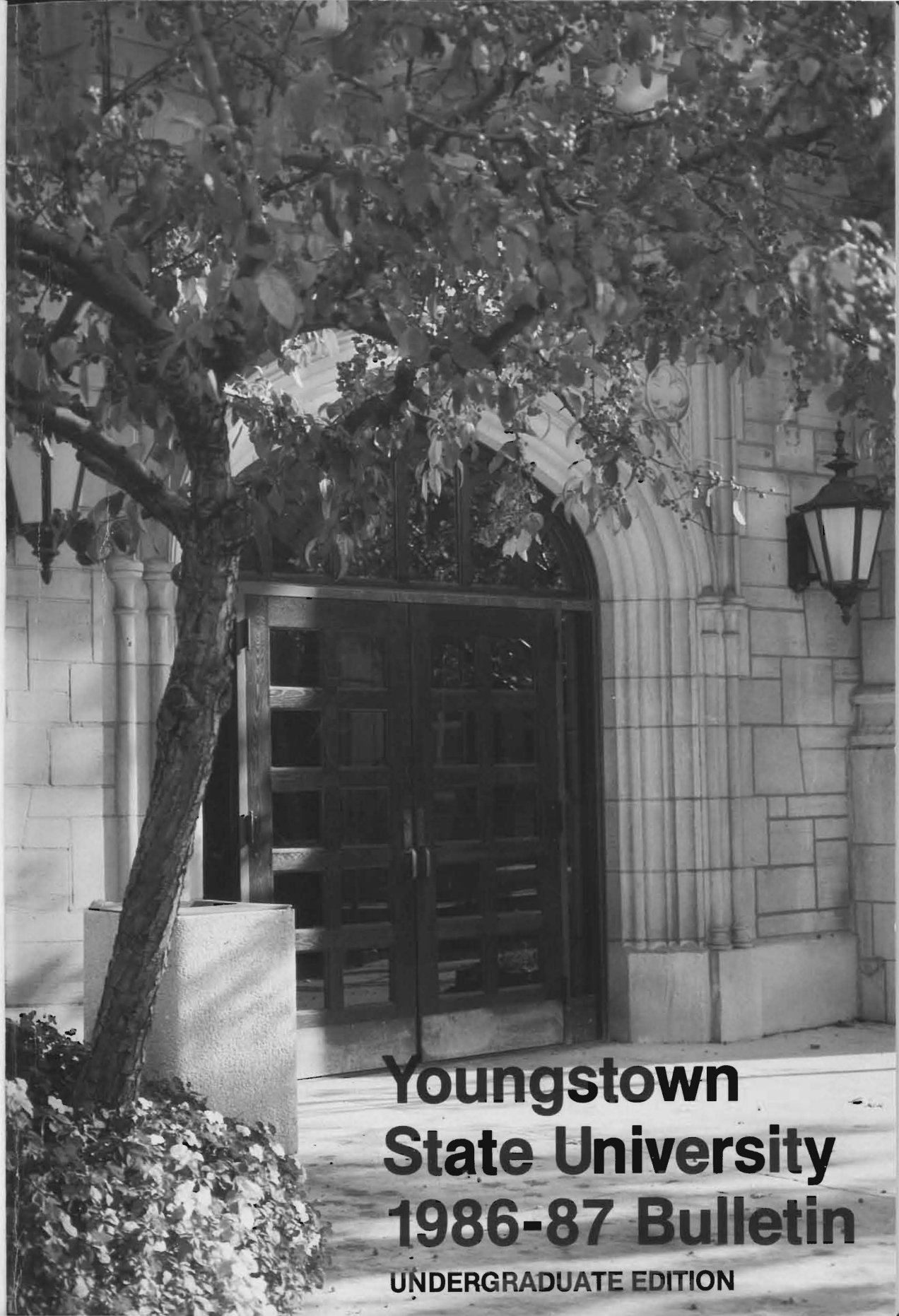

Youngstown State University 1986-87 Bulletin

UNDERGRADUATE EDITION

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YOUNGSTOWN STATE UNIVERSITY

Catalog
1986 - 1988

UNDERGRADUATE CATALOG 1986-87

EFFECTIVE SEPTEMBER, 1986
Youngstown, Ohio 44555

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The information contained in this catalog should be considered informational only and not binding in any way. The University reserves the right to change requirements, fees, course offerings, or other specified policies at any time.

Youngstown State University is an equal opportunity/affirmative action institution in accordance with Civil Rights Legislation and the University does not discriminate on the basis of race, religion, national origin, sex, age, handicap, or other factors prohibited by law in any of its educational programs, activities, admissions, or employment policies. Any concerns regarding these policies should be addressed to the Affirmative Action Director, Tod Administration Building, Youngstown State University, Youngstown, Ohio, 44555

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EFFECTIVE SEPTEMBER, 1986
YOUNGSTOWN, OHIO

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Academic Calendar 86-87

FALL 1986

Sept. 15	Mon.	1000	Faculty Meeting
Sept. 24	Wed.	0800	Classes Begin
Sept. 30	Tues.	1800	Last Day to Add a Class
Oct. 6	Mon.	1700	Last Day To Apply For Fall Quarter Graduation
Nov. 4	Tues.	1800	Last Day To Withdraw With a W
Nov. 11	Tues.		Legal Holiday — University Closed (Veterans Day)
Nov. 26	Wed.	2300	Thanksgiving Academic Break Begins
Nov. 27	Thurs.		Legal Holiday — University Closed
Nov. 28	Fri.		Legal Holiday — University Closed
Dec. 1	Mon.	0800	Thanksgiving Academic Break Ends
Dec. 8	Mon.	0800	Final Examinations Begin
Dec. 13	Sat.	1700	Final Examinations End
Dec. 25	Thurs.		Christmas Holiday — University Closed
Dec. 26	Fri.		Legal Holiday — University Closed
Jan. 1	Thurs.		New Year's Holiday — University Closed

WINTER 1987

Jan. 5	Mon.	0800	Classes Begin
Jan. 10	Sat.	1200	Last Day to Add a Class
Jan. 12	Mon.	1700	Last Day to Apply for Winter Quarter Graduation
Jan. 19	Mon.		Legal Holiday — University Closed (Martin Luther King Day)
Feb. 14	Sat.	1200	Last Day to Withdraw with a W
Mar. 16	Mon.	0800	Final Examinations Begin
Mar. 21	Sat.	1700	Final Examinations End
Mar. 28	Sat.	1000	Winter Commencement

SPRING 1987

Mar. 30	Mon.	0800	Classes Begin
Apr. 4	Sat.	1200	Last Day to Add a Class
Apr. 6	Mon.	1700	Last Day to Apply for Spring Quarter Graduation
May 9	Sat.	1200	Last Day to Withdraw with a W
May 25	Mon.		Legal Holiday — University Closed (Memorial Day)
June 8	Mon.	0800	Final Examinations Begin
June 13	Sat.	1700	Final Examinations End
June 20	Sat.	1000	Spring Commencement

SUMMER 1987

June 22	Mon.	0800	Classes Begin — Entire Summer Quarter and First Term
June 26	Fri.	1700	Last Day to Add a Class — First Term
June 27	Sat.	1200	Last Day to Add a Class — Entire Summer Quarter
June 29	Mon.	1700	Last Day to Apply for Summer Quarter Graduation
July 3	Fri.		Legal Holiday — University Closed (Independence Day)
July 4	Sat.		Legal Holiday — University Closed (Observance of Independence Day)
July 13	Mon.	1700	Last Day to Withdraw with a W — First Term Classes
July 25	Sat.	1200	First Term Ends (Final Examinations for First Term Classes are Given During Last Scheduled Class Period)
July 27	Mon.	0800	Second Term Begins
July 31	Fri.	1700	Last Day to Add a Class — Second Term
Aug. 3	Mon.	1700	Last Day to Withdraw with a W — Entire Summer Quarter
Aug. 17	Mon.	1700	Last Day to Withdraw with a W — Second Term Classes
Aug. 28	Fri.	2200	Second Term and Entire Summer Quarter Ends (Final Examinations are Given During Last Scheduled Class Period)
Aug. 29	Sat.	1000	Summer Commencement

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 approval list of the American Chemical Society. The Dental Hygiene Technology Program is accredited by the Commission on Accreditation of the American Dental Association. Programs in the William Rayen School of Engineering accredited by the Accreditation Board for Engineering and Technology include Chemical Engineering (jointly accredited by the American Institute of Chemical Engineers), Civil Engineering, Electrical Engineering and Mechanical Engineering. The Associate and Bachelors programs in Civil, Electrical and Mechanical Engineering Technology are accredited by the Accrediting Board of Engineering and Technology. The Associate Degree Nursing Program and the Bachelor of Science in Nursing Program are accredited by the National League of Nursing and are approved by the Ohio State Board of Nursing Education and Nurse Registration. The Dietetic Technology program, the Food and Nutrition program and the Coordinated Undergraduate Program in Dietetics are approved by the American Dietetic Association. The Emergency Medical Technology Program is accredited by the Ohio Board of Regents. The Medical Laboratory Technology Program and the Respiratory Therapy Technology Program are accredited by the Committee on Allied Health Education and Accreditation. The School Counseling and Community Counseling Programs have been approved by the Council on Accreditation of Counseling and Related Educational Programs. The Dana School of Music of Youngstown State University is a member of the National Association of Schools of Music.

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 Engr.), Master of Business Administration (M.B.A.), Master of Music (Mus.M.), Bachelor of Arts (A.B.), Bachelor of Engineering (B.E.), Bachelor of Fine Arts (B.F.A.), Bachelor of Music (B.M.), Bachelor of Science (B.S.), Bachelor of Science in Applied Science (B.S. in A.S.), Bachelor of Science in Business Administration (B.S. in B.A.), Bachelor of Science in Education (B.S. in Ed.), Bachelor of Science in Nursing (B.S.N.), Associate in Arts (A.A.), Associate in Applied Business (A.A.B.), Associate in Applied Science (A.A.S.), and Associate in Labor Studies (A.L.S.). All bachelor and associate degrees may be taken as honors degrees.

MISSION

Youngstown State University is an urban university, assisted by the State of Ohio, and maintained to provide a wide range of opportunities in higher education primarily, but not exclusively, to the residents of northeastern Ohio and western Pennsylvania. The University is committed to broad access to education: academic access through open admission to all Ohio high school graduates to a wide range of programs; economic access through reasonable tuition charges and a strong program of financial aids; and geographic access through concentration on the needs of the students who commute to campus without neglect of the needs of students living on or near campus.

Youngstown State University seeks to enrich and liberate the minds of its students that they may be fully developed men and women, conscientious and productive citizens and responsible and understanding partners with others in life, family and work. The University seeks to prepare its students for the future, not just to adapt or succumb to it, but to play active roles in shaping the future. To this end the University seeks to combine the best elements of the long tradition of humanistic, liberal education with education in the most significant advancements in science and technology.

The University is committed to quality in teaching, scholarship, research, and public service. The University seeks faculty who combine these elements in ways that bring excitement to the classroom and laboratory, and stimulate enthusiasm and eagerness for learning in students. The University sees the primary test of its effectiveness in the high quality of its graduates, the kinds of lives they lead, their accomplishments and their services to society. In this sense, teaching is the primary function and mission of the University and its faculty, while scholarship and research undergird and strengthen this function.

Public Service has assumed a greater importance than in years past. As the people of Youngstown and the University's service region have encountered variety of economic problems in recent years, they have developed a greater need of assistance from the University than previously existed; as the University, in turn, faces problems in the 1980's, it experiences a greater need for community support and assistance. Within the limits of available resources, the University will continue to provide professional expertise to governmental bodies and businesses in the area. The University will increase its activities in the area of financial development, seeking methods of securing additional income from corporate and governmental sources. The University will seek to maintain its role as a point of institutional stability and community pride within its service region.

AFFIRMATIVE ACTION PROGRAM

Youngstown State University is committed to a policy of non-discrimination in sex, race, religion, color, age, national origin, or handicap, in respect to applicants for admission, matriculated students, employees, applicants for employment, and organizations providing contractual services to it. It operates in full compliance with the Civil Rights Act of 1964 as amended

by Executive Order 11246; Title IX Regulations implementing the Education Amendment of 1972; Section 504 of the Rehabilitation Act of 1973; the Older Americans Act of 1965 as amended; and the Age Discrimination and Employment Act of 1967 as amended in 1978.

Although the ultimate responsibility for maintaining a viable and effective Affirmative Action Program rests with the President of the University, the key role in its execution is delegated to the Director of Affirmative Action in Employment and Purchasing, who periodically reviews the program, discusses grievances and charges of discrimination, if any, and makes recommendations toward the program's effectiveness. An Affirmative Action Committee serves in an advisory capacity.

The University utilizes all normal means of communication to make known its policies of affirmative action and equal-opportunity employment.

HISTORICAL SKETCH

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

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 as Youngstown State University.

Dana's Musical Institute, founded in nearby Warren in 1869, became the Dana School of Music of Youngstown 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 1981 the School name was changed to the Warren P. Williamson Jr. School of Business Administration. In 1960, the Education Department became the School of Education. The Graduate School and the College of Applied Science and Technology were created in the spring of 1968, and in 1974, the College of Fine and Performing Arts was established, comprising the Dana School of Music and the departments of Art and of Speech Communication and Theatre.

In 1972, Youngstown State University, with the University of Akron and Kent State University, formed a consortium to sponsor the Northeastern Ohio Universities College of Medicine, which enrolled its first students in 1975.

THE GENERAL PROGRAM OF THE UNIVERSITY

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

The College of Applied Science and Technology

The College of Arts and Sciences

The Warren P. Williamson, Jr. School of Business Administration

The School of Education

The William Rayen School of Engineering

The College of Fine and Performing Arts

The Graduate School

The Northeastern Ohio Universities College of Medicine

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 a full 10-week session and for half-sessions of five weeks each.

THE COLLEGE OF APPLIED SCIENCE AND TECHNOLOGY

The College of Applied Science and Technology offers baccalaureate programs in Civil Engineering Technology, Computer Technology, Criminal Justice, Electrical Engineering Technology, Food and Nutrition, Home Economics, Mechanical Engineering Technology, Medical Technology, and Fashion Retailing leading to the Bachelor of Science in Applied Science degree; in Nursing, leading to the Bachelor of Science in Nursing degree; and, in cooperation with the School of Education, in Business Education and Home Economics, leading to the Bachelor of Science in Education degree, for secondary school teaching.

It also offers two-year programs in a large number of technologies, leading to the degree of Associate in Applied Business, Associate in Labor Studies, or Associate in Applied Science; and a more general two-year program leading to the Associate in Arts degree, with a variety of concentration areas. A complete list of the available fields of technology and the programs for each will be found in the College of Applied Science and Technology section.

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 technical or professional fields upon graduation. It provides the Arts and Sciences courses in the curriculums of the other schools and colleges of the University.

Programs offered in the College of Arts and Sciences lead to either the Bachelor of Arts or the Bachelor of Science degree. Students working toward the Bachelor of Science in Education degree take most of their courses in Arts and Sciences subjects. The major subject may be Anthropology, Biology, Black Studies, Chemistry, Computer Science, Earth Science, Economics, English, French, Geography, Geology, German, Health Education, History, Italian, Labor Relations, Latin, Mathematics, Music, Philosophy, Physical Education, Physics, Political Science, Psychology, Russian, Religious Studies, Social Work, Sociology, Spanish, or a combined major in American Studies, Humanities, Sciences, or Social Studies. Courses are also offered in astronomy, ancient Greek, journalism, linguistics, military science, and social science.

THE WARREN P. WILLIAMSON, JR. SCHOOL OF BUSINESS ADMINISTRATION

The Warren P. Williamson, Jr. School of Business Administration offers courses leading to the Bachelor of Science in Business Administration degree, with a major in Accounting, Advertising and Public Relations, Fashion Retailing, Finance, General Administration, Management, Industrial Management,Industrial Marketing, Marketing Management, Retail Marketing, Public Administration, Transportation Management, and Advertising Art in conjunction with the Art Department.

THE SCHOOL OF EDUCATION

The School of Education offers courses leading to the degree of Bachelor of Science in Education. It also cooperates with the College of Arts and Sciences in providing the professional courses for the degrees of Bachelor of Arts and Bachelor of Science with the major in a teaching field; with the Dana School of Music for the Bachelor of Music degree with a major in Public School Music; with the College of Fine and Performing Arts in the preparation of teachers of art; and with the College of Applied Science and Technology in the preparation of business education and home economics teachers.

THE WILLIAM RAYEN SCHOOL OF ENGINEERING

The William Rayen School of Engineering offers complete curriculums in Chemical, Civil, Electrical, Industrial, Mechanical, and Metallurgical Engineering, all leading to the degree of Bachelor of Engineering.

THE COLLEGE OF FINE AND PERFORMING ARTS

The College of Fine and Performing Arts offers programs leading to the degrees of Bachelor of Arts, Bachelor of Music, Bachelor of Fine Arts, and Bachelor of Science in Education (in conjunction with the School of Education). The major may be in Applied Music (Performance), Art History, Music History and Literature, Speech Communication, Studio Art, Theatre, or Music Theory and Composition; or (in conjunction with the School of Education) in Art Education, Music Education, or Speech Education.

THE GRADUATE SCHOOL

The Graduate School offers programs in Economics, English, and History leading to the Master of Arts degree; programs in Biology, Chemistry, Criminal Justice, and Mathematics leading to the Master of Science degree; programs in Accounting, Accounting/Finance, Management, and Marketing leading to the Master of Business Administration degree; programs in Music Education, Performance, Music Theory and Composition, and Music History and Literature leading to the Master of Music degree; programs in Civil, Electrical, and Mechanical Engineering, and Materials Science leading to the Master of Science in Engineering degree; and Master Teacher (Elementary or Secondary), Educational Administration and Supervision, Counseling, and Special Education programs leading to the Master of Science in Education degree.

THE NORTHEASTERN OHIO UNIVERSITIES COLLEGE OF MEDICINE

The Northeastern Ohio Universities College of Medicine (NEOUCOM), was established under the sponsorship of a consortium formed in 1972 by Youngstown State University, Kent State University, and the University of Akron. From the first students, admitted in 1975, came the college's first graduating class in 1981.

This non-traditional medical program, which includes courses in the humanities and social studies, makes clinically-related experiences a part of the students' education from the first, so that they begin early to appreciate the relevance of science courses to their future role. Medical science instruction is under the direction of the medical school faculty, and

emphasis on the basic sciences continues throughout the last four years of medical school and it is shared with graduate physicians in internship and residency training.

Prospective YSU students interested in the NEOUCOM Program will find further information in this catalog under Admissions in the General Requirements and Regulations Section and under Combined B.S./M.D. Program in the College of Arts and Sciences section. A detailed description of the curriculum is available from the office of the Dean of the College of Arts and Sciences or from the YSU Admissions Office.

SPECIAL PROGRAMS

UNIVERSITY HONORS

Two types of Honors Programs are available:

(1) The Honors Degree program permits any program to be taken, with additional requirements, for an Honors Degree. (See section covering COURSE REQUIREMENTS.)

The program is designed to create a distinct and continuing community of intellectual excellence by bringing together superior students from diverse disciplines, challenging these students with extra-ordinary courses, and recognizing their unique academic achievements with a special Honors Degree. This is intended to attract and retain superior students, to stimulate faculty interaction and growth, and to serve as a tangible emblem of the University's academic excellence.

(2) Departmental Honors programs are available in selected departments.

INDIVIDUALIZED CURRICULUM PROGRAM

This program, intended to provide opportunities for non-traditional curricula, is further explained in the section covering COURSE REQUIREMENTS.

BLACK STUDIES

The Black Studies program was established in the fall of 1970, and a program for an interdisciplinary major in Black Studies was approved by the University Senate in the winter of 1972. The purpose of this major is to facilitate the academic investigation and analysis of the historical, social, and aesthetic impact of people of African descent on American society and the world. It also provides for the systematic study of problems confronting the modern multi-racial world. The Black Studies major can serve as a valuable complement to teacher education, humanistic study, and preparation for various fields of employment such as business, law, or social work. A Black Studies minor complements majors in related areas, especially in Economics, Education, English, History, Philosophy, Political Science, Religious Studies, and Sociology. Both the major and minor programs can provide diverse opportunities for employment and for graduate and postgraduate experiences.

OFFICE OF CONTINUING EDUCATION

The Office of Continuing Education (OCE) develops and administers courses and programs outside the traditional degree programs. Through both credit and non-credit course offerings at a variety of convenient times and locations, it makes academic programs, along with administrative and support services, available to non-traditional students. OCE'S education outreach function is manifested in its weekend and off-campus credit course offerings, while its continuing education function is carried out in several series of non-credit offerings described below.

The Continuing Education non-credit programs offer area residents a wide variety of adult education or lifelong-learning courses and seminars to meet the needs of a changing society for professional updating and upgrading, for mid-career adjustments, and for lifestyle changes.

Area residents participate annually in more than 200 non-credit programs, many of which are in the academic disciplines and professional areas, varying from half-day seminars to multi-week courses conducted in local business and government settings and other off-campus locations.

The COMMUNIVERSITY SERIES enables individuals to learn in informal settings at convenient hours without the pressures of examinations and papers, and to discuss and probe subjects of their choice under the guidance of the University faculty or community leaders. The series includes not only adult programs in the humanities, sciences, fine arts, and personal conditioning and exercise, but also such varied activities as the Dana Preparatory Program.

The COLLEGE FOR OVER SIXTY enables Ohio residents 60 years of age or older, who have been Ohio residents for 12 months or more, to enroll in credit classes on a non-credit basis, as space is available.

The DANA PREPARATORY PROGRAM, developed in association with the Dana School of Music, offers musical training of nearly all kinds to people of all ages who are not enrolled for credit in the University. No previous musical education is needed, and individual lessons can be scheduled.

The PROFESSIONAL DEVELOPMENT SERIES offers non-credit courses, both on-campus and in-plant, to help individuals update professional knowledge and skills or explore new areas of knowledge and skill development. These opportunities are offered in three areas: Health and Human Services Programs to meet the needs of various local, county, state, and federal agencies; Business and Management Programs in many occupational fields; and Engineering, Technical and Computer Programs to meet the needs of a "high tech" society.

OCE also sponsors SEMINARS AND CONFERENCES designed to bring the resources of the University to bear on the needs of professionals and community leaders.

The Office of Continuing Education, in accordance with the Board of Trustees and Senate policy, awards the Continuing Education Unit (CEU) in programs that meet the policy requirements. The CEU is a standard unit of measure (10 hours of participation in a Continuing Education course or seminar) that has been increasingly used by employers and professional certifying agencies to evidence educational attainment in non-credit post-secondary courses.

EDUCATION OUTREACH PROGRAMS FOR CREDIT

Evening and weekend credit programs are designed for people who find the traditional daytime courses inaccessible. They permit students, with or without prior credit, to undertake courses for an undergraduate degree during evenings or weekends or both.

The adult re-entry program enables high school graduates or individuals with GED credit who have been out of school for at least two years, and former college students who have not attended for two years or more, to resume undergraduate study on the University level.

Further information may be obtained from the Office of Continuing Education, Room B087, Cushwa Hall: (216) 742-3221, or, for non-credit programs, (216) 742-3357.

TELECOMMUNICATION SERVICES

Radio Programs

The University owns and operates WYSU, a 45,000-watt stereo FM radio station with a range of approximately 55 miles. The station operates at 88.5 megahertz and broadcasts 24 hours a day, providing more than 4,000,000 people in Northeastern Ohio and Western Pennsylvania with fine arts programs from its studios in Cushwa Hall. The primary purpose of the station is to serve the cultural and educational needs of the area by providing an alternative listening service, emphasizing serious music and intellectually stimulating public affairs programs not provided by commercial stations in the area.

YSU'S broadcast services attempt to bring to all audiences the University's and community's best energies, resources, and talents; and thus to enhance the quality of the area's cultural atmosphere.

The core of the radio operation is a full-time professional staff, but students are also employed if their qualifications meet professional broadcasting standards.

FM-SCA Programs

The University transmits special educational programs for the handicapped on a multiplex basis using a sub-carrier frequency of 67 kilohertz.

TV Programs

The University is a member of NETO (Northeastern Educational Television of Ohio), a Public Television Consortium of the state universities at Akron, Kent, and Youngstown, which operates UHF Channels 45 and 49.

Common transmitters, at Salem and Akron, broadcast programs acquired from National Public Television Sources and the Ohio Educational Television Network as well as local programs produced at Kent, Akron, and by contract at Youngstown.

PUBLIC SERVICE INSTITUTE

The Public Service Institute was created by the University Board of Trustees in 1985 to coordinate, promote and stimulate public service programs and activities offered by the University to the community. At present, the Institute consists of the Human Services Development Center, Cushwa Center for Industrial Development, Engineering Services Center, and the Center for Urban Studies. In the future, new programs may be included.

The Institute works with community members and organizations, as well as with University public service programs or departments to facilitate the extension of University resources into the community where they might be needed. In order to accomplish this, the Institute's coordinator is responsible for identifying public service needs in the community not now being met by University programs; assisting in developing public service programs to meet community needs; helping coordinate public services delivered to the community when two or more University departments are involved; and promoting the Institute as a clearinghouse for disseminating information about University public service programs.

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 University's obligations to the development and progress of the region. The Center's primary objective is to apply YSU's resources to the problems and processes related to urbanization, through the development of an ongoing program of making basic and applied research, technical assistance, and training available to local government, business, and public service organizations.

Service Areas

The following are representative of services available to the community through the Center for Urban Studies. (1) Systematic assessments of the impact of

public programs and designs for improved service. (2) Management analyses and organizational development strategies that emerge from examination of current practices drawing on innovations in public administration and aiming at improving productivity. (3) Low-cost rapid sampling of public opinion by telephone, mail questionnaire, or personal interviews. (4) Assistance in designing computer-based systems for data management to aid in planning and operations. (5) Provision of data storage and processing facilities to public users at reasonable cost. (6) Assistance to decision-makers in selecting the best alternative program or policy, based on formal assessments of needs, projected environmental and economic impacts, and benefits-cost or cost-effectiveness analysis. (7) Access to census tapes, technical reports, and other publications related to urban public management. (8) Training processes, workshops, seminars, and symposia to bring information on urban problems to the attention of public administrators, citizens, and faculty. (9)Urban planning, including urban design, economic base analysis, general and specific land use studies, zoning, and economic revitalization strategy development.

CHARLES B. CUSHWA, JR. CENTER FOR INDUSTRIAL DEVELOPMENT

The Charles B. Cushwa, Jr. Center for Industrial Development was created in June 1978 with matching endowments from Mrs. Charles B. Cushwa, Jr., wife of the late President and Chairman of Commercial Shearing, Inc. of Youngstown, and from the Commercial Shearing Foundation.

The Center's purpose is to promote the creation of jobs by encouraging new business ventures and by assisting existing firms to improve their production capabilities. It seeks to accomplish this goal through programs which:

Help local industry to identify, develop, and effectively market their products and services.

Guide the exploration and development of new enterprises that can provide business and industry with basic goods and services.

Provide local industry with access to supportive technical and educational resources of the University.

Serving primarily industries in the five counties immediately surrounding the University, the Center utilizes the faculty and facilities of the University to provide enterprise counseling, manufacturing consulting, market development, and product development services to individuals and businesses. Emphasis is placed on the utilization of strategic business planning, effective marketing techniques, and basic principles of enterprise development. Client identity and all information discussed with the Cushwa Center are treated confidentially and a close relationship is maintained with clients for a period sufficient to achieve tangible results. No fees are charged for initial discussions with clients; fees for subsequent counseling or technical assistance depend on the duration and circumstances of a project and its cost to the University.

Under a grant from the Ohio Department of Development, Youngstown State University provides technology transfer services for business and industrial firms in Mahoning and Trumbull counties for the Ohio Technology Transfer Organization (OTTO). Through this organization, functioning within the Cushwa Center, the University draws from the network of other Ohio colleges and universities for technological information and assistance for companies that is not available from local resources.

HUMAN SERVICES DEVELOPMENT CENTER

In 1985, the University Board of Trustees established the Human Services Development Center to serve as a community resource for health and human service organizations, community leaders and the general public. Staff at the Center work with a community-wide spectrum of people to identify problems, meet needs, develop solutions, and evaluate activities in the health and human services field.

The Center offers a variety of services, including: 1)establishing and maintaining networks or linkages among service providers and consumers; 2) offering technical assistance for social service program planning and evaluation; 3) working with organizations to identify and obtain grants; 4) providing training for agency managers, boards and staff members; 5) sharing information and acting as a clearinghouse; and 6) helping organizations develop marketing strategies and programs.

CAMPUS DEVELOPMENT

During its earlier years the institution had a number of homes. Starting in the old Central YMCA 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 most of an area four blocks long and three blocks wide, covering 92 acres. The University also has 17.6 acres in Liberty Township and 118.4 acres in Hartford Township.

The next 10 year period of facilities planning and construction will be guided by a Facilities Master Plan that was adopted by the Board of Trustees in June 1985.

JONES HALL

The oldest building on the present campus is Howard W. Jones Hall, a limestone structure of conventional tudor style on the northwest corner of Wick and Lincoln Avenues. Built in 1931 and long the institution's "main building," it was renamed in 1967 to honor the man whose energy and acumen, during his 36 years as president, brought an embryonic college to membership in the State University System.

The structure was enlarged in 1949 by the addition of the C.J. Strouss Memorial Auditorium, named for the then president of the Strouss-Hirshberg Company, a devoted friend and trustee of the University. In 1978 the interior was completely remodeled to accommodate administrative offices directly serving student needs: Admissions, Bursar's, Career Services, (Until late in 1986, Career Services will be temporarily located in Tod Hall, lower level), Counseling and Testing, Financial Aids, Graduate School, Records, Registrar's, Student Data Services and Student Developmental Services Offices.

TOD ADMINISTRATION BUILDING

The University's main administrative offices are in The Tod Administration Building, a former library building built in 1952 and thoroughly renovated in 1978. These offices include those of the President, Provost, Vice-President for Personnel Services, Vice-President for Student Services, and Vice-President for Institutional Advancement; the Executive Director of Administrative Services, Affirmative Action, Assistant Provost for Academic Services, Audits and Systems, Budget, Controller, Executive Director of Facilities, Payroll, Personnel, Purchasing, and News Service/Publications Offices; and the Board of Trustees' Meeting Room.

