis.* Fundamental and systematic determination of loads and deflections in beams, frames, trusses, and arches. Influence diagrams. Energy relations in structural systems. Practice in analysis of existing structures in area. Prereq.: CET 607. (W) 4 q.h.

612. *Structural Design and Drafting.* Design methods in wood, concrete, and steel. Familiarization with AISC, ACI, CRSI, SJI, and other national and local codes. Selection of members and connections in accordance with specifications. Drafting of simple members, connections, elementary, and more complex structures. Design and drafting thesis required. Two hours lecture, four hours laboratory per week. Prereq.: CET 610. (Sp) 4 q.h.

615. *Soil Mechanics.* Study of the properties of soils, soil classification, soil strength, bearing capacity, consolidation, and compressibility. Seepage and frost action. Principles and procedures of soil testing. Laboratory practice in soil identification and soil properties. Three hours lecture, three hours laboratory per week. Prereq.: CET 604. (W) 4 q.h.

617. *Construction Methods and Materials.* Methods and planning of construction, estimating, and scheduling materials, equipment, and labor. Understanding steel, wood, concrete, asphalt, and composites as construction materials. Laboratory demonstrations of development and testing of individual construction materials and structural composites as roofing, insulation, masonry, etc. Familiarization with building codes. Relationship between architect and engineer. Three hours lecture, three hours laboratory per week. Prereq.: CET 604. (F) 4 q.h.

622. *Advanced Surveying.* Precise surveying instruments and practice. Land and city surveying. Plane coordinate systems in cadastral surveying. Topographic mapping. Prereq.: CE 710. 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.

624. *Environmental Analysis.* Introduction to analysis of problems in public works such as water supply, waste management, utility services, land planning, and traffic control. Emphasis is placed on development of the ability to apply mechanics, graphics, and measurements skills to problems in the aforementioned areas. Prereq.: Chem. 501, CET 615, CE 710. (Sp) 4 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Math. 502 Algebra II	5
English 525 Communication I	4
ME 500 Drawing Fund*	3
Chem. 501 Survey of Chemistry	4
	16

SECOND QUARTER	Hrs.
Math. 503 Trigonometry	5
English 526 Communication II	4
ME 501 Eng. Drawing	3
MET 515 Mechanics I	4
	16

THIRD QUARTER	Hrs.
Math. 550 Intro. to Calculus	5
Soc. Sci. 501 Intro. to Soc. Sci.	3
MET 516 Mechanics II	4
CET 604 Properties and Strength of Materials	4
	16

SECOND YEAR

FOURTH QUARTER	Hrs.
MET 615 Fluid Mechanics	4
CET 607 Solid Mechanics	4
CET 617 Construction Methods and Materials	4
CE 710 Surveying I	5
	17

FIFTH QUARTER	Hrs.
Soc. Sci. 502 Intro. to Econ.	3
CET 610 Structural Analysis	4
CET 615 Soil Mechanics	4

*Students with one or more years of high school drafting or the equivalent in industrial experience must replace ME 500 with a technical elective suitable to both the student and his advisor.

Physics 502 Fund. of Physics	3
Physics 502L Fund. of Physics Lab.	1
Health and Physical Education 590 Health Education	3
	18

SIXTH QUARTER	Hrs.
Soc. Sci. 503 Intro. to Pol. Sci.	3
CET 612 Structural Design and Drafting	4
CET 624 Environmental Analysis	4
CE 711 Surveying II	4
	15
Total Credit Hours	98

COMPUTER TECHNOLOGY

Assistant Professors Chrobak (supervisor) and Herndon; Instructor Ciminero.

The Computer Technology Program produces a technician skilled to meet the needs of the electronic data-processing industry. Most graduates are employed as programmers, associate analysts, or associate operators in industries related to business or science.

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. (F,W) 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. (W) 3 q.h.

601. *Scientific Programming I.* An introductory course in computer programming using the science-oriented language known as FORTRAN. Applications of FORTRAN to fundamental problems in science, engineering, and business. Three hours of lecture and three hours of programming laboratory per week. Prereq.: Math 502 or consent of instructor. (F,W,Sp) 4 q.h.

602. *Scientific Programming II.* A continuation of CPT 601 stressing the application of FORTRAN to advanced problems in science, engineering, and business. Fundamental numerical techniques applied to problem solving. Three hours of lecture and three hours of programming laboratory per week. Prereq.: CPT 601, Math. 550 or consent of instructor. (W) 4 q.h.

603. *Scientific Programming III.* A continuation of CPT 602 stressing the application of FORTRAN to higher level problems in science and engineering. Three hours lecture and three hours of programming laboratory per week. Prereq.: CPT 602 or consent of instructor. 4 q.h.

607. *Business Programming I.* An introductory course in computer programming using the business-oriented language known as COBOL. The history of languages, flow charting, and the use of COBOL in basic commercial applications. Three hours of lecture and three hours of programming laboratory per week. Prereq.: 502 or consent of instructor. (F,W,Sp) 4 q.h.

608. *Business Programming II.* The application of COBOL to the solution of advanced problems in business. Techniques of programming using mass storage devices. Three hours of lecture and three hours of programming laboratory per week. Prereq.: CPT 607 or consent of instructor. (F) 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 607. (W) 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. (W) 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. 605, CPT 611. (Sp) 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. (Sp) 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, ac-

counts payable, budget control, inventory control, production control, etc. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 614. (Sp) 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. (Sp) 4 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Math. 502 Algebra II	5
English 525 Communication I	4
CPT 501 Data Processing Concepts	4
Health and Physical Education 590 Health Education	3
	16

SECOND QUARTER	Hrs.
Math. 503 Trigonometry	5
English 526 Communication II	4
Soc. Sci. 501 Introduction to Social Science	3
CPT 502 Computer Concepts	3
	15

THIRD QUARTER	Hrs.
Math. 550 Intro. to Calculus	5
Acctg. 605 Elem. Acctg. I	5
Soc. Sci. 502 Intro. to Econ.	3
CPT 607 Bus. Prog. I	4
	17

SECOND YEAR

FOURTH QUARTER	Hrs.
Physics 501 Fund. of Physics	4
Elective	4
CPT 601 Scientific Prog. I	4
CPT 608 Bus. Prog. II	4
	16

FIFTH QUARTER	Hrs.
CPT 611 Prog.-S/360 Assembler	4
CPT 602 Scientific Prog. II	4
CPT 612 Programming-PL/I	4
Physics 502 Fund. of Physics	3
	15

SIXTH QUARTER	Hrs.
Soc. Sci. 503 Intro. to Pol. Sci.	3
CPT 614 Bus. Systems and Prog.	3
CPT 616 Operating Systems	3
CPT 618 Data Processing Application	4
CPT 620 Data Processing Supervision	4
	17
Total Credit Hours	96

ELECTRICAL ENGINEERING TECHNOLOGY

Professor Richley; Assistant Professor Gardner (supervisor).

The Electrical Engineering Technology Program prepares its graduates to support electrical engineers in the design, analysis, and laboratory testing of electrical and electronic systems and of rotating machinery. Most graduates are employed by electrical and electronic equipment manufacturers, utility companies, the aerospace industry, and by manufacturing companies in general.

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, Chem. 501. Concurrent: Math. 503. (W,Sp) 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. (W,Sp) 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. (F,Sp) 3 q.h.

502L. *Circuit Theory II Laboratory.* Experiments on the measurement 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. (F,Sp) 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. (F,W) 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. (F,W) 1 q.h.

600. *Measurements.* Error and 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. (F) 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. (F) 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. (F) 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. (F) 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. (W) 3 q.h.

606L. *Electronics II Laboratory.* Experiments on vacuum tube amplifiers; transistor amplifiers; R-C coupled amplifiers; power ampliers; magnetic amplifiers. Three hours of laboratory per week. Taken concurrently with EET 606. (W) 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. (Sp) 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. (Sp) 1 q.h.

609. *Analog Computers.* Theory and operation of the analog computer. Emphasis is placed on operation and usage rather than design. Six hours of lecture and/or laboratory per week. Concurrent: EET 606. (W) 4 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. (W) 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. (W) 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. (Sp) 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. (Sp) 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. (Sp) 3 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Math. 502 Algebra II	5
Chem. 501 Survey of Chem.	4
English 525 Communication I	4
ME 500 Dwg. Fundamentals	3
	16

SECOND QUARTER	Hrs.
Math. 503 Trigonometry	5
English 526 Communication II	4
Health and Physical Education 590 Health Education	3
EET 501 Circuit Theory I	3
EET 501L Circuit Theory I Laboratory	1
	16

THIRD QUARTER	Hrs.
Math. 550 Intro. to Calculus	5
CPT 601 Scientific Prog. I	4
Physics 501 Fund. of Physics	4
EET 502 Circuit Theory II	3
EET 502L Circuit Theory II Laboratory	1
	17

SECOND YEAR

FOURTH QUARTER	Hrs.
Soc. Sci. 501 Intro. to Soc. Sci.	3
EET 503 Circuit Theory III	3
EET 503L Circuit Theory III Lab.	1
EET 600 Measurements	3
EET 600L Measurements Lab.	1
EET 605 Electronics I	3
EET 605L Electronics I Lab.	1
	15

FIFTH QUARTER	Hrs.
Soc. Sci. 502 Intro. to Econ.	3
EET 606 Electronics II	3
EET 606L Electronics II Lab.	1
EET 609 Analog Computer	4
EET 610 Direct Current Machines	3
EET 610L Direct Current Mach. Lab.	1
	15

SIXTH QUARTER	Hrs.
Physics 503 Fund. of Physics	3
Soc. Sci. 503 Intro. to Pol. Sci.	3
EET 607 Electronics III	3
EET 607L Electronics III Lab.	1
EET 611 Alternating Current Mach.	3
EET 611L Alternating Current Mach. Lab.	1
EET 614 Industrial Controls	3
	17
Total Credit Hours	96

MECHANICAL ENGINEERING TECHNOLOGY

Assistant Professor Barsch (supervisor).

The Mechanical Engineering Technology Program prepares its graduates to support mechanical engineers in various industrial activities including drafting, design, and production. Graduates are sought by local industries engaged in the production of heavy equipment and consumer products.

515. *Mechanics I.* Study of forces as vector quantities; resultant of force systems; principles of mechanical equilibrium; application of basic principles to problems involving trusses, frames, machine elements; friction, internal forces, and fluid statics. Concurrent: Math. 503. (W) 4 q.h.

516. *Mechanics II.* Continuation of MET 515 with applications of basic principles of statics, introduction to dynamics of solids and fluids, study of various types of motion, Newton's second law, concept of work and energy, impulse and momentum, vibrations. Prereq.: MET 515. (Sp) 4 q.h.

550. *Advanced Drawing.* An advanced course devoted to the development of drafting proficiency and drawing interpretation abilities. Three hours lecture, three hours laboratory per week. Prereq.: ME 501. (W) 4 q.h.

605. *Thermodynamics.* Fundamental concepts and definitions, first law of thermodynamics, physical properties, ideal and real gases, second law of thermodynamics, application to thermodynamic cycles involving power plants and cyclic machinery. Three hours lecture, three hours laboratory per week. Prereq.: Math. 550. (W) 4 q.h.

606. *Machine Design I.* Study and design of machine elements such as bolts, screws, shafting, and welded connections. Three hours lecture, three hours laboratory per week. Prereq.: CET 607. (W) 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. (Sp) 4 q.h.

610. *Mechanical Equipment.* The study of common mechanical equipment such as refrigerators, pumps, internal combustion engines, and vibration equipment. Prereq.: CET 607, MET 605, MET 615. (Sp) 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. (Sp) 1 q.h.

615. *Fluid Mechanics.* Fundamental concepts, fluid statics, a study of the basic laws of fluid mechanics and their application to incompressible flow in pipes and channels, dimensional analysis, fluid measurements. Three hours lecture, three hours laboratory per week. Prereq.: MET 516. (F) 4 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.: MET 630. (Sp) 3 q.h.

630. *Manufacturing Techniques.* Manufacturing methods, processes, tooling, and equipment. Topics include casting, machine operations, and machine tools, welding, production machining. Prereq.: CET 604. (F) 4 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Math. 502 Algebra II	5
English 525 Communication I	4
ME 500 Engineering Dwg.*	3
Chem. 501 Survey of Chem.	4
	16

SECOND QUARTER	Hrs.
Math. 503 Trigonometry	5
English 526 Communication II	4
ME 501 Engineering Dwg.	3
MET 515 Mechanics I	4
	16

THIRD QUARTER	Hrs.
Math. 550 Intro. to Calc.	5
Soc. Sci. 501 Intro. to Soc. Sci.	3
MET 516 Mechanics II	4
CET 604 Prop./Stgth. of Matls.	4
	16

SECOND YEAR

FOURTH QUARTER	Hrs.
MET 630 Manufacturing Techniques	4
MET 615 Fluid Mechanics	4
CET 607 Solid Mechanics	4
Soc. Sci. 502 Intro. to Econ.	3
	15

FIFTH QUARTER	Hrs.
MET 605 Thermodynamics	4
MET 606 Machine Design I	4
Physics 502 Fund. of Physics	3
Physics 502L Fund. of Phy. Lab.	1
MET 550 Advanced Drawing	4
	16

SIXTH QUARTER	Hrs.
MET 610 Mechanical Equipment	3
MET 610L Mech. Equip. Lab.	1
MET 607 Machine Design II	4
MET 620 Tool Design	3
Soc. Sci. 503 Intro. to Pol. Sci.	3
Health and Physical Education 590 Health Education	3
	17
Total Credit Hours	96

*Students with one or more years of high school drafting or the equivalent in industrial experience must replace ME 500 with a technical elective suitable to both the student and his advisor.