WILLIAM F. MAAG, JR. LIBRARY

The University's six-story William F. Maag, Jr., Library, completed in 1976, provides an attractive and comfortable environment for study and research. A member of the Online Computer Library Center, Maag Library provides reference, government documents, inter-library loan, database searching, and other services necessary to the needs of the University community. In addition, the library has an online public access catalog (the Virginia Technology Library System) with several terminals.

The library includes instructional and research materials in books, periodicals, and microforms. These holdings number 514,226 volumes and 698,603 microforms. Microreaders are on the lower level, as are coin-operated copy machines. On the main level are user services and the library offices. The book collection is on the third through sixth floors in open stacks, with split-level design between stack and reading levels. There are study rooms and carrels on each floor.

Maag Library and its facilities provide opportunity for group study and discussion, as well as individual development.

HARRY MESHEL HALL

The newly dedicated Meshel Hall houses expanded facilities for academic and administrative computer use, broadens the Youngstown State University educational programs, and provides local business and industry with highly trained personnel. The state-of-the-art center is for instruction, research, and application in advanced computer technology including computer assisted design and robotics which will serve the entire University community. It will particularly enhance programs in the College of Applied Science and Technology, William Rayen School of Engineering, College of Arts and Sciences and the Warren P. Williamson School of Business Administration.

The four story steel, concrete, stone and glass structure contains 87,000 square feet of space and is located to the west of the Wick Avenue Parking Deck with its main access and entry by the pedestrian walkway over Wick Avenue. The building contains 7 classrooms, 13 specialized computerized laboratories, 25 faculty offices, and a large atrium for student study. The fourth floor houses the University's main computer facilities and Computer Center staff. The Harry Meshel Hall total project cost was $15,000,000 which includes the structure, furnishings and equipment.

THE COMPUTER CENTER

The Computer Center is a centralized computational facility that provides decentralized access by the faculty, staff, and students throughout the entire University. Serving both academic and administrative needs, the Computer Center operates an AMDAHL 5868 Multiprocessor (equivalent to two IBM 3081s) having 32 million characters of main memory (16 million in each processor) and approximately 30 billion characters of on-line disk storage. The computer complex is complemented by approximately 650 online devices, including terminals, personal computers, printers, plotters and projection systems.

The Computer Center occupies the fourth floor of the recently constructed (1986) 87,000 square-foot "high-technology center" called Harry Meshel Hall. A wide variety of software and peripheral equipment are explained in full detail in the Computer Center's annual publication, *The Guide to Academic Computing*. Computing services available to students and faculty are described in this publication but are also available via online tutorials using computer based education techniques.

Students have access to the computer either in the batch mode or interactively at remote installations located throughout campus. The main installations are located in Meshel Hall which contains 7 classrooms and 13 laboratories dedicated to student use of the computer facilities. Forty-eight dial-up telephone lines are provided for remote access off-campus. A full-time professional staff and part-time student assistants are available for student consultation on course work and research projects.

WARD BEECHER SCIENCE HALL

This building houses the departments of Biology, Chemistry, and Physics and Astronomy. The five-story

original unit was constructed in 1958, a major addition was built in 1967, and a small addition comprising chemical storerooms was completed in 1979. It was initially built with funds contributed by Mahoning Valley Industries and area industrialist Ward Beecher. Presently the building contains 34 laboratories including a planetarium, 12 classrooms, 37 academic offices, 10 faculty-research rooms, and a conference-seminar room. Currently underway is a major $11,000,000 renovation and remodeling project consisting of two phases. Phase I includes renovation to the Engineering Science Building. Phase II includes a complete renovation of the entire Ward Beecher building with an infill to the breezeway area linking old and new Ward Beecher. Major construction will include renovation of the heating, ventilating, and air conditioning systems, electrical systems, labs and lab equipment, construct infill area, new brick and glass exterior, and general upgrade of all interior finishes. The total project is scheduled to be completed in the Spring of 1987.

POLLOCK HOUSE

Pollock House, built in 1900, was given to the University in 1950 by its former owners, Mr. and Mrs. William B. Pollock II. Currently the building is unoccupied. Plans are underway to convert the Pollock House into a University Inn. The projected completion date is September 1987.

CLINGAN-WADDELL HALL

The aquisition, 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 John R.T. Clingan of Niles, Ohio. Located on Rayen Avenue just east of Wick Avenue, it currently houses the ceramics and sculpture studios of the Department of Art. The ceramics and sculpture studios will eventually be relocated to a planned addition to Bliss Hall.

HISTORICAL BUILDINGS

The renovations to the Alumni House, Campus Security and Parking Building and North Annex have been consistent with the recommendations of our Facilities Master Plan and these buildings are listed in the "National Register of Historic Places" in recognition of their representing important eras in Youngstown's development. These three buildings are in the "Wick Avenue Historical District." Our renovation efforts were dedicated to maintaining the visual, architectural, and physical character of these structures recognizing, identifying and preserving their heritage.

ALUMNI HOUSE — The existing three-story stucco Alumni House on the corner of Wick Avenue and Spring Street, originally constructed in 1865 and renovated in 1910 and 1982, was recently remodeled and restored to house the Youngstown State University Alumni Association and the Youngstown State University Foundation.

CAMPUS SECURITY BUILDING —The existing two story stucco building was also constructed in 1865 and recently renovated to house the Department of Campus Security and Parking. The entire interior and exterior of the structure will was renovated at a total project cost of $210,000.

NORTH ANNEX — The two-story brick North Annex Building located on the north side of Spring Street was originally constructed in 1933; remodeled in 1978 and will be renovated in the Spring/Summer of 1986. It will be the location of The Public Service Institute which includes the Cushwa Center for Industrial Development, Center for Urban Studies, The Engineering Service Center, and Human Resource Development Center.

SCHOOL OF EDUCATION BUILDING

The School of Education Building, located on the west side of Elm Street was originally constructed in 1951 and purchased from the Youngstown Board of Education in September 1965. The heating, ventilating and air conditioning system was completely renovated in 1985. The building contains 8 classrooms, 15 laboratories, a large curriculum resource center, and 50 offices. It also contains the consolidation and relocation of developmental education activities which include the reading, mathematics and writing laboratories.

KILCAWLEY CENTER

Kilcawley Center is the community center of the University and its facilities include dining rooms, seminar rooms, lounges, an art gallery and recreational areas including rooms for billiards, chess, backgammon, table tennis, music listening and television viewing. Student organization offices are located in the Center, as is the University Bookstore, a campus information center, a bank, ice cream parlor, student publications, Student Enrichment Center and the International Student Program Office. A gift of $300,000 had been made to the Center by the William H. and Mattie M. Kilcawley Foundation to which gifts from industry and from alumni and student funds were added. The Center was built in 1966. Expansion and remodeling were completed in 1974, 1976 and 1981. The most recent expansion included a 300-seat dining room, a study lounge, an enlarged lobby and art gallery, an expanded pub, a room for quiet games,four seminar rooms and an information center. Information about Kilcawley Center and University Events can be found at the information center or by calling 742-3516.

KILCAWLEY RESIDENCE HALL

The Residence Hall was constructed in 1965. The seven-story building has 240 beds. Its residents can utilize all of Kilcawley Center's facilities without going outdoors. Admission to the University does not obligate the University to secure living accommodations for the student. Students who wish to reside in Kilcawley Residence Hall should contact the Housing Office at 742-3547.

ENGINEERING SCIENCE BUILDING

The Engineering Science Building, a five-level structure completed in 1967, houses the William Rayen School of Engineering and the Geology Department. In addition to 31 laboratories, 27 classrooms, 8 research and development rooms, 6 conference rooms, and 51 offices, it contains the 268-seat Schwebel Auditorium.

WILLIAMSON HALL

Williamson Hall houses the four departments of the School of Business Administration. Williamson Hall, built in 1970, has 31 classrooms and 71 faculty and staff offices. Williamson Hall was completely remodeled during the 1982-83 academic year for a total project cost of $1,800,000 and was returned to full use and occupancy in the Fall of 1983.

BLISS HALL

Housing the College of Fine and Performing Arts, Bliss Hall, completed in 1976, was named in memory of William E. Bliss, a prominent area industrialist. Its facilities include the 409-seat theatre, Ford Auditorium, a theatre named for the Ford family; the 237-seat Choral Recital Hall; an experimental theatre with flexible seating up to 250; 70 music practice rooms, equipped with studio or grand pianos; a Schlicker performance organ and two Flentrop practice organs; 27 faculty office-studios which can be used for music instruction; a band/orchestra room with a library; a photography studio with 18 enlargers; a crafts studio with 18 weaving looms; fully equipped drawing, advertising, printmaking, sculpture, and painting studios; a complete shop with heavy equipment for working in three-dimensional design; art faculty office-studios; a student lounge/art gallery; a materials center with a collection of 6000 LP's, 2000 volumes of musical scores, and 50,000 art slides; and conference and seminar rooms. During the summer of 1982, the heating and cooling system was remodeled to effect an improved environment and make the facility more energy efficient. A major $2,660,000 interior renovation and addition of a ceramics laboratory as recommended by the Facilities Master Plan is planned for 1986/87.

DANA HALL

Dana Hall, a classic one-story building located at the corner of Bryson Street and Spring Street, was constructed in 1908. The building houses Student Support Programs which includes the nontraditional student lounge, student tutorial services and the Women's Resource Center.

BEEGHLY PHYSICAL EDUCATION CENTER

In this building, first occupied in 1972, are the Department of Health and Physical Education and the varsity basketball athletics offices and facilities. In addition to a gymnasium with seating for over 7,000 spectators and an olympic-size swimming pool, it contains faculty offices; 17 classrooms including laboratories for health research and kinesiology; separate gymnasiums for wrestling, weight-lifting, gymnastics, and physical education for handicapped; handball and squash courts, dance studio and a rifle range. A major energy conservation and mechanical system improvement project to convert and tie the cooling system of the building to the University chilled water system was recently completed at a cost of $1,000,000.

ALL-SPORTS COMPLEX

Located on an 18-acre site adjacent to Beeghly Physical Education Center, the new All-Sports Complex includes Arnold D. Stambaugh Stadium with Beede Field, an artificial-turf sports field for football and soccer, and facilities with seating for 16,000 spectators; officials' dressing rooms; varsity athletic offices; H.PE classrooms, handball courts, gymnasiums, and facilities for various other Health and Physical Education activities; and the Department of Military Science.

The Complex also includes an all-weather 400-meter track with 1500 bleacher seats; facilities for all other track and field events; outdoor courts for basketball, handball, and volleyball; an outdoor classroom area; and 10 hard-surfaced and lighted tennis courts.

OTHER SPORTS FACILITIES

Currently, in addition to Beeghly Center and the All-Sports Complex, the physical education and athletic programs utilize the athletic fields and well-equipped sports centers in Mill Creek Park; Evans Field and Pemberton Park for baseball; and, for off-campus sports, the McGuffey Bowling Lanes on North Garland Avenue, the Avalon Golf Course, and Harrison Field in Smokey Hollow and Liberty Field for intramural activities and varsity football and softball.

CUSHWA HALL

Opened in 1976, this structure houses the College of Applied Science and Technology, as well as the Media Center, WYSU Radio Station, Office of Continuing Education, Department of Geography, and Department of Mathematical and Computer Sciences. One of the largest buildings on campus, it contains

52 classrooms, 70 laboratories, 169 offices, 23 conference-seminar rooms, and two lecture halls with seating capacities of 180 and 198.

DE BARTOLO HALL

DeBartolo Hall was first occupied in 1978. The departments of Economics, English, Foreign Languages, History, Philosophy and Religious Studies, Political Science and Social Science, Psychology, and Sociology, Anthropology, and Social Work and the Black Studies Program Office are in this six-story structure, with over 150 offices for faculty and staff, 5 student lounge and study areas, 19 classrooms, 5 laboratories, a computer terminal room, a 200-seat lecture hall with stage, and special varied laboratories for the Department of Psychology.

LABORATORIES

Biology, Chemistry, and Physics Laboratories are in the Ward Beecher Science Hall; the Language, Psychology, Anthropology/Archaeology Laboratories are in De Bartolo Hall and are described below. The Geology Laboratory is in the Engineering Science Building. The Engineering Laboratories are described in the School of Engineering section. The Laboratories in Cushwa Hall are also described below. The Writing Laboratory is in the School of Education.

The Foreign Language Laboratory is designed for both classroom use and individual study. The classroom section has 31 student stations equipped with individual cassette recorders coordinated with multi-channel console through which audio programs are transmitted to the students, a 16-MM film projector with auxiliary feed into the console to provide individual listening to the movie soundtrack. The individual-study section has 44 carrels, in which all types of audio-visual equipment can be used. Special over-sized carrels house video equipment. Audio-visual programs are available for audio/oral practice and for study of foreign cultures.

In the Psychology Laboratories, in the basement of De Bartolo Hall, students can learn basic techniques of experimental psychology, child psychology, social psychology, and survey research. Equipment includes an electromagnetically isolated room for recording neural activity, a surgery room for investigating brain-behavior interactions, animal housing areas, a child observation room with mirropane glass, equipment for the control of animal behavior, and a complete audio-visual system to record the different behaviors possible in the laboratory setting.

The Physical Anthropology and Archaeology Laboratory has a wide range of special equipment including research microscopes, analytical balances, and spectrophotometers.

In Cushwa Hall, laboratories are provided for Television and Radio, Dental Technology, Allied Health, Microbiology, Nursing, Criminal Justice, Geography, Business Education, Home Economics, Paramedical Science, Mathematics, and Engineering Technology. Each laboratory is equipped for individual instruction of a full complement of students.

THE BOOKSTORE

The Youngstown State University Bookstore, located at the west end of the Kilcawley Center Complex, sells required texts, materials and supplies. In addition, the bookstore stocks a wide selection of standard books in inexpensive editions. A selection of personalized soft goods, stationery and specialty items is also carried.

SERVICE BUILDINGS

The buildings at various locations on campus that house specific services include:

PHYSICAL PLANT BUILDING located on Rayen and Wood Streets houses physical plant maintenance personnel, administration staff, central receiving, key control, motor pool, main warehouse and various repair shops.

CENTRAL UTILITY PLANT - the central production plant for campus utilities is located at the corner of Spring Street and Elm Street. The plant has the capability of producing steam and chilled water for University needs and is distributed through a complex of underground tunnels and direct burial utilities.

GROUNDS BUILDING located on Rayen Avenue contains Grounds Department staff, personnel and equipment.

CENTRAL SERVICES is located on Spring Street north of the Tod Administration Building and houses University printing services, office supplies, campus mail services, and the parking office.

WICK AVENUE MOTEL

The Wick Avenue Motel located on the east side of Wick Avenue south of Bliss Hall and west of the Parking Deck is presently utilized for the temporary relocation of faculty and staff during major renovation of academic buildings. The Youngstown State University Credit Union, Council of Family Medicine (NEOUCOM) and the Hands on Musuem are currently housed in the Motel.

CAMPUS SECURITY DEPARTMENT

A service-oriented, state-of-the-art, well-trained and well-equipped campus security department is maintained by Youngstown State University. The department is located in the Campus Security Building on Spring Street, just west of Wick Avenue, in what was previously referred to as the Disciple House Annex.

The staff consists of 29 sworn police officers and associated support personnel. An effective/modern

communication system is utilized. It is complemented with well-equipped cruiser/patrol vehicles.

The training of departmental personnel is continuously updated. Additional educational and specialized training is a departmental priority. Crime prevention is highlighted and these individuals form a unique group of professional people serving the YSU community.

The Campus Security Department is open 24 hours a day. The general business telephone number is 742-3527. For emergency service call Extension 3333. Campus emergency telephones are located throughout campus to provide help and assistance.

PARKING AREAS

Parking areas are designated as follows:

S — Student Parking
F — Faculty/Staff Parking
M — Mixed Parking (Faculty, Staff, and Students)

Parking facilities for students include two parking decks and specified surface lots. After 4:30 p.m. daily, all parking areas (except spaces posted as No Parking, Handicap, etc.) are available for use by students, faculty and staff with a current permit.

The current Parking Regulations contain additional information about University controlled parking. For information on registration of vehicles and applicable fees, see the Fees and Expenses section of this catalog.

LEARNING ASSISTANCE CENTER

The University provides a comprehensive program of academic support services to assist the adjustment of students to college. Credit courses are offered during the year in the Departments of English, Elementary Education and Mathematics to help students overcome deficiencies in basic writing, reading and mathematical skills.

Laboratories designed to assist the developmental education needs of students are provided at no cost to the student for writing, reading, and mathematics. The laboratories are operational each quarter including the summer. Tutors are available to work with students on an individual and small group basis in academic areas.

THE WRITING CENTER

The Writing Center is operated by the Department of English to provide individualized and group instruction in writing skills for all students in the University. The Writing Center staff includes members of the English faculty, undergraduate and graduate tutors, and a full-time Coordinator. Services include diagnosis of writing problems, tutoring, writing workshops for specific course needs, and consultation for writing projects in disciplines other than English. The Writing Center also maintains a lab component for English 520.

Writing Center services are free of charge to all registered YSU students. The Center is open from 9 A.M. to 3 P.M. weekdays, and from 4:30 to 7:30 on Monday and Thursday evenings. For further information contact the Writing Center, Telephone: (216) 742-3055; Mrs. Sherri Zander, Coordinator.

STUDENT SERVICES

A wide variety of services, programs, and activities are available to students through the various departments that make up Student Services. The Vice President, Student Services, is the chief administrative officer of Student Services and has the overall responsibility for supervision, leadership, and professional development of the Student Services staff.

Student Services is comprised of the following five units. OFFICE OF VICE PRESIDENT, STUDENT SERVICES—Responsible for Student Discipline process; Code of Student Rights, Responsibilities, and Conduct; staff professional development; Student Services Research; responding to individual student problems and concerns; and administrative liaison with Student Government and Student Publications. SCHOLARSHIPS AND FINANCIAL AIDS—Administers federal, state, and local grant-in-aid, scholarship, and loan programs; and veterans' affairs. STUDENT DEVELOPMENTAL SERVICES—Provides the Students Serving Students program; Student Health and Counseling Services including Handicapped Student Services; and Career Services. STUDENT ACTIVITIES AND AUXILIARY SERVICES—includes Student Activities and Programs; Kilcawley Center; Kilcawley Residence Hall and Off-Campus Housing; and the Bookstore. SPECIAL STUDENT SERVICES—Involves International Student Services, Minority Student Services, and the Student Enrichment Center.

STUDENTS SERVING STUDENTS

The Students Serving Students Program is an individualized approach to the general University orientation of new students. New students including both freshmen and transfers are assigned to upper-class students who not only assist them in their initial entry into University life but maintain contacts with students during their first three consecutive quarters of attendance at Youngstown State.

New students are contacted by student assistants either by phone or mail. Times are arranged for individual meetings so that students are acquainted with various policies, procedures, programs, and services.

The student assistants through periodic contacts with students are a valuable peer resource to individuals who need assistance in adjusting to University life. The Students Serving Students Office is located in 344 Jones Hall.

COUNSELING, TESTING, AND HANDICAPPED SERVICES

Counseling Services staff includes several counseling psychologists and a testing coordinator. All are experienced professionals who specialize in working with college students concerned about adapting to college life, academic progress, career choice, drugs, family, marriage, problem pregnancies, or other personal concerns.

No information is released to officers of the administration, to faculty members, to parents, or to outside agencies without the student's explicit authorization, unless there is a clear and immediate threat to the life or welfare of the student or another individual. Information obtained in the course of counseling remains confidential and is not part of the student's academic record.

Counseling Services administers the American College Test, the Graduate Record Examination, the Miller Analogies Test, the Law School Admission Test, the Medical College Admission Test, National Teacher Examination, and the Graduate Management Admission Test. Information about other national examinations is available.

Counseling Services acts as an advisor for students who have physical handicaps. The Center acts as a liaison with community agencies, provides general assistance and advisement, and assists with registration so that students will have an opportunity to schedule classes according to location and time.

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

HEALTH SERVICE

A Student Health Service Office is maintained by the University for emergency medical care to students while they are on campus. This service is provided at no cost to the student; 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 a student should be reported to the Student Health Service Office within 24 hours.

A Group Health Insurance Program specifically written to meet the needs of the University students is available, if desired, at the time of initial registration for each academic year. A brochure explaining this program is available at the Student Health Service 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 Residence Hall must participate in this or a comparable program of health and accident insurance during their entire period of enrollment at Youngstown State University.

CAREER SERVICES

The University maintains a Career Services Office to provide professional assistance to students and alumni in career exploration and employment placement. Students are encouraged to make use of the office early in their college life for aid in career planning and decision making. The office is a member of the National College Placement Council and both national and local employers come to the campus to interview students and alumni seeking employment. Credentials service is provided to certified teachers applying for positions with schools, colleges or universities. Resumes of registered students and alumni are also provided to employers.

Students are assisted in finding employment on campus or off campus while enrolled in the University. The 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 during the school year.

The Career Services Office has an information center which includes career and organization material from over 1,000 employers and many other sources. Mock interview sessions as well as over 200 video taped presentations on career and company information are available. Career days are presented throughout the year as are seminars on job search techniques, resume writing and interviewing techniques.

STUDENT ENRICHMENT CENTER

The Student Enrichment Center (SEC) is the combined effort of Youngstown State University administrators, faculty, and students to aid in the college adjustment of new freshman students.

SEC goals are to help students build self-confidence, identify opportunities, develop a sense of direction and achieve their educational goals.

Emphasis is placed on newly admitted students who have not previously attended a college or university. Students may be referred to SEC from a variety of sources including high school guidance counselors, University faculty, staff and students. A student may also be self-referred.

Students participating in SEC prepare a personalized 'development plan' to guide them through their first year of college study. This involves setting realistic academic, career and personal goals based on the students' interests and abilities. Participants are assisted in this activity by SEC staff who meet with them individually on a regular basis to offer guidance and support.

Peer Assistants, specially trained upperclass student employees, serve as helpers and friends of new students during the first year of college study. They provide information and referral assistance as well as other types of supportive services.

Faculty Mentors, volunteers from the YSU faculty, are also available in the Student Enrichment Center for students to consult on educational matters and seek advice on requirements and procedures.

The SEC is located in Kilcawley Center West below the YSU Bookstore. For more information call 742-3746 or 742-3538.

MINORITY STUDENT SERVICES

The Office of Minority Student Services has general responsibility for assessing minority student needs and recommending appropriate programs and services. Emphasis is placed on serving students in the following categories: American Indian or Alaskan Native, Asian or Pacific Islander, Black and Hispanic.

The office provides a variety of services including personal counseling and advisement, information, referral and assistance in resolving educationally related difficulties. This office also works cooperatively with the Affirmative Action office to investigate and attempt to resolve student complaints of racial discrimination. In addition information on special opportunities established for minorities is maintained on file and distributed to qualifying students.

The following special opportunities are available to students through the Office of Minority Student Services.

MINORITY STUDENT RECEPTION: The Minority Student Reception is held at the beginning of fall quarter to welcome freshman students to the University. The reception provides an opportunity for students, faculty members and university administrators to interact on an informal basis.

"MINORITY STUDENT FOCUS" NEWSLETTER: A newsletter which provides current information on the activities of minority students. The newsletter highlights cultural events, outstanding accomplishments of minority students, and other helpful hints on college survival.

WORKSHOPS: The Office of Minority Student Services, in cooperation with other administrative offices, offers workshops in study skills, leadership development, college survival skills, race relations and community information.

MINORITY STUDENT ADVISORY COUNCIL: Minority Student Services provides an opportunity for minority students to become actively involved in University affairs through participation in the Minority Student Advisory Council which advises the office on minority student issues and whose members serve as program volunteers.

Students seeking further information and/or assistance are encouraged to visit the Minority Student Services office, located in Kilcawley Center West, or telephone 742-7175 or 742-3538.

INTERNATIONAL STUDENT SERVICES

The International Student Services Office (ISSO) provides services for participants in international educational exchange at YSU. The office serves students seeking exchange through campus activities, overseas study and training programs, and students from other lands seeking education on the campus. ISSO serves as the primary campus liaison with agencies of the U.S. and other governments concerned with international educational exchange.

ISSO provides services for participants in the University's foreign and exchange student programs. Programs are maintained for nonimmigrant academic and language students ('F-1') and exchange visitors for study and scholarship ('J-1') in accordance with the regulations of the U.S. Immigration and Naturalization Service and the Educational and Cultural Affairs Bureau of the International communications Agency. Special services include U.S. visa certification, pre-arival and arrival coordination, program advisement, and reentry to home culture assistance.

Other services provided by ISSO to international students are: study abroad advising for those seeking overseas study or training components to their YSU experience; certification of YSU status for international agencies; and academic, career, cultural, personal, and legal advising.

ISSO also provides special programs to enhance cross-cultural communication including: WorldFest Week (an annual campus program to increase global awareness); the International Resource and Speakers Bureau (to provide international information and expertise for the campus and community); international coffee hours (for on-campus informal exchange); and international orientation (a workshop series to assist new international students to adjust to campus and community life and learning).

STUDENT SUPPORT PROGRAMS

Three Student Support Programs are offered by the University to provide services to a wide range of students. These programs are located in Dana Hall at Spring and Bryson Street.

STUDENT TUTORIAL SERVICES: Student Tutorial Services has as its primary goal the provision of supplementary academic help through tutoring in the 500 and 600 level courses. This tutoring assistance for the lower division courses, exclusive of those offered in the Learning Assistance Center and the Foreign Language Laboratory, is available to students referred by faculty or academic advisors, or to students applying as self-referrals. These services are free to all students currently enrolled at YSU.

The students meet regularly for one-on-one sessions with peer tutors who are selected for their academic proficiency. The tutors are especially trained in study skills techniques to assist students in improving their skills. The staff provides educational information and refers students to other services on campus when appropriate.

Students may obtain tutoring by applying at Student Tutorial Services on the upper level of Dana Hall. For further information call 742-7253.

NONTRADITIONAL STUDENT LOUNGE: The University has provided a lounge on the lower level of Dana Hall as an informal meeting place for nontraditional students, e.g. 25 years of age or older. A quiet study area is also available. The goal is to provide facilities where nontraditional students can interact with each other, share information and receive support. These facilities are available to all nontraditional students currently enrolled at the University.

The staff serves nontraditional students by providing information about the University through programs and discussions. Referrals are made to appropriate campus services as students' needs are assessed. The staff also assists the Nontraditional Student Organization in their activities.

WOMEN'S RESOURCE CENTER: The Women's Resource Center was established to address a broad range of women's concerns through information, programs and activities. The Women's Resource Center helps insure that women's perspectives are made known and incorporated into services and programs on campus. Progams are presented which explore the educational, career and personal development of women. The Center is a referral source for women to campus and community services. The Women's Resource Center includes a library containing books, periodicals and magazine articles which offer an opportunity for research on women and women's issues.

These services and programs have been developed through the involvement of the Women's Resource Center Advisory Committee consisting of faculty, administrators and students of Youngstown State University. The Center works cooperatively with University offices and community groups in presenting speakers and activities. For additional information visit or call Student Support Programs, Dana Hall, 742-7253.

STUDENT HOUSING

Admission to the University does not obligate the University to secure living accommodations for the student. Students are responsible for making their own housing arrangements. The University, however, provides to students one on-campus residence hall and information about off-campus accommodations.

On-Campus Housing — The Housing Office operates Kilcawley Residence Hall, which accommodates 240 students. Resident assistants are available for advisement and counseling and to insure good study and living conditions in the Residence Hall. Accommodations include room and food service on a contract basis. For charges see fees and expenses. Further information and applications can be obtained by writing to the Housing Office.

Off-Campus Housing — The Housing Office provides information about specific lodging-places available on its housing list. This list provides much of the information needed to properly evaluate each facility, such as costs, number of occupants, and whether furnished or unfurnished. Also available are area maps and other helpful publications, and a list of YSU students seeking roommates. No housing facility that discriminates because of race, color, creed, or nationality will be included on this list. Further information can be obtained by writing to the Housing Office.

LOCKERS

A full-time student may rent a locker on campus for a small fee. All items stored must be removed at the end of each academic year. The University assumes no responsibility for property stored in a locker. Information about these lockers is available in the Kilcawley Center Information Center.

STUDENT ACTIVITIES

Youngstown State University offers numerous opportunities to interested individuals who want to get involved in student activities. Areas of involvement include Student Government, Program and Activities Council, sports and recreational activities, service organizations, religious groups, academic, political and professional organizations, and social fraternities and sororities. There are more than 130 student organizations and groups in which to get involved. In addition a varied social and cultural program is provided to students including concerts and musical groups, performers, lecturers, and dramatic groups.

The University believes that involvement and participation in extracurricular activities can make a significant difference in the quality of a student's college experience. Involvement offers students the opportunity to explore and pursue a wide range of interests outside the formal classroom setting. Other benefits of involvement include the development of leadership skills, self-confidence and social poise, and expanded friendships.

In order to facilitate involvement in student activities, the University has provided an office — the Student Activities Office — with a full-time staff to assist students in finding areas of involvement to meet their interests and needs. The Student Activities Office, located on the second floor of Kilcawley Center, is responsible for the development and coordination of student organization programs and other student-oriented cultural and recreational events to ensure a well-balanced and responsive activities program.

KILCAWLEY CENTER

Kilcawley Center is the community center of the University, for all the members of the University family — students, faculty, staff and alumni. It is not just a building; it is also an organization and a program. Together they represent a well-considered plan for the community life of the University.

As the "living room" of the "hearthstone" of the University, the Center provides the services, conveniences, and amenities the members of the University family need in their daily life on campus and for getting to know and understand one another through informal association outside the classroom.

Kilcawley Center is part of the educational program of the University. As the center of University community life, it serves as a laboratory of citizenship, training students in social responsibility and for leadership in a democratic society.

Through its various boards, committees, and staff, it provides a cultural, social, and recreational program, aiming to make free-time activity a cooperative factor with study in education.

In all its processes it encourages self-directed activity, giving maximum opportunity for self-realization and for growth in individual social competency and group effectiveness. Its goal is the development of persons as well as intellects.

Kilcawley Center attempts to meet the diversified needs of the University community in its food service program. The snack bar, contracted by Arby's, offers a variety of fast foods designed to meet the needs of today's commuting students. A breakfast is offered beginning at 7:00 a.m., while the evening student arriving after work may choose a varied menu including roast beef sandwiches. A full cafeteria-style menu, is offered in the first-floor Terrace Room.

For those who wish to dine in a more relaxed atmosphere, the Wicker Basket offers a choice of table service items, or a moderately priced buffet style meal including a salad bar. In addition to the Wicker Basket, the second floor houses dining facilities for students living in the Kilcawley Residence Hall. Students who are not residents may purchase a quarterly meal ticket or individual meals in the Brass Rail Cafe.

Groups who wish to avail themselves of Kilcawley Center Catering Services may choose from a selection of buffet and table service menus, served in a variety of attractive conference rooms, with service available for groups of up to 450 persons.

STUDENT GOVERNMENT

The student body of Youngstown State University is represented by Student Government, which operates under constitutional powers granted by the University. Student Council, the legislative branch of Student Government, is composed of representatives from the six undergraduate units, the College of Arts and Sciences, the School of Business Administration, the School of Education, the School of Engineering, the College of Fine and Performing Arts, the College of Applied Science and Technology, and the Graduate School, in proportion to the enrollment of each. All meetings of student council are open to the student body.

Student Government exercises the power to conduct student elections, to recommend students to serve as members of joint faculty-student committees, and to supervise programs financed from its operating budget.

STUDENT PUBLICATIONS

The University supports several student publications which provide an avenue for students to express their literacy and artistic talents. Policies and procedures concerning student publications are recommended to the Vice President, Student Services, by the Student Publications Committee.

The *Jambar,* a newspaper published twice a week; the *Neon,* the University yearbook; *The Penguin Review,* a literary magazine; and *The Polygot,* a foreign language magazine, are published by student staffs.

DEBATE AND OTHER FORENSIC ACTIVITIES

The forensic program at the University is divided into two areas — individual events and audience-oriented debating.

The individual events team participates in many tournaments including those at Marshall University, Ohio University, and the University of Toledo, competing in such catagories as oratory, extemporaneous speaking, and oral interpretation.

The University Debate Team engages in audience-centered debate with teams from other area colleges and universities. The team is also available for presentations of topical debate to clubs and other organizations, offering the Youngstown area a view of forensics in action as well as information on topics of current national interest.

Participation in the University forensics program is open to all students. Continued activity may qualify the student for membership in the University Chapter of Pi Kappa Delta, the National Honorary Forensics Fraternity.

THEATRE

All students in the University are invited to participate in the production of plays. The University Theatre presents six major productions during each academic year as part of cultural offerings from the Speech Communication and Theatre Department of the College of Fine and Performing Arts. A dinner theatre production program is also offered in cooperation with Kilcawley Center each summer.

The co-curricular production program is designed to reflect contemporary patterns in educational theatre extending from revivals of historical masterpieces to representative plays and musicals from modern Broadway. Major productions are so selected that during a four-year span at YSU a student may have the opportunity to become exposed to masterpieces representing each major period in western theatre history. This approach to play selection results in a happy blend

of modern and classical plays and musicals offering YSU students a varied theatrical fare. Recent productions have included *A Flea in Her Ear, A Delicate Balance, The Boy Friend, A Moon for the Misbegotten,* and *The Mousetrap.*

Major University theatre productions are presented in Bliss Hall, the Performing Arts Complex which contains Ford Auditorium, a 410-seat standard proscenium theatre, and the Spotlight Arena Theatre, which affords a variety of production formats including arena and thrust staging. Besides accommodating some of the major productions, the Spotlight Theatre serves as a laboratory for student-directed plays, acting and oral interpretation recitals, and various workshop activities.

With an emphasis on "learning by doing," YSU theatre students apply classroom-learned theories and techniques in numerous campus productions. In recent years YSU students have also been able to meet with theatre professionals such as Edward Albee, Barrie Stavis, Robert E. Lee (who attended the opening performance of his *Inherit the Wind*), and Fred Voelpel (who taught an advanced seminar in design and designed costumes, scenery, and lighting for YSU'S production of *Tartuffe*), Earl Hyman (who played the title role in YSU'S production of *Othello*) and Christopher Martin (who directed Stavis' *Harpers Ferry*).

Another feature of University theatre is its sponsorship each year of student-directed one-act plays selected through open competition. Also, during the major production season, drama workshops are conducted for the high schools in the Youngstown area.

Membership in the Eta Phi cast of Alpha Psi Omega, the country's largest and most active honorary dramatics fraternity, is open to YSU students who distinguish themselves in theatre and scholarship.

MUSICAL ORGANIZATIONS

Many 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 Student Art Association has for many years sponsored an annual exhibition of the work of Youngstown State University art students. The work is displayed at the Institute during the month of May, with awards given from various donors.

Student and faculty exhibits are periodically held in the Kilcawley Center Gallery and the department gallery/lounge in Bliss Hall. Exhibits of nationally known artists are also held in these exhibition areas. The Butler Institute of American Art sponsors three annual competitive exhibits (autumn annual of area artists, the national mid-year, and the statewide ceramic/sculpture) which are available to the students.

Each year Bank One of Northeast Ohio N.A. sponsors a student show called Graffiare in the bank's downtown branch.

INTERCOLLEGIATE ATHLETICS

Intercollegiate athletics are conducted at Youngstown State University to enlist the interest of the entire student body as spectators or participants in healthful amateur sports. Participation is open to any student who qualifies under the Youngstown State University athletic regulations. Men's teams compete in intercollegiate baseball, basketball, cross country, football, golf, rifle, soccer and tennis. Women's intercollegiate teams compete in basketball, cross country, softball, swimming, tennis and volleyball.

The University's intercollegiate athletic programs are governed by the National Collegiate Athletic Association (NCAA). YSU is a member of the Ohio Valley Conference and the Penn-Ohio Swimming Conference.

Students are encouraged to participate as athletes, trainers, managers or scorekeepers in any of the varsity sports. Students desiring to try out should contact the Athletic Offices in the Stambaugh All Sports Complex.

INTRAMURAL/RECREATION DEPARTMENT

The YSU Intramural/Recreation Department provides students, faculty and staff with an opportunity to spend leisure time participating in organized sports and recreational activities. More than 70 different activities help meet the physical, social and recreational needs of the University's population. In addition to the sports programs, a camping and backpacking equipment loan service is available. All current students and members of on-campus organizations may use the camping equipment by making reservations more than 48 hours in advance.

Students, who are enrolled full-time and in good academic standing, may be employed as sports officials and site supervisors in the Intramural/Recreation Department

The Intramural Department also offers Club Sport programs. Distinctly different from on-campus intramural activities, the focus of the club sport program is to compete with similarly established interest groups from other colleges and universities. The presently organized club sports are Cricket, Bowling, Karate, Track and Archery.

The YSU Intramural/Recreation Department, is located in Room 302 of the Beeghly Physical Education Center.

HONORARY ORGANIZATIONS

Established to recognize outstanding academic achievement by University students, Youngstown State University provides several honorary organizations related to academic fields and departments. Many of these honorary organizations are local chapters of national honor societies, which provide national recognition and local scholarships.

For more information on honorary organizations in your area of academic concentration, contact the faculty department chairman of that area, or the Student Activities Office, second floor, Kilcawley Center.

Alpha Beta Chi — Business Communication Honor Society

Alpha Epsilon Delta — Honorary Premedical Society

Alpha Epsilon Rho — Broadcasting Society

Alpha Phi Sigma — Law Enforcement Honor Society

Alpha Psi Omega — Honorary Dramatic Fraternity

Alpha Tau Gamma — Honorary Accounting Fraternity

Centurians — Freshman Honorary

Chi Sigma Iota — Counseling Honorary

Delta Phi Alpha — National German Honor Society

Gould Society — Liberal Arts Honor Society

Kappa Delta Pi — Education Honor Society

Lambda Tau — Medical Technicians Honor Society

Omega Chi Epsilon — Chemical Engineering Honor Society

Omicron Delta Epsilon — Economics Honor Society

Omicron Lambda — Honorary Biology Fraternity

Phi Alpha Theta — History Honorary

Phi Kappa Phi — National Honor Society for Achievement in All Fields

Psi Chi — Honorary Psychology

Psi Mu Epsilon — Mathematics Honorary

Scabbard & Blade — Military Science Honorary

Pi Kappa Delta — National Honorary Forensics Fraternity

Sigma Delta Pi — Spanish Honor Society

Sigma Xi — Scientific Honor Society

Tau Beta Pi — Engineering Honor Society

YSU ANNUAL AWARDS

The University has established a series of awards to recognize excellence, and encourage participation in campus life. The awards are presented annually at the Student Activities Awards Banquet in May.

THE YSU PIN
Outstanding Graduating Seniors

Instituted more than 35 years ago, the YSU Pin rewards students for their academic achievement, leadership, innovation, and creativity in University and community activities. This award is open to all students who are graduating this year.

LEADERSHIP SCHOLARSHIP
Outstanding Undergraduate Leaders

Scholarship(s) will be presented to recognize outstanding participation in student activities, particularly during the last year. Candidates must have been full-time undergraduate students during the current year, and must be planning to attend school next year. Recipients will receive a voucher for $445.00 to be used toward tuition and fees. Nominated students will be asked to apply for the scholarship.

THE ORION AWARD
Outstanding Student Organizations

Organizations which have had exemplary success in one or more of the following areas are eligible for the Orion Award:

— Service to the University and Community.

— Programs/Events.

— Leadership Development.

— Member Recruitment and orientation.

— Members' Scholarship.

Nominated organizations will be asked to apply for the award.

THE LIBRA AWARD
Outstanding Advisor

Groups will nominate a faculty or staff member who has had extraordinary impact on the organization they advise and on its members. An application will be given to the organization after nomination of the advisor.

THE CONSTELLATION AWARD
Outstanding University-Wide Programs

Each year, organizations sponsor programs or events that use creative approaches to publicity and promotion, and generate excitement within the University community and beyond. Award(s) will be given to organizations that sponsor such events. These programs must be University-wide, student-generated and -run, and responsive to student needs and desires.

Nominated organizations will be asked to apply for the award.

THE NOVA AWARD
Most Promising New Organization

Any newly registered (since last April) organization that has made significant progress during its first year is eligible for the Nova Award.

Bases for selection will be success in one or more of the following areas:

— Service to University and community.
— Leadership Development.
— Membership Recruitment and orientation.
— Programs/Events.
— Members Scholarships.
— Fellowship/Social Activities.

Applications wll be given upon nomination.

Each year, students, faculty, and staff are invited to nominate outstanding individuals and organizations

for these prestigious awards. Selections will be made by a committee composed of students, faculty, and staff.

AWARDS AND PRIZES

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 extracurricullar 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 Interfraternity Council Awards for Scholarship are given annually to the fraternity chapter with the highest aggregate point index and to the member of a fraternity with the highest individual point index, based on the academic work of the previous three quarters. The awards are presented during the spring quarter at the Greek Sing.

The Panhellenic Council Awards for Scholarship are given annually to the sorority chapter with the highest aggregate point index and to the member of a sorority with the highest individual point index, based on the academic work of the previous three quarters. The awards are presented during the spring quarter at the Greek Sing.

Who's Who Among Students in American Universities and Colleges lists upperclassmen and graduate students achieving outstanding academic and co-curricular records.

The following awards and prizes are listed according to the relevant school or college.

College of Applied Science and Technology

The American Society of Civil Engineers, Youngstown Branch, Award in Civil Engineering Technology is granted annually to the outstanding graduate in Civil Engineering Technology.

The American Society of Mechanical Engineers, Youngstown Section, Award in Mechanical Engineering Technology is granted to the outstanding graduate in Mechanical Engineering Technology.

The Gilda DeCapita Award is given annually by the Nursing Chapter of the YSU Alumni Association to an honors student in the Associate degree program. The student must be in good standing and in need of financial assistance. The amount of the award given is determined annually by the chapter's board.

The Mosure and Syrakis Company, Limited, Award in Civil Engineering Technology is granted annually to the graduate in Civil Engineering Technology deemed by the faculty the best overall graduate completing the degree program as a part-time student.

The National Business Education Association (NBEA) Award of Merit is given annually to a Business Education major in recognition of outstanding achievement. Selection is determined by the Business Education and Technology faculty.

The Ohio Nurses Association, District III, Award for Excellence in Clinical Nursing. This award is given three times a year, to the member of each graduating class in the associate degree Nursing program who has the best scholastic record in clinical nursing.

The Stokely-Van Camp Home Economics Award is given to a student for outstanding achievement in Home Economics.

The Wilma A. Brown Home Economics Award. This award was established by Dr. Wilma A. Brown, the first Chairman of the Department of Home Economics. Majors of junior or senior standing in the department may apply. Full-time students of good academic standing who have been enrolled for the three preceding quarters will be considered by the full-time faculty in the department, who make the final decision.

The Woman's Board of Youngstown Hospital Association Award for Excellence in Nursing. This award is given three times a year, to the member of each graduating class in the associate degree Nursing program who has the highest grade point average.

College of Arts and Sciences

The American Chemical Society Student Affiliates Award, to the graduating senior with the highest cumulative point average.

The American Institute of Chemists Award, to the outstanding senior in Chemistry.

The American Legion (Post 15) Awards, to two cadets who rank in the top 25% of their academic class and have demonstrated outstanding leadership traits.

The Armed Forces Communications and Electronics Association Award is presented to the most outstanding senior R.O.T.C. cadet majoring in Electrical Engineering.

The Department of the Army Superior Cadet Ribbon Award, to the outstanding student in Military Science.

The B'Nai B'Rith Undergraduate History Award of $50 given to the outstanding undergraduate History student.

The Los Buenos Vecinos Art Award is a $10 prize given by the YSU Spanish Club for the best drawing shown at the annual Youngstown State University Art Exhibition.

The Candace Gay Memorial Awards were established in 1978 by Professors Thomas and Carol Gay of the Department of English in memory of their thirteen-year-old daughter, Candace McIntyre Gay. This fund provides $450 or three $150 prizes for junior high and

senior high school students who exhibit distinctive writing ability in the Candace Gay Memorial Essay Contest. The awards are presented at the annual YSU English Festival.

The Chemical Rubber Company Award is given for superior achievement in freshman Chemistry.

The Daughters of the American Revolution Award is a gold medal presented annually to the graduating cadet in the top 25% of the R.O.T.C. and of the academic class.

Delta Phi Alpha National German Honorary Society annually extends membership to a German major who has excelled in the study of German.

The Distinguished Military Graduate Honor Award is presented by the President of Youngstown State University to designated distinguished military graduates.

The Dean Gillespie Award is presented to the R.O.T.C. senior who has most demonstrated all facets of leadership.

The Sister Jean Gillespie Memorial Award in Religion was established in 1984 by Marie Weyrick and Mildred Gedeon in memory of their sister, Dominican Sister Jean Gillespie, O.P., who died in 1982 and who was deeply committed to the ecumenical work of the Jewish/Christian Dialogue Group of Youngstown. It provides income from an endowment of $2500 to a distinguished senior in religious studies whose academic program best exhibits an interest in comparative religion.

The Robert R. Hare Award for Distinction in Journalistic Writing was established in 1979 by Dr. Mary Virginia Hare in memory of her husband, Dr. Robert R. Hare, a distinguished member of the English Faculty of Youngstown State University. The award provides $250 each year to a full-time YSU student who has demonstrated distinction in journalistic writing. The recipient is chosen by the English faculty and outside experts designated by them.

The Robert R. Hare Award for Distinction in Creative and Critical Writing was established in 1974 by Dr. Mary Virginia Hare in memory of her husband, Dr. Robert R. Hare, a distinguished member of the English faculty of Youngstown State University. The award provides $250 each year to a YSU English major who has demonstrated distinction in creative or critical writing or both. The recipient is chosen by the English faculty and outside experts designated by them.

The Department of History Chairman's Award of $25 is given for the best undergraduate research paper in any field of History.

The Mahoning Chapter, Reserve Officers Association, R.O.T.C. Honor Awards are medals presented to the cadet completing the basic course who is selected for and enrolls in the advanced course, 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 best exhibited the qualities of leadership.

The Evangelos Meshel Memorial Award in Greek is given to the best student in elementary or intermediate Ancient Greek.

The Nathan Hale Chapter, Sons of the American Revolution, Awards are presented to the R.O.T.C. cadet who completes the basic course with the most outstanding excellence in all academic subjects, and to the cadet who completes the advanced course with the most outstanding excellence.

The Omicron Lambda Honorary Biology Fraternity Award for Scholarship ($25) to an outstanding graduating biology student.

The President-Professor of Military Science Award is presented to the senior cadet judged by the Military Science Cadre to be the most outstanding student in the class.

The Psychology Research Award of $25.00 is presented annually by the YSU Psychology Club for the best student-initiated research project in psychology which involved data collection.

The Rawson-Moritz Memorial Award for the outstanding freshman in Biological Sciences.

The Association of the United States Army Medal is awarded to the cadet completing the first year of advanced course who is the most outstanding in all academic subjects and who has completed one full year of the R.O.T.C. Program at YSU.

The Peter I. Wenzen Award is an annual cash grant given by the Youngstown State University Geological Society and Friends to a junior or senior majoring in Geology who is in need of financial assistance.

The Wolves Club Awards in Advanced Latin are presented for meritorious work in Latin on the upper division level.

The Wolves Club Awards in Intermediate Latin are presented for meritorious work in Latin on the intermediate level.

Warren P. Williamson, Jr. School of Business Administration

The Alpha Delta Sigma National Professional Advertising Society offers an award annually to an outstanding senior who is a member of the Advertising Fraternity.

Alpha Kappa Psi awards the scholarship key annually to the senior in business who typifies the standards of excellence set forth by the fraternity.

The Alpha Tau Gamma Fraternity Award is given annually 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 Production and Inventory Control Society Award is given to the graduating senior in the

School of Business Administration completing courses in Management with the highest grade point average.

The Becker CPA Review Awards are presented annually to two accounting seniors outstanding in scholastic achievement and interested in careers in Public Accounting.

The Distinguished Student in Business Award is presented each quarter to students with current and cumulative grade point averages of at least 3.50 and total quarter hours of at least 100 (half of these hours must have been earned at YSU).

The Mahoning Valley Chapter of the Ohio Society of Certified Public Accountants Award is presented to the student selected as the outstanding participant in the Accounting Internship Program.

The National Association of Accountants Award is presented to the graduating senior with the highest grade point average in Accounting.

The Wall Street Journal Student Achievement Award is presented to a senior in the Williamson School of Business Administration for academic excellence and outstanding performance.

The Williamson Fellow Award is given annually to an outstanding graduating senior in Accounting, Finance, Marketing, and Management.

The Williamson Society is an honorary organization for juniors and seniors majoring in business.

School of Education

The Frieda F. Chapman Award. The School of Education annually presents an award to an Elementary Education major who shows evidence of becoming an outstanding elementary school teacher.

The George M. Wilcox Award. The School of Education annually presents an award to a Secondary Education major who shows evidence of becoming an outstanding secondary school teacher.

The Department of Special Education Award is given annually to a Special Education major who, as a senior, exhibits exemplary scholarship and potential for work with exceptional individuals.

The Kappa Delta Pi Award is given annually by the Society to a member who, as a senior, exhibits outstanding scholarship, leadership, character, and service to the organization.

William Rayen School of Engineering

The American Chemical Society Student Affiliates Award is a copy of Van Nostrand's Chemists' Dictionary or other suitable book presented annually to the graduating senior with the highest cumulative point average in Chemistry and Chemical Engineering Courses as a full-time student.

The Institute of Electrical and Electronics Engineers, Sharon Section Award in Electrical Engineering is given annually to the outstanding graduate in Electrical Engineering.

The American Institute of Industrial Engineers Award in Industrial Engineering is given to the outstanding graduating Industrial Engineering student.

The American Society of Civil Engineers, Youngstown Branch, Award in Civil Engineering is granted annually to the outstanding graduate in Civil Engineering.

The Louis A. Deesz Memorial Award is given by the Mahoning Valley Chapter of the Ohio Society of Professional and Registered Engineers, Tri-County Section, to the graduating engineering student outstanding in overall achievement.

The Professor Paul Luginbill Chemical Engineering Award goes to the best all-around senior student in Chemical Engineering.

College of Fine and Performing Arts

The Fine and Performing Arts Dean's Award is given to the outstanding graduating senior majoring in the College of Fine and Performing Arts who has demonstrated exceptional accomplishment in his/her major field through performance, creativity, or scholarship.

The SAI Honor Certificate is a music award given to the graduating Sigma Alpha Iota Women's Fraternity Member with the highest point average.

The Phi Mu Alpha Opera Award is an annual award given to a student who has displayed leadership and excellence in an operatic production.

The Doris I. Dalrymple Award is given to an outstanding ensemble participant.

The Friends of Music Award is given annually to two outstanding students in the field of music.

The Youngstown Music Teachers Association Award is given annually to a music student for outstanding contribution in the field of music.

The R. Donald Elser Award is given to an outstanding junior or senior in the Department of Speech Communication and Theatre for scholarship and achievement.

The Charles A. Borawski Memorial Art Award is a cash award for artistic accomplishment given in memory of art student Charles A. Borawski (1951-1978). It is presented annually at the Youngstown State University Student Art Exhibition in the Butler Institute of American Art.

The Daniel J. O'Rourke Award is given to the forensics team member who brings good spirit to the team.

The Kelly Schreck Award is given to the forensics team member who does the most to promote participation in speech-related activities.

The Eddie Dowling Award is given annually to the student who has demonstrated distinguished accomplishment in Dramatic Arts through participation in University Theatre Productions.

The Peggy Ennis Memorial Award is given annually to the outstanding freshman in Theatre.

SCHOLARSHIPS/FINANCIAL AIDS

The University has a comprehensive program of financial assistance which includes scholarships, loans, grants-in-aid, and part-time employment. All these programs are administered by the Director of Scholarships/Financial Aids in Jones Hall.

All students seeking financial assistance, including entering freshmen, should apply not later than March 31 preceding the academic year for which aid is desired. Students must complete the following forms: (1)Youngstown State University Scholarships/Financial Aid Request, and (2) An approved need analysis form.

In addition to the above-mentioned forms all Ohio residents seeking financial assistance must apply for a Pell Grant and an Ohio Instructional Grant, and all Pennsylvania residents seeking financial assistance must apply for a Pell Grant and a PHEAA Grant. Forms are available at the Scholarships and Financial Aids Office.

Most student aid awards are made in June. Separate applications are required for Summer Quarter assistance.

SCHOLARSHIPS

Scholarships are monetary awards to students with outstanding records of academic achievement. Amounts may vary depending on academic ability, financial need, and/or the current state of the fund or endowment supporting the scholarship. Scholarship funds have been established at YSU by corporations, clubs, religious and fraternal organizations. The Youngstown State University Foundation administers endowments which include substantial funding for scholarships for Youngstown State University students.

Scholarship Awards to Youngstown State University students are based upon the student's university academic record, character, and financial need. Scholarships for entering freshmen are awarded on the basis of high school academic record, recommendation by high school administrators, and score on a standard college entrance examination and class rank. All scholarship applicants are considered for all scholarships appropriate to their aims and interests.

Sponsored scholarships and the qualifications required for them are listed below.

American Association of University Women, Youngstown Branch, Scholarship. This scholarship was established in 1950. A grant of $500 is awarded each year to an upperclass woman student, on the basis of high scholarship and financial need.

American Business Women's Association Scholarship. This scholarship, instituted in 1957, is provided by the Youngstown Chapter of the American Business Women's Association for a woman student in Business Administration.

American Society for Women Scholarship. This scholarship, established in 1963, is for a woman majoring in Accounting or Secretarial Accounting.

Builders Association of Eastern Ohio and Western Pennsylvania Scholarship. This tuition scholarship is awarded each year to an entering freshman in Civil Engineering Technology. The recipient, who must be a full-time student, receives tuition for two years until graduation with an associate degree, as long as academic standards are met and full-time status is maintained.

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

Copperweld Steel Company's Warren Employees' Trust Scholarships. Funds for these scholarships are provided by the employees of the Copperweld Steel Company in Warren, Ohio, to aid deserving and able employees of the company, or their dependents, to secure a college education. The number of scholarships and the amount of each depend on available funds, the number of applicants, and each applicant's financial need and academic promise.

J. Ford Crandall Memorial Foundation Scholarships. These grants provide tuition for full-time undergraduate students from Mahoning county and are renewable for a maximum of 11 additional academic quarters. Recipients are selected on the basis of scholastic record from among students nominated by the Buckeye Elks Lodge of Youngstown.

Diamond Shamrock Corporation Scholarships. Diamond Shamrock Corporation funds scholarships for outstanding Chemical Engineering students recommended by the Chemical Engineering Faculty.

Fleming Education Scholarship. This $250 scholarship is awarded annually by the Youngstown-Mahoning County Retired Teachers Association to a Mahoning county resident who is a senior with at least a "B" grade point average and who will be eligible for a Provisional (standard) Teaching Certificate upon graduation.

General Extrusion, Inc., Scholarship. This $500 scholarship was established to help 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 died 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 governing the scholarship.

Gold Bar Scholarships. Up to 30 Gold Bar Scholarships may be awarded annually by the Professor of Military Science to qualified freshmen and sophomores who demonstrate the qualities of military aptitude, leadership potential, and dedication. The amount of this award is $900 per school year.

Harry K. Graebing Athletic Scholarships. These scholarships were 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 grants to deserving Ohio or Pennsylvania students participating in YSU Athletics.

Mildred N. Graebing Scholarships. These scholarships were established in 1973 by Mildred N. Graebing. The income from an endowment of $10,000 makes available annual grants to deserving Ohio or Pennsylvania students enrolled full-time in degree programs in Business Education or Secretarial Studies.

Eugene Green Memorial Scholarship Fund. Established in 1984 in memory of Attorney Eugene Green, this scholarship will provide aid to students selected by the Labor Studies Coordinator and the Director of Financial Aids of Youngstown State University. Two recipients will be selected annually. Recipients must be members of local trade unions and must be full-time students with high academic promise.

Dorothy Zola Greenberger Memorial Scholarship. This scholarship was established in 1971 by Sidney Greenberger in memory of his wife, Dorothy Zola Greenberger, a former member of the YSU Faculty. The income from an endowment makes possible an annual scholarship for a student in the College of Arts and Sciences.

Harris Scholarship. This is an annual award to help defray the tuition costs of a student majoring in either Geology or Earth Science. The recipient — a sophomore, junior, or senior who has demonstrated an above-average potential in the Geological Sciences and needs financial assistance — is chosen by the students in the YSU Geological Society.

The Rosemary Pecchio Johns Memorial Scholarship. This scholarship fund was founded in 1983 by a bequest of Rosemary Pecchio Johns, a former Youngstown State University student. Income from the fund provides an annual award of approximately $250.00 to a student majoring or minoring in French for the purpose of study abroad in a French-speaking University.

Junior Civic League Scholarships. These scholarships, established in 1961, are provided for worthy students by the Junior Civic League of Youngstown.

The Assad Kassees Scholarship. The scholarship was established by the Kassees family in memory of Dr. Assad Kassees, but it is funded by the Arab community of the Mahoning Valley. It provides for an award of $250 granted each year by the Department of Sociology, Anthropology and Social Work to a student majoring in one of the three disciplines.

Koppers Foundation Company Scholarships. These scholarships are awarded to outstanding students in Chemical, Mechanical, or Electrical Engineering. The recipients are chosen on the basis of merit by a faculty committee of the William Rayen School of Engineering. The amount of each scholarship is related to financial need, with a minimum of $750 and a maximum of $2,000 per student per academic year.

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

Outstanding Scholars Award. This is an award of $1,500 for in-state students and $2,500 for out-of-state students who qualify as National Merit Scholars. The award is made in tandem with the entering freshman awards provided by the YSU Foundation; hence, the student's scholarship award from both sources cannot exceed $1,500 for in-state and $2,500 for out-of-state students. The award is renewable for three years provided the student maintains an accumulative grade point average of 3.0 or higher.

Dean Robert L. Miller Scholarship. This annual scholarship was established in 1966 by Alpha Tau Gamma Honorary Accounting Fraternity of Youngstown State University in honor of Robert L. Miller, Professor of Accounting and at that time Dean of the School of Business Administration. The recipient, selected by the Dean of the School of Business Administration, must be an upperclass Accounting student with acceptable scholastic standing and need of financial assistance.

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 in the Dana School of Music.

Peter George Parthemos Scholarship. This scholarship was established in 1985 by Irene Parthemos in memory of her husband, Peter George Parthemos. The income from an endowment makes possible an award to students in the School of Business who are of Greek descent or from Greece.

President's Scholarship. Established in 1984 by Mary and Neil Humphrey, this scholarship will be awarded each Fall Quarter: $250 to the woman and $250 to the man selected as the most outstanding juniors by grade point average and activities.

Remacor Scholarship. This $1,000 scholarship is awarded to an outstanding junior Metallurgical Engineering student. The recipient is chosen by the current chairman of the Penn-Ohio Chapter of the American Institute of Mining and Metallurgical Engineers, together with the chairman of the Department of Chemical and Metallurgical Engineering.

Army R.O.T.C. Scholarships. The Army ROTC scholarship program awards four-year scholarships, on a competitive basis, to students entering college as freshmen. Three-year and two-year scholarships are awarded to students already enrolled in college. In addition, students who attend the Basic Camp of the two-year program may compete for two-year scholarships. Army ROTC scholarships pay the full cost of tuition, all laboratory fees, a flat rate for textbooks, and other

educational expenses for the duration of the award. A $1,000 subsistence allowance of $100 per month for each academic year of the scholarship is also provided.

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 teach in the Mahoning County School for the Retarded may apply. The scholarship is given to a student needing financial assistance and is renewable for a total of four years subject to good academic progress, continuing financial need, and availability of funds.

Georgene M. Smith Scholarship. This scholarship was established in 1972 for students in Botany, Geology, or Forestry, with funds bequeathed by Georgene M. Smith, an ardent conservationist and a past President of the Trumbull Arboretum and Conservation Association.

Louis and Julie Spitzer Memorial Scholarships. These scholarships were established in 1961 for students of the Jewish faith who need financial assistance.

Strouss Scholarship. This scholarship, established in 1984, will provide aid to two students nominated by the Buckeye Elks Lodge of Youngstown, Ohio.

Alice W. Tod Scholarship. This scholarship is awarded by the Women's Board of the Youngstown Hospital Association to an upperclass student seeking a Bachelor of Science in Nursing Degree. It is awarded on the basis of academic excellence and is renewable for a second year provided the recipient maintains full-time status and meets the established academic standards governing the award. Selection of the recipient is based on the recommendation of the Director of the Associate Degree Nursing Program and the Women's Board of the Youngstown Hospital Association, in co-operation with the University's Director of Financial Aids.

Miriam S. Ullman Scholarship. These scholarships are provided annually by the Monday Musical Club of Youngstown. It is intended primarily for students who attend the Dana School of Music. The scholarship provides $1,500 annually.