METALLURGICAL ENGINEERING TECHNOLOGY

Assistant Professor Terlecki (supervisor).

The Metallurgical Engineering Technology program prepares technicians to support the technical needs of the metals industry in general with emphasis on steel making and fabricating. Graduates are employed by a spectrum of diversified manufacturers relating to the metals industry.

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. 501. (Sp) 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. 501. (F) 3 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. (F) 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 604, Physics 502. (Sp) 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. (Sp) 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. (F) 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. (F) 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. Three hours lecture and three hours of laboratory per week. Prereq.: MTT 604. (W) 4 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. Three hours lecture and three hours laboratory per week. Prereq.: MMT 606. (Sp) 4 q.h.

610. *Metallurgy of Iron and Steel.* Manufacturing process of iron and steel; open hearth process; blast furnace process; rolling mills (semi-finish and finish mills); electric furnace steel making; L & D (Basic oxygen process) B.O.P. and customer specifications and applications. Three hours lecture and three hours laboratory per week. Prereq.: Chem. 502, MTT 500. (W) 4 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Math. 502 Algebra II	5
Chem. 501 Survey of Chemistry	4
English 525 Communication I	4
ME 500 Dwg. Fundamentals	3
	16

SECOND QUARTER	Hrs.
Math. 503 Trigonometry	5
Chem. 502 Survey of Chemistry	4
English 526 Communication II	4
Physics 501 Fund. of Physics	4
	17

THIRD QUARTER	Hrs.
Math. 550 Intro. to Calculus	5
CET 604 Prop./Str. of Mat'l	4
Physics 502 Fund. of Physics	3
Physics 502L Fund. of Physics Laboratory	1
MTT 500 Intro. to Metallurgy	3
	16

SECOND YEAR

FOURTH QUARTER	Hrs.
Soc. Sci. 501 Intro. to Soc. Sci.	3
CET 607 Solid Mechanics	4
MTT 604 Physical Met. (Adap. I)	3
MTT 604L Physical Met. (Adap. I) Lab.	1
MTT 501 Foundry and Metal Casting	3
MTT 501L Foundry and Metal Casting Lab.	1
	15

FIFTH QUARTER	Hrs.
Soc. Sci. 502 Intro. to Econ.	3
MTT 606 Physical Met. (Adap. II)	4
MTT 610 Metallurgy of Iron and Stl.	4
CPT 601 Scientific Prog. I	4
	15

SIXTH QUARTER	Hrs.
Soc. Sci. 503 Intro. to Pol. Sci.	3
MTT 608 Phys. Met. (Adap. III)	4
MTT 602 Non-Destructive Inspect	3
MTT 602L Non-Des. Inspect Lab.	1
Health and Physical Education 590 Health Education	3
Physics 503 Fund. of Physics	3
Physics 503L Fund. of Physics Lab.	1
	18
Total Credit Hours	97

HOME ECONOMICS

Associate Professors Hakojarvi (chairman), Feldmiller, and McMillan.

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.

There are four academic programs in home economics; two-year programs in child care technology and food service technology leading to the degree Associate in Applied Science; and four-year programs in home economics leading to the degree Bachelor of Science or Bachelor of Science in Education (in cooperation with the School of Education).

The Child Care Technology Program is designed to prepare the student for work

in nursery schools and day care centers. The program consists of 96 quarter hours with a suggested curriculum given at the end of this section.

The Food Service Technology Program is designed to prepare the student for work in the dietary departments of hospitals and nursing homes and in commercial food service systems. The program consists of 95 quarter hours with a suggested curriculum at the end of this section.

Students working toward a baccalaureate degree have three options. They may earn the Bachelor of Science degree with a major in home economics by meeting the general requirements for that degree and completing the following courses:

Biology 551, 552, 604.

Chemistry 501, 502, 503.

Home Economics 503, 550, 551, 551L, 601, 604, 652, 701, 705, 706, 707, 762, 763, 770, 850, 852.

Or those students interested in dietetics and nutrition may meet the general requirements for the degree and complete the following courses:

Biology 551, 552, 604.

Chemistry 501, 502, 503, 517, 705, 719, 720.

Home Economics 550, 551, 551L, 601, 652, 759, 760, 770, 809, 810, 850, 857, 861.

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 offered by the School of 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 503, 550, 551, 551L, 601, 604, 652, 701, 705, 706, 707, 762, 763, 770, 800, 850, 852.

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.

Lower Division Courses

502. *Applied Nutrition.* Study of basic nutrition focusing on the nutritive needs of the individual or family group. Open only to non-majors. Prereq.: Consent of instructor. (W,Sp) 4 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. (F) 5 q.h.

505. *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 four hours of laboratory per week. (W) 4 q.h.

550. *Orientation to Home Economics.* Introduction to content, opportunities, and various points of view about home economics. Current readings and occasional field trips will implement the course. (F) 1 q.h.

551. *Food and Nutrition.* The fundamentals of human nutrition as they apply to normal requirements. Study of the body's need for essential nutrients, the contribution of various food groups, the selection of an adequate diet, and the importance of diet in achieving and maintaining optimum health. (F,W,Sp) 4 q.h.

551L. *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 551. (F,W) 1 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 551 and 551L. (F,W) 5 q.h.

603. *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 two hours of laboratory per week. Prereq.: Home Economics 551. (F) 4 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. (W) 4 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. (W) 9 q.h.

609. *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 two hours of laboratory per week. (Sp) 4 q.h.

610. *Organization and Management.* 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. Three hours of lecture and two hours of laboratory per week. (F) 4 q.h.

611. *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. Two hours of lecture and four hours of laboratory per week. (F) 4 q.h.

612. *Child Care I.* The child, the home, and the day care center. A study of the day care center and how each aspect of its program relates to family relationships and the development of the child. Prereq.: Permission of chairman. (F'72) 4 q.h.

613. *Child Care II.* The philosophy and the organization of a total day care center to include management, program scheduling, and methods of material presentation. Prereq.: Home Economics 612. (W'73) 4 q.h.

614. *Child Care III.* Supervised participation in all phases of operation and functioning in day care center programs. One hour of lecture and discussion and six hours of laboratory per week. Prereq.: Home Economics 613. (Sp'73) 4 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. (Sp) 2 q.h.

652. *Family Meal Planning and Serving.* Principles of menu planning for the family and other groups with emphasis on adaptation to various economic levels of expenditure. Prereq.: Home Economics 601. (W,Sp) 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. (Sp) 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 lectures and two two-hour laboratory periods a week. Prereq.: Home Economics 604 and 701. (Sp alternate years) 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. (W alternate years) 4 q.h.

705. *Child Psychology.* Identical with Psychology 755 except for the addition of directed observation. Home Economics 706 taken concurrently. (F,W,Sp) 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. (F,W,Sp) 2 q.h.

707. *Psychology of Marriage and Family Relations.* Identical with Psychology 707. (F,W,Sp) 3 q.h.

759. *Normal Nutrition.* Designed to broaden and extend the student's knowledge of the science of nutrition, with special emphasis on food nutrients, the metabolism

of food, and recent advances in the field of nutrition. Prereq.: Biology 552, Chemistry 720,Home Economics 652. (F) 4 q.h.

760. *Diet Therapy.* The modifications and adaptations of normal diets to meet the special needs in abnormal conditions where choice of food is of particular importance. Prereq.: Home Economics 759. (W) 4 q.h.

762. *Housing I: Furnishings.* The fundamentals 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. Three lecture hours and one two-hour laboratory period a week. (F) 4 q.h.

763. *Housing II: Equipment.* The selection, care, and use of various items of household equipment, with comparison of the merits of different types in respect to materials, design, cost, and performance. Three lecture hours and one two-hour laboratory period a week. (W) 4 q.h.

770. *Activity Analysis.* Task analysis of work done in homes and institutions. Three lecture hours and one two-hour laboratory period per week. Prereq.: Consent of instructor. (Sp) 4 q.h.

771. *Demonstration Techniques.* Techniques and practice in presentations related to various areas in home economics. Two lecture hours and two two-hour laboratory periods a week. Prereq.: Home Economics 601. (W) 4 q.h.

772. *Child Nutrition.* A study of nutritional requirements from the time of conception through the adolescent years. Prereq.: Consent of instructor. (W) 3 q.h.

773, 774, 775. *Problems in Child Nutrition.* Each course may be taken concurrently with or following Home Economics 772. Each student electing the course will plan and conduct a term project related to a problem of child nutrition. Prereq.: Consent of instructor. (F,W,Sp) 1+1+1 q.h.

780. *Consumer Economics.* Emphasis on becoming informed and effective consumers. Current consumer issues and sources of information for consumers. Four lecture hours a week. 4 q.h.

800. *Methods of Teaching Home Economics.* A study of the problems involved in teaching general and vocational home economics in schools. Observation of home economics classes. Prereq.: Ed. 706 and 15 hours credit in home economics. (Sp) 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. (W) 3 q.h.

810. *Experimental Cookery.* Application of scientific principles and experimental procedures to cooking processes. Two two-hour laboratory periods a week. Prereq.: Chemistry 720 and Home Economics 602. (Sp) 3 q.h.

850. *Seminar in Home Economics.* Required of all seniors majoring in home economics. Prereq.: Senior standing and consent of faculty. (W) 2 q.h.

852. *Home Management.* Study of the home, its functions and operation, and resources recognized by the family. Three lecture hours and one two-hour laboratory period a week. Prereq.: Home Economics 770. (W) 4 q.h.

857. *Institutional Management II.* The selection of equipment for institutional food service with consideration of need, quality, cost, and trends in the market. The selection and purchase of food for institutional food service with consideration of quality, cost, and marketing practices. Prereq.: Junior or senior standing with consent of instructor. (Sp) 4 q.h.

861. *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. Laboratory may be concluded off campus. Prereq.: Consent of instructor. (F) 4 q.h.

CHILD CARE TECHNOLOGY CURRICULUM

FIRST YEAR

FIRST QUARTER	Hrs.
Eng. 525 Communication I	4
Biol. 551 Anatomy and Physiology of Man	4
Home Ec. 551 Food and Nutrition	4
Home Ec. 551L Food and Nutrition Laboratory	1
Psych. 501 Introduction to Psychology	3
	16

SECOND QUARTER	Hrs.
Biol. 552 Anatomy and Physiology of Man	4
English 526 Communication II	4
Soc. Sci. 501 Introduction to Social Science	3
BE & SS 520 Typewriting I	2
Psych. 707 Marriage and Family Relations	3
	16

THIRD QUARTER	Hrs.
English 527 Communication III	4
Health and Physical Education 590 Health Education	3
Home Ec. 706 Child Development Laboratory	2
Mus. Ed. 521 Introduction to Music Fundamentals	3
Psych. 755 Developmental Psychology I (Child)	4
	16

SECOND YEAR

FOURTH QUARTER	Hrs.
Art 607 Introduction to Art, Art Education	2
Home Ec. 603 Nutrition	4
H&PE 721 Health Education in Elem. Schools	3
Home Ec. 612 Child Care I	4
Educ. 630 Pre-School Curriculum	3
	16

FIFTH QUARTER	Hrs.
Spec. Stu. 529 Instructional Media	4
Speech 728 Speech Problems for the Classroom Teacher	3
Home Ec. 613 Child Care II	4
Soc. 600 Principles of Sociology	5
	16

SIXTH QUARTER	Hrs.
H&PE 722C Phy. Ed. for Elementary Grades	3
Home Ec. 614 Child Care III	4
Elective (Technical)	4
Soc. 700 Minority Groups	5
	16
Total Credit Hours	96

SUGGESTED ELECTIVES

Art 722 Arts and Crafts I	3
Art 723 School Arts (Elementary)	2
BE & SS 521 Typewriting II	2
Bus. Tech. 500 Survey of Business	4
English 608 Children's Lit.	4
Phil. 500 Life's Ideals	4
Mus. Ed. 621 Music Literature and Appreciation	3
Soc. Sci. 502 Introduction to Economics	3
Soc. Sci. 503 Introduction to Political Science	3

FOOD SERVICE TECHNOLOGY CURRICULUM

FIRST YEAR

FIRST QUARTER	Hrs.
English 525 Communication I	4
Home Ec. 551 Food and Nutrition	4
Home Ec. 551L Food and Nutrition Laboratory	1
Chem. 501 Survey of Chemistry I	4
Health and Physical Education 590 Health Education	3
	16

SECOND QUARTER	Hrs.
English 526 Communication II	4
Home Ec. 601 Principles of Food Preparation	5
Home Ec. 505 Food Purchasing and Storage	4
Chem. 502 Survey of Chemistry II	4
	17

THIRD QUARTER	Hrs.
Home Ec. 652 Family Meal Planning and Serving	4
Biol. 560 Para-Medical Microbiology	5
Math. 531 Mathematics of Business	5
	14

SECOND YEAR

FOURTH QUARTER	Hrs.
Soc. Sci. 501 Introduction to Social Science	3
Home Ec. 603 Nutrition	4
Home Ec. 610 Organization and Management	4
Home Ec. 611 Quantity Foods	4
	15

FIFTH QUARTER	Hrs.
Soc. Sci. 502 Introduction to Economics	3
Home Ec. 607 Food Service Internship	9
Elective (Technical)	4
	16

SIXTH QUARTER	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
Acctg. 605 Elementary Accounting I	5
Home Ec. 650 Food Service Seminar	2
Home Ec. 609 Planning Food Service Systems	4
Electives (Non-Technical)	3
	17
Total Credit Hours	95

NURSING

Assistant Professors DeCapita (chairman), Engelhardt, and Goard; Instructors Erickson, Fitzgerald, Hetzel, Jeffrey, Kennedy, Scheetz, and Watts.