Myron C. Wick, Jr. Scholarships. These scholarships were established in 1985 by a $93,000 endowment by Alice Tod Wick Hall in memory of her father, Myron C. Wick, Jr. The endowment makes possible three academic scholarships, two in the physical sciences and one in engineering.

Yo-Mah-O Chapter, Professional Secretaries International, Scholarship. This scholarship, which pays in-state fees, 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.

Youngstown Association of Purchasing Agents Scholarship. This annual award is presented by the Youngstown District of the NAPM to a student majoring in Business Administration who is required to complete at least one course in purchasing offered by the Marketing Department. Selection of the recipient of this $1,000 scholarship is chosen by designated faculty and approved by the executive board of the Youngstown District, NAPM.

Youngstown Music Teachers Association Scholarship. This scholarship is an award of $200 annually to an upperclass Music major chosen through a competitive audition each spring.

YOUNGSTOWN STATE UNIVERSITY FOUNDATION SCHOLARSHIPS

These scholarships vary in size according to established need and academic ability. The maximum amount normally does not exceed tuition and fees for the academic year. Applications are made to the Scholarships/Financial Aids Office. Selection of recipient is made by representatives of the University and the Foundation.

In addition to the awards made in its own name, the Youngstown State University Foundation controls funds for the following scholarships:

William W. Battin Scholarship Fund. Established in 1973 as a memorial to Mr. William W. Battin by his wife, Mrs. Margaret P. Battin, and by Judge and Mrs. Reed Battin, this fund provides annual scholarships for worthy YSU students in need of financial assistance.

Eugene C. Beach Memorial Scholarship. This scholarship was established in 1976 by the members and friends of First Christian Church of Youngstown, Ohio, as a memorial to Dr. Eugene C. Beach, Minister and National President of Tau Kappa Epsilon Fraternity. The income from the endowment provides an annual scholarship for a worthy and needy member of Epsilon Iota, the Local Chapter of Tau Kappa Epsilon. The Board of Control of Epsilon Iota recommends a recipient.

Larue R. Boals Scholarship. This scholarship, established in 1961, provides $250 for a student in the Dana School of Music.

Colonel Lloyd Booth Scholarship. This scholarship was established in 1965 by the Mahoning Chapter of the Reserve Officers' Association as a Memorial to Colonel Lloyd Booth. It pays $250 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 need.

Bucheit Scholarship. This scholarship of $1200 was established in 1983 by the Joseph Bucheit and Sons

Company. It is given annually to a Civil Engineering student whose parent is employed by the company.

B. Carrol Cubbison Music Scholarship. These scholarships are funded by a gift from Attorney Theodore R. Cubbison in honor of his wife, B. Carrol Cubbison. Recipients will be selected on a basis of talent and need from YSU's Dana School of Music's Department of Voice.

Gene D'Antonio Memorial Golf Scholarship. This scholarship, established in 1980 in memory of the late Gene D'Antonio, who took great joy in teaching golf to young people, provides $200 annually for a member of the YSU golf team who lives in Mahoning or Trumbull county. The recipient is selected by the Athletic Director and the Head Golf Coach at Youngstown State University.

The Deans' Scholarships. These scholarships were established in 1986, to give recognition to outstanding academic achievement. Ninety six scholarships will be awarded to sixteen students in each of the six undergraduate colleges and schools within the University. These monetary awards of $1,500 will be given to four students in each of the four class levels of the undergraduate colleges and schools. The Deans' Scholarships are renewable for up to three years providing recipients continue to meet the criteria established by their particular college or school.

James W. Degarmo Criminal Justice Scholarship. This scholarship was established in 1976 by the Law Enforcement Honor Society of the Department of Criminal Justice of YSU. Its purpose is to give recognition to the contributions of James W. Degarmo to the profession of Law Enforcement and Criminal Justice Education. Upperclassmen evidencing outstanding scholastic performance as Criminal Justice students are eligible for this award.

Dow Chemical Company Scholarships. The Dow Chemical Company makes two $500 scholarship awards for students in the Williamson School of Business.

Karl W. Dykema Scholarship. This scholarship was established in 1972 as a Memorial to Karl Washburn Dykema, a nationally known authority on English grammar and a former Dean of this University's College of Arts and Sciences. It is awarded annually to a full-time College of Arts and Sciences student with a distinguished academic record.

Electrical Engineering Scholarship Grant. This grant was made possible by a gift from a retired faculty member of the Department of Electrical Engineering. It provides annually $200 to a needy sophomore, junior, or senior Electrical Engineering student with an adequate scholastic record who has exhausted all his other sources of financial aid.

Cora E. Emerson Memorial Scholarship. This scholarship was founded in 1972 by a bequest of Cora E. Emerson to provide assistance annually to a deserving and needy full-time student.

Dolores Fitzer Scholarship Fund. This fund, established in 1979 by friends and family of the late Dolores Fitzer, provides a $500 annual scholarship to a freshman piano student in the Dana School of Music.

The Ilajean Feldmiller Scholarship. This annual award was established in 1985 to honor Ilajean Feldmiller, a long-time faculty member and former chairperson of the Home Economics department. Its purpose is to assist in the development of concerned professionals. The recipient is selected by a committee of the faculty and students and must be currently enrolled in one of the Home Economics programs.

Hilda George Hanna Scholarship. This scholarship, established in 1964, is given annually to a woman who is a full-time student in the secretarial field.

Gertrude E. Hendricks Family Life Scholarship. This scholarship is available each year to a Graduate School student whose undergraduate major has afforded preparation for an effective contribution in the family life area.

Ronald J. Hepp Memorial Fund. This fund, established in 1985 in memory of the late Ronald J. Hepp, provides an award each year to an electrical engineering student who is first in his/her graduating class. The award shall consist of a $500 savings bond and a commemorative plaque.

Hynes Industries, Inc., Scholarships. This scholarship program, established in 1973, provides two annual $500 grants. Priority is given to children of Hynes employees who are incoming freshmen. If there are not two qualified priority candidates, preference will be given to other undergraduates who are dependents of Hynes employees.

Howard W. Jones Scholarship. This scholarship was created in 1980 to honor Dr. Howard Jones, the University's first President, who served for more than 35 years and was subsequently President of the Youngstown State University Foundation for an additional 11 years. It provides a one-year $1,200 award for a YSU student in need of financial assistance who has a good academic record in high school and/or college. The recipient is selected by a committee of the Youngstown State University Foundation.

Michael B. Kaufman Memorial Scholarships. These scholarships are funded by an endowment created by Col. Jack D. Kaufman and Beatrice Kaufman in memory of their son Michael B. Kaufman. Michael B. Kaufman Memorial Scholarships are available to members, spouses or the children of members of United Steel Workers of America. Officers, directors, staff persons, employees of this Union or their offspring are not eligible for these scholarships. No individual will be eligilbe for more than one scholarship. Recipients will be selected by YSU Scholarships/Financial Aids Department on the basis of need, from the first twenty applications received.

William F. Maag, Jr., Scholarship. This scholarship was established in 1947 in honor of William F. Maag,

Jr., by his friends. Revenue from invested capital pays $330 for one year to an upperclassman.

William F. Maag, Jr. — Vindicator Scholarships. These scholarships were established in 1971 by the Youngstown Vindicator as a Memorial to William F. Maag, Jr., whose leadership was instrumental in the development of 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.

Martin Family Scholarships. These scholarships, estabished by Fred and Paul Martin in 1986, are available to YSU Junior and Senior students. Recipients must be residents of Mahoning, Trumbull or Columbiana Counties in Ohio or Lawrence and Mercer Counties in Pennsylvania.

Mayberry Scholarship Fund. This fund, established in Memory of Richard M. Mayberry and Jean E. Mayberry, is used to assist worthy or needy students.

Metropolitan Savings Bank Summer Internship Scholarship Program. A $500 scholarship, created by Metropolitan Savings Bank, shall be awarded each year to a YSU student who has completed his/her Junior year majoring in Marketing, Management or Accounting and Finance. Each candidate will be interviewed by a designated Metropolitan officer who will select the Metropolitan Savings Bank scholarship recipient. The recipient will work as an intern at Metropolitan Savings Bank during the Summer before his senior year.

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. It is awarded on the basis of superior scholarship and financial need.

Nicholas Paraska Scholarship. This scholarship was created in 1982 by friends and colleagues to honor Nicholas Paraska for his service as Dean of the College of Applied Science and Technology. It is awarded annually on the basis of academic achievement and need to a student majoring in one of the College of Applied Science and Technology programs who has or is in process of completing 12 hours in the major by Spring Quarter.

Doris Burdman Pasman Scholarship. This scholarship was created in 1983 by the grandchildren and great grandchildren to honor the memory of Doris Burdman Pasman. Doris Burdman Pasman worked tirelessly for the benefit of mentally, physically and emotionally handicapped persons. The scholarship will be awarded on the basis of financial need and scholastic achievement to a graduate or upper level undergraduate student of Youngstown State University majoring in the field of social work.

Tom Pemberton Memorial Scholarships. Two four-year scholarships of $400 a year are provided for graduates of the Mahoning county high schools — one man and one woman — from an endowment established as a Memorial to Tom Pemberton. The recipients must be in the upper two-thirds of their high school classes.

Margaret I. Pfau Scholarships. This scholarship fund was founded in 1973 by a bequest of Margaret I. Pfau, who served with distinction as Chairman of the Department of English. Income from the fund provides two annual $500 awards to students majoring in English who have demonstrated academic excellence while attending YSU.

Joseph Potochny Scholarship. This scholarship, made possible by a bequest of Joseph Potochny in 1963, is granted to a needy and deserving student of Ukrainian descent.

Haig Ramage Scholarships. Income from an endowment provides scholarships of $300 each for the freshman year. Selection of recipients is based on scholastic and leadership qualities and need for assistance.

Herman C. Ritter Scholarship for the Violin. An endowment from the estate of Miss Juliet L. Ritter was made available in 1957, the annual income from which provides a scholarship for a needy student who intends to make a career of music and shows particular promise on the violin.

ROTC Military Science Scholarships. Twenty (20) one year scholarships were established by the Youngstown State University Foundation in the amount of $250 per quarter for Military Science II students to aid in the improvement of retention to the Military Science III level at Youngstown State University.

John R. Rowland English Scholarship. This scholarship, established in 1957, is available to an outstanding student majoring in English.

The Irving Schwebel Memorial Scholarship. This $1,500 Scholarship was created in 1985 by the Schwebel Baking Company in memory of the late Irving Schwebel who was its President and Chairman of the Board. The Irving Schwebel Memorial Scholarship is available for the children of full-time Schwebel Baking Company employees who have at least two years of continuous service. First priority will be given to incoming Freshman students.

Joseph E. Smith Scholarship. This scholarship, which provides funds for a worthy and needy student, was established in 1971 by friends as a memorial to Dr. Joseph Earle Smith, a former Dean of the College of Arts and Sciences and the first Dean of the University.

Mary B. Smith Scholarship Fund. This fund, established in 1980 to honor Mary B. Smith on her completion of 41 years of exemplary service at YSU, provides scholarship aid to a deserving adult student who cannot otherwise qualify for specific financial assistance.

Lawrence M. Stolle Athletic Scholarships. These scholarships were established in 1973 by the Greater Youngstown Old Timers Association and other sports enthusiasts to honor Lawrence M. Stolle as Sports Editor of the Youngstown Vindicator. The income from an

endowment makes possible annual scholarships for deserving students who participate in the University's athletic program.

C.J. Strouss Memorial Scholarship. This scholarship of $150 is awarded annually to an upperclassman in memory of the late Clarence J. Strouss, a longtime trustee and devoted friend of the University.

Grace M. and Blanche F. Vail Scholarship. This scholarship is available to a student of excellent character and scholarship who needs financial assistance.

The Lia N. Vouros Memorial Scholarship. This scholarship, created by Attorney Joseph E. Vouros and friends in memory of Attorney Vouros's wife, the late Lia N. Vouros, is available for YSU students whose parents are members of St. John's Greek Orthodox Church of Boardman, Ohio. Scholarship recipients are selected on the basis of academic performance from a list of candidates provided by an advisory committee of St. John's Greek Orthodox Church.

Sally Watson Scholarship. This scholarship, established in 1969 by friends of the late Sally Watson, provides assistance to a worthy student.

Bessie Wilson Music Scholarships. The income from an endowment from the estate of Miss Bessie Wilson is used for scholarships for Music students. Applications may be sent to the director of the Dana School of Music, who makes the recommendations to the Scholarship Committee.

Isadore Zobel Scholarship Fund. This fund, established in 1966 under the will of Isadore Zobel, provides assistance to needy students of the Jewish Faith.

LOANS

Loans are repayable awards, in amounts determined by financial need. Loans are based on a consideration of financial need, ability to make a creditable academic record, and character.

The University participates in the Federal National Direct Student Loan and Nursing Student Loan programs. The YSU Instructional Fee Loan Fund makes funds available for not more than 60 days, if justified by emergency conditions.

A student desiring a long-term educational loan may apply at a local bank or other lending institutions under the Guaranteed Student Loan Program, whereby the Federal Government subsidizes the interest while the student is enrolled and until repayment begins (6 months after leaving college).

Additional limited student loan funds, provided by the Youngstown State University Foundation are as follows:

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

Paul E. Shields Scholarship Loan Fund. This fund, established in 1961, makes loans available to Mathematics and Engineering students of junior or senior rank who have maintained a 3.25 average in these disciplines.

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

Lysle M. and Ina W. Shields Student Services Loan Fund. Established in 1983, this fund is to help young people attend college who might not be able to do so otherwise.

Applications for loans from these funds should be made to the YSU Scholarships/Financial Aids Department.

GRANTS-IN-AID

Grants-in-Aid are monetary gifts to students, frequently in combination with another type financial aid, the amount of grant aid is determined by the recipient's financial need, ability to make a creditable though not necessarily outstanding academic record, and character.

Those seeking financial assistance based on need must apply for a Pell Grant. These are U.S. Government Grants intended to help those who need financial assistance to attend post-secondary educational institutions. The maximum grant permissible under this program is $2,100. Grants may be less than that, however, since they are based on two additional factors: the amount of funds available to finance the program country-wide, and the cost of education at the institution attended. Application materials and information about these grants are available from high school guidance counselors and from the YSU Scholarships/Financial Aids Department.

Youngstown State University participates in the Supplemental Educational Opportunity Grant Program. These grants range up to $2,000 depending on family income.

The Nursing Scholarship Program, similar to the program just described, makes funds available to nursing students of exceptional financial need.

Ohio residents desiring financial assistance based on need must also apply for Ohio Instructional Grants. These are State of Ohio Awards made to full-time students of demonstrated financial need who are Ohio residents and in good standing academically. The amount awarded varies depending upon the family's adjusted effective income and the number of dependent children in the family. Application forms are available in the Scholarships/Financial Aids Department and from high school guidance counselors. These applications are submitted to the Ohio Board of Regents in Columbus.

EMPLOYMENT

Part-time jobs are available for students to help pay educational costs. Some jobs are available in on-campus offices, the library, and building and grounds maintenance. Other employment opportunities are also available at various off-campus locations. The Career Services office has information about both on-campus and off-campus employment.

R.O.T.C. — MILITARY SCIENCE

Students who enroll in the advanced R.O.T.C. Program are paid a subsistence allowance of $100 a month for 10 months of each school year, and half of a Second Lieutenant's pay plus lodging, meals, and travel cost for six weeks of R.O.T.C. advanced camp training. Application is made through the Department of Military Science.

GRADUATE SCHOLARSHIPS

The Youngstown State University Foundation makes money available to provide scholarships and grants to graduate students. Awards cover tuition and are available to eligible students. Applications are available in the Graduate School Office.

The Graduate School of Youngstown State University awards a number of assistantships each year. Normally, assistantships are awarded for a period of three quarters beginning with the Fall Quarter. Each assistantship carries a stipend and remission of instructional fees, including the nonresident tuition surcharge.

The Earl E. Edgar Memorial Scholarship Fund provides an annual $500 award to a graduate student at YSU studying the humanities. Selection of the recipient is based on financial need and academic excellence. Information is available in the Graduate School Office.

National scholarships for which graduate students may apply include Phi Kappa Phi Fellowships and Fulbright Grants for study abroad. Information can be obtained from the Graduate School.

ALUMNI OFFICE

An up-to-date record of the more than 48,000 graduates is maintained in this department. The Alumni Association sponsors special events for alumni, the University and the community; raises funds to support University projects; publishes a quarterly alumni newspaper; and serves as a continuing connection between the University and its graduates. The Alumni Association Office is located in the Alumni House on the corner of Wick Avenue and Spring Street.

The Youngstown State University Alumni Association is the official organization of the institution's alumni. Membership is extended to all graduates, former students of the University, parents and the community.

GENERAL REQUIREMENTS AND REGULATIONS

STATE RESIDENCY STATUS

Place of residence for tuition purposes will be determined at the time of admission or readmission by the Director of Admissions, on the basis of the residency rules stated below and information supplied on the "Application for Admission" form.

If the student has any question about the appropriate classification, he should immediately bring it to the attention of the Director of Admissions for review. Retroactive refunds or charges may be made to any student improperly classified.

Residency Status Appeal

Appeal for a change in residency classification should be made in writing to the Director of Admissions, who may require the student to complete an "Application for Non-Resident Tuition Surcharge Exemption" form. The Director's decision will be sent in writing to the student, who may then appeal the classification in a personal interview with the Director of Admissions.

The student may request the Director of Admissions to arrange an appearance before the Residence Classification Board. Such appearances ordinarily occur within two weeks of the request, if possible. The residence classification board's appellate decision is final.

Ohio Student Residency For State Tuition Surcharge Purposes

(A) Intent and Authority.

(1) It is the intent of the Ohio Board of Regents in promulgating this rule to exclude from treatment as residents, as that term is applied here, those persons who are present in the State of Ohio primarily for the purpose of receiving the benefit of a state-supported education.

(2) This rule is adopted pursuant to Chapter 119. of the revised code, and under the authority conferred upon the Ohio Board of Regents by Section 3333.31 of the revised code.

(B) Definitions For Purposes Of This Rule:

(1) A 'resident of Ohio for all other legal purposes' shall mean any person who maintains a twelve-month place or places of residence in Ohio, who is qualified as a

resident to vote in Ohio and receive state welfare benefits, and who may be subjected to tax liability under section 5747.02 of the revised code, provided such person has not, within the time prescribed by this rule, declared himself or herself to be or allowed himself or herself to remain a resident of any other state or nation for any of these or other purposes.

(2) 'Financial Support' as used in this rule, shall not include grants, scholarships and awards from persons or entities which are not related to the recipient.

(3) An 'Institution of Higher Education' as used in this rule shall mean any university, community college, technical institute or college, general and technical college, medical college or private medical or dental college which receives a direct subsidy from the State of Ohio.

(4) For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, 'Domicile' is a person's permanent place of abode; there must exist a demonstrated intent to live permanently in Ohio, and a legal ability under federal and state law to reside permanently in the state. For the purpose of this policy, only one domicile may be maintained at a given time.

(5) For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, an individual's immigration status will not preclude an individual from obtaining resident status if that individual has the current legal status to remain permanently in the United States.

(C) Residency Rules For Tuition Surcharge Purposes. The following persons shall be classified as residents of the State of Ohio for tuition surcharge purposes:

(1) A dependent student, at least one of whose parents or legal guardian has been a resident of the State of Ohio for all other legal purposes for twelve consecutive months or more immediately preceding the enrollment of such student in an institution of higher education.

(2) A person who has been a resident of Ohio for the purpose of this rule for at least twelve consecutive months immediately preceding his or her enrollment in an institution of higher education and who is not receiving, and has not directly or indirectly received in the preceding twelve consecutive months, financial support from persons or entities who are not residents of Ohio for all other legal purposes.

(D) Additional Criteria Which May Be Considered In Determining Residency For The Purpose May Include But Are Not Limited To The Following:

(1) Criteria evidencing residency:

(a) If a person is subject to tax liability under section 5747.02 of the revised code;

(b) If a person qualifies to vote in Ohio;

(c) If a person is eligible to receive state welfare benefits;

(d) If a person has an Ohio driver's license and/or car registration.

(2) Criteria evidencing lack of residency:

(a) If a person is a resident of or intends to be a resident of another state or nation for the purpose of tax liability, voting, receipt of welfare benefits, or student loan benefits (if the student qualified for that loan program by being a resident of that state or nation);

(b) If a person is a resident or intends to be a resident of another state or nation for any purpose other than tax liability, voting, or receipt of welfare benefits (see paragraph (D)(2)(a) of this rule).

(E) Exceptions To The General Rule Of Residency For Tuition Surcharge Purposes:

(1) A person who is living and is gainfully employed on a full-time or part-time and self-sustaining basis in Ohio and who is pursuing a part-time program of instruction at an institution of higher education shall be considered a resident of Ohio for these purposes.

(2) A person who enters and currently remains upon active duty status in the United States military service while a resident of Ohio for all other legal purposes and his or her dependents shall be considered residents of Ohio for these purposes as long as Ohio remains the state of such person's domicile.

(3) A person on active duty status in the United States Military Service who is stationed and resides in Ohio and his or her dependents shall be considered residents of Ohio for these purposes.

(4) A person who is transferred by his employer beyond the territorial limits of the fifty states of the United States and the District of Columbia while a resident of Ohio for all other legal purposes and his or her dependents shall be considered residents of Ohio for these purposes as long as Ohio remains the state of such person's domicile as long as

such person has fulfilled his or her tax liability to the state of Ohio for at least the tax year preceding enrollment.

(5) A person who has been employed as a migrant worker in the state of Ohio and his or her dependents shall be considered a resident for these purposes provided such person has worked in Ohio at least four months during each of the three years preceding the proposed enrollment.

(F) Procedures

(1) A dependent person classified as a resident of Ohio for these purposes and who is enrolled in an institution of higher education when his or her parents or legal guardian removes their residency from the state of Ohio shall continue to be considered a resident during continuous full-time enrollment and until his or her completion of any one academic degree program.

(2) In considering residency, removal of the student or the student's parents or legal guardian from Ohio shall not, during a period of twelve months following such removal, constitute relinquishment of Ohio residency status otherwise established under paragraph (C)(1) or (C)(2) of this rule.

(3) Any person once classified as a nonresident, upon the completion of twelve consecutive months of residency, must apply to the university for reclassification as a resident of Ohio for enrollment if such person in fact wants to be reclassified as a resident. Should such person present clear and convincing proof that no part of his or her financial support is or in the preceding twelve consecutive months has been provided directly or indirectly by persons or entities who are not residents of Ohio for all other legal purposes, such person shall be reclassified as a resident.

Evidentiary determinations under this rule shall be made by the University which may require, among other things, the submission of documentation regarding the sources of a student's actual financial support.

(4) Any reclassification of a person who was once classified as a nonresident for these purposes shall have prospective application only from the date of such reclassification.

(5) The university in reporting student enrollment to the Ohio Board of Regents for the purpose of assessing the tuition surcharge shall provide individual students with a fair and adequate opportunity to present proof of his or her Ohio residency for purposes of this rule. The university may require the submission of affidavits and other documentary evidence which it may deem necessary to a full and complete determination under this rule.

ADMISSION INFORMATION
GENERAL ADMISSION STATEMENT

Admission to the University does not assure admission to a particular course or program. Minimum point averages, test scores and/or grades on specific subjects are required by a number of programs. Developmental courses are available to assist in satisfying scholastic deficiencies. Those who lack high school subjects required by the various schools and 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 college sophomore year.

ACADEMIC CREDENTIALS

Academic credentials include high school and college transcripts, test scores, transient authorization forms, GED scores, and/or any other records required for admission or granting credit. Only properly certified and signed credentials received directly from the issuing institution will be accepted.

APPLICATION REQUIREMENTS

All prospective students must submit their applications for admission and all required credentials to the Admissions Office by the following dates:

Quarter	Last Day to Apply	Last Day for Credentials
Fall 1986	Aug. 15, 1986	Sept. 1, 1986
Winter 1987	Nov. 15, 1986	Dec. 1, 1986
Spring 1987	Feb. 15, 1987	Mar. 1, 1987
Summer 1987	May 15, 1987	June 1, 1987

Application Fee

Every new applicant must pay an application fee, not refundable under any circumstances.

NEW FRESHMAN APPLICANTS

Ohio Residents

Ohio residents must have graduated from high school or successfully completed the General Education Development (GED) Test.

Out-of-State Residents

Out-of-state residents must have graduated from high school in the upper two-thirds of their high school class; or have an ACT composite score of 15 or higher; or have a combined SAT score of 700 or higher.

Guidance and Counseling Tests

All new freshmen are required to take the American College Test (ACT) or the Scholastic Aptitude Test

(SAT). Those who have been out of school for two or more years and who are not pursuing a restricted program are exempt from this requirement. Failure to take a required test will result in postponing consideration for admission to a later quarter.

The University is a testing center administering the ACT at announced dates to accommodate applicants to institutions requiring the test for entrance or advisement.

An English Placement Test provided by the University is required of all students who must take English 550 (Basic Composition).

General and vocational-interest examinations for guidance purposes are available. Prospective freshmen and others wishing such tests may make arrangements with the University's Counseling and Testing Center.

High School Transcripts

Applicants must arrange to have their high schools send to 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, notification of acceptance will be made before high school graduation. Final transcripts for all early-decision applicants must be received by the Admissions Office before registration will be permitted.

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.

Transcripts

All transfer applicants (unless postgraduate) must provide the Youngstown State University Admissions Office with a copy of their high school transcript and a copy of all undergraduate transcripts. Postgraduate applicants are not required to submit high school transcripts unless specifically requested by the Admissions Office.

Ohio Residents

Transfer applicants who are residents of Ohio and in good standing at the last institution attended with a cumulative point average of 2.0 or higher (on a 4.0 system) for all courses taken at other colleges or universities, are admitted in good standing. Those with less than 2.0 or on probation may be considered for probationary transfer 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 quarters have passed following the term in which the suspension occurred.

Out-of-State Residents

Applicants who are non-residents of Ohio must be in good standing at the last institution attended and have at least a 2.0 cumulative point average (on a 4.0 system) for all courses taken at all colleges or universities to be considered for admission.

Transfer Credit

Transcripts of credits earned are evaluated by the Admissions Office and a copy of the evaluation is issued to the applicant if he is accepted.

Transfer credit is given for all course work taken at a regionally accredited college or university, provided that the student has a cumulative point average equivalent to at least a 2.0 (on a 4.0 system) at that institution and that the work is creditable toward a degree at that institution. A "D" grade accepted in transfer of credit does not satisfy a prerequisite for which a higher grade is needed. A student who has a cumulative point average of less than 2.0 (on a 4.0 system) at a regionally accredited institution can transfer only courses in which a grade of "C" or higher has been earned.

Distribution of any accepted course work is determined by the appropriate school or college and/or department in accordance with policies governing the fulfillment of degree requirements.

Transfer students should note the residence requirement under candidacy for a degree.

Applicants who attend any institution during a suspension period are not given credit for work completed during the period of suspension (generally consisting of the two quarters immediately following the suspension).

Transfer From a Regionally Accredited Two-Year Institution

The University recognizes the associate degree as preliminary to the baccalaureate and admits to advanced standing students possessing the associate degree from an accredited institution. Transfer credit is granted for all work successfully completed for the associate degree. If a student elects to pursue a baccalaureate program different from the associate degree program, additional courses may be required before achieving Junior Standing.

Applicants who have not completed an associate program are considered on the same basis as other transfer applicants.

TRANSIENT APPLICANTS

A student seeking a degree at another institution may ordinarily take one quarter of course work as a transient student. The student must apply for admission to the University and obtain a transient authorization form from the Admissions Office. This form must be partially completed by the applicant and the remainder

by the registrar of the institution which the student 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 will be permitted to enroll 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 two or more quarters, exclusive of summer, must apply for readmission.

Suspended Students

A former student who was academically suspended must be reinstated by the Dean of the School from which he or she was suspended, or in the event the student wishes to change schools, by the Dean of the new school. Reinstatement procedures may vary with the school; for details consult either the Admissions Office or the appropriate Dean's Office.

COMBINED B.S./M.D. (NEOUCOM) APPLICANTS

Prospective students seeking admission to YSU'S combined B.S./M.D. Degree Program must submit an application to the Admissions Office and must take either the American College Test (ACT) or the Scholastic Aptitude Test (SAT). The test should be taken early in the senior year of high school. The application deadline is December 31 of that year.

FOREIGN STUDENT APPLICANTS

General Admission Statement

The Admission information contained in the sections applicable to Foreign Students reflects minimum requirements. Meeting these requirements does not guarantee admission to the University or to specific programs.

Foreign Freshmen and Overseas Students

Applicants from overseas must submit the following information six months in advance of the desired date of admission (By April 1 for the fall term; by September 1 for the spring term):

1. A completed application form with a list of all educational experiences, including any studies undertaken in the U.S.
2. Official credentials and transcripts from all secondary schools, colleges, and universities which the student has attended, including subjects studied, grades, and key to the grading system. (If credentials are not in English, official translations must be provided.)
3. Certification of a score of 500 on the test of English as a Foreign Language (TOEFL), administered by the Educational Testing Services, Princeton, New Jersey, or of an equivalent score on the Michigan Test of English Language Proficiency (MTELP), officially administered by the English Language Institute, Ann Arbor, Michigan.
4. A complete medical examination record on the form provided.
5. Certification of financial resources available for education and living expenses while attending the University. Advance payment may be required.
6. A letter of recommendation from the last educational institution attended or from an international agency such as the Institute for International Education.
7. Applicants may be required to submit additional materials.

Provisional Admission

Students meeting all the above requirements except the specified level of English proficiency may be admitted provisionally for up to one academic year, to study English until the required level of proficiency is reached. Such applicants must have a TOEFL score of 450 or higher (or the MTELP equivalent) and will be expected to enroll in a 50% credit load of academic work in addition to a 50% credit load of English language courses if the English placement testing on campus at YSU indicates such a program.

Non-speakers of English may submit proof of their admission to an intensive English Institute with their YSU application and request an advance recommendation, contingent upon attainment of satisfactory English proficiency according to the above conditions.

Foreign Transfer Student

To be considered as a transfer student, applicants must have first completed a minimum of one academic year at a United States (or other English-speaking) college or university. Applications must be received not later than July 1—Fall Quarter; October 1—Winter Quarter; January 1—Spring Quarter.