The Department of Nursing offers the two-year program leading to the Associate in Applied Science degree, and an Upper Division undergraduate curriculum leading to a Bachelor of Science degree. The Upper Division program is designed for graduates of the associate degree program in nursing.

Graduates of the two-year (associate degree) program will be eligible to take the Ohio Licensing Examination for registered nurses and will be prepared to serve as staff nurses in hospitals and clinics, as private duty nurses, and in doctors' offices. The program consists of 101 quarter hours, of which 51 quarter hours are Lower Division nursing courses.

The associate degree nursing program is approved by the Ohio State Board of Nursing Education and Nurse Registration and has membership in the Council of Associate Degree Programs of the National League of Nursing. 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. Students who have satisfactorily completed the associate degree program in nursing must obtain the registered nurse certificate prior to entering the Upper Division nursing courses.

Registered nurses who are graduates of approved diploma programs in nursing may gain advanced standing credit in the program through transfer of credit and/or credit by evaluation in accordance with the policies set forth by the University.

The Upper Division program in nursing is offered to registered nurses who are interested in (1) a liberal education, (2) preparation for beginning practice in first-level leadership positions in clinical and in community health nursing and (3) preparation for further study in nursing at the graduate level.

The baccalaureate nursing program consists of general and professional subjects taken concurrently with approximately equal apportionment of the 190 quarter hours of credit required. The following Upper Division nursing courses are required: 705, 706, 707, 805, 806, and 807. All general degree requirements except the foreign language and health and physical education must be met. Electives in foreign language and science may be advised for the nurse who wishes to pursue graduate and/or post-graduate study.

All agencies used for field instruction and for clinical practice are approved by appropriate accrediting bodies.

Lower Division Courses

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 significance 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.

505. *Nursing Care of Adults and Children I.* The major emphasis is upon the normal aspects of maternal and infant health guidance necessary during the developmental stages from birth through adolescence. Deviations from normal in the maternity cycle and in the newborn infant are presented. Clinical experience in the care of maternity patients and the newborn infant. Field trips to related agencies. Prereq.: Nursing 502 with a grade of *C* or better; Biol. 552. 8 q.h.

610. *Nursing Care of Adults and Children II.* 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. Learning experiences in both psychiatric and general hospitals are provided with concurrent academic content. Field trips to related agencies. Prereq.: Nursing 505 with a grade of *C* or better; Biol. 560. 10 q.h.

611. *Nursing Care of Adults and Children III.* Major health problems encountered by children and adults including the biological and psychosocial effects of illness. Experience in clinical nursing units. Field trips to related agencies. Prereq.: Nursing 610 with a grade of *C* or better; Chem. 502. 10 q.h.

612. *Nursing Care of Adults and Children IV.* Continuation of the study of major health problems encountered by children and adults including the biological and psychosocial effects of physical illness. Experience in clinical nursing units. Field trips to related agencies. Prereq.: Nursing 611 with a grade of *C* or better; Chem. 502; Chem. 503. 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 612 with a grade of *C* or better; Chem. 502; Chem. 503. 2 q.h.

Upper Division Courses

705. *Modern Issues in Nursing.* Current trends in nursing education and practices. Study of factors relevant to understanding the different philosophical approaches to nursing. Prereq.: Registered nurses only. 4 q.h.

706. *Family and Community Nursing I.* A study of factors that influence individual family, and community health. Focus on basic human needs with an introduction to the role of nursing and health agencies

in meeting these needs on an individual, family, and community basis. Use of appropriate community resources and agencies. Prereq.: Nursing 705. 4 q.h.

707. *Family and Community Nursing II.* Provides student laboratory experience in therapeutic nursing intervention for patient with complicated health problems, experience in community health agencies with emphasis on philosophy of positive health, and skills in preventive and promotional procedures. One hour conference, 8 hours laboratory per week. Prereq.: Nursing 706; Sociology 705. 4 q.h.

805. *Nursing Leadership I.* Principles of team nursing with emphasis on the nurse's responsibility in directing nursing personnel in patient care. Management principles or guides for action in beginning leadership positions in nursing. Prereq.: Nursing 705. 4 q.h.

806. *Nursing Leadership II.* Designed to prepare the student to coordinate theory and its application to function as a beginning nursing team leader. One hour conference, 8 hours laboratory per week. Prereq.: Nursing 805; Business Org. 725. 4 q.h.

807. *Nursing Seminar.* A reading in selected nursing studies and/or research and reports. Experience in the identification and definition of a nursing problem. Each student writes a paper encompassing a specific nursing problem or issue. Prereq.: Nursing 707, 806; Business Org. 750. 4 q.h.

Curriculum leading to the Associate in Applied Science Degree

FIRST YEAR

FIRST QUARTER	Hrs.
Biol. 551 Anatomy and Physiology of Man	4
Home Ec. 551 Food and Nutrition	4
English 525 Communication I	4
Nursing 501 Introduction to Nursing I	5
	17

SECOND QUARTER	Hrs.
Biol. 552 Anatomy and Physiology of Man	4
Psych. 501 Introduction to Psychology	3
English 526 Communication II	4
Nursing 502 Introduction to Nursing	6
	17

THIRD QUARTER	Hrs.
Biol. 560 Paramedical Microbiology	5
Psych. 755 Developmental Psychology I (Child)	4
Nurs. 505 Nursing Care of Adults and Children I	8
	17

SECOND YEAR

FOURTH QUARTER	Hrs.
Chem. 502 Survey of Chemistry II	4
Soc. Sci. 501 Introduction to Social Science	3
Nurs. 610 Nursing Care of Adults and Children II	10
	17

FIFTH QUARTER	Hrs.
Chem. 503 Survey of Chemistry III	4
Elective (Lower division course from Art, Music, History, Philosophy, Economics or Political Science)	3
Nurs. 611 Nursing Care of Adults and Children III	10
	17

SIXTH QUARTER	Hrs.
Soc. 500 Fundamentals of Sociology	4
Nurs. 612 Nursing Care of Adults and Children IV	10
Nurs. 613 Role of the Registered Nurse	2
	16
Total Credit Hours	101

SPECIAL STUDIES

Assistant Professor Foley; Instructor Gubser.

ASSOCIATE IN ARTS PROGRAM

Assistant Professor Foley (supervisor); Instructor Gubser.

This program is designed for any student seeking a two-year general education degree. He may transfer at any time to a four-year degree program if he chooses to do so.

A candidate for an Associate in Arts degree must complete at least 96 hours and have a concentration in a field of his own choosing: social studies (economics, geography, history, psychology, social science, sociology—any 32 q.h.); humanities (art, English, language, music, philosophy and religion—any 27 q.h.); science or mathematics (biology, chemistry, mathematics, physics—any 24 q.h.); business administration—any 24 q.h. No grades lower than a *C* will be acceptable toward a concentration.

This program also serves students admitted on a restricted basis who eventually may transfer to a four-year undergraduate degree program. A restricted student who wishes to transfer must have completed a minimum of 36 quarter hours and have at least a 2.00 cumulative average. This student must apply for a transfer and be accepted by the dean of the school to which he expects to transfer.

501, 502, 503. *Study Skills.* These basic courses develop skills which should aid in

academic achievement. Study methods are analyzed and writing and reading skills are developed. (501, 502: F, W, Sp; 503: as needed.) 3+3+3 q.h.

FIRST YEAR

FIRST QUARTER	Hrs.
Spec. Stu. 501 Study Skills*	3
English 525 Communication I or Math.	4-5
Psych. 501 Introduction to Psychology	3
Health and Physical Education 590 Health Education	3
	13-14

SECOND QUARTER	Hrs.
Spec. Stu. 502 Writing Skills*	3
English 526 Communication II	4
Soc. Sci. 501 Introduction to Social Science	3
Elective	3-4
	13-14

THIRD QUARTER	Hrs.
English 527 Communication III	4
Soc. Sci. 502 Introduction to Economics	3
Health and Physical Education Activity Course	1
Science or Math.	4-5
	12-13

FOURTH QUARTER	Hrs.
Soc. Sci. 503 Introduction to Political Science	3
Health and Physical Education Activity Course	1
Philosophy or Religion	4
Science or Math	4-5
	12-13

SECOND YEAR

FIFTH QUARTER	Hrs.
Science or Math.	4-5
Health and Physical Education Activity Course	1
Concentration and/or Electives	9
	14-15

SIXTH QUARTER	Hrs.
Concentration and/or Electives	15

SEVENTH QUARTER	Hrs.
Concentration and/or Electives	15
Minimum Total Credit Hours	96

*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 to 12-14 hours per quarter for his first three quarters. Credit for Study Skills 501, 502, 503 will apply only towards the Associate in Arts degree.

A student entering the Associate in Arts Program, who is not restricted, may have his Study Skills courses waived and be allowed to substitute 6 quarter hours of other course work.

529. *Instructional Media.* Lectures cover the philosophy of the audio-visual movement, its importance in the field of communication in general, and its application to education in particular including skill in handling the various kinds of audio-visual equipment. (Offered as needed.) 4 q.h.

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M.A., Case Western Reserve University.

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B.S. in B.A., Youngstown State University;
M.Litt., University of Pittsburgh.

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Associate Professor of Education
B.S. in Ed., Youngstown State University;
M.Ed., University of Pittsburgh;
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Instructor in Biology
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PAUL H. CRESS, B.Th.
Assistant Professor of Criminal Justice
B.Th., Nyack Missionary College.

HAROLD R. CRITES, M.A.
Associate Professor of Speech and Dramatics
A.B., Hiram College;
M.A., Case Western Reserve University.

KATHERINE H. CRITES, M.A.
Instructor in English
A.B., Youngstown State University;
M.A., Case Western Reserve University.

RALPH G. CRUM, Ph.D.
Associate Professor of Civil Engineering
B.S., M.S., Ph.D., Carnegie Institute of Technology.

JANE G. CUNNINGHAM, M.S. in Ed.
Assistant Professor of Psychology
R.N., St. Elizabeth School of Nursing;
B.S., Youngstown State University;
M.S. in Ed., Westminster College.

ARTHUR R. CURRAN, Ph.D.
Associate Professor of Management
B.S., Boston University;
M.B.A., Air Force Institute of Technology;
Ph.D., University of Georgia.

PAUL E. DALBEC, Ph.D.
Associate Professor of Physics and Astronomy
B.S., Boston College;
M.S., University of Notre Dame;
Ph.D., Georgetown University.

JAMES E. DALE, Ph.D.
Assistant Professor of Political Science
B.A., M.A., M.A., Ph.D., University of Minnesota.

CHARLES W. DARLING, M.A.
Assistant Professor of History
B.S. in Ed., Youngstown State University;
M.A., Ohio University.

ANTHONY F. DASTOLI, M.B.A.
Assistant Professor of Management
B.E., Youngstown State University;
M.B.A., University of Pittsburgh.

LAWRENCE A. DAVIS, M.B.A.
Instructor in Marketing
B.S. in B.A., Youngstown State University;
M.B.A., Kent State University.

GILDA M. DeCAPITA, M.S.N.Ed.
Assistant Professor of Nursing
R.N., Youngstown Hospital Association;
B.S., Youngstown State University;
M.S.N.Ed., Case Western Reserve University.

JAMES W. DeGARMO, JR., J.D.
Assistant Professor of Criminal Justice
B.S. in B.A., University of Pittsburgh;
J.D., Cleveland-Marshall Law School.

EDWIN T. DEIDERICK, M.S.
Assistant Professor of Marketing
B.S. in B.A., Youngstown State University;
M.S., New York University.

JANET E. DEL BENE, Ph.D.
Assistant Professor of Chemistry
B.S. in Ed., A.B., Youngstown State University;
Ph.D., University of Cincinnati.

THEODOSIUS L. DEMEN, Ph.D.
Associate Professor of Mathematics
University of Innsbruck;
M.S., Marquette University;
Ph.D., St. Louis University.

ROBERT A. DiGIULIO, Ph.D.
Associate Professor of Education
B.S., Lewis College;
M.S., Northern Illinois University;
Ph.D., Purdue University.

THADDEUS M. DILLON, Ph.D.
Professor of Mathematics
B.S., M.S., John Carroll University
Ph.D., University of Pittsburgh.

LAWRENCE A. DiRUSSO, Ed.D.
Associate Professor of Education
A.B., Youngstown State University;
M.A., Kent State University;
Ed.D., Case Western Reserve University.

FRANK A. D'ISA, Ph.D.
Professor of Mechanical Engineering
B.S., Youngstown State University;
M.S. in M.E., Carnegie-Mellon University;
Ph.D., University of Pittsburgh.

THOMAS N. DOBBELSTEIN, Ph.D.
Associate Professor of Chemistry
B.S., Eastern Michigan University;
M.S., Ph.D., Iowa State University.

GUIDO A. DOBBERT, Ph.D.
Associate Professor of Sociology and Anthropology
A.M., Ph.D., University of Chicago.

MARY A. DOBRICH, M.Ed.
Assistant Professor of Psychology
A.B., Youngstown State University;
M.Ed., University of Pittsburgh.

ISTVAN Z. DOMONKOS, M.S.P.A.
Assistant Professor of Criminal Justice
B.A., Youngstown State University;
M.G.A., University of Pennsylvania;
M.S.P.A., Ohio State University.

LESLIE S. DOMONKOS, D.S.M.
Associate Professor of History
B.A., Youngstown State University;
M.A., M.M.S., D.S.M., Mediaeval Institute, University of Notre Dame.

ALFRED J. DONOVAN, Ph.D.
Assistant Professor of History
B.A., Cardinal Glennon College;
B.S., M.A., University of Albuquerque;
Ph.D., St. Louis University.

ROBERT L. DOVE, B.S.
Instructor in Health and Physical Education
B.S., University of Notre Dame.

WADE C. DRISCOLL, Ph.D.
Assistant Professor of Industrial Engineering
B.S., Pennsylvania State University;
M.S., New York University;
Ph.D., Case Western Reserve University.

CAROL M. DUCEY, M.L.S.
Circulation Librarian with the Rank of Instructor
B.A., Barnard College;
M.L.S., University of Rhode Island.

PAUL R. DUCEY, Ph.D.
Associate Professor of Sociology and Anthropology
A.B., Ph.D., Columbia University.

JACK D. DUNSING, Ph.D.
Associate Professor of Education
B.S., M.S., Ph.D., University of Pittsburgh.

CHRISTINE R. DYKEMA, M.A.
Professor of Foreign Languages
A.B., Barnard College, Columbia University;
M.A., Western Reserve University.

HUGH G. EARNHART, M.A.
Assistant Professor of History
A.B., Bowling Green State University;
M.A., University of Maryland.

EARL E. EDGAR, Ph.D.
Professor of Philosophy and Religious Studies
B.A., DePauw University;
M.A., University of Nebraska;
Ph.D., University of Cincinnati.

C. WILLIAM EICHENBERGER, M.S. in Ed.
Assistant Professor of Political Science
A.B., Youngstown State University;
M.S. in Ed., Westminster College.

LOUISE H. EINSTEIN, M.Ed.
Assistant Professor of English
A.B., Chatham College;
M.Ed., University of Pittsburgh.

FRANK M. ELLIS, M.S.
Professor of Physics and Astronomy
B.S., Carnegie-Mellon University;
M.Ed., M.S., University of Pittsburgh.

R. DONALD ELSER, M.Litt.
Associate Professor of Speech and Dramatics
A.B., Youngstown State University;
M.Litt., University of Pittsburgh.

EARL E. EMINHIZER, Th.D.
Assistant Professor of Philosophy and Religious Studies
B.A., Furman University;
B.S. in Ed., Youngstown State University;
B.D., Th.M., Crozer Theological Seminary;
Th.D., California School of Theology at Claremont.

BARBARA G. ENGELHARDT, M.N.
Assistant Professor of Nursing
B.S., Muskingum College;
M.N., Western Reserve University.

SISTER BARBARA A. ERICKSON, M.S.
Instructor in Nursing
B.S., St. John College of Cleveland;
M.S., Catholic University of America.

WINSTON H. ESHLEMAN, Ed.D.
Associate Professor of Education
B.A., M.A., Stanford University;
Ed.D., University of Arizona.

LARRY E. ESTERLY, M.A.
Assistant Professor of Political Science
A.B., Youngstown State University
M.A., Johns Hopkins University.

ERWIN M. EVANS, M.B.A.
Associate Professor of Accounting
B.S. in B.A., Youngstown State University;
M.B.A., Case Western Reserve University.

JOHN D. FAIRES, Ph.D.
Assistant Professor of Mathematics
B.S., Youngstown State University;
M.S., Ph.D., University of South Carolina.

ILAJEAN FELDMILLER, Ph.D.
Associate Professor of Home Economics
B.S., Pennsylvania State University;
M.S., Ph.D., Ohio State University.

DALE W. FISHBECK, Ph.D.
Assistant Professor of Biology
B.A., Yankton College;
M.A., University of South Dakota;
Ph.D., University of Minnesota.

MASON L. FISHER, M.S.
Assistant Professor of Physics and Astronomy
B.S., Lafayette College;
M.S., Lehigh University.

ROBERT J. FISHER, M.B.A.
Professor of Military Science
B.S., Bryant College;
M.B.A., Siena College.

DORCAS C. FITZGERALD, M.S.
Instructor in Nursing
B.S., M.S., University of Alabama.

WILLIAM S. FLAD, M.B.A.
Associate Professor of Advertising and Public Relations
A.B., Lafayette College;
M.B.A., Harvard Graduate School of Business Administration.

ROBERT E. FLEMING, M.A.
Assistant Professor of Music
A.B., M.A., Marshall University.

ELMER FOLDVARY, Ph.D.
Associate Professor of Chemistry
B.S., Youngstown State University;
M.S., Ph.D., Texas A&M University.

MARGUERITE B. FOLEY, M.S. in Ed.
Assistant Professor of Special Studies
A.B., Cornell College;
M.S. in Ed., Westminster College.

FRANK A. FORTUNATO, LL.M.
Assistant Professor of Management
A.B.A., J.D., Youngstown State University;
LL.M., Case Western Reserve University.

JACK D. FOSTER, Ph.D.
Associate Professor of Criminal Justice
B.A., M.A., Kent State University;
Ph.D., Ohio State University.

ROBERT H. FOULKES, JR., Ph.D.
Assistant Professor of Electrical Engineering
B.S., Case Western Reserve University;
M.S., University of Southern California;
Ph.D., Case Western Reserve University.

SAUL S. FRIEDMAN, Ph.D.
Assistant Professor of History
B.A., Kent State University;
M.A., Ph.D., Ohio State University.

GARY F. FRY, Ph.D.
Assistant Professor of Sociology and Anthropology
B.A., University of Denver;
M.A., Ph.D., University of Utah.

ALFONSO L. GARCIA, J.D.
Associate Professor of Foreign Languages
A.B., Instituto de la Habana;
Doctor en Leyes, Universidad de la Habana;
Diplomado en Filologia Hispanica, Universidad de Salamanca.

BOOKER T. GARDNER, M.A.
Assistant Professor of Education
B.Ed., Chicago Teachers College;
M.A., Roosevelt University.

STEVEN R. GARDNER, Ph.D.
Assistant Professor of Engineering Technology
B.E.E., M.S., Ph.D., Ohio State University.

BEVERLY P. GARTLAND, M.A.
Instructor in Political Science
A.B., Youngstown State University;
M.A., Ohio State University.

CAROL M. GAY, Ph.D.
Assistant Professor of English
A.B., Youngstown College
M.A., Ohio State University;
Ph.D., Kent State University.

THOMAS GAY, M.A.
Assistant Professor of English
A.B., Youngstown College;
M.A., Western Reserve University.

CHARLES G. GEBELEIN, Ph.D.
Associate Professor of Chemistry
B.A., M.A., Ph.D., Temple University.

CYNTHIA W. GOARD, M.Litt.
Assistant Professor of Nursing
R.N., Temple University Hospital, Philadelphia;
B.S. in N.Ed., New York University;
M.Litt., University of Pittsburgh.

EMILY K. GOLDSTEIN, M.A.
Assistant Professor of Mathematics
B.S., New York University;
M.A., Columbia University.

ADORACION F. GONZALEZ, M.A.
Assistant Professor of Political Science
A.B., Adamson University
M.A., Michigan State University.

RONALD R. GOODELL, B.S.
Assistant Professor of Military Science
B.S., Eastern Michigan University.

RONALD L. GOULD, S.M.D.
Associate Professor of Music
B.M., North Central College;
S.M.M., S.M.D., Union Theological Seminary.

STEPHEN A. GRAF, Ph.D.
Assistant Professor of Psychology
A.B., Miami University;
M.A., Ph.D., Ohio State University.

STEPHEN J. GRCEVICH, M.A.
Instructor in Speech and Dramatics
A.B., Youngstown State University;
M.A., Kent State University.

MARTIN A. GREENMAN, Ph.D.
Professor of Philosophy and Religious Studies
B.A., Ph.D., University of Chicago.

JOHN L. GRIM, M.B.A.
Assistant Professor of Management
A.B., Youngstown State University;
M.B.A., Kent State University.

MARIE F. GUBSER, M.Ed.
Instructor in Special Studies
B.S. in Ed., Kent State University;
M.Ed., Westminster College.

MARY G. GUTERBA, M.S. in Ed.
Assistant Professor of Psychology
A.B., Youngstown State University;
M.S. in Ed., Westminster College.

PHILIP J. HAHN, Ph.D.
Professor of Economics
B.S., Juniata College;
M.B.A., Harvard University;
Ph.D., Case Western Reserve University.

ADOLPHUS C. HAILSTORK, III, Ph.D.
Assistant Professor of Music
B.M., Howard University;
B.M., M.M., Manhattan School of Music;
Ph.D., Michigan State University.

WILBERT M. HAMMACK, Ed.D.
Assistant Professor of Education
B.S. in Ed., Kent State University;
M.Ed., University of Pittsburgh;
Ed.D., Kent State University.

CLYDE T. HANKEY, Ph.D.
Professor of English
B.A., M.A., University of Pittsburgh;
M.A., Ph.D., University of Michigan.

FRANK A. HANKEY, Ph.D.
Assistant Professor of Electrical Engineering
B.S., St. Lawrence University;
M.S., M.E., Ph.D., University of Florida.

WILLIAM W. HANKS, M.S.
Associate Professor of Marketing
B.S., Delta State Teachers College;
M.S., New York University.

STEPHEN HANZELY, Ph.D.
Assistant Professor of Physics and Astronomy
B.S., Kent State University;
M.S., Toledo University;
Ph.D., New Mexico State University.

MARY V. HARE, Ph.D.
Associate Professor of English
A.B., Mount Holyoke College;
M.A., Ph.D., University of Virginia.

ROBERT R. HARE, Ph.D.
Associate Professor of English
B.A., Ohio State University;
M.A., University of Delaware;
Ph.D., University of Maryland.

ANN G. HARRIS, M.S.
Assistant Professor of Geology
B.S., Kent State University;
M.S., Miami University.

C. EARL HARRIS, JR., M.S.
Assistant Professor of Geology
B.S., Kent State University;
M.S., Miami University.

LARRY F. HARRIS, M.M.
Instructor in Music
B.M.E., M.M., Drake University.

GEORGE D. HAUSHALTER, M.Ed.
Instructor in Political Science
B.S., Indiana University of Pennsylvania;
M.Ed., University of Pittsburgh.

MARTIN HELLING, Ph.D.
Assistant Professor of Mathematics
B.S., Ohio State University;
M.S., University of Chicago;
Ph.D., University of California at Berkeley.

JAMES T. HENKE, Ph.D.
Assistant Professor of English
B.A., Washington University;
M.A., University of Missouri;
Ph.D., University of Washington.

JOEL E. HENKEL, Ph.D.
Assistant Professor of Physics and Astronomy
A.B., Princeton University;
M.S., Yale University;
M.S., Ph.D., University of New Hampshire.

THOMAS C. HERNDON, Ph.D.
Assistant Professor of Engineering Technology
B.S., University of Kentucky;
M.C.S., Ph.D., Texas A&M University.

GERALDINE D. HETZEL, B.S. in Ed.
Instructor in Nursing
R.N., St. Luke's Hospital School of Nursing;
B.S. in Ed., Youngstown State University.

DOROTHY F. HEYM, M.S. in Ed.
Instructor in Education
B.S. in Ed., Youngstown State University;
M.S., in Ed., Westminster College.

LOUIS E. HILL, Ed.D.
Associate Professor of Education
B.S., State University of New York at Oswego;
M.S., Ed.D., Syracuse University.

DOROTHY M. HILLE, M.B.A.
Instructor in Business Education and Secretarial Studies
B.S. in B.A., Marquette University;
M.B.A., Kent State University.

LEONORE N. HOFFMANN, M.A.
Instructor in English
B.A., University of North Carolina;
M.A., Eastern Kentucky University;
M.A., Indiana University.

BETTY J. HOLSTEEN, M.M.
Assistant Professor of Music
A.A., Stephens College;
B.M., Oberlin College;
M.M., Northern Illinois University.

M. DEAN HOOPS, Ph.D.
Associate Professor of Education
B.S.E., Kent State University;
M.S., Ph.D., University of Michigan.

LOIS M. HOPKINS, M.M.
Associate Professor of Music
B.M., Morningside College;
M.M., Eastman School of Music of the University of Rochester.

ROBERT E. HOPKINS, D.M.A.
Associate Professor of Music
B.M., M.M., D.M.A., Eastman School of Music of the University of Rochester.

SALLY M. HOTCHKISS, Ph.D.
Assistant Professor of Psychology
A.B., Randolph-Macon Woman's College;
M.A., Ph.D., University of Minnesota.

SANFORD N. HOTCHKISS, Ph.D.
Professor of Psychology
B.A., M.A., Ph.D., University of Minnesota.