Applicants wishing to transfer advanced credit must submit the following:

1. A completed application form with the list of all educational experiences, including studies undertaken in the U.S.
2. Official credentials and transcripts showing one academic year of full-time study, including evidence of academic and disciplinary good standing at the last prior institution with a minimum grade point average of 2.00 (on a 4.00 scale). (Some YSU programs may have higher requirements.)

3. A TOEFL score of at least 525 (or its MTELP equivalent) if the applicant has English composition credit from a prior institution, or at least 500 (or its MTELP equivalent) if no English composition credit was earned from a prior institution.
4. A complete medical examination on the form provided.
5. Certification of financial resources for education and living expenses while studying at the University.
6. Recommendation from the foreign student advisor of the currently enrolled college or university.
7. Any additional information that may be needed.

All advanced credit is evaluated by the Admissions Office to determine eligibility. Credits from institutions in other countries will be evaluated upon presentation of course syllabi. Students holding undergraduate degrees equivalent to the bachelor's degree may be admitted to the University for post-graduate study only upon recommendation of the Foreign Admissions Committee and the Dean of the proposed college.

Requirements For Enrolled Foreign Students

All entering foreign and exchange students are expected to attend an orientation program during the two weeks prior to their initial enrollment, in which assistance is given in placement and course registration, and housing and community information is provided.

During orientation, entering students are required to take English Placement Tests and may be required to include certain English courses in their programs during their initial terms, to bring their English proficiency up to the necessary standard.

Foreign students must register, attend, and receive credit in a full-time course of study throughout the academic program year. Grades of imcomplete, audit, or failure do not count toward the required credit.

All University requirements apply to foreign students as well as other students. In particular, the following rules should be noted:

Tuition and other fees must be paid in full each quarter prior to the beginning of classes. The University does not carry installment accounts.

Students must carry acceptable medical insurance for hospital and surgical care. Such insurance is available at registration for any who do not already have it.

Financial Resources

The University offers no financial aids for undergraduate foreign students. This fact and employment restrictions mentioned below make it necessary for non-immigrant international students to be financially able to supply their own financial needs during their entire educational stay in the U.S.

Employment

Non-immigrant international students are not permitted to be gainfully employed off-campus during their first year at the University. Any part-time employment must be approved by the Coordinator of International Student Services and, if the work is off-campus, by the U.S. Immigration and Naturalization Service.

CREDIT BY EXAMINATION

Credit by Examination is available to students who satisfactorily complete the appropriate subject examination. Departmental tests and the following standardized tests are currently available:

Advanced Placement Program (APP)

College Level Examination Program (CLEP)

Proficiency Examination Program (PEP)

For further information, contact the Admissions Office.

GRADUATE SCHOOL APPLICANTS

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

OFFICE OF CONTINUING EDUCATION

Individuals interested in a continuing education program should consult the director of that program. This program is described in the "General Information" Section of this bulletin.

VETERANS

Efforts are made to give all necessary guidance and assistance to military veterans.

Courses taken through the United States Armed Forces Institute (USAFI) or the Defense Activity for Non-Traditional Education Support (DANTES) as well as certain formal service school courses may be considered for transfer toward the student's degree program. USAFI or DANTES courses must be evidenced by an official transcript, and service school courses by certification of in-service training on DD Form 214 (Armed Forces of the United States Report of Transfer or Discharge).

Veterans who have completed at least one full year of active United States military service will 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 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 under the same circumstances as provided in the section titled *Transfer Credit*.

GENERAL REQUIREMENTS FOR GRADUATION

Each student entering Youngstown State University is entitled to a copy of the University Catalog. This catalog or any one subsequent catalog will be the guide to graduation requirements, provided the student is in continuous attendance and does not change majors. When a student changes majors, the guide to graduation requirements will be the catalog in effect at the time of change or any one subsequent catalog. Readmitted students will use the catalog in effect at their last readmission or any one subsequent catalog as the guide to graduation requirements. Any exceptions to requirements must be approved by the student's department chairman and/or school dean. The University reserves the right to change course offerings and academic requirements. Certain general requirements apply to all degrees earned at Youngstown State University, while other requirements apply only to particular degrees. There follows a condensed table of courses required for graduation, including high school or other preparatory units.

COURSES REQUIRED FOR GRADUATION

Pre-College: Students graduating from high school after September 1985* and desiring to pursue a baccalaureate degree must have completed a minimum of 16 units of high school credit in the courses listed below. Students admitted with deficiencies in these areas will be required to make them up by completing certain prescribed courses without baccalaureate credit before the beginning of the junior year (90 q.h.). The pre-college courses required are:

English	4
Algebra	2
Geometry	1
Biology, Chemistry, Earth Science, or Physics	1
Other Science	1
US History	1
US Government	1/2
Other Social Sciences	1/2
Additional Science or Social Science	1
Foreign Language	2
Fine or Performing Arts	1
Other Subjects	1
Total Units	16

In addition, the Bachelor of Engineering (B.E.) degree program suggests a unit of Mechanical Drawing, a half-unit of Trigonometry, and in the Sciences one unit of Chemistry and one unit of Physics specifically. For the B.M. degree program, the applicants are expected to have completed a certain proficiency in one or more branches of applied music. See the Dana School of Music section.

Students desiring to pursue an associate degree must have completed a minimum of 16 units of high school credit in the courses listed below:

English	4
Algebra I	1
Algebra II or Geometry	1
Biology, Chemistry, Earth Science or Physics	1
Other Science**	1
U.S. History	1
U.S. Government	½
Other Social Science	½
Other Subjects	7-8
Total Units	16

A unit of Mechanical Drawing and a half-unit of Trigonometry are advisable for Engineering Technology students. The preferred Sciences for Dental Hygiene, Medical Assisting and Nursing students are Biology and Chemistry.

*Students graduating from high school before September 1985 should consult the dean of the school in which they are registered for the list of pre-college courses.

**Not required of students pursuing AAB or ALS degrees.

IN THE UNIVERSITY	A.B.	B.S.	B.S. in Educ.	B.S. in A.S. B.S.N.	B.S. in B.A.	B.E.	B.F.A.	B.M.	A.A. A.A.B. A.A.S. A.L.S.
BASIC COURSES	(These Figures Mean Quarter Hours of Credit)								
English Comp.	8	8	8	8	8	8	8	8	4-8
Health/Phys.Ed.	6	6	6	6	6	6	6	6	3[1]
Speech	—	—	4	—	3	—	—	—	—
AREA COURSES:									
Humanities	16	16	8-18[3]	8-18	8	8	8-18	8-18	—[2]
Social Studies	20	20	16-22[4]	16-22	30	16	16-22	16-22	5[2]
Science/Math.	16	12	12-22[6]	12-22	18	46	12-22	12-22	5[2]
FOR THE DEGREE[5]									
Foreign Lang.	8-20[7]	4-16[7]	—	—	—	—	—	—[8]	—[2]
Other Courses[9]	110-112	126-138	122	126-138	113	113	136	132-159	—[2]
TOTAL CREDIT HOURS[10]	186	186	186	186-198	186	197	186-212	189-209	96[11]

NOTES

[1]H. and P.E. 590. For Dental Hygiene, Emergency Medical Technology, and Nursing Students, H. and P.E. 590 is waived.

[2]Curriculums in the College of Applied Science and Technology Section.

[3]At least one course in each of two of the following three areas—Fine Arts, Philosophy, Theological Studies—is required by the Ohio Department of Education for students seeking a High School Teaching Certificate.

[4]Candidates for the B.S. in Ed. degree who seek certification in Elementary Education or Special Education (EMR or LD/BD) are required to take 25 quarter hours of Social Studies.

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

[6]Candidates for the B.S. in Ed. degree in Elementary Education must take 12 hours of Science (Physical and Biological) plus nine hours of Mathematics: This is the minimum set by the Ohio 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 Ohio Department of Education.

[7]The eight-hour requirement for the A.B. degree and the four-hour for the B.S. degree assumes the continued study of the same language in which two units of high school credit were earned. If a different language is studied, or if the student has more than two units of high school credit, the requirement is different. See proficiency in a Foreign Language for details.

[8]For Voice Majors 24 hours are required. Part of this requirement may be met by two units of high school study in one of the following languages: French, Italian, or German. In this case 16 hours are required (eight hours in each of the two languages not previously studied).

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

[10]The B.S.N. requires 194 hours. For the B.M., the total is 203 hours. For the B.S. in Ed., minimum is 186 quarter hours if the student is exempted from taking Education 502.

[11]The exact number of hours varies for the various two-year programs, as shown in the specific curriculums.

[12]Included in the major.

COMMENCEMENTS

There are three graduation ceremonies each year: Winter Commencement (March), at the end of the second quarter of the academic year; Spring Commencement (June), at the end of the third quarter of the academic year; and Summer Commencement, at the end of the summer session.

Although there is no graduation ceremony at the end of the Fall Quarter, diplomas will be issued to students who have completed the requirements for a degree at the end of the Fall Quarter and who have applied for candidacy for December graduation.

GRADUATION HONORS

Students graduating with a baccalaureate degree who rank high scholastically are awarded special honors at the commencement exercise, as follows:

Those who attain a quality point average of 3.8 or higher are granted their degrees *Summa Cum Laude.*

Those who attain a quality point average of less than 3.8 but not less than 3.6 are granted their degrees *Magna Cum Laude.*

Those who attain a quality point average of less than 3.6 but not less than 3.4 are granted their degrees *Cum Laude.*

Students graduating with any associate degree who rank high scholastically are awarded special honors at the commencement exercise, as follows:

Those who attain a quality point average of 3.7 are granted their degrees With High Honors.

Those who attain a quality point average of less than 3.7 but not less than 3.4 are granted their degrees With Honors.

All Youngstown State University grades will be counted in determining honors for graduation.

Transfer students who are baccalaureate degree candidates must have at least 90 quarter hours of credit at Youngstown State University, or those who are associate degree candidates must have at least 60 quarter hours of credit at Youngstown State University, to be eligible for graduation honors. However, no transferred credit — work taken at any time at an institution other than Youngstown State University — is included in the calculation of the point average.

CANDIDACY FOR A DEGREE

To be eligible for candidacy for any degree, the following three requirements must be fulfilled:

Application. A formal application for graduation must be filed at the Bursar's Office before 5:00 p.m. on the Monday following the first complete week of the quarter in which the student intends to graduate. The application form is available at 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 the application has been filed, the application must be reactivated with the appropriate dean. The student should file the "Notice of Intention to Apply for Graduation" form with the dean of the school after the completion of 60 quarter hours for an associate degree and 150 quarter hours for a baccalaureate degree. (See Fees and Expenses further on in this Section.) It is the student's responsibility to see that they complete all of the requirements for graduation. Care should be taken to make certain that each of the requirements, 1) University-wide, 2) School or College, and 3) Departmental, are met as well as the minimum credit hours in order that the student might graduate at their anticipated commencement ceremony.

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 final credit hours *In Absentia,* the last 45 quarter hours prior to the period of absence must be spent at Youngstown State University.) Any modification of this requirement must be approved by the office of the Provost.

Grades. The point average must be at least 2.00 (See *The Point Average 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 peculiar to the associate or baccalaureate degree, further details follow.

BACCALAUREATE DEGREE

In addition to requirements stated under *Candidacy for a Degree,* the following requirements must also be fulfilled for a baccalaureate degree:

Pre-College Requirements. 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 *Courses Required for Graduation Section* and should be read carefully, together with the explanatory notes accompanying them. This is especially important if the student changes the degree for which he is studying, as his high school preparation, even though satisfactory for the 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. Every student must complete a major. He must also complete a minor, unless he (1) elects to complete a combined major, or (2) enrolls in a school or college offering approved professional or technical curriculums which do not require a delineated minor.

A department major consists of at least 45 quarter hours in one department with grades of 'C' or better. A combined major, in which courses are given by 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, unless the department includes more than one discipline. If the department includes more than one discipline, the minor may be in the same department in a discipline other than that of the major. Certain approved interdisciplinary programs are exceptions to the above definitions.

*Each department determines the course requirements for its own major or majors. A department may also establish a pattern of courses to be recommended for students seeking a minor in that department. However, responsibility for certifying that a student has completed a major and minor rests with the chairman of the major department in which the student completes the major. The student may be required to do more than the minimum stated in the preceding paragraph.

As soon as a student has decided on his major, he should consult with the chairman of the major department. While no student is compelled to declare a major before completing an *Intention to Graduate* form, early consultation with the chairman is strongly recommended, since in some departments the student must begin course work related to the major during the freshman year or risk a delay in graduation.

Credit From Professional Schools

A student who has completed work at Youngstown State University for a baccalaureate degree and has satisfied all requirements for the degree before leaving the University except the completion of not more than 45 quarter hours, will be granted the appropriate baccalaureate degree on the satisfactory completion of the remaining hours in any professional school granting any of the degrees listed below and approved by the accrediting agency of that profession, provided that the student has been accepted for further study at the professional school. The student may thus secure the baccalaureate degree after three to three-and-a-half years in the University followed by approximately a year in the professional school. The relevant professional degrees are: The degree of Doctor of Dental Surgery or equivalent; Doctor of Medicine, Doctor of Osteopathy, Doctor of Veterinary Medicine or equivalent; Doctor of Jurisprudence or equivalent; Doctor of Ministry or equivalent; Bachelor of Divinity or equivalent.

The above policy does not apply to students admitted in the BS/MD Integrated Program of Youngstown State University and the Northeastern Ohio Universities College of Medicine (NEOUCOM). However, credit of up to 20 Q.H. may be granted toward the completion of the B.S. degree to those students who have participated in the 6th year *Human Values in Medicine* Programs of NEOUCOM.

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

COURSE REQUIREMENTS — GENERAL BASIC

English. The candidate must show satisfactory proficiency in the use of written English. This requirement is normally met by taking English 550, 551, totaling eight quarter hours. Students must be tested by the English Department to assess their skills in written composition before registration into English Composition courses. Placement into precourses (English 520 and/or English 540), into English 550, or English 550H (Honors Composition) is made on the basis of the English Placement Test results. Students who demonstrate superior proficiency may be exempted from English 550. Information on the policy and procedure for testing and exemption is available from the English Department. A student who has had part or all of some other "Freshman English" sequence, either at this institution or elsewhere, should consult the Chairman of the Department of English or the Coordinator of Basic Composition before registering for Basic Composition courses 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 activity courses require evidence of a physical examination presented prior to admission to these courses. The candidate who completed 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 academic 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.

COURSE REQUIREMENTS — GENERAL AREA

The candidate must complete at least 46 quarter hours in the areas of Humanities, Social Studies, and Science/Mathematics. The following are the general requirements in these areas of study:

Humanities. The candidate must have completed at least eight quarter hours and may apply no more than 18 quarter hours in satisfaction of the requirement in any of the following: literature course in English or Humanities (600-level or above); courses in a literature in a Foreign Language; courses in Philosophy and/or

Religious Studies; history and/or appreciation courses in the Department of Art, the Department of Speech Communication and Theatre or the Dana School of Music; Black Studies 601 (Introduction to Black Studies II). Candidates for Ohio High School Teaching Certificates must have at least one course in any two of the following areas: Fine Arts, Philosophy, Theological Studies.

Social Studies. The candidate must have completed at least 16 hours, and may apply no more than 22 quarter hours in satisfaction of the requirement, in at least two of the following departments: Economics, Geography, History, Political Science (Including the Social Science Sequence Courses), Psychology, or Sociology. Black Studies 600 (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 12 quarter hours. No more than 22 quarter hours may be applied in satisfaction of the requirement. At least eight quarter hours of Science must be taken. No more than 10 quarter hours of Mathematics may be applied toward the requirement. The Science area includes courses in the Departments of Biological Sciences, Chemistry, Geology, Physics and Astronomy, and courses in Physical Geography.

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

In Elementary Education, 12 quarter hours of Science (Physical and Biological) plus nine quarter hours of Mathematics (Mathematics 515 and Mathematics 516).

Students seeking a High School Teaching Certificate must have at least one Mathematics course.

ADDITIONAL COURSE 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 degrees of Bachelor of Science in Applied Science (B.S. in A.S.) and Bachelor of Science in Nursing (B.S.N.) are in the College of Applied Science and Technology Section.

Those for the Bachelor of Science in Education (B.S. in Ed.) 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 Warren P. Williamson, Jr. 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 degrees of Bachelor of Fine Arts (B.F.A.) and Bachelor of Music (B.M.) are listed in the college of Fine and Performing Arts Section.

ASSOCIATE DEGREE REQUIREMENTS

For an associate degree, the requirements of a two-year curriculum of the College of Applied Science and Technology must be fulfilled. See Curriculums in that section.

MODIFICATIONS FOR STUDENTS ENROLLED IN MILITARY SCIENCE

Students enrolled in R.O.T.C. may make the following substitutions with approval of their academic major advisor:

A. Military Science Courses 520, 530, 610, and 615 each allow the student to omit one quarter hour of the Health and Physical Education activity requirement.

B. The following courses are possible substitutions for Social Studies area requirements contingent upon approval by the academic major advisor:

	Q.H.
MS 601 American Military History	4
MS 502 Basic Leadership and Management	1
MS 701 Organizational Leadership	3

C. The following courses may be taken as general electives with the major advisor's approval:

	Q.H.
MS 501 Introduction to Military Science	1
MS 502 Basic Leadership and Management	1
MS 503 First Aid and Emergency Care	3
MS 520 Introduction to Living Out-of-Doors	1
MS 530 Survival and Mountaineering Techniques	1
MS 602 Individual Military Skills	2
MS 603 Comparative Analysis of U.S./Soviet Land Forces	2
MS 610 Individual Weapons and Marksmanship	1
MS 615 Orienteering	1
MS 604 Basic ROTC Summer Camp (2-Year ROTC Students Only)	*4
MS 702 Advanced Leadership and Management I	3
MS 703 Advanced Leadership and Management II	3
MS 704 Advanced ROTC Summer Camp	6
MS 801 The Military Team	3
MS 802 Seminar in Leadership and Management I	3
MS 803 Seminar in Leadership and Management II	3

*Credit for two-year program students not completing MS 500 and MS 600 level courses only.

D. Academic major advisors may allow substitution credit as indicated:

1. COLLEGE OF ARTS AND SCIENCES
   - 3 Activity Hours for Health and Physical Education
   - 7 Q.H. Social Studies
   - 17 Q.H. General Electives

A minor is available in consultation with the academic advisor.

2. SCHOOL OF BUSINESS ADMINISTRATION
   - 3 Activity Hours for Health and Physical Education
   - 7 Q.H. Social Studies
   - 10 Q.H. General Electives

3. SCHOOL OF EDUCATION
   - 3 Activity Hours for Health and Physical Education
   - 7 Q.H. Social Studies

Additional hours are available in consultation with academic major advisor.

4. SCHOOL OF ENGINEERING
   - 3 Activity Hours for Health and Physical Education
   - 4 Q.H. for MS 601 History

Additional hours are available in consultation with academic major advisor.

5. COLLEGE OF FINE AND PERFORMING ARTS
   - 3 Activity Hours for Health and Physical Education

Additional hours are available in consultation with academic major advisor.

6 COLLEGE OF APPLIED SCIENCE AND TECHNOLOGY (4-Yr. Curriculums)
   - 3 Activity Hours for Health and Physical Education
   - 7 Q.H. Social Studies
   - 14 Q.H. General Electives

A minor is available in consultation with the academic major advisor.

REQUIREMENTS FOR A SECOND DEGREE

A student who has a degree from Youngstown State University and desires a second degree must earn 27 additional quarter hours of credit (in addition to the total requirements for the first degree), meet all requirements for the second degree, and complete the requirements for another major. In no case may a student be awarded the same degree twice, although the student may earn a second major in a given degree subsequent to the time the degree was originally awarded. If a second major is earned, it is recorded, along with the completion date, on the student's academic record.

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 or 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.

HONORS DEGREE PROGRAM

I. ADMISSION AND RETENTION OF STUDENTS

A. Students meeting one of the following criteria are eligible to enter the Honors Degree Program:

1. High school graduates with any one of the following minimums:
   a. ACT composite score of 28.
   b. SAT total score of 1230.
   c. High school GPA of 3.7 on a 4.0 basis.
2. Current YSU students having completed at least 12 quarter hours of college-level studies (not to include remedial courses and designed to make up high school deficiencies) with a cumulative GPA of at least 3.4.

B. For the baccalaureate program, students must enter no later than the completion of 90 quarter hours and, for the associate degree, no later than the completion of 33 quarter hours.

C. To remain in good standing in the program, the student must maintain at least a 3.4 GPA. A student falling below this level will not be eligible to participate in the program until the GPA is restored to the 3.4 level.

II. DEGREE REQUIREMENTS AND PROCEDURES

A. Minimum quantitative requirements for completion of an Honors Degree Program:

1. Baccalaureate degree
   a. A student must complete a minimum of 40 q.h. of Honors credit.
   b. Not more than 20 quarter hours of Honors credit may be earned in any academic year.

c. At least 12 quarter hours of Honors credit must be earned in the student's major. With the approval of the Honors and ICP Subcommittee, the major department may specify the Honors credit required within the major and/or establish more extensive requirements, called Departmental Honors, leading to graduation "with distinction" in the student's area of concentration.
d. The program must contain at least four University Honors Seminars, two of which must be in upper division.

2. Associate degree

a. A student must complete a minimum of 20 quarter hours of Honors credit.
b. Not more than 12 quarter hours of Honors credit may be completed in any academic year.
c. At least 8 quarter hours of Honors credit must be completed in the student's major. The major department may specify the Honors credit required within the major, subject to the approval of the Honors and ICP Subcommittee.
d. The program must contain at least two University Honors Seminars.

B. Documentary recognition of success in the Honors Degree Program:

1. Grade records. A student's permanent record will be the sole official record of his Honors courses and seminars, each of which will be designated with an 'H' after the catalog number.
2. Completion of the Honors Degree Program. When a student's record satisfies the Director of the Honors Program that the student has successfully completed the requirements of the Honors Degree Program, the following notation will be entered on the student's permanent record: "Has successfully completed the Honors Degree Program," and upon graduation the student will be awarded a special diploma bearing the word "Honors" before the name of the degree.

INDIVIDUALIZED CURRICULUM PROGRAM

The student whose needs are not completely met by existing conventional programs may wish to investigate and apply for the individualized curriculum program. This requires a student to design the curriculum suited to the student's particular background and needs, allowing alternative paths for reaching the currently offered undergraduate degrees.

A student admitted to the program will have the help of a Committee of Faculty Advisors selected by the student. This committee will help to develop a program that will serve a valid educational goal not attainable within the regular curricular structure of the University. To receive approval, the over-all program needs to be of a scope and intensity comparable to conventional programs leading to the degree being sought.

Waiver of any existing curricular requirement may be sought, subject to approval by the student's committee and the appropriate Academic Dean. However, the student must present valid specific reasons for each variation from these normal requirements. Only curricular adjustments may be made within this program; it does not provide for new or modified courses or degrees, or for changes in course prerequisites. Credit by examination may be sought, subject to approval through normal channels.

Detailed information is available from the director of the program, Room 104, College of Arts and Sciences Office Building.

STUDENT RECORDS POLICY

The Student Records Policy is published in the *Youngstown State University Code of Student Rights, Responsibilities, and Conduct* which is available at the Kilcawley Information Center or the Office of the Vice President, Student Services, Room 203 Tod Administration Building.

ADVISEMENT

The Registrar's Office provides instructions for advisement and registration prior to registration. The policy regarding advisement and the advisor's signature is:

> All students are urged to consult with advisors in their major area. Each department or school has a procedure for either assigning an advisor to a student or for the student to select an advisor. Signatures on advisement sheets are required for all freshmen (with less than 48 hours of credit completed, as indicated on the permit to register), all first quarter transfer students, all former students returning to the University, and all students whose grade point average is below 2.00 (as indicated on the permit to register). The responsibility for fulfilling all requirements rests ultimately upon the student; the advisors provide assistance in that process.

A student planning the program should use the *Schedule of Classes* in order to determine the specific classes offered in a particular quarter. The *Schedule of Classes* is published for each quarter by the Registrar's Office as an issue of the Youngstown State University Bulletin. For information about future offerings or when a particular course will be offered

again, the student should consult the appropriate Department Chairman.

REGISTRATION

Every student registers in person, for each quarter, in the following manner:

1. Current students register according to the registration appointment schedule published in the *Schedule of Classes*.
2. *New, transfer, and former students register according to the appointment times mailed to them by the Registrar's Office.*

Registration is not completed until all tuition and fees are paid. Registration must be concluded no later than the date published for the late and final registration for the particular quarter. All significant dates are published in the catalog issue of the *Youngstown State University Bulletin* and in the *Schedule of Classes* for each specific quarter.

Non-payment of tuition and fees by the due date results in schedule cancellation.

ENGLISH REQUIREMENT AND THE ENGLISH PLACEMENT TEST

All students admitted to the University are required to take the English Placement Test. No student is permitted to register for a second quarter of classes without having taken the test. Students must contact the English Department for scheduling to take this test.

A student is required to complete the English requirement within the first ninety hours of course work. A student who does not complete the English requirement within the first ninety hours of course work will be prohibited from registering for any additional *upper division courses* until the English requirement has been met. Transfer students having completed 90 hours or more are exempt from this policy for their first 16 hours of enrollment at Youngstown State University.

PHOTO IDENTIFICATION CARDS

The Registrar's Office issues a photo identification card to every student enrolled at the University. The student must carry the card while on campus and is responsible for all transactions completed with the card. The use of this card is restricted to the student to whom it was issued and should be used for identification purposes only. The student must report the loss or theft of his or her card to the Campus Security Office. Lost or stolen cards must be replaced at the student's expense (see service charges for charge). To replace the card, the student must present proper identification (i.e. driver's license) to the Registrar's Office. The photo identification card is the property of the University and must be surrendered by the student upon request by University Officials.

EXTRA HOUR OF CREDIT

Credit for more than the stated number of credit hours may be obtained for extra work in a course, under the following stipulations:

1. Permission is limited to seniors.
2. Extra credit may not exceed one hour per quarter.
3. A brief description of the extra work must be given by the instructor.
4. Such extra work may be done only under the supervision of a full-time instructor.
5. An application form must include signatures showing approval by the instructor of the course, the Chairman of the Department in which it is taught, and the Dean of the School in which the course is taught.
6. The extra credit hour application form must be submitted at the time of registration.

MINIMUM CREDIT HOURS

Registration is not permitted for less than the approved credit hour value of any course as listed in the catalog.

VARIABLE CREDIT HOURS

Certain courses have variable credit hours. A student wishing to register for such a course may do so only after consulting with the department offering the course to determine the number of hours for which to register.

CLOSED CLASSES

Departments set limits to the number of students that can be accommodated in the various classes. During the registration period or the period for adding classes, many classes become filled. These classes are called "closed," which means that no more students will be admitted to them. Only the chairman of the department offering the course can admit a student to a closed class or reopen a closed class.

CHANGE OF REGISTRATION

A registered student wishing to alter a schedule must complete a *Change of Registration Form*. After the form has been completed, it must be submitted to the Registrar's Office. All necessary fees must be paid before the change is processed.

Each student who needs an advisor's signature for registration must also have an advisor's signature for add/drop (change of registration).

A registered student may enter an additional course through the change of registration procedure until the seventh calendar day of the quarter or until the fifth calendar day of a summer term.

Withdrawal from a course must be accomplished through the change of registration procedure. If a student withdraws from one or more classes during the first week of classes, no entry will be made on the student's permanent record for the class(es) dropped.

Administrative change(s) of registration may occur if a student registers for more hours than prescribed by their Academic Dean.

CANCELLATION OF REGISTRATION

A student's registration may be cancelled for one of the following reasons:

1. Non-payment of tuition and fees for a quarter by the payment due date for that quarter.
2. Academic suspension for the previous quarter.
3. Disciplinary action against the student.

COMPLETE WITHDRAWAL OF REGISTRATION

The student who wishes to withdraw from all classes in a particular quarter must follow the same procedure as in Change of Registration. If a student withdraws from all classes during the first week of the quarter, the permanent record will contain the statement "Student Completely Withdrew During the First Week of the Quarter." For information regarding how withdrawal after the first week of classes affects a student's permanent record, see the paragraph on the **W** grade under the section entitled "Grading System." The student who withdraws from all classes will automatically receive a permit to register for the subsequent quarter.

AUDITED COURSES

A student may register for and attend any course as an auditor. The student pays the regular tuition, as well as any other applicable fees, for the course(s) audited. Audited courses are carried in a student's load only for fee purposes.

A student may not change registration from audit to credit status or from credit to audit status after the last day to add a class.

An audit entry grade is given to those students who have met the audit attendance requirement determined by the instructor. Failure to meet the attendance requirement will result in a grade of AU crossed out and replaced with a W. A student receiving financial aid should confer with the Student Financial Aids Office before electing to audit a course.

CONFERENCE COURSES

Conference work is available only in exceptional cases and if the academic advisor considers conference work essential. The student must present a completed *Conference Course Form* with the registration or change of registration material at the time of processing. Conference courses have the following restrictions:

1. Permission is limited to seniors with a 3.00 average. Exceptions must be approved by the Dean of the School in which the student is enrolled.
2. The course must be given by a full-time faculty member.
3. A brief description of the plan of procedure must be given by the full-time faculty member.
4. The course must have approval from the department concerned and the Dean of the School in which it is offered.

CREDIT/NO-CREDIT

A student may elect to register for a course on a CR/NC basis. (For rules governing *Credit/No Credit* see appropriate section under "Grading System".)

CREDIT BY EXAMINATION — DEPARTMENTAL

A current student who can demonstrate ability and knowledge in a particular subject area may establish credit in certain courses without enrolling in them, by taking a special examination (through the appropriate department). An examination fee is assessed for each examination. The only grade possible is 'CR', and there is no effect on the student's grade point average. For the examination fee, see Fees and Expenses. Information on courses for which credit by examination is possible, may be obtained from the Student's Academic Dean, the Admissions Office, or the Registrar's Office.

GRADUATE COURSES FOR UNDERGRADUATES

An undergraduate student who has senior standing and a cumulative grade point average of 2.70 or above, and who does not require a full schedule to complete the 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 the total schedule for the quarter to exceed 16 quarter hours. Before registering for the course(s), the student must have the approval of the advisor, the instructor of each course in which the student wishes to enroll, and the Dean of the Graduate School. The credit earned cannot be counted toward fulfillment of the requirements for a baccalaureate 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 graduate work. The amount of such credit that is acceptable at Youngstown State University is 15 quarter hours.