JAMES A. HOUCK, Ph.D.
Assistant Professor of English
B.A., St. John's College;
Ph.D., Duquesne University.

MICHAEL K. HOUSEHOLDER, Ph.D.
Associate Professor of Civil Engineering
B.S. in C.E., Valparaiso University;
M.S. in C.E., Ph.D., Purdue University.

DONALD E. HOVEY, Ph.D.
Professor of Management
B.A., University of California at Los Angeles;
M.A., Ph.D., University of Colorado.

PEI HUANG, Ph.D.
Associate Professor of History
B.A., M.A., National Taiwan University, China;
Ph.D., Indiana University.

JOHN M. HUDZIK, M.Ed.
Instructor in Political Science
B.A., Youngstown State University;
M.Ed., Westminster College.

CAROLYN H. HUGHES, Ph.D.
Assistant Professor of Education
B.S., M.Ed., Miami University;
Ph.D., Kent State University.

BILL G. HULSOPPLE, Ph.D.
Associate Professor of Speech and Dramatics
B.S. in Ed., University of Dayton;
M.A., University of Denver;
Ph.D., Ohio State University.

RICHARD F. HUNTLEY, A.B.
Instructor in Continuing Education
A.B., Youngstown State University.

RAYMOND W. HURD, Ph.D.
Associate Professor of Mathematics
B.S. in Ed., M.Ed., Ohio University;
Ph.D., Ohio State University.

SISTER DOROTHY A. HWOPEK, Ph.D.
Assistant Professor of English
B.A., M.A., De Paul University;
Ph.D., University of Illinois.

ARLAND B. IMLAY, Ed.D.
Assistant Professor of Education
B.S. in Ed., Ohio University;
M.A. in Ed., Ohio State University;
Ed.D., West Virginia University.

DAVID S. IVES, M.A.
Associate Professor of English
B.A., Baldwin-Wallace College;
M.A., Western Reserve University.

HELEN T. JEFFREY, B.S. in N.Ed.
Instructor in Nursing
B.S. in N.Ed., Florida State University.

VERA R. JENKINS, M.Ed.
Associate Professor of Accounting
B.A., B.S. in Ed., Youngstown State University;
M.Ed., University of Pittsburgh.

WILLIAM D. JENKINS, JR., Ph.D.
Assistant Professor of History
B.S., Loyola College;
M.A., Ph.D., Case Western Reserve University.

RONALD W. JONAS, Ph.D.
Associate Professor of Mathematics
B.A., Ph.D., The University of Texas.

GEORGE H. G. JONES, Ph.D.
Librarian with the Rank of Assistant Professor
A.B., Oberlin College;
M.L.S., Kent State University;
Ph.D., Harvard University.

RICHARD W. JONES, Ph.D.
Assistant Professor of Materials Science
B.S., University of Missouri;
M.S., Rensselaer Polytechnic Institute;
Ph.D., Northwestern University.

ELAINE S. JUHASZ, M.Ed.
Assistant Professor of Art
B.S. in Ed., Youngstown State University;
M.Ed., Kent State University.

VERN L. KAGARICE, M.M.
Assistant Professor of Music
B.M., Bethany College;
M.M., Indiana University.

JAMES G. KARAS, Ph.D.
Associate Professor of Biology
B.S., University of Illinois;
M.S., Ph.D., Michigan State University.

ASSAD S. KASSEES, Ph.D.
Assistant Professor of Sociology and Anthropology
B.A., University of Delaware;
M.S.W., University of North Carolina;
Ph.D., Florida State University.

WILLIAM E. KATERBERG, M.A.
Instructor in Health and Physical Education
B.S., M.A., Western Michigan University.

JOHN L. KEARNS, Ph.D.
Associate Professor of Industrial Engineering
B.A., University of Toronto;
Ph.D., Iowa State University.

GEORGE W. KELLEY, JR., Ph.D.
Professor of Biology
A.S., Lamar Junior College;
B.S., University of Nebraska;
M.S., University of Kentucky;
Ph.D., University of Nebraska.

JEAN M. KELTY, Ph.D.
Associate Professor of English
A.B., Youngstown University;
M.A., Western Reserve University;
Ph.D., Case Western Reserve University.

DOROTHY M. KENNEDY, M.S.
Instructor in Nursing
Diploma, Sharon General Hospital;
B.S., Duquesne University;
M.S., Westminster College.

TAGHI T. KERMANI, Ph.D.
Professor of Economics
Licenciate in Law, University of Tehran;
M.A., Ph.D., University of Nebraska.

IKRAM U. KHAWAJA, Ph.D.
Assistant Professor of Geology
B.S., M.S., University of Karachi;
M.S., Southern Illinois University;
Ph.D., Indiana University.

JAMES W. KIRIAZIS, Ph.D.
Associate Professor of Sociology and Anthropology
A.B., Youngstown State University;
M.S.W., Louisiana State University;
Ph.D., University of Pittsburgh.

JOSEPH KIRSCHNER, Ed.D.
Associate Professor of Education
B.S., M.A.T., Tulane University:
Ed.D., Rutgers, The State University.

MICHAEL KLASOVSKY, M.A.
Associate Professor of Geography
B.S. in Ed., Bowling Green State University;
M.A., Ohio State University.

ALBERT J. KLEIN, Ph.D.
Assistant Professor of Mathematics
B.S., M.S., Ph.D., Ohio State University.

JANET S. KNAPP, M.A.
Assistant Professor of English
B.S. in Ed., Miami University;
M.A., University of Kansas.

LELAND W. KNAUF, M.Ed.
Assistant Professor of Mathematics
B.S. in Ed., M.Ed., Kent State University.

MARILYN A. KOCINSKI, M.Ed.
Assistant Professor of Health and Physical Education
B.S. in Ed., M.Ed., Kent State University.

MERVIN KOHN, Ph.D.
Associate Professor of Management
A.B., University of Missouri;
M.S. in C., Ph.D., St. Louis University.

FRIEDRICH W. KOKNAT, Ph.D.
Assistant Professor of Chemistry
B.S., M.S., Ph.D., Justus Liebig-Universitat.

JOSEPH J. KOSS, M.A.
Assistant Professor of Economics
B.S., M.A., University of Pittsburgh.

STEPHEN L. KOZARICH, Ph.D.
Assistant Professor of Mathematics
B.S., Youngstown State University;
M.S., Michigan State University;
Ph.D., Colorado State University.

RAYMOND E. KRAMER, M.S. in E.E.
Associate Professor of Electrical Engineering
B.S., Heidelberg College;
M.S. in E.E., Case Western Reserve University.

RICHARD D. KREUTZER, Ph.D.
Assistant Professor of Biology
B.S., M.S., Ph.D., University of Illinois.

KARL E. KRILL, Ph.D.
Professor of Materials Science
B.S., Missouri School of Mines & Metallurgy;
M.S., University of Colorado;
Ph.D., Ohio State University.

T. R. RAMA KRISHNAN, Ph.D.
Associate Professor of Management
B.A., Panjab University;
B.S. in B.A., M.B.A., Ph.D., The American University.

JACK D. KUHLMAN, J.D.
Instructor in Political Science
A.B., Harvard University;
J.D., Youngstown State University.

GEORGE P. KULCHYCKY, Ph.D.
Assistant Professor of History
B.S., Kent State University;
M.A., John Carroll University;
Ph.D., Georgetown University.

MICHAEL J. LA BAY, Ph.D.
Assistant Professor of Education
B.S. in Ed., Bowling Green State University;
M.Ed., Ph.D., University of Toledo.

BERTINA A. LABORDE, M.S.
Assistant Professor of Health and Physical Education
B.S. in Ed., M.S., Ohio University.

ROBERT P. LACICH, M.B.A.
Assistant Professor of Management
B.S. in Ed., Slippery Rock State College;
M.B.A., University of Pittsburgh.

LEON LAITMAN, Ph.D.
Associate Professor of Geography
B.S., Brooklyn College;
Certificat Et. Politiques, University of Grenoble;
Ph.D., University of Paris.

VIRGIL R. LANG, Ph.D.
Associate Professor of Advertising and Public Relations
B.S., John Carroll University;
M.A., Western Reserve University;
Ph.D., St. John's University.

JOSEPH E. LAPINSKI, M.M.
Instructor in Music
Mus.B., Youngstown State University;
M.M., Michigan State University.

EDWARD J. LARGENT, JR., M.M.
Assistant Professor of Music
B.S., B.M., Ohio State University;
M.M., University of Illinois.

ABDUL B. LATEEF, Ph.D.
Assistant Professor of Criminal Justice
B.S., Government College, Punjab University;
M.S., Punjab University;
Ph.D., University of Newcastle, England.

VIRGINIA L. LAUGHLIN, M.A.
Instructor in Foreign Languages
A.B., Hunter College;
M.S.Ed., State University of New York;
M.A., University of Arizona.

ROBERT F. LEAHY, M.A.
Assistant Professor of Health and Physical Education
B.S., Southern Connecticut State College;
M.A., University of Maryland.

JAMES J. LEPORE, M.F.A.
Associate Professor of Art
B.S., Youngstown State University;
M.S., Illinois Institute of Technology;
M.F.A., Arizona State University.

GEORGE E. LETCHWORTH, Ph.D.
Assistant Professor of Psychology
A.B., Bucknell University;
M.A., Ph.D., University of Pennsylvania.

KAI C. LEUNG, M.L.S.
Assistant Cataloger with the Rank of Instructor
B.A., Hong Kong Baptist College;
M.L.S., University of California at Berkeley.

PAUL E. LIBER, M.B.A.
Assistant Professor of Marketing
B.S. in B.A., Ohio State University;
M.B.A., Kent State University.

RENEE D. LINKHORN, M.A.
Assistant Professor of Foreign Languages
Diplome de Licenciee, University of Liege, Belgium;
M.A., University of Connecticut.

LORETTA M. LIPTAK, M.A.
Assistant Professor of Health and Physical Education
B.S. in Ed., Youngstown State University;
M.A., Ohio State University.

FRANK W. LITTLE, Ph.D.
Assistant Professor of Education
B.S., M.Ed., Wisconsin State University;
Ph.D., Purdue University.

YIH-WU LIU, Ph.D.
Assistant Professor of Economics
B.A., National Taiwan University;
M.B.A., City College of New York;
Ph.D., Southern Illinois University.

CYNTHIA M. LOEHR, M.S.
Assistant Professor of Health and Physical Education
B.S., Northeastern State University;
M.S., Oklahoma State University.

JOSEPH C. LONG, M.Litt.
Assistant Professor of Management
B.S., Thiel College;
M.Litt., University of Pittsburgh.

NEAL B. LONG, JR., Ph.D.
Associate Professor of Economics
A.B., Indiana University;
M.A., University of North Carolina;
Ph.D., Indiana University.

LAWRENCE E. LOOBY, Ph.D.
Associate Professor of Continuing Education
B.A., M.A., Michigan State University;
Ph.D., University of Nebraska.

MARY B. LOUD, Ph.D.
Assistant Professor of Foreign Languages
B.A., University of Wisconsin;
M.A., University of North Carolina;
Ph.D., University of Kentucky.

CHARLES M. LOVAS, Ph.D.
Assistant Professor of Mechanical Engineering
B.S.M.E., University of Akron;
M.S.M.E., Ph.D., University of Notre Dame.

JAMES G. LUCAS, M.A.
Assistant Professor of Art
A.B., Youngstown State University;
M.A., Kent State University.

JOSEPH R. LUCAS, Ph.D.
Associate Professor of Philosophy and Religious Studies
A.B., University of Scranton;
M.A., S.T.B., S.T.L., University of Ottawa;
M.A., Kent State University;
J.D., Youngstown State University;
J.C.B., J.C.L., J.C.D., Lateran University, Rome;
S.T.D., Angelicum University of Rome;
Ph.D., University of Ottawa.

MARVIN LUKIN, Ph.D.
Assistant Professor of Chemistry
B.S., Ohio University;
M.S., Ph.D., Case Western Reserve University.

EMILY P. MACKALL, M.A.
Associate Professor of Economics
B.A., Westminster College;
M.A., Northwestern University.

DAVID B. MAC LEAN, Ph.D.
Assistant Professor of Biology
B.S., Heidelberg College;
M.S., Ph.D., Purdue University.

RUSSELL A. MADDICK, M.F.A.
Assistant Professor of Art
B.A., Youngstown State University;
M.F.A., Ohio State University.

RICHARD M. MAGNER, M.S. in Ed.
Associate Professor of Accounting
B.S., University of Indiana;
M.S. in Ed., Westminster College.

INALLY MAHADEVIAH, Ph.D.
Associate Professor of Chemistry
B.S., M.S., University of Mysore;
Ph.D., University of Cincinnati.

FRANK J. MALAK, M.Litt.
Professor of Mathematics
B.S. in Ed., Ohio State University;
M.Litt., University of Pittsburgh.

MELVIN MAMULA, M.Litt.
Assistant Professor of Advertising and Public Relations
B.S. in B.A., Youngstown State University;
M.Litt., University of Pittsburgh.

JOHN V. MANTON, M.A.
Assistant Professor of Geography
B.A., M.A., M.A., University of Michigan.

KYRIACOS C. MARKIDES, Ph.D.
Assistant Professor of Sociology and Anthropology
B.S. in B.A., Youngstown State University;
M.A., Bowling Green State University;
Ph.D., Wayne State University.

JOSEPH M. MARSHALL, Ph.D.
Associate Professor of Health and Physical Education
B.S., M.Ed., Springfield College;
Ph.D., University of Minnesota.

JOHN A. MARSYLA, M.A.
Instructor in English
B.A., University of Minnesota;
M.A., Arizona State University.

MARK A. MASAKI, Ph.D.
Assistant Professor of Psychology
A.B., University of California at Los Angeles;
M.A., California State College at Long Beach;
Ph.D., Southern Illinois University.

DONALD H. MATHEWS, JR., M.B.A.
Assistant Professor of Marketing
B.B.A., Baylor University;
M.B.A., Southern Methodist University.

ALBERT MATZYE, M.Ed.
Assistant Professor of Geography
B.S. in Ed., Youngstown State University;
M.Ed., Kent State University.

GUS MAVRIGIAN, M.S. in C.E.
Associate Professor of Mathematics
B.S., M.S., Carnegie Institute of Technology;
M.S. in C.E., Carnegie-Mellon University.

JOSEPH T. MAY, Ph.D.
Assistant Professor of History
A.B., Wheaton College;
M.A., Ph.D., Kent State University.

WALTER S. MAYHALL, B.M.
Assistant Professor of Music
B.M., Cleveland Institute of Music.

HUGH T. MC CRACKEN, Ph.D.
Associate Professor of English
B.S., M.S., State University of New York;
M.A., Middlebury College;
Ph.D., University of Illinois.

EDNA K. MC DONALD, M.Litt.
Assistant Professor of Sociology and Anthropology
A.B., Youngstown State University;
M.Litt., University of Pittsburgh.

KEITH MC KEAN, M.A.
Instructor in Political Science
Ph.B., University of North Dakota;
Diploma, St. Vladimir's Orthodox Theological Seminary;
M.A., Fordham University.

KENNETH H. MC KINLEY, Ph.D.
Assistant Professor of Education
B.A., Tarkio College;
M.A., Ph.D., University of Iowa.

DONALD E. MC LENNAN, Ph.D.
Professor of Physics and Astronomy
B.A., University of Western Ontario;
M.A., Ph.D., University of Toronto.

ANNIE M. MC MILLAN, Ed.D.
Associate Professor of Home Economics
B.Sc., Mount Allison University;
A.M., M.S., Ed.D., Columbia University.

JAGDISH C. MEHRA, Ph.D.
Associate Professor of Economics
B.A., M.A., Rasjasthan University;
Ph.D., State University of New York at Buffalo.

HOWARD D. METTEE, Ph.D.
Assistant Professor of Chemistry
B.A., Middlebury College;
Ph.D., University of Calgary.

MARGARITA W. METZGER, M.A.
Associate Professor of Foreign Languages
B.A., M.A., University of Mississippi;
Licenciada en Letras, Universidad de San Carlos.

KENNETH E. MILLER, M.A.
Instructor in Political Science
B.A., Youngstown State University;
M.A., University of Illinois.

ROBERT L. MILLER, M.B.A.
Professor of Accounting
B.S. in B.A., M.B.A., Ohio State University.

DONALD J. MILLEY, B.A.
Assistant Professor of Economics
B.A., State University of New York at Buffalo.

THELMA S. MINER, Ph.D.
Professor of English
B.A., Dickinson College;
M.A., Ph.D., University of Pennsylvania.

WARD L. MINER, Ph.D.
Professor of English
B.A., University of Colorado;
M.A., University of Chicago;
Ph.D., University of Pennsylvania.

ROBERT W. MINNEY, B.S. in Ed.
Assistant Professor of Military Science
B.S. in Ed., West Virginia University.

RICHARD C. MITCHELL, M.F.A.
Assistant Professor of Art
B.F.A., Illinois Wesleyan University;
M.F.A., Ohio University.

EDWARD MOONEY, JR., M.S.
Assistant Professor of Physics and Astronomy
B.S., Youngstown State University;
M.S., Cornell University.

CASPER J. MOORE, JR., J.D.
Instructor in Management
A.B., J.D., University of Alabama.

MARGARET C. MOORE, M.A.
Assistant Professor of Sociology and Anthropology
B.S., Ohio State University;
M.A., Kent State University.

WILLIAM D. MOORHEAD, JR., Ph.D.
Assistant Professor of Physics and Astronomy
B.A., Ohio Wesleyan University;
Ph.D., Ohio State University.

ALBERT F. MORITZ, Ph.D.
Assistant Professor of Biology
A.B., Ohio University;
M.Ed., Kent State University;
Ph.D., Ohio State University.

CLYDE D. MORRIS, M.A.
Instructor in Economics
B.A., Ohio State University;
M.A., Michigan State University.

FLOYD E. MORRIS, Ph.D.
Assistant Professor of Mechanical Engineering
B.S., Stanford University;
M.S., University of Washington;
Ph.D., Iowa State University.

ROBERT A. MORRIS, M.A.
Instructor in English
B.A., Dartmouth College;
M.A., University of Chicago.

JAMES C. MORRISON, Ph.D.
Assistant Professor of Psychology
B.A., University of Oregon;
M.A., University of Tennessee;
Ph.D., Michigan State University.

NICHOLAS T. MORTELLARO, M.S.
Instructor in Mathematics
B.S., Youngstown State University;
M.S., Rensselaer Polytechnic Institute.

LOYAL B. MOULD, M.A.
Assistant Professor of Music
B.S., Youngstown State University;
M.A., Kent State University.

ALEXANDER J. MUNTEAN, Ph.D.
Associate Professor of Sociology and Anthropology
B.A., Youngstown State University;
M.A., Ph.D., Michigan State University.

GRATIA H. MURPHY, M.A.
Assistant Professor of English
A.B., Bucknell University;
M.A., Ohio State University.

JON M. NABEREZNY, M.A.
Professor of Art
B.S. in Ed., Youngstown State University;
M.A., State University of Iowa.

ANTHONY V. NEGLIA, B.S.E.E.
Assistant Professor of Military Science
B.S.E.E., University of Detroit.

RUTH C. NEWCOMB, M.S. in L.S.
Catalog Librarian with the Rank of Instructor
A.B., Sterling College;
M.S. in L.S., Case Western Reserve University.

WILLIAM J. NICHOLS, Ed.D.
Assistant Professor of Education
Th.B., Olivet Nazarene College;
M.S. in Ed., Indiana University;
Ed.D., Ball State University.

ESTHER P. NIEMI, Ph.D.
Associate Professor of Economics
B.S. in B.A., Youngstown State University;
M.A., Ph.D., Case Western Reserve University.

RICHARD A. NITSCHE, M.A.
Instructor in English
B.A., Ohio State University;
M.A., National Taiwan University.

DANIEL J. O'NEILL, Ph.D.
Assistant Professor of Speech and Dramatics
B.A., Wayne State University;
M.A., Bowling Green State University;
Ph.D., Michigan State University.

WENDELL E. ORR, M.M.
Assistant Professor of Music
B.S., B.M., Lawrence College;
M.M., University of Michigan.

ROGER T. OVERBERG, M.A.
Assistant Professor of Criminal Justice
B.S., M.A., Xavier University.

CLYDE A. PAINTER, Ed.D.
Associate Professor of Business Technology
B.B.A., Northeastern University;
M.A., Colorado State College;
Ed.D., Pennsylvania State University.

NICHOLAS PARASKA, Ph.D.
Professor of Civil Engineering
B.S., U.S. Military Academy;
M.S., A&M College of Texas;
Ph.D., Carnegie Institute of Technology.

EDWIN R. PEJACK, Ph.D.
Associate Professor of Mechanical Engineering
B.M.E., M.S., Rensselaer Polytechnic Institute;
Ph.D., Ohio State University.

ESOTTO PELLEGRINI, M.A.
Associate Professor of Music
B.M., Youngstown State University;
M.A., Kent State University.

ARTHUR J. PERKINS, Ph.D.
Assistant Professor of Materials Science
B.S., Drexel Institute of Technology;
M.S., Ph.D., Case Western Reserve University.

PAUL C. PETERSON, Ph.D.
Associate Professor of Biology
B.S., Gustavus Adolphus College;
Ph.D., University of Nebraska.

ROBERT W. PETERSON, M.A.
Instructor in English
B.A., Kent State University;
M.A., Northeastern University.

JOHN E. PETREK, M.S. in E.
Associate Professor of Mechanical Engineering
B.S., Oregon State University;
M.S. in E., University of Akron.

WILLIAM PETRYCH, M.A.
Assistant Professor of Accounting
B.S., M.A., Ohio State University.

MARGARET I. PFAU, Ph.D.
Professor of English
A.B., Wellesley College;
M.A., Western Reserve University;
Ph.D., Radcliffe College.

JOAN A. PHILIPP, Ph.D.
Associate Professor of Health and Physical Education
B.S., Western Michigan University;
M. of P.E., MacMurray College;
Ph.D., University of Michigan.

RICHARD C. PHILLIPS, Ph.D.
Assistant Professor of Chemistry
B.A., Oklahoma State University;
Ph.D., University of Texas.

VIRGINIA B. PHILLIPS, M.B.A.
Instructor in Business Education and Secretarial Studies
B.S. in Ed., Youngstown State University;
M.B.A., Kent State University.

JAMES P. POGGIONE, M.S.
Instructor in Mathematics
B.S. in Ed., Northern Michigan University;
M.S., Case Western Reserve University.

PEGGY O. POTTS, M.S. in Ed.
Instructor in Business Education and Secretarial Studies
B.S. in Ed., M.S. in Ed., Youngstown State University.

DAVID S. PROVANCE, M.Litt.
Assistant Professor of Management
B.S. in C., Grove City College;
M.Litt., University of Pittsburgh.

GERALD J. PYLE, JR., M.A.
Instructor in English
A.B., Princeton University;
B.S. in Ed., Kent State University;
M.A., Duke University.

DAVID L. QUINBY, M.A.
Instructor in Psychology
B.A., Youngstown State University;
M.A., University of Denver.

JOYCELYN L. RAMSEY, M.S.
Instructor in Health and Physical Education
A.A., Potomac State Jr. College;
B.S., M.S., West Virginia University.

LEON RAND, Ph.D.
Professor of Chemistry
B.S., Northeastern University;
M.A., Ph.D., University of Texas.

CHARLES W. RARIDON, D.M.A.
Associate Professor of Music
B.A., M.A., D.M.A., University of Iowa.

FRANCIS S. REDBURN, Ph.D.
Assistant Professor of Political Science
B.A., Pennsylvania State University;
Ph.D., University of North Carolina.

JAMES A. REEDER, Ph.D.
Assistant Professor of Chemistry
B.S., University of Kansas;
Ph.D., University of Colorado.

CHARLES L. REID, Ph.D.
Associate Professor of Philosophy and Religious Studies
B.A., Bethel College;
M.A., Ph.D., Duke University.

RONALD J. RICHARDS, Ph.D.
Assistant Professor of Education
B.A., M.S. in Ed., Ph.D., Southern Illinois University.

VICTOR A. RICHLEY, Ph.D.
Professor of Engineering Technology
B.E., Youngstown State University;
M.S. in E., University of Akron;
Ph.D., University of Pittsburgh.

MARY P. RIGO, M.Litt.
Instructor in English
B.S. in Ed., Kent State University;
M.Litt., University of Pittsburgh.

BRUCE T. RILEY, Ph.D.
Associate Professor of Philosophy and Religious Studies
A.B., Cornell College;
S.T.B., Ph.D., Boston University.

LEWIS B. RINGER, D.P.E.
Associate Professor of Health and Physical Education
B.S., Springfield College;
M.S., West Virginia University;
D.P.E., Springfield College.

JOHN F. RITTER, M.S.
Assistant Professor of Civil Engineering
B.E., Youngstown State University;
M.S., Carnegie-Mellon University.

SIDNEY I. ROBERTS, Ph.D.
Professor of History
B.S. in Ed., City College of New York;
M.A., Columbia University;
Ph.D., Northwestern University.

DONALD W. ROBINSON, Ph.D.
Professor of Education
B.A., Carthage College;
M.A., Ph.D., Bradley University.

JUANITA G. RODERICK, Ph.D.
Associate Professor of Education
B.S. in Ed., Youngstown State University;
M.S. in Ed., Westminster College;
Ph.D., University of Akron.

STAMAN F. RODFONG, M.S.
Assistant Professor of Mathematics
B.S., M.S., Case Western Reserve University.

HASSAN A. RONAGHY, Ph.D.
Assistant Professor of Economics
B.S., University of Shiraz;
M.S., Southern Illinois University;
Ph.D., University of Wisconsin.

JAMES P. RONDA, Ph.D.
Assistant Professor of History
B.A., Hope College;
M.A., Ph.D., University of Nebraska.

JOSEPH S. ROOK, M.A.
Associate Professor of Education
B.S., Shippensburg State College;
M.A., George Washington University.

FRED ROSENBERG, M.A.
Assistant Professor of Music
Mus.B., Cleveland Institute of Music;
M.A., Case Western Reserve University.

LEWIS S. ROSENTHAL, Ph.D.
Assistant Professor of English
B.A., Colgate University;
M.A., Auburn University;
Ph.D., Louisiana State University.