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

REPETITION OF COURSES

A student may repeat a course once, unless otherwise stipulated in the course description or unless an additional repetition is authorized by the student's academic dean. If the course is a prerequisite to another course, the repetition must be successfully completed

before the other course is taken. If the student has received credit for a more advanced course in the same subject, a repetition is treated merely as another course, along with the first, in calculating the point average, unless the student secures an approved repetition form for recalculation of point average from the dean of the school in which enrolled. (See *Repetition Form.*) A course repeated, however, may be counted only once as credit toward a student's total academic hours for graduation.

PREREQUISITES

No student may receive credit for a course that is a prerequisite for a more advanced course which the student has already successfully completed, unless an exception to this policy is recommended by the appropriate chairman and approved in writing by the student's academic dean.

REPETITION FORM (RECALCULATION OF POINT AVERAGE)

A current undergraduate student may wish to improve his/her cumulative point average by repeating a course in which a grade of 'D' or 'F' was earned. In order to recalculate the cumulative point average, the repetition must be consistent with the policy on Repetition of Courses and the student must initiate the recalculation process with the approval of his/her advisor (or the dean if it is a second repetition). Although courses are not deleted from the permanent record, the record is adjusted to reflect the inclusion of only the last grade in the computation of the point average. The hours credited toward degree hours completed are those earned with the last grade. Only undergraduate students currently enrolled in the University may request this recalculation privilege. A post-baccalaureate student is not eligible to petition for a recalculation unless both the course and the repetition are completed subsequent to the conferring of the degree. A student holding the two-year associate degree may petition after receiving the associate degree only if currently pursuing a baccalaureate degree. (All Y.S.U. grades will be counted in determining honors for graduation.)

ACADEMIC HONESTY

Academic honesty and personal integrity are the foundation upon which a quality education is built. To maintain high scholastic standards and to ensure each student the right to obtain a quality education, the University cannot tolerate academic dishonesty, e.g. cheating or plagiarism.

Though instructors are responsible for taking all reasonable precautions to prevent cheating and plagiarizing, students share a joint responsibility and should report any act of academic dishonesty to the instructor.

An instructor may give a failing grade and/or refer for disciplinary action any student who participates in acts of academic dishonesty. 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 or referral. A report of any action will be filed with the University Discipline Officer.

Since such grades are in fact disciplinary actions, the student involved may appeal the action to a disciplinary hearing panel by contacting the University Discipline Officer. In the event of an appeal, both the student and the instructor will be requested to appear before the panel.

Repeated incidents of Academic Dishonesty or flagrant, single offenses may warrant action beyond a failing grade in the course. Such cases will be referred to the University Discipline Officer for Disciplinary Action.

Offenses which may warrant additional disciplinary action including disciplinary probation, suspension, or expulsion, include the following:

A. Cheating, plagiarism, or other forms of academic dishonesty, including the acquisition and or use, without permission, of tests or other academic material belonging to a member of the University faculty or staff. A student enrolled at Youngstown State University who secures the services of an individual or enterprise engaged in the selling of term papers or similar academic materials, and who submits these as the student's own work, is committing plagiarism.

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

C. Forgery, alteration, or misuse of University Documents, Records, or Identification Cards.

   It should be observed that under the Ohio Revised Code, forgery is a felony and is punishable as such.

D. Unlawful and/or Vandalistic Appropriation of University property (e.g. books, magazines, or parts thereof) with the result that others are deprived of its use and benefits.

E. Misuse of computer privileges, including unauthorized use of an account number, password, program, files or file definition.

Procedures for reporting, investigating, and considering disciplinary action are found in the *Youngstown State University Code of Student Rights, Responsibilities, and Conduct.* A copy of this code may be obtained from the office of the Vice President–Student Services or Kilcawley Information Center.

ACADEMIC GRIEVANCES

Student complaints concerning instruction should be discussed first with the student's instructor. If not resolved at that level, the complaint may then be brought to the Chairman of the Department. An appeal may be made to the Dean of the College or School, should the student not feel the matter has been handled fairly. Further information may be found in the

Youngstown State University Code of Student Rights, Responsibilities and Conduct which may be obtained from the Office of the Vice President–Student Services.

ABSENCE FROM CLASSES AND EXAMINATIONS

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

The instructor, however, has the prerogative of determining the relationship between class attendance, achievement, and course grades, and the responsibility for communicating the relationship to the 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 CLASS HOUR, QUARTER HOUR, AND QUARTER HOUR OF CREDIT

The *class hour* (often called "hour" when the meaning is clear) 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 an average of *three hours of study and instruction* every week through the quarter.

THE TIME/CREDIT RATIO

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

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

Accordingly, the student carrying a 16-hour schedule should count on devoting an average of 48 hours a week to it. (Exclusive of time spent in extracurricular activities, commuting, eating , etc.) Some students 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 quarter hours of credit a student carries per quarter depend on the degree sought and on the curriculum being followed. Students interested in taking more than the recommended load under their curriculum should consult their academic advisor.

FULL-TIME STATUS

A full-time student is one carrying 12 or more quarter hours for credit.

ACADEMIC CLASSIFICATION

All students working for any undergraduate degree conferred by this University are ranked in classes, by quarter hours completed, as follows:

Freshman . . . . . 0-47 Quarter Hours of Credit
Sophomore . . . . . 48-95 Quarter Hours of Credit
Junior . . . . . 96-143 Quarter Hours of Credit
Senior . . . . . 144 or more Quarter Hours of Credit

For purposes of satisfying course prerequisites, the term "senior standing" may be defined by reference to the specified curriculums of a given school or college, if it provides detailed programs leading to the attainment of a degree.

COURSE-NUMBERING SYSTEM AND ABBREVIATIONS

It is important that the student be familiar with the University's Course-Numbering System and its significance, and with the abbreviations used to indicate the amount of credit.

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.

Hyphen. A hyphen between numbers (e.g., 501-502-503) indicates that the 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 prerequesite 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 each course individually.

ABBREVIATIONS.

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

The abbreviation "NC" means "No Credit." Thus, "2 NC" indicates that the course offers no quarter hours of credit but that the course is counted 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 a group of course descriptions.

An *asterisk* or other *reference mark* 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 course descriptions stand for fall, winter, spring, and summer and indicate the quarter or quarters in which the course is offered.

NEOUCOM stands for Northeastern Ohio Universities College of Medicine.

GRADING SYSTEM

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 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/she has firmly grasped and achieved objectives of the course.

The grade of **B** indicates very good work and considerable grasp of the essentials of the course.

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 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 *Change of Registration* and *Refund of Fees Upon Withdrawal*).

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 control and deemed justifiable by the teacher, had 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 other 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, but in no instance may an **I** be converted after a student has received a baccalaureate degree. 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 converting the grade.

A progress grade, **PR**, is given in certain approved courses to indicate that work is still in progress on a project that occupies more than one quarter. This grade is changed to a final letter grade at the end of the quarter in which the work is completed.

The **PR** grade may also be given at the end of the quarter in courses specifically identified as competency-based* to indicate that the student needs more time to demonstrate a mastery of the subject matter. In such instances, the **PR** grade will be converted to a letter grade by the instructor no later than the end of the subsequent quarter, excluding the summer quarter. A **PR** grade not changed by this time is automatically converted to an **F** grade.

W represents a withdrawal properly processed at any time from the beginning of the second week through the end of the sixth week of any quarter (or from the fifth calendar day through the third week of any summer session.) Withdrawal thereafter (or improperly done, at any time) is recorded as **F**. If the grade resulted from circumstances over which the student had no control, the student may petition the appropriate dean to change the grade to **W**.

When withdrawals change a student's status (full-time to part-time), the student immediately forfeits any privileges contingent upon full-time status, and all interested parties which legally require it will be notified.

The distribution of achievement levels, 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 will occur in individual classes, the instructor does not use the "curve" as a standard to be imposed, but only as a model against which the instructor may compare each particular class, using his/her own judgment on the basis of professional standards.

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*The definition of competency-based instruction is to be provided by the instructor responsible for the course. Competency-based courses are so designed in the quarterly *Schedule of Classes*.

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

Audit (AU)

AU signifies that the student is registered as an auditor. 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 the end of the period for adding a course.

Credit/No-Credit (CR/NC)

To encourage students to experiment with courses outside their major field of concentration, a Credit/No-Credit Policy exists within the following guidelines.

Youngstown State University students who have completed at least four courses and have a grade point average of 2.00 or better, or transfer students admitted unconditionally who have at least 16 quarter hours of transfer credit, may elect to take a course for Credit/No-Credit.

This means that the grade recorded for the student is not a letter grade but either **CR** (Credit) or **NC** (No-Credit).

Students opting the CR/NC basis are not so identified on the class roster. The instructor assigns grades as usual. If a CR/NC student gets an A, B, or C, the grade officially assigned is **CR**; otherwise it is **NC**. In either case, the grade point average is not affected.

This option may be elected for a maximum of six courses for the baccalaureate degree or three courses for the associate degree, but not more than one course a quarter.

Courses taken under the CR/NC option may not be counted toward a student's major or minor. Students should confer with their advisors prior to electing the CR/NC option.

Students must indicate their election of the CR/NC option at the time of registration or within the time limits established for adding classes. The CR/NC option will not be changed to the standard beyond the last day to add a class.

Credit/No Entry (CR/NE)

Grades of credit/no entry are used in specific courses for which the traditional achievement grades have been deemed inappropriate. A **CR** denotes satisfactory completion of the course, whereas no entry at all is made on the student's permanent record if the work has been unsatisfactory, or if the student has withdrawn from the course.

An **I** (Incomplete) may be assigned when additional work must be made up at a later time to complete the requirements for credit.

Traditional Grade/No Credit

To receive credit for Basic Composition I-II (English 550 and 551), a student must earn a grade of C or better. If the student fails to do so, an NC is entered on his transcript. An NC does not fulfill the requirements for satisfactory completion of the course; it does not affect the Grade Point Average.

THE POINT AVERAGE AND SCHOLASTIC STANDING

The student's scholastic standing is indicated by the quality point average (Also called "Grade Point Average," "Grade Average," or "Point Average").

For determining this, every grade has a quality point value for each quarter hour it represents, as follows: **A**, four quality points; **B**, three points; **C**, two points; **D**, one point; **F**, zero points. For example, an **A** in a three-hour course is worth 12 quality points; a **D** in a four-hour course, four points; and an **F** in any course, zero points. To find the point average, the total number of quality points earned is divided by the total number of quarter hours attempted. 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 average.

PROFICIENCY IN ENGLISH

The student's ability to express himself in English is not the concern of the English Department 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

Four categories of academic standing have been established: Good Standing, Warning, Probation, and Suspension. The last three categories are intended not as punishments, but as opportunities that can ultimately enable the student to achieve graduation. Suspension means an unspecified period of separation from the University (generally a minimum of two quarters) to permit maturation in judgment and responsibility on the part of a student, which should improve the student's capacity for academic achievement. Any student who is suspended from the University for academic reasons is not eligible for readmission until the lapse of at least two academic quarters, for the first suspension. If a student is suspended twice for academic reasons, the second suspension shall be for a duration of at least two years. An exception may be granted in rare and unusual cases upon the recommendation to the Dean by the student's advisor and department chairperson.

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 the level required for graduation. Academic standing is based

on the total academic hours (TAH) completed, including accepted transfer hours. The point averages (PA) required for good standing are as follows:

TAH	REQUIRED PA
1-14	1.50
15-29	1.60
30-44	1.70
45-59	1.80
60-74	1.90
75+	2.00

A student whose point average falls below the specified average for the number of credit hours achieved will be given a warning.

A student who has been warned and who fails to bring the average up to the minimum by the end of the following quarter will be put on probation for the next quarter. A probationary student who has failed to bring the average up to the minimum by the end of this probationary quarter will be suspended; however, a student who makes substantial improvement during a probationary quarter and averages at least 2.00 for that quarter will be continued on probation even though the student's cumulative average does not reach the desirable 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 this University.

STATUTE OF LIMITATIONS (EXCLUDING OLDER GRADES)

An undergraduate student currently enrolled may petition the dean of his/her school to exclude from the calculation of the grade point average grades earned five 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 and F's) will then be removed from the calculation. However, all grades remain on the permanent record.

Excluded course credit (including transfer credit) will not count toward the total hours required for graduation. However, courses passed may fulfill basic curriculum requirements and may satisfy 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 the student's grades is sent to every student by the Registrar as soon after the close of a quarter as possible.

GRADE CHANGES

Application for grade changes may be secured from the office of the school or college in which a student is enrolled, or from the Registrar's Office. Applications for grade changes must be signed by the instructor, department chairman, and 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; they will not be accepted from the student. After a baccalaureate degree has been conferred, in no case may a grade change be made for a course(s) taken while pursuing that degree.

A students' academic record contains a complete history of his/her academic performance while earning a degree. Therefore, the academic record of a student who graduates may not be revised using *REPETITION FORM,PETITION FOR CHANGE OF GRADE FROM F TO W,* or *STATUTE OF LIMITATIONS.* In the case of a student who has completed an associate degree program the above policy may, on occasion, be waived. However, changes cannot be made in a students' record which would affect the status of the awarded associate degree. Waivers must be approved by the appropriate Dean.

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

To be eligible for undergraduate class honors a freshman must have completed at YSU at least 18 quarter-hours; a sophomore 36 quarter-hours; a junior 54 quarter-hours; and a senior 72 quarter-hours. Honors are based on the accumulative point average at YSU only, no transfer work is included. Both full-time and part-time students are eligible provided they have completed at least one of the four quarters (including summer) preceding the quarter in which honors are awarded. A student can receive class honors only once as a member of a particular class (Freshman, Sophomore, etc.). The number of honor recipients approximates the top one percent of the total fall enrollment of every 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 CONVOCATION

The Honors Convocation recognizes those students who have distinguished themselves academically. Class honors certificates are given on this occasion,

and some of the awards listed under *Awards and Prizes* are announced and presented.

HONORABLE DISMISSAL

A transcript indicates the academic status of a student. Disciplinary action is not shown on a student's academic record.

If a 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.

TRANSIENT STUDENT AUTHORIZATION

Students desiring to attend another institution as transient students must complete and submit the *Transient Student Authorization* form, available from the dean of the school in which they are enrolled. Instructions are on the back of the form.

Credit will be granted for approved course work in which a grade of 'C' or better is received. It is the student's responsibility to have an official transcript sent from the other institution to the YSU Office of Admissions.

UNIVERSITY HONORS

George E. Sutton, Director

ORGANIZATION AND DEGREES

The program is operated under the jurisdiction of the Honors and ICP Subcommittee of the University Senate.

(For admission and degree requirements see "Honors Degree Program.")

COURSES OF INSTRUCTION

University Honors Studies

501, 502, 503. *Freshman Honors Seminar.* An interdisciplinary seminar series dealing with topics appropriate to the entrance of students into the Honors Degree Program and continuation thereof. The subjects include, but are not limited to, creativity, the organization and function of the University, the total human being, etc. Prereq.: Eligibility for the Honors Degree Program 2+2+2 q.h.

701, 702, 703. *University Honors Seminar.* A critical investigation of selected ideas underlying civilization, embracing and integrating the particular studies of science, society and the humanities. Prerequisite: Eligibility for the Honors Degree Program.
3+3+3 q.h.

Contract Honors Courses

Any course other than remedial or high school remedial courses may be taken for Honors credit with the concurrence of the faculty teaching the class and the approval of the Honors and ICP Subcommittee. For information, contact the Director of the Honors Program.

Honors Courses:

The following courses are listed in the departmental sections as Honors Courses, but are repeated here for information. For the course description please see the appropriate section of the Bulletin.

Chemistry 515H, 516H, 517H
Computer Science 600H
Contract Honors Courses (see above)
Economics 621H, 622H
English 550H, 551H
Management 750H
Mathematics 523H, 524H 571H, 572H, 673H, 674H 580H, 581H, 681H

TUITION, NON-RESIDENT TUITION SURCHARGE, SPECIAL PURPOSE FEES, SERVICE CHARGES, AND FINES FOR 1986-87

(The fees listed below are subject to change since fee charges were not finalized when this publication was printed).

TUITION

INSTRUCTIONAL FEE (Including Audit)

Part-Time Undergraduate Student, 1 to 11 Credits	$	32	Per Credit
Full-Time Undergraduate Student, 12 to 16 Credits	$	375	Per Quarter
Undergraduate Credits in excess of 16 credits per Quarter	$	32	Per Credit
Graduate Students, All Credits	$	37	Per Credit

GENERAL FEE

Part-Time Student, 1-11 Credits	$	6	Per Credit
Full-Time Student, 12 Credits or More	$	70	Per Quarter

NON-RESIDENT TUITION SURCHARGE

Part-Time Student, 1 to 11 Credits	$	27	Per Credit
Full-Time Student, 12 to 16 credits	$	325	Per Quarter
Credits in Excess of 16 Per Quarter	$	27	Per Credit

SPECIAL PURPOSE FEES, SERVICE CHARGES, AND FINES

Performance Music Fee — Tuition Plus	$	14	Per Credit
International Student Fee	$	65	Per Quarter
Application Fee (Undergraduates Only)	$	20	
Change of Registration Fee	$	6	
Credit by Examination Fee	$	20	Per Course
Graduation Fee	$	25	
Matriculation Fee (Graduate School)	$	20	
Proficiency Examination Fee	$	10	
Transcript Fee	$	3	Per Copy
Student Locker Rental	$	3	Per Academic Year
Thesis Binding Charge	$	10	
Health and Physical Education Locker and Towel Charge:			
Student Registered for H&PE Course			No Charge
All Others Authorized to Use Facilities	$	5	Per Quarter
Lock Replacement Charge	$	3	
Towel Replacement Charge	$	2	
Health and Physical Education Activity Charge:			
Variable to cover cost in specified courses			
Charge set by and paid to vendor			
Diploma Mailing Charge (Not Assessed Those Attending Commencement)	$	5	
Registration Withdrawal Fee	$	10	
Diploma Replacement Charge	$	20	
Identification Card Replacement Charge	$	5	
I.D. Card Validation Sticker Replacement Charge	$	3	
Late Registration Fee	$	30	
Late Payment Fee	$	15	
Returned Check or Credit Card Charge	$	12	

Library Fines:

(1) Overdue Book: 10¢ Per Day to Maximum of $5.00 Plus Cost of Book Replacement, Including a $10 Processing Charge.

(2) Overdue Reserve Book: 55¢ Per Day to a Maximum of $5, Plus Cost of Book Replacement Including a $10 Processing Charge.

(3) Unauthorized Removal of Closed Reserve Book: 55¢ Per Day to a Maximum of $5, Plus Cost of Book Replacement, Including a $10 Processing Charge, Plus $5.

Child Development Laboratory Charge	$	25	Per Quarter
Elementary Education Reading Specialist Charge	$	50	Per Quarter
Early Childhood Practicum Charge	$	25	Per Quarter
Dental Hygiene Clinic Charge	$	5	Per Treatment
ROTC Activity Fee	$	4	Per Quarter
Parking Permit Fee	$	20	Per Quarter
Per Entrance Without Permit	$	1	
Residence Hall			
Academic Year			
Room and Board	$	2265	
(Payable $755 per Quarter except that an extra $100 is charged the first Quarter of residency and the Spring Quarter is reduced by $100. If a resident does not stay through the Spring Quarter, the $100 is forfeited.)			
Residence Hall Improvement Fee (applicable to all residents)	$	75	Academic year
Security Deposit (paid first Quarter of occupancy)	$	50	
Single Room Surcharge	$	80	Per Quarter
Summer Session:			
Room—per five-week session	$	115	
Security Deposit	$	50	
Single Room Surcharge—per five-week session	$	15	
Voluntary Board Plan for Students Not Living in Kilcawley Residence Hall			
Academic Year:			
Five Day Plan	$	389	Per Quarter
Seven Day Plan	$	459	Per Quarter
Intramural Team Deposit	$	10	
Intramural Team Protest Charge	$	5	
Neon Mailing Charge	$	10	
Neon Printing Charge (If not registered Winter Quarter nor graduating during academic year)	$	20	
Library Carrel Key Deposit	$	10	
Parking Violation Fine (Class I—all violations except those in Class II)	$	5	
(Fine doubled if not paid within 10 days of issuance of ticket.)			
Parking Violation Fine (Class II)	$	13	
Parking in a Handicap Zone without proper permit.			
Parking at a No Parking sign, Tow Away Zone, Loading Zone, Official Use Only sign, Fire Lane, or in the Campus Core area.			
(Fine doubled if not paid within 10 days of issuance of ticket.)			

THE UNIVERSITY RESERVES THE RIGHT TO CHANGE ANY FEE WITHOUT NOTICE.

FEES, SERVICE CHARGES, AND FINES

Fees for each registration are due on or before the pertinent "Payment Due" date published in the "Important Dates" Section of the relevant *Schedule of Classes*, which is published for each quarter as an issue of the *Youngstown State University Bulletin*. Payment of fees is required before the registration is completed. Checks are to be made payable to Youngstown State University. Master Card and VISA are honored. Payment of fees is made by mail to the Bursar or at the Cashiers' windows in Jones Hall. Failure to make payments by the due date will result in the student being assessed late fees and/or dropped from classes for non-payment.

Approximately 60 percent of the educational and general fund revenue of Youngstown State University is received as a subsidy from the State of Ohio. The balance must be raised from the students and from other non-appropriated sources. The Board of Trustees of Youngstown State University has pledged to make every effort to keep the required fees as low as is consistent with providing quality education. It is intended that fees not be adjusted more often than annually and that fee changes be announced in the spring or early summer. The Board of Trustees does, however, reserve the right to change any fee, charge, or fine without notice if conditions warrant.

All outstanding charges must be paid before fees will be accepted for registration. Graduation and transcript of credits will be held until all financial obligations to the University are satisfied. Recipients of financial aid through the University receive an award voucher from the Financial Aids Department. The signed award voucher, payment notice, and any balance owed must be sent or delivered to the Bursar's Department no later than the payment notice due date in order to complete the registration process.

A table included in this section lists all fees, charges, and fines for the current academic year. An explanation of each may be found below.

FEES

Tuition. The sum of the instructional fee and the general fee is the tuition for the student.

Instructional Fee. This charge is assessed all students each quarter. The rate is per academic quarter hour of credit for one to 11 credits or for more than 16 credits; it is a flat rate for students registering for 12 to 16 credits during one quarter. Students registering for 17 or more credits pay the flat rate plus the per-credit rate for each credit over 16. This fee supplements the State Subsidy and is a source of revenue for the University's educational and general fund.

Audited Courses. Students may audit courses (*i.e.*, register to take a course without receiving credit). The fee for auditing a course is the same as if the course were taken for credit.

General Fee. This charge is also assessed all students each quarter; the rate depends upon the number of credits registered for. This fee is for non-instructional services such as Kilcawley Center, Intercollegiate Athletics, Intramural Sports, Performing Artists and Lecture Programs, Student Government, and the Career Services Office.

Non-Resident Tuition Surcharge. As noted above, all students pay the instructional fee and the general fee. Those students who are not legal residents of Ohio must pay a tuition surcharge which is in addition to all other fees. The University does not receive State Subsidy for non-resident undergraduate students; therefore a surcharge is necessary to more nearly recover the cost of instruction for non-resident students.

Performance Music Fee. This fee is in addition to the regular instructional fee. It is assessed students taking music lessons and applies on a per-credit basis.

International Student Fee. A fee is charged those students attending YSU who hold F-1 or J-1 Visas. This fee is in addition to tuition and non-resident tuition surcharge and is intended to cover certain expenses incurred by the University for such students.

Application Fee. A fee is charged every *new* undergraduate student applying for admission. The fee is non-refundable.

Change of Registration Fee. A fee is charged for changing a registration unless the change is caused by the University (e.g. a class is cancelled). This fee does not apply when a student withdraws from the University. Students making a change in registration which results in an increase in fees will receive a revised statement of the amount due. Failure to make payment within ten days of the date of revision results in a penalty assessment equal to two-thirds of the late payment fee and, if payment is not made, can result in the student being dropped from class(es) for nonpayment.

Child Development Laboratory Fee. A fee is charged for each pre-school child enrolled in the Home Economics Department Child Development Laboratory (HE 706).

Credit by Examination Fee. A fee is charged for each course for an individual examination provided by an academic department to determine whether a student can be given academic credit for his knowledge of the course material. The fee must be paid before the test can be taken.

Elementary Education Reading Center Program Fee. A fee is charged for each elementary pupil enrolled in the School of Education's Reading Center. If the pupil's parent or guardian is receiving public welfare assistance, the fee will be reduced by 80 percent upon presentation of documentation concerning the welfare assistance to the Dean's Office, School of Education.

Early Childhood Practicum Fee. A fee is charged for each elementary pupil enrolled in the School of Education's early childhood practicum.

Graduation Fee. A fee is charged anyone who is to receive an earned degree and is to be paid before the application for graduation is filed with the dean of the school or college awarding the degree. The fee covers the cost of the required academic attire (cap and gown) and the diploma. No reduction or waiver of the fee occurs for graduation *In Absentia* or for use of non-academic attire. The fee is assessed for each earned degree granted but not for an honorary degree. If two degrees are conferred at the same commencement ceremony, the fee is 125 percent of the regular fee. The fee is not refundable.

Health and Physical Education Locker and Towel Fee. Students enrolled in a class requiring use of a basket, or towel service in Beeghly Physical Education Center or the Sports Complex do not pay a fee. Other authorized persons pay a fee each academic quarter. Loss of or damage to the lock or towel will result in assessment of a replacement charge.

Late Payment Fee. Payment of a bill after the due date results in assessment of a late payment fee. The instructional fee, general fee, non-resident tuition, surcharge, and performance music fee are due in full 10 days prior to the first day of scheduled classes for that term or as otherwise shown in the *Schedule of Classes.* All fees and charges billed must be paid in full. Partial payments are not accepted. This fee is also charged any student who registers after classes begin.

Late Registration Fee. A fee is charged a currently enrolled student who fails to register for the next term at the assigned time and later registers at the time assigned new or returning students.

Matriculation Fee. Upon initial registration in the graduate school a matriculation fee is assessed.

Parking Permit Fee. A permit to park in YSU parking facilities is issued to students and employees of the University upon payment of a fee. The fee is for the academic quarter and does not guarantee a parking space. Some areas are restricted (e.g. for students only, or for faculty and staff only). The current *Driving and Parking Regulations* pamphlet and parking lot map should be consulted. A daily fee is charged anyone not having a permit who wishes to park in facilities designated for cash business. Persons other than employees and students who are on campus for a short period of time to conduct business may park in the visitor's lots if space is available. The parking permit fee is refundable only if the student withdraws and returns the permit access card. Any refund is prorated at the daily parking rate from the first day of the term.

Proficiency Examination Fee. A fee is charged for an examination provided by an academic department to determine a student's proficiency for some reason other than assignment of academic credit. If academic credit is to be awarded, the credit by examination fee applies and not this fee.

Registration Withdrawal Fee. A fee is charged a student who withdraws from all courses or who does not complete the registration process by payment of appropriate fees. This fee is not refundable.

R.O.T.C. Activity Fee. Students registering for Military Science courses pay a fee which is made available to the Military Science Department for awards and activities sponsored by the department.

Testing Fees. The University Counseling and Testing Center supervises a variety of special tests used for admission to college, graduate, or professional schools. The fees are established by the agencies responsible for the tests. Students are advised to contact the center for information and to make reservations. An additional fee is charged if a student is allowed to take a test without a reservation.

SERVICE CHARGES

Dental Hygiene Clinic Charge. The Dental Hygiene Technology Program includes a clinic for the benefit of the students being trained. A service charge is made for each treatment. This charge is paid at the clinic.

Health and Physical Education Activity Charge. Certain activity courses (e.g. bowling, skiing, ice skating) are available only upon the payment of a charge sufficient to cover the cost of the facility or transportation. These charges are set by the operator of the facility, are paid to that operator (not to the University), and are in addition to any other applicable fee.

Identification Card or Sticker Replacement Charge. A charge is made for replacement of an ID Card or a current-term validation sticker to be affixed to the card.

Residence Hall Charge. Kilcawley Residence Hall is available by the academic quarter. The residence contract includes room and 19 meals per week. In addition to the charge for service, a security deposit is required. Payment and refunds are as scheduled in the housing contract. Meal tickets are also available for students who are not residents of Kilcawley.

Returned Check Charge. A charge is levied on anyone whose check or charge card is returned unpaid by the bank. If any late payment results therefrom, the applicable fee is also assessed. Failure to pay billing of return check and/or charge within ten days; and/or a second check/charge return will result in the University not accepting this type of payment at any of its collection points.

Student Locker Rental. A limited number of lockers are available in various buildings for the convenience of commuting students. Locker payments and assignments are made in the Kilcawley Center.

Thesis-Binding Charge. A charge is made for each copy of a master's thesis bound by the William F. Maag, Jr. Library.

Transcript of Credits Charge. A charge is made for each transcript issued by the recorder. Transcripts will not be issued for students or alumni with outstanding debts owed to the University. Only a student may order a transcript; however, students are cautioned that most graduate and professional schools and many employers accept transcripts only if sent directly by the University.

FINES

Parking Violation Fine. Parking without a permit, parking in such a manner as to impede regular traffic flow, occupancy of more than one identified space (assuming lines are not obscured), and other offenses as identified in the *Driving and Parking Regulations,* will result in the issuance of a citation against the vehicle and its owner, or against the student responsible for the vehicle (e.g., a student driving parents' car). Payment of a fine removes the citation; however, the fine is doubled if not paid within 10 days of issuance. Vehicles may be towed in certain cases. See the regulations.

Library Fines. Fines are assessed for failure to return books on time as stipulated or for the unauthorized removal of a reserved book. Willful damage or defacement of library materials or other property is a violation of State law and is punished as such.

REFUND OF FEES UPON WITHDRAWAL

To withdraw from a single course or from all courses it is necessary to complete a change of registration form and present it with the required fee at the Cashiers' windows, Jones Hall. Changes of registration are not valid until accepted by the Bursar; mere non-attendance or notification to the instructor or department does not constitute official withdrawal. If a student is permitted to withdraw, refund of the instructional fee, the general fee, the non-resident tuition surcharge, the International student fee, and the performance music fee, will be in conformity with the following schedule:

DATE OF ACCEPTANCE BY BURSAR	ACADEMIC QUARTER	SUMMER TERM
1st-6th Day	75% of Fee	50% of Fee
7th-12th Day	50% of Fee	No Refund
13th-18th Day	25% of Fee	No Refund
19th Day and Thereafter	No Refund	No Refund

The schedule is figured from the first day of classes, and every day of the week is counted except Sunday. If a course is cancelled by the University, fees paid for that course are refunded in full. If fees were paid by scholarship, loan, or grant-in-aid, the appropriate credit is issued to the fund from which the initial payment was made. Refunds are processed fifteen days after withdrawal. If payment was made by personal check, refunds are processed thirty days after withdrawal.