DOMINIC L. ROSSELLI, M.Ed.
Assistant Professor of Health and Physical Education
B.S. in Ed., Geneva College;
M.Ed., University of Pittsburgh.

DUANE F. ROST, Ph.D.
Assistant Professor of Electrical Engineering
B.S., M.S., Ph.D., Iowa State University.

DEAN S. ROUSSOS, Ph.D.
Associate Professor of Marketing
B.S.C., M.S., Ph.D., University of Iowa.

CHESTER E. RUFH, M.S.
Assistant Professor of Biology
B.A., Youngstown State University;
M.S., Florida State University.

BARRY K. RUSSAL, M.A.
Instructor in English
B.A., City College of New York;
M.A., University of Wisconsin.

JAROSLAV RYSKA, Ph.D.
Assistant Professor of Foreign Languages
Ph.D., Palacky's University.

A. DUANE SAMPLE, Ed.D.
Associate Professor of Music
B.F.A., Carnegie-Mellon University;
M.Ed., University of Pittsburgh;
Ed.D., Columbia University.

EUGENE S. SANTOS, Ph.D.
Associate Professor of Mathematics
B.S.M.E., Mapua Institute of Technology;
M.S., University of the Philippines;
Ph.D., Ohio State University.

LOWELL J. SATRE, Ph.D.
Assistant Professor of History
B.A., Augustana College;
M.A., Ph.D., University of South Carolina.

ANNE B. SCHAFER, M.A.
Instructor in English
B.S. in Ed., Kent State University;
M.A., Ohio State University.

MARGARET V. SCHAFER, Ph.D.
Assistant Professor of Psychology
B.A., Bucknell University;
M.A., University of Michigan;
Ph.D., George Washington University.

ANNE M. SCHEETZ, B.S.
Instructor in Nursing
Diploma, St. Joseph Hospital School of Nursing, Indiana;
B.S., St. Mary's College.

STEVEN M. SCHILDCROUT, Ph.D.
Assistant Professor of Chemistry
B.S., University of Chicago;
Ph.D., Northwestern University.

EUGENE E. SCHNEIDER, M.B.A.
Assistant Professor of Management
B.S. in B.A., Youngstown State University;
M.B.A., Kent State University.

HILDEGARD K. SCHNUTTGEN
Circulation Librarian with the Rank of Instructor
Examination, Buchereischule, Germany.

GEORGE H. SCHOENHARD, Ed.D.
Associate Professor of Education
A.B., Youngstown State University;
Litt.M., Ed.D., University of Pittsburgh.

LAUREN A. SCHROEDER, Ph.D.
Associate Professor of Biology
B.S., St. Cloud State College;
A.M., Ph.D., University of South Dakota.

CAROL F. SCHULTZ, M.S.L.S.
Instructor in Education
B.A., Hiram College;
B.S.L.S., Drexel Institute of Technology;
M.S.L.S., Case Western Reserve University.

WERNER WILLIAM SCHULTZ, M.A.
Assistant Professor of English
B.A., Hiram College;
A.S.T.P., Kenyon College;
M.A., Oberlin College.

DOROTHY M. SCOTT, Ph.D.
Assistant Professor of Education
A.B., Webster College;
M.Ed., Ph.D., St. Louis University.

AURORA M. SEBASTIANI, M.S.
Instructor in Biology
B.A., Youngstown State University;
M.S., Tulane University.

MARY A. SEBESTYEN, B.S. in Ed.
Instructor in Business Education and Secretarial Studies
B.S. in Ed., Youngstown State University.

ROBERT H. SECRIST, Ph.D.
Associate Professor of English
A.B., Harvard University;
M.A., Ph.D., New York University.

FRANK J. SEIBOLD, Ph.D.
Associate Professor of Advertising and Public Relations
B.A., M.S., Long Island University;
Ph.D., Yeshiva University.

EUGENE A. SEKERES, M.B.A.
Assistant Professor of Advertising and Public Relations
B.A., Geneva College;
M.B.A., University of Pittsburgh.

FRANKLIN M. SEMBERGER, Ph.D.
Assistant Professor of Criminal Justice
A.A., Miami-Dade Community College;
B.S., M.S., Ph.D., Florida State University.

VIRGINIA W. SHALE, M.A.
Instructor in English
B.A., M.A., Ohio Wesleyan University.

HENRY P. SHENG, Ph.D.
Associate Professor of Chemical Engineering
B.S., University of Maine;
M.S., Purdue University;
Ph.D., University of Oklahoma.

THOMAS A. SHIPKA, Ph.D.
Assistant Professor of Philosophy and Religious Studies
A.B., John Carroll University;
Ph.D., Boston College.

RAYMOND J. SHUSTER, Ph.D.
Associate Professor of Management
B.S. in B.A., M.B.A., Wayne State University;
Ph.D., Michigan State University.

MATTHEW SIMAN, Ph.D.
Associate Professor of Electrical Engineering
B.S.E.E., M.S.E.E., Case Institute of Technology;
Ph.D., University of Pittsburgh.

CHARLES R. SINGLER, Ph.D.
Assistant Professor of Geology
B.S., City College of New York;
M.S., Ph.D., University of Nebraska.

ALVIN W. SKARDON, Ph.D.
Professor of History
A.B., College of Charleston;
M.A., Ph.D., University of Chicago.

SAMUEL J. SKAROTE, M.Sc.
Assistant Professor of Electrical Engineering
B.E.E., M.Sc., Ohio State University.

MORRIS SLAVIN, Ph.D.
Professor of History
B.S. in Ed., Ohio State University;
M.A., University of Pittsburgh;
Ph.D., Western Reserve University.

TADEUSZ K. SLAWECKI, Ph.D.
Professor of Chemical Engineering
B.S., University of Illinois;
M.S., Ph.D., University of Pennsylvania.

AGNES M. SMITH, Ph.D.
Assistant Professor of History
A.B., Hiram College;
M.A., University of West Virginia;
Ph.D., Western Reserve University.

CHARLES L. SMITH, Ed.D.
Associate Professor of Education
B.S., University of Louisville;
M.A., Ohio State University;
Ed.D., Western Reserve University.

FRANCIS W. SMITH, Ph.D.
Associate Professor of Chemistry
B.Sc., B.Sc. Honours, Ph.D., University of Capetown, S. Africa.

MARY B. SMITH, M.A.
Assistant Professor of Health and Physical Education
A.B., Hiram College;
M.A., Ohio State University.

ROBERT K. SMITH, Ph.D.
Associate Professor of Chemistry
B.S., M.S., University of Massachusetts;
Ph.D., University of Wyoming.

JOHN W. SMYTHE, M.A.
Assistant Professor of Economics
B.A., Youngstown State University;
M.A., Northwestern University.

STEPHEN L. SNIDERMAN, Ph.D.
Assistant Professor of English
B.A., Michigan State University;
M.A., University of Michigan;
Ph.D., University of Wisconsin.

ANTHONY E. SOBOTA, Ph.D.
Associate Professor of Biology
B.S. in Ed., Indiana University of Pennsylvania;
M.S., Ph.D., University of Pittsburgh.

MARILYN M. SOLAK, Ed.D.
Associate Professor of Education
A.B., Mount Union College;
M.Ed., Kent State University;
Ed.D., Case Western Reserve University.

JOSEPH SOLIMINE, JR., Ph.D.
Associate Professor of English
B.A., Brown University;
M.A., University of Rhode Island;
Ph.D., University of Pennsylvania.

ROBERT J. SOROKACH, M.S. in E.
Associate Professor of Industrial Engineering
B.E., Youngstown State University;
M.S. in E., University of Akron.

LEONARD B. SPIEGEL, Ph.D.
Associate Professor of Chemistry
B.A., New York University;
M.S., Ph.D., Florida State University.

ARTHUR G. SPIRO, Ph.D.
Associate Professor of Music
B.A., M.A., University of Minnesota;
Ph.D., Boston University.

DAVID E. STARKEY, M.M.
Assistant Professor of Music
B.M., M.M., Indiana University.

SISTER ELIZABETH STAUDT, M.S.
Instructor in Biology
B.S., Notre Dame College, Cleveland;
M.S., Villanova University.

JAMES D. STEELE, Ph.D.
Associate Professor of Education
B.S. in Ed., M.E., Kent State University;
Ph.D., Ohio University.

VERONICA R. STEINES, M.S. in Ed.
Instructor in Education
B.S. in Ed., M.S. in Ed., Youngstown State University.

DAVID T. STEPHENS, M.A.
Instructor in Geography
A.A., El Reno Junior College;
B.S., Oklahoma State University;
M.A., University of Oklahoma.

ELIZABETH I. STERENBERG, Ph.D.
Professor of Political Science
A.B., Knox College;
M.A., Radcliffe College;
Ph.D., University of Chicago.

JOHN A. STEVENS, Ph.D.
Associate Professor of Chemical Engineering
B.S., Providence College;
M.S., Ph.D., University of Cincinnati.

ANTHONY H. STOCKS, Ph.D.
Professor of Economics
B.A., San Jose State College;
M.A., Syracuse University;
Ph.D., State University of New York at Buffalo.

NICHOLAS STURM, M.S.
Assistant Professor of Biology
B.S., West Virginia Wesleyan College;
M.S., Purdue University.

B. SUBRAMANIAN, Ph.D.
Assistant Professor of Mathematics
B.A., Annamalai University;
M.Sc., Andhra University;
Ph.D., Lehigh University.

G. ROY SUMPTER, Ph.D.
Associate Professor of Criminal Justice
B.A., Bob Jones University;
M.S., Ph.D., Florida State University.

JYE SWAN, M.A.
Instructor in Economics
B.A., Youngstown State University;
M.A., University of Akron.

WILLIAM O. SWAN, Ph.D.
Associate Professor of Education
B.S. in Ed., Youngstown State University;
M.S. in Ed., Westminster College;
Ph.D., University of Pittsburgh.

JOSEPH F. SWARTZ, Ph.D.
Professor of Education
A.B., Bridgewater College;
M.Ed., Ph.D., University of Pittsburgh.

CHRISTOPHER J. SWEENEY, Ph.D.
Associate Professor of Psychology
A.B., Boston College;
M.Ed., Northeastern University;
Ph.D., University of Oklahoma.

LESLIE v. SZIRMAY, Ph.D.
Assistant Professor of Chemical Engineering
B.S., Eotvos University;
M.E. in Nucl.E., Iowa State University;
M.S., University of Detroit;
Ph.D., University of Denver.

FRANK J. TARANTINE, Ph.D.
Professor of Mechanical Engineering
B.E., Youngstown State University;
M.S. in E., University of Akron;
Ph.D., Carnegie-Mellon University.

MICHAEL W. TAYLOR, M.A.
Instructor in Advertising and Public Relations
B.S. in B.A., Youngstown State University;
M.A., Ohio State University.

RONALD E. TAYLOR, M.S.
Instructor in Advertising and Public Relations
A.B., University of North Carolina;
M.S., University of Illinois.

DUMITRU TEODORESCU, Ph.D.
Professor of Management
B.S., St. Sava State College, Bucharest, Romania;
M.S. in L.S., Case Western Reserve University;
A.M., L.M., Ph.D., Bucharest State University.

JOHN P. TERLECKI, M.S. in Ed.
Assistant Professor of Engineering Technology
B.A., Youngstown State University;
M.S. in Ed., Westminster College.

JAMES R. TOEPFER, Ph.D.
Assistant Professor of Biology
B.A., M.A., Ph.D., Kent State University.

DENNIS F. TOROK, JR., Ph.D.
Assistant Professor of Mechanical Engineering
B.S., Lehigh University;
M.S., Pennsylvania State University;
Ph.D., Lehigh University.

MAE D. TURNER, M.S. in Ed.
Associate Professor of Business Education and Secretarial Studies
A.B., Youngstown State University;
M.S. in Ed., Westminster College.

RICHARD A. ULRICH, M.A.
Instructor in Art
B.S. in Ed., Youngstown State University;
M.A., Kent State University.

CLYDE V. VANAMAN, Ed.D.
Professor of Education
B.S., Mount Union College;
B.A., Youngstown State University;
M.Ed., Kent State University;
Ed.D., Case Western Reserve University.

HELEN S. van GORDER, M.A.
Instructor in English
B.A., M.A., Pennsylvania State University.

JOHN D. VAN NORMAN, Ph.D.
Associate Professor of Chemistry
B.S., University of Rochester;
Ph.D., Rensselaer Polytechnic Institute.

PAUL D. VAN ZANDT, Ph.D.
Professor of Biology
A.B., Greenville College;
M.S., University of Illinois;
M.S.P.H., Ph.D., University of North Carolina.

MARIO A. VECCIA, Ph.D.
Assistant Professor of Foreign Languages
Ph.D., University of Naples.

JAMES A. VECHIARELLA, B.S. in Ed.
Instructor in Geography
B.S. in Ed., Youngstown State University.

LARRY A. VIEHMEYER, Ph.D.
Assistant Professor of Foreign Languages
B.S. in Ed., Western Illinois University;
A.M., Ph.D., University of Illinois.

DONALD E. VOGEL, Ed.D.
Associate Professor of Music
B.M., M.M., Indiana University;
Ed.D., Columbia University.

PETER W. von OSTWALDEN, Ph.D.
Associate Professor of Chemistry
Doctorandum, University of Graz, Austria;
M.A., Ph.D., Columbia University.