If a student withdraws for reasons beyond his or her control (e.g., illness, required military service, job transfer, or shift change imposed by the employer), the fees are refunded in direct proportion to the number of weeks of attendance. All requests for refund for these reasons must be documented and are processed only by mail on forms provided by the Bursar. Address such correspondence to the YSU Fees and Charges Appeal Board, C/O Bursar.

HOURS FOR BURSAR AND STUDENT FINANCIAL AIDS OFFICES

WHEN CLASSES ARE IN SESSION:

Monday and Tuesday: 8 A.M. to 6:30 P.M. (first six weeks of quarter)

Wednesday, Thursday, and Friday: 8 A.M. to 5 P.M.

Saturday: 9 A.M. to 12 Noon

WHEN CLASSES ARE NOT IN SESSION:
Monday Through Friday: 8 A.M. to 5 P.M.
Saturday: Closed

SUMMER

Monday and Tuesday: 8 A.M. to 6 P.M.
Wednesday, Thursday, Friday: 8 A.M. to 5 P.M.
Saturday: Closed

The Bursar and Student Financial Aids Offices are also open by appointment during late and final registration and change of registration.

The College of Applied Science and Technology

Victor A. Richley, Dean

ORGANIZATION, MISSION AND DEGREES

In support of the University Mission to provide a wide range of educational opportunities in higher education, the College of Applied Science and Technology assumes a dual role. As its name implies, the college offers baccalaureate degree programs which focus on the application of natural or social sciences in a discipline and associate degree programs which center on the technology of a discipline. Consequently the college exhibits characteristics of both a professional and a community college whose programs are designed to enhance the employment potential of its graduates in professional or technical careers.

The college offers several traditional baccalaureate programs that deal directly with human health and well-being. It also offers a number of two-year associate degree programs that blend together theoretical principles, practical application of concepts and skill development. Through a TWO-PLUS-TWO arrangement in the college, many of these associate degree programs can be used as the basis for upward academic growth to a baccalaureate degree.

The College of Applied Science and Technology consists of six departments; Allied Health, Business Education and Technology, Criminal Justice, Engineering Technology, Home Economics, and Nursing, all of which offer both associate and baccalaureate programs. In cooperation with the School of Education, Business Education and Technology provides a Comprehensive Business Education major for secondary school teaching and Home Economics similarly provides a Vocational Home Economics major. Graduate work is offered by the Business Education and Technology, Criminal Justice and Home Economics departments. The six departments are listed below with their associate (A) and baccalaureate (B) offerings.

Department of Allied Health

* Dental Hygiene (A)
Emergency Medical Technology (A)
Medical Assisting Technology (A)
* Medical Laboratory Technology (A)
* Medical Technology (B)
* Respiratory Therapy Technology (A)

Department of Business Education and Technology

Accounting Technology (A)
** Business Education (B)
Business Management Technology (A)
Labor Studies Technology (A)
Marketing Technology (A)
Secretarial Studies (A)

Department of Criminal Justice

Criminal Justice (B)
Police Science Technology (A)

Department of Engineering Technology

* Civil Engineering Technology (A) (B)
* Computer Technology (A) (B)
* Drafting and Design Technology (A)
* Electrical Engineering Technology (A) (B)
* Mechanical Engineering Technology (A) (B)

Department of Home Economics

Child Care (A)
Dietetic Technology (A)
Food and Nutrition (B)
Home Economics Services (B)
** Vocational Home Economics Education (B)

Department of Nursing

* Nursing (A) (B)

The Student whose needs are not completely met by existing conventional programs may wish to investigate and apply for the Individualized Curriculum Program (see the General Requirements and Regulations section).

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

It is the student's responsibility to satisfy all the graduation requirements for the degree sought. These comprise:

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.

3. The specific curriculum requirements of a given program.

CURRICULUMS AND COURSES OF INSTRUCTION

CAST 517. *Occupational Career Planning.* The course is intended to facilitate self-directed activities relating to prospective careers. Students participate in (1) self-assessment of personal abilities, (2) identification of entrance level requirements for specific careers, (3) job market surveys, (4) interaction with specific work area representatives. 3 q.h.

Note: This is a career planning course. There is a limit to the number of these courses that can be counted toward graduation. Check your school/college requirements.

DEPARTMENT OF ALLIED HEALTH

Professor Yemma (Chairman); Assistant Professors Betz, Boyd, Feld, Harris, Shaffer; Instructors Boehm, Brown, Dannessa, Harig, Mistovich, Vendemia.

The department offers allied health programs for future members of the health delivery team. Programs are currently offered in Dental Hygiene, Emergency Medical Technology, Medical Assisting Technology, Medical Laboratory Technology, Medical Technology,

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*Restricted admission, see Department for further information.

**In cooperation with the School of Education, for the B.S. in Ed. degree.

and Respiratory Therapy Technology. The detailed requirements appear under the specific program. A copy of admission policies can be obtained in the department.

Academic Requirements for the Two-Year Associate Degree Programs

Admission into the Allied Health programs (except for Medical Assisting) is on a restricted basis since only a limited number of students can be accommodated. A copy of the admission policies specific information can be obtained from the Admissions Office of the Allied Health Department.

Grades of "C" or better are required in all courses in Allied Health programs. Each program has additional requirements regarding grades in required courses and cumulative point average. Copies of policies are available in the Allied Health Department. Some programs have special closing dates for application. For information regarding deadlines contact the Admissions Office or the Allied Health Department.

Students who have completed requirements for an Associate in Applied Science degree in a health related field may utilize the following Allied Health courses to obtain a Bachelors degree by way of the Individualized Curriculum Program. Students wishing to obtain this degree with a concentration in Allied Health should contact Dr. John Yemma, Chairman.

704. *Fundamentals of Pulmonary Rehabilitation.* This course is designed to demonstrate the multidisciplinary nature of a rehabilitation program for patients with C.O.P.D. It will also present the key elements that should be present in a quality pulmonary rehabilitation program. Prereq.: graduation from a 2-year AAS health related program or permission of instructor. May be repeated for a total of 10 hours.
3 q.h.

705. *Pharmacotherapeutics.* Advanced concepts and integration of various drug interactions will be presented as applied to modern drug therapy. Analysis of drug regimens related to a broad spectrum of pathologic conditions will be discussed. Prereq.: MA 605 and BIO 552, or permission of instructor.
3 q.h.

801. *Special Topics in Allied Health.* The directed study and research of a special problem or issue related to the health field. The topic of interest will allow the student to participate in the investigation of aspects of administration, education, business, or research as these pertain to the particular health specialty. Prereq.: Senior standing and an Associate in Applied Science degree in a health-related profession or permission of instructor. May be repeated for a total of 10 hours.
1-5 q.h.

802. *Advanced Cardiac Life Support.* The course is designed to follow the goals and objective of the American Heart Association's Advanced Cardiac Life Support program. Included will be ECG recognition, pharmacology of cardiovascular drugs, resuscitation techniques, and airway management. Course may be used for initial ACLS certification. Prereq.: Biol. 551, 552 or its equivalent with a C grade or better, successful completion of BCLS course, documentation of one of the following: R.N. or LPN license, CRTT or higher, EMT-P certification, or enrollment in 2nd year of Neoucom program. Two hours lecture. Concurrent with AH 802L. 2 q.h.

802L. *Advanced Cardiac Life Support Laboratory.* The laboratory will involve obtaining skills necessary to meet the goals and objectives of the American Heart Association's Advanced Cardiac Life Support Course. Students will practice intubation, utilized airway adjuncts, defibrillation, direct Mega codes and learn algorhythms according to ACLS protocols. Must be taken concurrently with AH 802. Student must receive a grade of C or better to receive certification. 3 hours lab per week. 1 q.h.

803. *Current Issues in Health Care.* Problems and issues facing health care practitioners are presented; emphasizing the interrelationships of the members of the health care team. Included also are the goals, historical development, internal structure, and responsibilities of various organizations that impact on health care delivery. A major project will be included. Prereq.: H&PE 791 or permission of instructor. 4 q.h.

804. *Stress and the Health Care Practitioner.* This course will examine the personal reactions of health care workers to patients, families, and their health care environment. Specifically, it will help the student identify stress and explore coping options. Other topics discussed include organizational systems, communication theory, conflict resolution, problem solving, and burnout. This course is recommended for individuals who have some work experience in the health care field. Prereq.: Psych. 780 or permission of instructor.
3 q.h.

805. *Concepts in Health Care Education.* University as well as hospital based programs will be reviewed in regard to accreditation, clinical vs. didactic instruction, use of simulations, and evaluation techniques. Public health education and the role of the Allied Health professional will also be investigated. A major learning unit and/or research project will be required. Prereq.: Education 710 or permission of instructor.
4 q.h.

806. *Research Methodology for Health Sciences.* Measurement and interpretation of health data and their application in the research process. Research design considerations, data collection methods and data analysis of health care research projects will be discussed. Prereq.: AH 803 or permission of instructor.
4 q.h.

Dental Hygiene

Assistant Professors Betz (Coordinator) and Shaffer; Instructors Harig and Vendemia.

The two-year program in Dental Hygiene leads to the Associate in Applied Science degree. The program

is designed to prepare hygienists for work in private practice and/or in public health settings.

In the spring of their second year in the Dental Hygiene curriculum, students are eligible to take the national and state board examinations. Upon successful completion of these comprehensive, written and clinical examinations, and upon graduation, the student may apply for a license to practice dental hygiene in the state.

The licensed dental hygienist is a professional, an oral health educator and a clinical operator who provides oral treatment and related preventive services. Services of the hygienist include taking medical and dental histories; radiographic surveys; study models; performing cancer screenings and other oral inspections; nutrition counseling; dental charting; making periodontal evaluations; administering fluoride therapy; and placing dental sealants. Many states permit the hygienist to perform additional services such as administering local anesthesia and placing restorative materials.

The dental hygienist also functions as a dental educator and is responsible for the preventive dental health program in private dental practices as well as in other settings. The hygienist teaches patients proper oral health care in order to reduce dental diseases and disorders.

The hygienist's role in service to the community may include increasing public awareness of dental health by coordinating 'Children's Dental Health Month' in the community, serving as a resource person to school systems, providing screenings or inspections to various school children or local groups, and making visits to nursing homes, hospitals and/or schools for the mentally retarded or handicapped.

Students are admitted to the Dental Hygiene program only once a year, at the beginning of the fall quarter. All current, former, and transfer applicants, in addition to meeting the requirements outlined in the Admission Policies, must have taken Anatomy and Physiology I and II, and have an acceptable point average from all colleges attended. Application to the Dental Hygiene program must be made by March to start in September of any year.

500. *Dental-Medical Emergencies.* Students will receive certification in Cardio-Pulmonary Resuscitation. Instructions on medical diseases and conditions in relationship to dental procedures. Two hours lecture. Prereq.: Permission of coordinator. 2 q.h.

501. *Dental Hygiene I.* An introduction to dental hygiene and its role as an integral part of the dental health profession. Prevention of disease transmission through sterilization and asepsis is also discussed. Medical/Dental history, vital signs, and oral inspection are discussed and peridontal disease is introduced. Prereq.: Admission to Dental Hygiene program. 3 q.h.

501L. *Clinical Dental Hygiene I.* A detailed clinical study of planning patient care, patient preparation and positioning the dental chair, and principles of dental instrumentation. Six hours laboratory per week. Prereq.: Admission to Dental Hygiene program. 2 q.h.

502L. *Clinical Dental Hygiene II.* Clinical application of dental hygiene techniques. Services include oral prophylaxis, fluoride application, and patient education. Nine hours laboratory a week. Prereq.: DH 501L. 3 q.h.

503. *Dental Hygiene III.* Modified dental hygiene procedures for special patients and the concomitant dental hygiene care. Three hours of lecture a week. Prereq.: DH 502. 3 q.h.

503L. *Clinical Dental Hygiene III.* Clinical application of dental hygiene techniques. Oral prophylaxis, radiographs, fluoride application, and patient education. Nine hours laboratory a week. Prereq.: DH 502L. 3 q.h.

504. *Dental Hygiene II.* Technics for individualized patient instruction. Clinical procedures and records preparation. One hour lecture. Prereq.: DH 501. 1 q.h.

520. *Dental Anatomy I.* Oral topography, basic terminology of soft and hard oral structures. The dentition is presented both as system entities and components. The symptomology and classification of dental caries. Two hours of lecture a week. Prereq.: Permission of coordinator. 2 q.h.

520L. *Dental Anatomy I Lab.* Individual tooth morphology, including drawing teeth from models and waxing onto prepared dies. Recognition and identification of natural teeth; classification of occlusion. Three hours of laboratory a week. Prereq.: Permission of coordinator. 1 q.h.

521. *Dental Anatomy II.* The anatomy of the head and neck: relationship of the bone structure, muscles, nerves, arterial supply and lymphatic system. Prereq.: DH 520. 2 q.h.

525. *Oral Histology And Embryology.* Introduction to the microscopic structure of the body by simple discussion of the cell concept, normal and abnormal tissues, and the embryonic development of the face and the oral cavity. Prereq.: DH 520. 3 q.h.

530. *Dental Radiology.* Radiographic theory, techniques, and use of diagnosis in prevention of dental and related diseases. History and development of radiographs hazardous effects of radiation, and methods of protection. 2 q.h.

530L. *Dental Radiology Lab.* The techniques necessary to expose, develop, and mount dental films. Three hours of laboratory a week. 1 q.h.

535. *General and Oral Pathology.* The cause and nature of disease, together with anatomical and functional changes. The observation and progress of disease

in the human as related to diagnosis and treatment-planning by the dentist. Special emphasis is given to oral pathology. 3 q.h.

601. *Dental Hygiene IV.* Introduction to the principles of ultrasonic scaling. Application of practical knowledge of nutritional science to patient education. Two hours of lecture a week. Prereq.: DH 503. 2 q.h.

601L. *Clinical Dental Hygiene IV.* Continued clinical experience. Completion of two plaque-control patients in addition to a required number of prophylaxes. Use of the ultrasonic scaler. Blood pressure and diabetes tests are included. Twelve hours of laboratory a week. Prereq.: DH 503L. 4 q.h.

602. *Dental Hygiene V.* Introduction to the dental specialty of oral surgery and related subjects, pain control, and hospital dentistry. Two hours of lecture a week. Prereq.: DH 601. 2 q.h.

602L. *Clinical Dental V.* Continued clinical experience. Completion of one proficiency patient and two plaque-control patients in addition to a specified number of oral prophylaxes. Comprehensive examination, charting, and history of a periodontally involved patient is required. Twelve hours of laboratory a week. Prereq.: DH 601L. 4 q.h.

603. *Dental Hygiene VI.* Individual review of current literature on a selected topic in the field of dentistry. One hour of lecture a week. Prereq.: DH 602. 1 q.h.

603L. *Clinical Dental Hygiene VI.* Continued clinical experience. Completion of one proficiency patient and two plaque-control patients in addition to specific clinical requirements. Twelve hours of laboratory a week. Prereq.: DH 602L. 4 q.h.

611. *Dental Materials.* The sources, physical properties, methods of manufacturing, and uses of various dental materials. Two hours of lecture a week. Prereq.: Second-year standing in DH Program. 2 q.h.

611L. *Dental Materials Lab.* Selected dental materials are manipulated in laboratory procedures so that the student will be able to assist the dentist at the chair as well as perform certain laboratory procedures and specified clinical duties. Three hours of laboratory a week. Prereq.: Second-year standing in DH Program. 1 q.h.

615. *Dental Health Education.* A lecture and laboratory course to introduce educational concepts, objectives, methodology in oral health instruction. Provides opportunity for the student to act as an instructor in a classroom situation and in professional groups by table clinic presentations. Two hours of lecture and three hours of laboratory a week. 3 q.h.

620. *Periodontics I.* Introduction to Periodontics for the Dental Hygienist. Etiology, clinical features, and classification of periodontal disease, and the treatment-planning for it, and the hygienists role in its prevention through patient education. Prereq.: DH 535. 2 q.h.

621. *Periodontics II.* Surgical techniques, root planning, curettage, and periodontal maintenance therapy will be presented and discussed. Prereq.: DH 620. 2 q.h.

625. *Community Dentistry.* The epidemiology of dental disease. Particular attention is given to means of preventing and controlling dental disease and promoting dental health through organized community efforts. Two hours of lecture and three hours of laboratory a week. Prereq.: DH 615. 3 q.h.

626. *Dental Public Health Clinical Experience.* Dental hygiene care in various public programs using a portable dental unit. Three hours of laboratory and/or clinical experience per week. Prereq.: DH 625. 1 q.h.

641. *Dental Office Management and Jurisprudence.* Business procedure and recall systems in a dental office, legal definitions pertinent to dentistry, as well as the laws relating to the practice of dentistry and dental hygiene in the state of Ohio. One hour of seminar a week. Prereq.: DH 601. 1 q.h.

650. *Preventive Dentistry.* Current concepts in preventive dentistry for the dental hygienist. The philosophy of prevention and its relation to total patient care, patient education and motivation, and the control of dental disease. Two hour lecture a week. Prereq.: DH 601. 2 q.h.

DENTAL HYGIENE CURRICULUM

SUMMER

	Cr. Hrs.
Biol. 551 Physiology and Anatomy of Man I	4
Biol. 552 Physiology and Anatomy of Man II	4
	8

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
DH 501 Dental Hygiene I	3
DH 501L Clinical Dental Hygiene I	3
DH 520 Dental Anatomy I	2
DH 520L Dental Anatomy Lab I	1
Chem. 502 Survey of Chemistry II	4
H. Ec. 551 Normal Nutrition	4
	17

SECOND QUARTER

	Cr. Hrs.
DH 500 Dental-Med. Emergencies	2
DH 504 Dental Hygiene II	1
DH 502L Clinical Dental Hygiene II	3
DH 530 Dental Radiology	2
DH 525 Oral History and Embryology	3
Chem. 503 Survey of Chemistry III	4
Soc. Sci. 502 Introduction to Economics	3
	18

THIRD QUARTER

	Cr. Hrs.
DH 503 Dental Hygiene III	3
DH 503L Clinical Dental Hygiene III	3
DH 530L Dental Radiology Laboratory	1
DH 535 General and Oral Pathology	3
Biol. 560 Microbiology	5
Speech 550 Principles of Speech Communication	4
	19

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
DH 601 Dental Hygiene IV	2
DH 601L Clinical Dental Hygiene IV	4
DH 611 Dental Materials	2
DH 611L Dental Materials Laboratory	1
DH 615 Dental Health Education	3
DH 620 Periodontics	2
	14

FIFTH QUARTER

	Cr. Hrs.
DH 602 Dental Hygiene V	2
DH 602L Clinical Dental Hygiene V	4
DH 621 Periodontics II	2
DH 625 Community Dentistry	3
DH 641 Dental Office Management and Jurisprudence	1
DH 650 Preventive Dentistry	2
MA 605 Introduction to Pharmacology	4
	18

SIXTH QUARTER

	Cr. Hrs.
DH 603 Dental Hygiene VI	1
DH 603L Clinical Dental Hygiene VI	4
Soc. 500 Fundamentals of Sociology	4
Engl. 550 Basic Composition I	4
Psych. 560 Introduction to Psychology	4
	17

Total Credit Hours **110**

Emergency Medical Technology

Instructor Mistovich (Coordinator).

Emergency medical technology programs are designed to train persons to provide emergency pre-hospital care to people experiencing health crises. The goals of these programs are on four different levels: Emergency Medical Technician — Ambulance; Advanced Emergency Medical Technician — Ambulance (EMT — A) Certification; Paramedic Certification; and the Associate in Applied Science degree.

The Emergency Medical Technician — Ambulance Certificate is a prerequisite for admission to the Emergency Medical Technology program in addition to University and department admission requirements.

The Emergency Medical Technician — Paramedic Certificate can be attained after successfully completing four quarters of study. The course of study provides the student with knowledge about the recognition, assessment, and supervised practice of emergency medical care in the hospital and in advanced life-support ambulance situations. It meets and exceeds all United States Department of Transportation 15 module paramedic curriculum objectives.

The Associate in Applied Science degree is awarded following the completion of the advanced training program with clinical paramedical experiences. The course of study affords the practitioner application of organizational and managerial principles in various emergency services. Forty percent of all didatic and clinical rotations are physician-instructed and/or precepted.

For the certificates, admission requirements and procedures are the same as those applicable to the University and the Department of Allied Health with the addition of a minimum age of 18 years, a current drivers license, and an interview by a selection committee. The student must be EMT-A certified. Physical examinations to attest good health are required. Admission into the Associate in Applied Science degree program is restricted. Please refer to the admission policies.

501. *Emergency Medical Technician-Ambulance.* A course that provides that basic knowledge and skills required to be an emergency medical technician. The course meets all U.S. Department of Transportation training standards for the Basic EMT. Two lecture hours per week. Must be taken concurrently with EMT 501L. 2 q.h.

501L. *Emergency Medical Technician-Ambulance-Laboratory.* A laboratory experience necessary to acquire skills required to be an Emergency Medical Technician-Ambulance. The course meets all U.S. Department of Transportation training standards for the Basic EMT. Six hours laboratory per week. Must be taken concurrently with EMT 501. 2 q.h.

502. *Emergency Medical Technology Orientation.* Introduction to the duties, legal and ethical responsibilities, and job opportunities for emergency medical technicians. Emphasis is on the individual's relationship with the patient, community, and co-workers. 4 q.h.

505. *Advanced Emergency Vehicle Procedures.* Methods utilized by the advanced EMT in delivering care to the medical and surgical pre-hospital emergency patient. Must be taken concurrently with EMT 505L. 4 q.h.

505L. *Advanced Emergency Vehicle Procedures Laboratory.* Course includes laboratory and hospital training of therapies and adjuncts taught in EMT 505. Three six hour clinical sessions and seven three hour laboratory sessions. Must be taken concurrently with EMT 505. 1 q.h.

510. *Emergency Medical Conditions I.* A study of the most common medical emergencies normally encountered with emphasis on pathophysiology and etiology. 4 q.h.

511. *Emergency Medical Techniques I.* A study of techniques necessary to treat emergency conditions introduced in EMT 510. 3 q.h.

511L. *Emergency Medical Techniques Laboratory I.* Laboratory includes simulated emergency situations and an actual hospital setting with ambulance service. Three hour laboratory. Four hour clinical. Must be taken concurrently with EMT 511. 2 q.h.

512 and 512L. *Rescue Squad Experience and Laboratory.* Clinical experience with an approved paramedic squad under supervision of trained EMT personnel. Two hours of lecture, five hours of clinic a week. 3 q.h.

520. *Emergency Medical Conditions II.* Intense emergency coronary and respiratory care, including artery disease, myocardial infarction, angina pectoris, congestive heart failure, and pulmonary dysfunction, and their pathophysiology and symptomology. Four hours of lecture a week. Prereq.: EMT 510. To be taken concurrently with EMT 521. 4 q.h.

521. *Emergency Medical Techniques II.* Techniques for treating coronary and respiratory emergencies. To be taken concurrently with EMT 521L. 3 q.h.

521L. *Emergency Medical Techniques Laboratory II.* Simulated coronary and respiratory emergency situations: Three-hour laboratory, four-hour clinic. 2 q.h.

523. *Communication Systems and Defensive Driving.* Regulations, limitations, and maintenance of communication systems; principles of defensive driving, particularly for ambulance operation under emergency conditions. 2 q.h.

523L. *Communication Systems and Defensive Driving Laboratory.* Practice in utilization of various communication systems and demonstration of defensive techniques in emergency vehicles. Three hours of laboratory a week. 1 q.h.

600. *Emergency Vehicle Experience.* Practical experience with an emergency vehicle squad to observe and perform emergency duties under supervision. Prereq.: EMT 520. Sixteen clinical hours and one hour seminar a week. 4 q.h.

601. *Advanced Emergency Conditions I.* Treatment of severely emergent medical conditions, with emphasis on assessment, monitoring, and life-supporting procedures. Prereq.: EMT 520. To be taken concurrently with EMT 602. 3 q.h.

602. *EMT-P Clinical Experience I.* Clinical experiences in hospitals, and emergency vehicles under severely emergent medical conditions. Twelve clinical hours a week. To be taken concurrently with EMT 601. 3 q.h.

610. *Advanced Emergency Conditions II.* The treatment of severely emergent medical conditions, with emphasis on assessment, monitoring, and life-supporting procedures. Prereq.: EMT 601. 3 q.h.

611. *EMT-P Clinical Experience II.* Clinical experiences in hospitals and emergency vehicles, emphasizing severely emergent surgical conditions. Twelve clinical hours a week. To be taken concurrently with EMT 610. 3 q.h.

615. *Emergency Medical Conditions III.* A study of pediatric, psychiatric, and obstetrical medical and surgical emergencies, focused on the pathophysiology, symptomatology, and treatment of problems unique to these special-care areas. Prereq.: EMT 520 and 521L. To be taken concurrently with EMT 615L. 3 q.h.

615L. *Emergency Medical Conditions III Laboratory.* Practical experience in pediatric, psychiatric, and obstetrical medical and surgical emergencies. Five hour clinic. Prereq.: EMT 520 and EMT 521. To be taken concurrently with EMT 615. 1 q.h.

620. *Leadership in Paramedic Technology.* Practical experience performing clinical and administrative duties under supervision with a rescue squad. One hour seminar; four clinical hours a week. Prereq.: EMT 601. 2 q.h.

630. *Field Based Study.* Student will choose a research project, community program involvement, internship, or act as an instruction assistant after meeting with the program coordinator concerning the project. Study time will vary according to project complexity. Prereq.: EMT 610. 1-5 q.h.

EMERGENCY MEDICAL TECHNOLOGY CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
MA 501 Medical Terminology	4
EMT 502 Emergency Medical Technology Orientation	4
EMT 510 Emergency Medical Technology Conditions I	4
Biol. 551 Physiology & Anatomy of Man I	4
	16

SECOND QUARTER

	Cr. Hrs.
EMT 511 Emergency Medical Technology Techniques I	3
EMT 511L Emergency Medical Technology Techniques Laboratory I	2
EMT 523 Communication Systems and Defensive Driving	2
EMT 523L Communication Systems and Defensive Driving Laboratory	1
Biol. 552 Physiology and Anatomy of Man II	4
MA 605 Introduction to Pharmacology	4
	16

THIRD QUARTER

	Cr. Hrs.
EMT 520 Emergency Medical Conditions II	4
EMT 521 Emergency Medical Techniques II	3
EMT 521L Emergency Medical Techniques Laboratory II	2
EMT 512 Rescue Squad Experience	3
	12

FOURTH QUARTER (SUMMER)

	Cr. Hrs.
EMT 600 Emergency Vehicle Experience	4
EMT 615 Emergency Medical Conditions III	3
EMT 615L Emergency Medical Conditions Laboratory III	1
	8

Total for EMT-Certificate Level 52

SECOND YEAR
FIFTH QUARTER

	Cr. Hrs.
EMT 601 Advanced Emergency Conditions I	3
EMT 602 EMT-P Clinical Experience I	3
Chem. 502 Survey of Chemistry II	4
Psych. 560 General Psychology	4
	14

SIXTH QUARTER

	Cr. Hrs.
EMT 620 Leadership of Paramedic Technology I	2
Chem. 503 Survey of Chemistry III	4
Psych. 702 Abnormal Psychology	4
Mil. Sci. 520 Introduction to Living Out-of-Doors	1
Elective (Approved Social Science)	3/4
	14/15

SEVENTH QUARTER

	Cr. Hrs.
EMT 610 Advanced Emergency Conditions II	3
EMT 611 EMT-P Clinical Experience II	3
Speech 550 Principles of Speech	4
Engl. 550 Basic Composition	4
Mil. Sci. 530 Survival Mountaineering	1
	15

Total Credit Hours 95/96

Medical Assisting Technology

Assistant Professor Feld (Coordinator)

The Medical Assisting Technology program is a two-year program leading to the Associate in Applied Science degree. It provides an opportunity to obtain the education needed to perform receptionist, bookkeeping, and other office management duties and assist the physician in physical exmainations, minimal laboratory tests, and patient recordkeeping, in private physician offices, clinics, or hospital outpatient departments. Admission to the program is not restricted, but high school prerequisites include biology, chemistry, algebra I, algebra II or geometry, and business typing (personal typing does not substitute).

A grade of C or better is required in all medical assisting and BET courses. A 2.0 overall G.P.A. must be maintained to continue in the program. Prior to scheduling the externship, the student records will be reviewed by the department to determine if all previous courses in the program have been satisfactorily completed and any deficiencies have been made up.

The student must have a physical examination report with a negative tuberculin-screening test and serology test prior to MA 620, MA 680 and the externship.

501. *Medical Terminology.* Structure of medical words, pronunciation and meaning of medical terms. 4 q.h.

502. *Medical Law and Ethics.* Types of medical practices. Legal relationship of physician to patient, i.e., professional liability, implied and informed consent, malpractice, invasion of privacy. Emphasis on professional attitude and behavior. 4 q.h.

600. *Medical Insurance Forms.* A study of private group and government insurance programs and the completion of required forms by using procedural and diagnostic coding. Prereq.: MA 501. 4 q.h.

605. *Introduction to Pharmacology.* Identification and interactions of drugs used in patient care including the pharmacological action and effects on the patient. Various modes of administration and patient education regarding the effects of common drugs are included. Prereq.: Chem. 502, Biol. 552 or concurrently. 4 q.h.

610. *Introduction to Disease Processes.* Introduction to the disease process including diagnostic symptoms and treatment aspects. Emphasis is placed on the physical, psychological and environmental conditions which influence the individual's well being. Prereq.: MA 501. 4 q.h.

611. *Clinical Procedures Lab.* Techniques of patient interviewing and history taking, performance of patient assessment, application of principles of body mechanics and instructions for examinations and diagnostic procedures. Three hour lab. Prereq.: MA 501 and 502. 1 q.h.

620. *Advanced Clinical Procedures.* Orientation to minor surgical and specialized examination techniques, physical examinations, preparation and administration of medication, performing electrocardiograms, application of physical therapy, and X-ray techniques including maintaining medical supplies and inventory. Prereq.: MA 610, 611, Bio 552 and concurrently with MA 620L. 3 q.h.