MARK F. WALKER, Ph.D.
Professor of Music
B.M., M.M., Butler University;
Ph.D., Indiana University.

WILLIAM E. WALSH, M.B.A.
Assistant Professor of Management
B.S. in B.A., Youngstown State University;
M.B.A., Case Western Reserve University.

MARTHA Z. WALTON, B.S. in B.A.
Instructor in Business Education and Secretarial Studies
B.S. in B.A., Miami University.

MICHAEL J. WALUSIS, M.F.A.
Assistant Professor of Art
B.F.A., University of Notre Dame;
M.F.A., Ohio State University.

ROBERT E. WARD, Ph.D.
Associate Professor of Foreign Languages
B.A., Baldwin-Wallace College;
M.A., Indiana University;
Ph.D., Vanderbilt University.

DWIGHT G. WATKINS, Ed.D.
Associate Professor of Education
B.A., M.A., Ed.D., University of Cincinnati.

ELIZABETH M. WATKINS, Ed.D.
Assistant Professor of Psychology
B.A., M.A., B.Ed., Ed.D., University of Cincinnati.

ROBERTA M. WATTS, M.A.
Instructor in Nursing
R.N., Sharon General Hospital School of Nursing;
B.S., Youngstown State University;
M.A., Westminster College.

WILLARD L. WEBSTER, B.S.
Associate Professor of Biology
B.S., Geneva College.

MARY L. WEDEKIND, M.Ed.
Instructor in Health and Physical Education
B.S., Pennsylvania State University;
M.Ed., Kent State University.

LIBBY G. WERBNER, M.A.
Instructor in Psychology
B.A., San Francisco State College;
M.A., Smith College.

NELL G. WHIPKEY, M.S. in Ed.
Assistant Professor of Mathematics
A.B., Brown University;
M.S. in Ed., Westminster College.

JOHN R. WHITE, M.A.
Assistant Professor of Sociology and Anthropology
A.A., City College of San Francisco;
B.A., San Francisco State College;
M.A., University of Oregon.

LEONARD A. WHITNEY, Ph.D.
Assistant Professor of Health and Physical Education
B.S. in Ed., Youngstown State University;
M.S. in P.E., Springfield College;
Ph.D., Ohio State University.

JERRY D. WILKERSON, B.S. in Ed.
Instructor in Health and Physical Education
B.S. in Ed., Ohio University.

JOHN WILKINSON, Ph.D.
Assistant Professor of English
B.A., University of Hull;
Ph.D., State University of New York at Buffalo.

LONNIE P. WILLIAMS, B.S.
Assistant Professor of Military Science
B.S., Central State University.

GILBERT R. WILLIAMSON, Ph.D.
Associate Professor of Civil Engineering
B.S.C.E., Ohio Northern University;
M.S.C.E., University of New Mexico;
Ph.D., Carnegie-Mellon University.

MYRON J. WISLER
Assistant Professor of Music
Pupil of Wilbur Keifer of the U.S. Marine Band, Byron Galbraith of The Pittsburgh Symphony Orchestra, and Roy Knapp, Chicago.

ROBERT J. WOLANIN, M.A.
Assistant Professor of Management
A.B., Westminster College;
M.A., University of Pittsburgh.

INGA S. WORLEY, Ph.D.
Associate Professor of Biology
B.S. in Ed., M.A., Ph.D., University of Wisconsin.

BARBARA L. WRIGHT, M.Ed.
Assistant Professor of Health and Physical Education
B.S., M.Ed., Kent State University.

JOHN J. YEMMA, Ph.D.
Assistant Professor of Biology
B.S. in Ed., Youngstown State University;
M.A., George Peabody College;
Ph.D., Pennsylvania State University.

RALPH E. YINGST, Ph.D.
Associate Professor of Chemistry
A.B., University of Chicago;
B.S., Lebanon Valley College;
Ph.D., University of Pittsburgh.

WARREN M. YOUNG, Ph.D.
Associate Professor of Physics and Astronomy
B.S., Case Western Reserve University;
M.S., Ph.D., Ohio State University.

BERNARD J. YOZWIAK, Ph.D.
Professor of Mathematics
A.B., Marietta College;
M.S., Ph.D., University of Pittsburgh.

BETTY F. ZBORAY, M.A.
Instructor in Health and Physical Education
B.S. in Ed., Kent State University;
M.A., University of Michigan.

JEROME E. ZETTS, M.B.A.
Assistant Professor of Accounting
B.S. in B.A., Youngstown State University;
M.B.A., Wayne State University.

JOHN S. ZETTS, Ph.D.
Assistant Professor of Physics
B.S., Youngstown State University;
M.S., Ph.D., Michigan State University.

LOUIS A. ZONA, M.S. in Ed.
Instructor in Art
B.S. in Ed., Youngstown State University;
M.S. in Ed., University of Pittsburgh.

ALLAN J. ZUCKERWAR, Dr.Rer.Nat.
Assistant Professor of Electrical Engineering
B.S., M.S., Carnegie-Mellon University;
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Robert J. Yalch ..... Art
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William Petrych .....Accounting

1969 - 1970

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1970 - 1971

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Raymond W. Hurd .....Mathematics
Inally Mahadeviah .....Chemistry

EMERITI OF YOUNGSTOWN STATE UNIVERSITY

HOWARD W. JONES, M.A., D.Ped.
President Emeritus
A.B., Hiram College;
M.A., Western Reserve University;
D.Ped., Westminster College.
Retired, 1966.

PAULINE E. BOTTY, M.A.
Professor Emerita of Sociology and Anthropology
B.S. in Ed., New York State University;
J.D., Youngstown State University;
M.A., Case Western Reserve University.
Retired, 1971.

CATHERINE M. BRIDGHAM, Ph.D.
Professor Emerita of Chemistry
B.S., University of Michigan;
Ph.D., University of Pittsburgh.
Retired, 1969.

MARION K. BROWNE, M.S.
Assistant Professor Emeritus of Merchandising
A.B., Eastern Michigan State College;
M.S., New York University.
Retired, 1968.

McKINLEY BROWNE, M.S.
Associate Professor Emeritus of Merchandising
B.S., Eastern Michigan State College;
M.S., New York University.
Retired, 1968.

PHILIP P. BUCHANAN, M.Ed.
Registrar with Rank of Assistant Professor Emeritus
A.B., Hiram College;
M.Ed., University of Pittsburgh.
Retired, 1966.

FRIEDA FRIEND CHAPMAN, M.A.
Associate Professor Emerita of Education
B.S. in Ed., Ohio University;
M.A., Ohio State University.
Retired, 1957.

NELLIE GWYNNE DEHNBOSTEL, M.A.
Associate Professor Emerita of Biology
Mus.B., F.C.M., Mus.M., Dana's Musical Institute;
B.A., B.S., in Ed., M.A., Kent State University
Retired, 1969.

JOHN PAUL GILLESPIE, B.S. in B.A.
Assistant Professor Emeritus of Merchandising and Dean of Men
B.S. in B.A., Youngstown State University.
Retired, 1970.

HAROLD NELS JOHNSON, M.A.
Assistant Professor Emeritus of Mechanical Engineering
B.S. in Ed., M.A., Ohio State University;
LL.B., Youngstown State University.
Retired, 1969.

WALTER EDWIN MAYER, Ph.D.
Professor Emeritus of Psychology
B.A., Ohio Northern University;
M.Ed., Ph.D., University of Pittsburgh.
Retired, 1967.

HOWARD HENRY MILLER, M.Ed.
Instructor Emeritus in Education
A.B., Manchester College;
M.Ed., University of Pittsburgh.
Retired, 1970

EDWARD T. REILLY, M.B.A.
Professor Emeritus of Accounting
B.S. in B.A., Youngstown State University;
M.B.A., Case Western Reserve University.
Retired, 1972.

LEONARD T. RICHARDSON, D. Univ.
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.

GERHARD M. STEIN, D.Ing.
Associate Professor Emeritus of Electrical Engineering
Diplom Ingenieur, Dr. Ingenieur, Technische Hochshule, Germany.
Retired, 1972.

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OCT

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOV

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DEC

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1973

	S	M	T	W	T	F	S
JAN		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31			
FEB					1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28			
MAR					1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
APR	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30					
MAY			1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31		
JUN						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30

	S	M	T	W	T	F	S
JUL	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				
AUG					1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	
SEP							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30						
OCT		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31			
NOV					1	2	3
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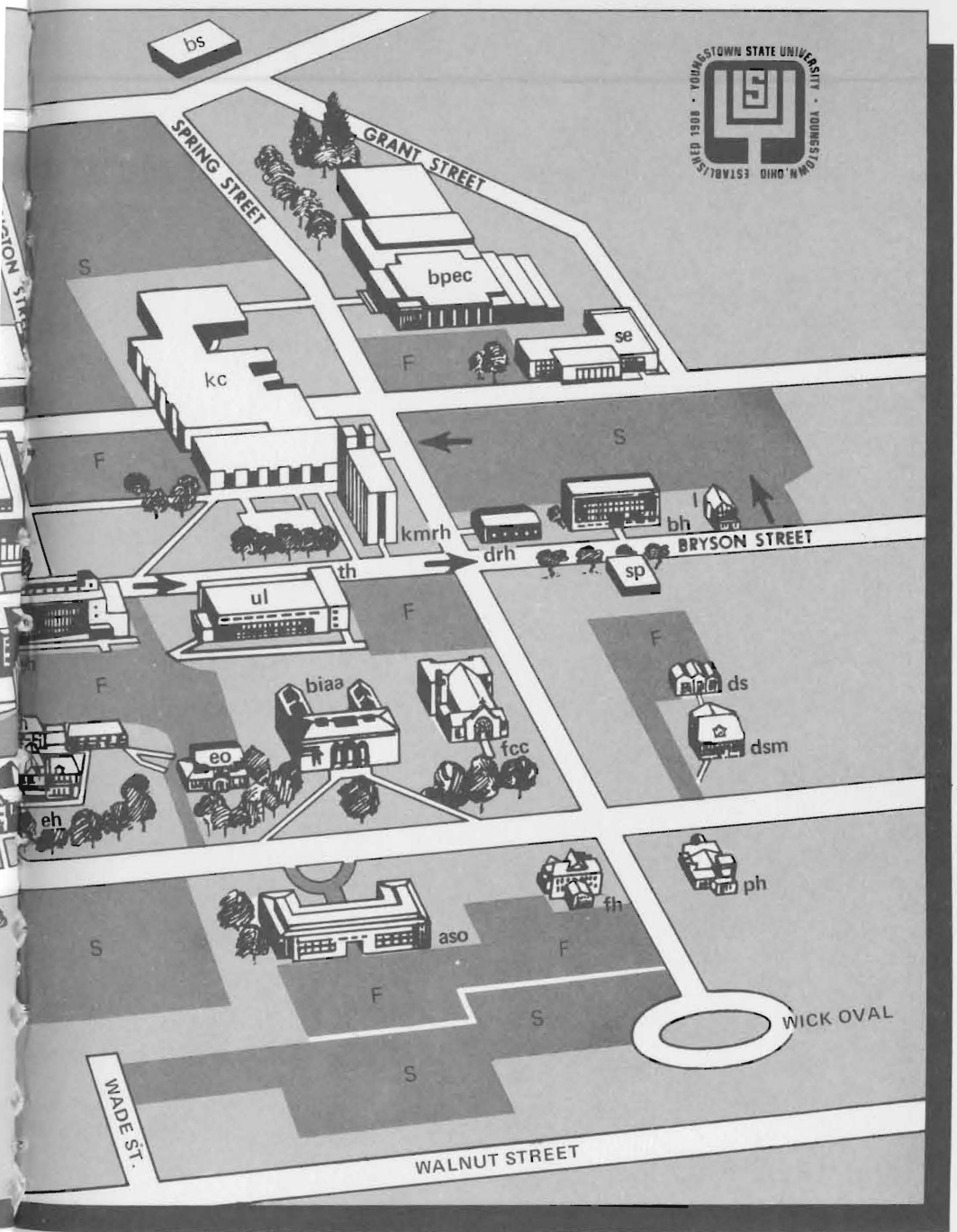
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	
DEC							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31					

YOUNGSTOWN STATE UNIV

UNIVERSITY BUILDINGS

aa	Administration Annex
bpec	Beeghly Physical Education Center
bs	Book Store
ch	Central Hall
cwh	Clingan-Waddell Hall
drh	Dana Recital Hall
dsm	Dana School of Music
ds	Dana Studio
eh	East Hall
esb	Engineering Science Building
eo	Executive Offices
fh	Ford Hall
jh	Jones Hall
kmrh	Kilcawley Men's Residence Hall
kc	Kilcawley Center
l	Linder House
p	Planetarium
ph	Pollock House
rh	Rayen Hall
se	School of Education
sp	Student Publications
tc	Technical & Community College (Completion in 1973)



UNIVERSITY CAMPUS MAP

th	Tod Hall
ul	University Library
wbsh	Ward Beecher Science Hall
wh	West Hall

PARKING

pd	Parking Deck
F	Faculty Parking
S	Student Parking

NON-UNIVERSITY BUILDINGS

aso	Arts and Sciences Office Building
bh	Buechner Hall
biaa	Butler Institute of American Art
fcc	First Christian Church
lp	Lincoln Project
nc	Newman Center
pl	Public Library
sjec	Saint John's Episcopal Church
ywca	Y.W.C.A.