620L. *Advanced Clinical Procedures Lab.* Laboratory experience in minor surgical and specialized examination techniques, preparation and administration of

medications, electrocardiograms, physical therapy, and X-ray procedure. Taken concurrently with MA 620. Three hours laboratory a week. 1 q.h.

680. *Laboratory Procedures for the Medical Office.* An introduction to diagnostic laboratory procedures performed in the physician's office. Principles and techniques of laboratory procedures are studied. Prereq.: MA 610 and MA 610L, to be taken concurrently with Biol. 560. 2 q.h.

680L. *Laboratory Procedures for the Medical Office Lab.* Practice in diagnostic laboratory procedures. Emphasis on collection, proper handling, and identification of specimens. Basic hematologic procedures, urinalysis, bacteriological exams, serology, and pregnancy tests. Must be taken concurrently with MA 680. Three hours of laboratory a week. 1 q.h.

692. *Medical Assisting Externship.* Practical, nonpaid experience in the office of a qualified physician, family practice or clinic. Performance of clinical and administrative procedures with supervision. Twenty-one hours weekly at a site selected by the instructor. Concurrent with MA 694. Prereq.: MA 620, 680, and BET 731, 622 or by consent of the instructor. 3 q.h.

694. *Medical Assisting Seminar.* Selected Medical Assisting topics based on the needs and interests of the students as related to externship. Investigates the various roles of the Medical Assistant, employment opportunities and continuing education. Must be taken concurrently with MA 692. 2 q.h.

MEDICAL ASSISTING TECHNOLOGY: CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
MA 501 Medical Terminology	4
Engl. 550 Basic Composition I	4
BE 521 Typing II	2
Chem. 502 Survey of Chemistry II	4
MA 502 Law and Ethics	4
	18

SECOND QUARTER

	Cr. Hrs.
Psych. 560 General Psychology	4
Engl. 551 Basic Composition II	4
Biol. 551 Physiology and Anatomy of Man I	4
MA 600 Medical Records and Insurance Forms	3
H&PE 590 Health Education	3
	18

THIRD QUARTER

	Cr. Hrs.
Soc. 500 Fundamentals of Sociology	4
BE 740 Records Management	3
Biol. 552 Physiology and Anatomy of Man II	4
BT 580 Elementary Accounting Tech I	4
H&PE 601 First Aid & Emergency Care	3
	18

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
MA 610 Paramedical Patient Care I	4
MA 610L Paramedical Patient Care I Lab	1
BET 513 Business Computer Systems I	4
MA 605 Introduction to Pharmacology	4
BE 510 Office Procedures	4
H PE 604 Cardio Pulmonary Resuscitation	1
	18

FIFTH QUARTER

	Cr. Hrs.
MA 620 Paramedical Patient Care II	3
MA 620L Paramedical Patient Care II Lab	1
MA 680 Laboratory Procedure Medical Offices	2
MA 680L Laboratory Procedure for the Medical Office Laboratory	1
Biol. 560 Paramedical Microbiology	5
BE 622 Typewriting VI	2
BE 731 Special Dictation	4
	18

SIXTH QUARTER

	Cr. Hrs.
MA 692 Externship	3
MA 694 Seminar	2
Hist 699 History of Medicine	4
BET 720 Organizational Behavior	4
	13
Total Credit Hours	**102**

To be taken concurrently: BET 622, 731.

Typewriting courses will depend on typewriting background.

Medical Laboratory Technology

Assistant Professor Boyd (Coordinator); Instructor Dannessa.

The Medical Technology program is a two-year program leading to the Associate in Applied Science degree in Medical Laboratory Technology.

The medical laboratory technician works in a supportive role in a hospital, private laboratory, clinic, public health facility, or pharmaceutical laboratory, performing a variety of clinical tests under appropriate supervision. These tests may be utilized by qualified physicians for the determination of the presence and extent of disease, as well as for their etiological implications about the cause of the disease.

The MLT Program meets the standards developed by the American Society of Clinical Pathologists and

the American Society of Medical Technologists through the National Accrediting Agency for Clinical Laboratory Sciences.

Admission to the program is restricted. Copies of the Admission Policy are available in the Allied Health Department Offices.

501. *Introduction to Medical Technology.* Introduction to Medical Technology Science: the purpose of various tests, quality control emphasis, ethics, and responsibilities. Prereq.: high school chemistry, algebra I and algebra II or geometry. Taken concurrently with MLT 501L. 3 q.h.

501L. *Introduction to Medical Technology Lab.* Observation of technologists in the clinical lab; performance of routine phlebotomy and simple lab procedures. Three hours of lab a week. Must be taken concurrently with MLT 501. 1 q.h.

502. *Medical Laboratory Methodology I.* Theory and techniques in the chemical analysis of urine and the fundamentals of blood banking and hematology. Prereq.: Biol. 506 and 507, and MLT 501. Taken concurrently with MLT 502L. 2 q.h.

502L. *Medical Laboratory Methodology I Laboratory.* Chemical and microscopic examination of urine, with emphasis on cells and casts; A, B, O and Rh blood typing and routine hematology procedures. Six hours of laboratory a week including hospital lab. Taken concurrently with MLT 502. 2 q.h.

601. *Medical Laboratory Methodology II.* Theoretical and practical knowledge related to chemistry in the medical laboratory, with emphasis on quality control and instrumentation. Prereq.: Chem. 517, MLT 502. Must be taken concurrently with MLT 601L. 3 q.h.

601L. *Medical Laboratory Methodology II Laboratory.* Test procedures include titremetric, colorimetric, and spectrophotometric methods, and various automated equipment to perform glucose, bilirubins, and blood gases. Three hours of laboratory per week to include hospital laboratory. Taken concurrently with MLT 601. 1 q.h.

700. *Diagnostic Labeled Immunoassays.* The basic concepts of immunoassays utilizing labeled antibodies to detect antigens based on immunomicroscopic and receptor binding techniques. Prereq.: Chem. 517, MLT 601 & 601L or advanced standing in the M.T. Program. To be taken concurrently with MLT 700L. 2 q.h.

700L. *Diagnostic Labeled Immunoassays Laboratory.* Thyroid, Digoxin, B 12, Folic acid, Antinuclear antibodies and T & B cell receptor procedures utilized in the clinical laboratory. Three hours of laboratory a week. Must be taken concurrently with MLT 700. 1 q.h.

703. *Clinical Immunology.* Fundamentals of antigen-antibody reactions applied to serological procedures performed in the clinical laboratory. Two hours of lecture a week. Must be taken concurrently with MLT703L. Identical with Biology 703. Prereq.: MLT 702. 2 q.h.

703L. *Clinical Immunology Laboratory.* Identical with Biol. 703L. VDRL, ASO, febrile, latex, pregnancy, and viral tests; also includes flocculation, precipitation, complement fixation, and titration procedures for various diseases. Three hours of laboratory a week. Must be taken concurrently with MLT 703. 1 q.h.

705L. *Clinical Laboratory.* Fifteen hours per week of practical application of skills learned in previous courses under the constant supervision of a medical technologist. Forty-eight hours of rotation in a hospital laboratory will also be included. The laboratory and hospital rotation to be taken concurrently with MLT 706. Prereq.: Successful completion of the previous six quarters of MLT courses. 7 q.h.

706. *Medical Laboratory Seminar.* Special problems concerning the internship are discussed with the coordinator. To be taken concurrently with MLT 705. 1 q.h.

729. *Clinical Hematology.* The origin and formation of blood cells, the coagulation mechanism and its factors, and blood group systems are discussed. Prereq.: Biol. 506, 507, and MLT 502 and 502L, or advanced standing in the Med Tech Program. To be taken concurrently with MLT 729L. 2 q.h.

729L. *Clinical Hematology Laboratory.* Includes counting red and white cells, reticulocytes, and eosinophiles; differential morphology, staining techniques, coagulation procedures, blood grouping and compatability testing, students will be required to perform 80 differentials. Six hours of lab per week. To be taken concurrently with MTL 729. 2 q.h.

787. *Diagnostic Microbiology.* An examination of the major disease producing micro-organisms encountered in the clinical laboratory. The areas will include a study of the frequency, clinical sources, treatment and control of these pathogenic organisms. Prereq.: Biol. 702. Same as Biol. 787. Must be taken concurrently with 787L. 2 q.h.

787L. *Diagnostic Microbiology Laboratory.* A clinical approach to the study of bacteria, fungi, and other micro-organisms including the identification of organisms encountered in the clinical laboratory. Six (6) hours lab per week. Same as Biol. 787L. Prereq.: Biol. 702. Must be taken concurrently with MLT 787. 2 q.h.

MEDICAL LABORATORY TECHNOLOGY CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Chem. 515 General Chemistry I	4
Biol. 506 Principles of Biology I	4
MLT 501 Introduction to Medical Technology	3

MLT 501L Introduction to Medical Technology Laboratory 1
Biol. 551 Anatomy and Physiology of Man I ... 4

16

SECOND QUARTER

	Cr. Hrs.
Chem. 516 General Chemistry II	4
Biol. 507 Principles of Biology II	4
Biol. 552 Anatomy and Physiology of Man II	4
MLT 502 Medical Laboratory Methodology	2
MLT 502L Medical Laboratory Methodology Lab	2
	16

THIRD QUARTER

	Cr. Hrs.
Chem. 517 General Chemistry III	4
Biol. 508 Principles of Biology III	4
MLT 729 Clinical Hematology	2
MLT 729L Clinical Hematology Laboratory	2
Biol. 702 Microbiology	4
	16

FOURTH QUARTER (SUMMER)

	Cr. Hrs.
Engl. 550 Basic Composition I	4
Psych. 560 General Psychology	4
MLT 601 Medical Laboratory Methodology II	3
MLT 601L Medical Laboratory Methodology II Laboratory	1
Chem. 603 Qualitative Analysis I	5
	17

FIFTH QUARTER

	Cr. Hrs.
MLT 703 Clinical Immunology	2
MLT 703L Clinical Immunology Lab	1
MLT 700 Diagnostic Labled Immunoassays	2
MLT 700L Diagnostic Labled Immunoassays Laboratory	1
MLT 787 Diagnostic Microbiology	2
MLT 787L Diagnostic Microbiology Laboratory	2
Math 714 Probability Statistics	5
	15

Note: Students may qualify for an internship after the fifth or sixth quarters.

SIXTH QUARTER

	Cr. Hrs.
Soc. Sci. 501 Introduction to Social Science	3
MA 501 Medical Terminology	4
Engl. 551 Basic Composition II	4
H&PE 590 Health Education	3
Soc. Studies Elective	3
	17

SEVENTH QUARTER

	Cr. Hrs.
*MLT 705 Medical Laboratory Internship	5
MLT 706 Medical Laboratory Seminar	1
	6

Total Credit Hours 103

*Medical Laboratory Internship Guidelines

Admission to the Medical Laboratory program *DOES NOT* guarantee admission to the internship. In a Medical Laboratory, MLT's are expected to function with a maximum degree of effectiveness in professional attitudes, patient relations, and integrity. The capacity for competent performance at each level must be assured for each student before they will be assigned to an Internship, since the work frequently deals with life and death situations.

All course work in the MLT program must be completed with a minimum grade of C, and only two courses may be repeated one time. Applicants must maintain an overall G.P.A. of 2.00 and a G.P.A. of 2.50 in all MLT courses (see admission policy).

Upon successful completion of the program the student becomes eligible to receive the Associate in Applied Science degree with a major in Medical Laboratory Technology and take any national certification examination to become certified as MLT(ASCP) or CLT(NCA).

Medical Technology

Assistant Professor Boyd (Coordinator) and Instructor Dannessa.

The Medical Technology program is a four-year program leading to a Bachelor of Science in Applied Science degree with a major in Medical Technology. Admission to the program is restricted. Copies of the admission policy are available in the Allied Health Department.

The medical technologist is a specialized member of the health care profession performing a variety of tests in hospital and private laboratories, clinics, armed forces, federal health agencies, pharmaceutical houses, and research programs.

The myriad of procedures performed or supervised by the medical technologist are utilized by qualified physicians to determine the presence or absence and extent of disease and types of treatment to be employed.

Since the work frequently deals with life-and-death situations which require precision, dependability, and a strong sense of responsibility, students must have an aptitude for an interest in the physical and biological sciences.

The program, as designed, exceeds the minimum requirements of the National Accrediting Agencies for Laboratory Science.

*Work in the MLT program

The program is designed to ensure a thorough understanding of the biological and physical science and to present to the student the artful applications of scientific principles that are practical in the clinical laboratory.

Upon successful completion of three years of the program at the university and a year in a hospital school accredited by the Committee on Allied Health Education and Accreditation through NAACIS, the students become eligible to take any national certification examination to become certified as MT (ASCP), CLS(NCA), and receive a Bachelor of Science in Applied Science degree with a major in Medical Technology.

MEDICAL TECHNOLOGY CURRICULUM

FIRST YEAR

	Cr. Hrs.
MLT 501 Introduction to Medical Technology	4
Chem. 515, 516, 517	12
Biol. 506, 507, 508	12
Engl. 550, 551	8
H&PE Activity Course	1
Biol. 551, 552	8
H&PE 590 Health Education	3
	48

SECOND YEAR

	Cr. Hrs.
Chem. 719, 720, 721	12
Chem. 603, 604	10
Mathematics 714	5
MLT 700 Diagnostic Labled Immunoassays	3
Biol. 702	4
MLT 787, 787L Diagnostic Microbiology and Laboratory	4
Physics 501	4
Electives (See Note A)	8
	50

THIRD YEAR

	Cr. Hrs.
Chem. 711, 712, 713	8
Physics 502, 502L, 503, 503L	8
H&PE Activity Course	2
MLT 703 Clinical Immunology	3
MLT 729 Clinical Hematology	3
Electives (See Note A)	16
Electives (See Note B)	4
	44

FOURTH YEAR

The courses listed below are limited to students admitted to the Professional Study Year at an accredited Hospital School of Medical Technology. 48 credit hours will be awarded for successful completion of the Internship.

Medical Technology Internship I	(12 q.h.)
(Clinical Microbiology and Lab)	
(Clinical Immunology and Lab)	
Medical Technology Internship II	(12 q.h.)
(Urinalysis and Lab)	
(Immunohematology and Lab)	
Medical Technology Internship III	(12 q.h.)
(Clinical Mycology)	
(Clinical Parasitology)	
(Clinical Chemistry and Lab)	
(Topics in Laboratory Education)	
Medical Technology Internship IV	(12 q.h.)
(Clinical Hematology and Lab)	
(Coagulation)	
(Topics in Laboratory Management)	
(Special Topics in Medical Technology)	
Total Credit Hours	**48**

Note (A): The electives should be courses which satisfy the university requirements for upper division credit, social studies, and humanities.

Note (B): Suggested science elective: Biol. 836 or Biol. 837 or Biol. 838 or Chem. 730.

Hours Required for Graduation:

Academic	184
Non-Academic	6
Total	**190**

MEDICAL TECHNOLOGY INTERNSHIP GUIDELINES

Students applying for internships must have completed at least 140 quarter hours. Their transcripts must be evaluated by the Allied Health Department before applying. It is suggested that the student make an appointment for the evaluation at the beginning of the junior year to ensure that all of the requirements for the internship and graduation are fulfilled.

Students who qualify for the internship can pick up the list of hospital affiliations, application forms, and information regarding the internship in the Allied Health Department.

The University cannot guarantee admission into the fourth year of hospital clinical internship since it is restricted. Students are selected by the professional affiliated schools which are very competitive and, therefore, are encouraged to maintain a 3.0 overall G.P.A.

Students should notify the Coordinator immediately upon their acceptance of a professional school.

Respiratory Therapy Technology

Assistant Professor Harris (Coordinator) and Instructor Boehm.

Respiratory therapy is an Allied Health specialty concerned with the treatment management, control, diagnostic evaluation, and care of patients with

deficiencies and abnormalities associated with the cardiopulmonary system. The respiratory care practitioner must be expert in the therapeutic use of medical gas administration, aerosol and humidity delivery techniques, intermittent and continuous mechanical ventilation, broncho-pulmonary hygiene, cardiopulmonary resuscitation, pulmonary function evaluation, and airway management procedures. These skills must be uniformly administered to neonatal, pediatric and adult patients.

To function effectively as a specialized member of the health care team, the respiratory care practitioner must also understand the physical and psychological needs of the patient, the doctor's goal in using respiratory therapy, and where and how the specialist's equipment and know-how fit into the treatment picture. The complexity of this responsibility requires the services of a highly trained, dedicated technologist. Theory and ample laboratory practice are provided prior to entering the clinical aspect of the training. Students gain clinical experience by working in various area hospitals under the supervision of qualified instructors. Affiliated hospitals include St. Elizabeth Hospital Medical Center, Youngstown Hospital Association, Trumbull Memorial Hospital, Youngstown Osteopathic Hospital, Robinson Memorial Hospital and Alliance City Hospital. Admission to the program is restricted. Copies of the admission policy are available in the Allied Health Department.

501. *Introduction to Respiratory Therapy.* The scope of the respiratory therapy field as a whole, the duties and responsibilities will be included. A discussion of important calculations for respiratory therapy with emphasis on specific applications current in medical practice. 3 q.h.

501L. *Introduction to Respiratory Therapy Laboratory.* Familiarization with fundamental equipment, basic patient-care techniques, and departmental design; visits to hospitals. Must be taken concurrently with RT 501. Three hours of laboratory. 1 q.h.

502. *Introduction to Respiratory Therapy Equipment.* An in-depth study of the apparatus used in providing respiratory care. Three hours lecture. Must be taken concurrently with RT 502L. 3 q.h.

502L. *Introduction to Respiratory Therapy Equipment Laboratory.* Practice in the use and maintenance of the equipment discussed in RT 502. Must be taken concurrently with RT 502. Three hours of Laboratory. 1 q.h.

503. *Respiratory Procedures I.* Indications, hazards, and techniques used to administer various respiratory procedures. Procedural demonstration will be required for medical gas administration, aerosal therapy, incentive spirometry, IPPB therapy, and chest physiotherapy. Must be taken concurrently with RT 504. 3 q.h.

503L. *Respiratory Procedures I Laboratory.* Integration of theory and patient-care skills in a simulated clinical setting. Three hours of laboratory a week. Must be taken concurrently with RT 503. 1 q.h.

504. *Clinical Practice I.* Practice in administering oxygen and other therapeutic gases to the patient by means of cannula, cathetic, and mask humidifiers by prefilled, disposable or permanent humidifiers. Clinical use of ultrasonic nebulizers, IPPB machines, and chest physiotherapy. Maintenance and sterilization of equipment relating to the prevention of nosocomial infections. Thirty clinical hours. Must be taken concurrently with RT 503. 5 q.h.

507. *Introduction to Pulmonary Disease.* An overview of cardiopulmonary disorders frequently encountered by respiratory care practitioners. Also included will be discussion of the treatment regimens utilized with these disorders. Prereq.: RT 502 or permission of instructor. 2 q.h.

601. *Respiratory Procedures II.* A study of the principles and practices of airway management, CPR and emergency procedures, manual resuscitators, and pulmonary rehabilitation is included. Must be taken concurrently with RT 601L. Prereq.: RT 503. 3 q.h.

601L. *Respiratory Procedures II Lab.* Performance of fundamental techniques employed in airway management, CPR, and pulmonary rehabilitation is required. Three hours a week lab. Must be taken concurrently with RT 601. Prereq.: RT 503. 1 q.h.

602. *Clinical Practice II.* Emphasis on airway management, cardiopulmonary resuscitation, and emergency procedures related to the apneic patient. Management of patients on mechanical ventilators with blood gas analysis. Maintenance of equipment used in these procedures. Twenty-five clinical hours. Prereq.: RT 504. 5 q.h.

603. *Pathology for Respiratory Therapy.* Types of inflammation. Pathology of respiratory and cardiovascular systems. Three hours of lecture; three hours of lab. Prereq.: Biol. 552 and Biol. 560. 4 q.h.

604. *Respiratory Procedures III.* Theory and therapy incorporating state of the art mechanical ventilators. Also included is the psychological aspects of long term mechanical ventilation. Must be taken concurrently with RT 604L. Prereq.: RT 503. 3 q.h.

604L. *Respiratory Procedures III Lab.* Application and troubleshooting mechanical ventilators in a simulated patient setting. 3 hours per week lab. Must be taken concurrently with RT 604. Prereq.: 503. 1 q.h.

605. *Clinical Practice III.* Operation and maintenance of pulmonary function equipment and the drawing and interpretation of arterial blood gases. Twenty-five clinical hours. Prereq.: RT 602. 5 q.h.

606. *Pulmonary Function and Blood Gas Analysis.* Ventilatory and respiratory insufficiency problems that can be diagnosed and evaluated by pulmonary function studies to include A-a O2 gradients and carbon

monoxide diffusion studies. Evaluation of normal and abnormal acid-base balance through blood gas analysis is included. Must be taken concurrently with RT 606L. Prereq.: RT 502. 3 q.h.

606L. *Pulmonary Function and Blood Gas Analysis Lab.* Use of equipment and analysis of data incorporating up to date pulmonary function analyzers. 3 hour lab per week. Must be taken concurrently with RT 606. Prereq.: RT 502. 1 q.h.

607. *Clinical Practice IV.* Advanced studies of mechanical ventilation, pulmonary functions, blood gases, and adult and pediatric respiratory therapy. Thirty clinical hours. Prereq.: RT 605. 5 q.h.

608. *Clinical Specialties.* Respiratory therapy applications in medical practice, including pathology, internal medicine, neurology, surgery, pediatrics, and obstetrics, and fluid and electrolyte balance. The role of the respiratory therapist as a member of the specialized health-care team. Three hours of lecture, three hours of laboratory. 4 q.h.

609. *Pediatric Respiratory Care.* This course is designed to encompass the various components of neonatal and pediatric respiratory care. The study of disease entities, specialized equipment and its application to pediatric patients will be investigated. Two hours lecture and three hours lab. Prereq.: RT 601 or permission of instructor. 3 q.h.

RESPIRATORY THERAPY TECHNOLOGY TWO-YEAR THERAPISTS CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Biol. 551 Physiology and Anatomy of Man I	4
Chem. 502 Survey of Chemistry II	4
RT 501 Introduction to Respiratory Therapy	3
RT 501L Introduction to Respiratory Therapy Laboratory	1
Biol. 560 Paramedical Microbiology	5
	17

SECOND QUARTER

	Cr. Hrs.
RT 502 Introduction to Respiratory Therapy Equipment	3
RT 502L Introduction to Respiratory Therapy Equipment Laboratory	1
Biol. 552 Physiology and Anatomy of Man II	4
Chem. 503 Survey of Chemistry III	4
Engl. 550 Basic Composition I	4
	16

THIRD QUARTER

	Cr. Hrs.
Phys. 500A Physics and Man	4
RT 507 Introduction to Pulmonary Disease	2
MA 605 Introduction to Pharmacology	4
RT 503 Respiratory Procedures I	3
RT 503L Respiratory Procedures I Laboratory	1
RT 606 Pulmonary Function and Blood Gas Analysis/Lab	4
	18

FOURTH QUARTER (SUMMER)

	Cr. Hrs.
RT 604 Respiratory Procedures III/Lab	4
RT 601 Respiratory Procedures II/Lab	4
RT 504 Clinical Practice I	5
	13

SECOND YEAR
FIFTH QUARTER

	Cr. Hrs.
RT 602 Clinical Practice II	5
RT 603 Pathology for Respiratory Therapy	4
RT 609 Pediatric Respiratory Care	3
	12

SIXTH QUARTER

	Cr. Hrs.
Soc. 500 Fundamentals of Sociology	4
RT 605 Clinical Practice III	5
RT 608 Clinical Specialties	4
Psych 560 General Psychology	4
	17

SEVENTH QUARTER

	Cr. Hrs.
MA 502 Law and Ethics	4
H&PE 590 Health Education	3
RT 607 Clinical Practice IV	5
Elective (Humanities/Soc Science)	3
	15
Total Credit Hours	**108**
Total Clinical Hours in Program	**1000**

ASSOCIATE IN ARTS DEGREE

Students interested in a two-year degree in general education may receive the Associate in Arts degree by fulfilling the requirements listed below with a concentration in business administration, business and secretarial, engineering and mathematical sciences, humanities, science or mathematics, or social studies.

DEGREE REQUIREMENTS

	Cr. Hrs.
English 550 and 551	8
Humanities	16
Science and Mathematics	12
Social Studies	16
H&PE 590	3
H&PE Activity Courses	3
Concentration*	32
Electives	6-22
Total Credit Hours	**112**

*Must have a C or better in concentration area

DEPARTMENT OF BUSINESS EDUCATION AND TECHNOLOGY

Professor Boggess (Chairman); Associate Professors Duda, Phillips, Potts, Russo and Sebestyen; Assistant Professors Campbell, C., Campbell, R. and Walton; Instructors Block, Hupp, Jones, Kohut, and Vendemia.

The courses in the Department of Business Education and Technology are designed for students interested in careers in business and labor and for education students desiring a comprehensive and vocational teacher certification in business education.

The Department of Business Education and Technology offers an A.L.S. degree in Labor Studies and four two-year programs leading to the A.A.B. degree: Accounting Technology; Business Management Technology; Marketing Technology; and Secretarial Studies. The Business Management Technology major may concentrate in Small Business Management. The Marketing major may concentrate in Advertising Technology, Graphics Technology, Marketing Technology, or Real Estate Technology. The Secretarial Studies student can major in Court/Conference Reporting, or can choose Executive Secretary, Legal Secretary, Medical Secretary, Office Management, or Information/Word Processing as a concentration area.

Secretarial students who prefer work in allied health areas should follow the medical secretary concentration. The office management concentration is designed for students who want to manage an information or word processing center. The word processing concentration is designed for students seeking jobs in automated offices. For students desiring to work in a law office or an affiliated profession, the legal secretary concentration is available. Secretarial Studies majors not choosing a concentration area follow the two-year curriculum for executive secretary.

The two-year Labor Studies program is designed to help the student develop collective bargaining skills.

A student who concentrates in court/conference reporting must have an ACT English score of 20. Interested students having lower ACT scores follow the legal secretary concentration until they have an overall point average of 2.50, at which time they may request a transfer to the court/conference reporting major. Court/conference reporting majors must have a 3.00 point average in their major courses and a 2.50 overall average to be approved for graduation.

Secretarial Studies and Business Education majors scoring less than 16 on the English ACT must take BET 505 during the first or second quarter. BET 505 or equivalent is a prerequisite for BET 704 and all shorthand classes.

After completing the two-year Secretarial Studies program, a student who wishes to complete a four-year program for teaching can complete the requirements for a bachelor's degree with a major in Business Education. Candidates for the Bachelor of Science in Education degree should consult the School of Education section of this catalog. All Business Education majors must pass subject matter proficiency exams in their teaching field(s) before being approved for student teaching.

Grades of C or better are required in all major area subjects for graduation. A major area course in which a grade of D or F was earned must be successfully repeated before taking a course for which it is a prerequisite.

Certificate programs are offered for clerk stenographer, clerk typist, and information/word processing. The certificate is awarded after completion of the requisite hours of course work with a point average of 2.00 or higher.

Curriculum sheets and schedules may be obtained from the Department of Business Education and Technology or from advisors in Cushwa Hall 2068.

Business Education and Technology

Lower Division Courses

505. *Transcription Skills.* Transcription skills and proficiencies necessary for successfully completing the secretarial course of study. Students taking this course must add four hours to degree requirements. 4 q.h.

506. *Word Processing Skills.* Extensive practice and applications in correct word usage, spelling, and punctuation. Transcription from tapes, belts, hardcopy, and rough drafts. Prereq.: BET 505 or ACT English score of 16, and BET 521 or equivalent. 3 q.h.

510. *Office Procedures.* Basic secretarial and clerical procedures, telephone techniques, behavioral problems, basic filing procedures, use of reference material, and office systems. Must be taken in first or second quarter of program. 4 q.h.

511. *Administrative Procedures for Medical Assistants.* Fundamentals in patient reception, appointment scheduling, mail handling, records creation and filing, office systems and management practice. Four hours lecture, six hours practicum per week in an assigned office. Prereq.: BET 521 and BET 505 or English 550. 4 q.h.

513. *Business Computer Systems I.* Basic concepts and vocabulary of information processing. Topics include introduction to flowcharting, BASIC programming utilizing microcomputers, microcomputer applications, and interactive processing on the mainframe computer. 4 q.h.

520. *Typewriting I.* The basic principles of touch typewriting. (This course is open to all students in the University. However, some majors must add two hours to their programs if they take this course.) One hour of lecture, three hours of laboratory. 2 q.h.

521. *Typewriting II.* Business letters, outlines, manuscript writing, and business reports. One hour of lecture, three hours of lab. Prereq.: BET 520 or equivalent. 2 q.h.

522. *Typewriting III.* Advanced typing problems and machine transcription. One hour of lecture, two hours of laboratory. Prereq.: BET 521 or equivalent. 2 q.h.

530. *Introduction to Gregg Shorthand.* Theory of the Gregg shorthand system will be presented along with fundamentals of dictation and transcription. A dictation speed of 60 words a minute should be attained. Students will be required to spend a minimum of three additional hours per week in open student-monitored lab. Four hours of lecture. Prereq.: BET 505 or equivalent. 4 q.h.

534. *Alphabetic Shorthand I.* Principles of shorthand based on the English alphabet, and development of a speed of 60 words a minute on business letters. Prereq.: BET 505 or equivalent. 4 q.h.

535. *Machine Shorthand I.* Learning the theory of machine shorthand. Prereq.: BET 505 or equivalent. 3 q.h.

536. *Machine Shorthand II.* Review of theory with emphasis on dictation speed and transcription. A speed of 60-80 words a minute should be attained. Prereq.: BET 521 and 535. 3 q.h.

537. *Machine Shorthand III.* Emphasis on dictation speed and transcription. A dictation speed of 80-100 words a minute should be attained. Prereq.: BET 536. 3 q.h.

538. *Machine Shorthand IV.* Emphasis on dictation speed and transcription. A dictation speed of 120 words a minute should be attained. Prereq.: BET 537. 3 q.h.

539. *Alphabetic Shorthand II.* Reinforcement of transcription and dictation practices. A dictation speed of 90 words a minute should be attained by the completion of this course. Students will be required to spend as many additional shorthand lab hours per week as necessary in open student-monitored lab to attain this speed. Four hours of lecture. Prereq.: BET 534 and BET 521. 4 q.h.

615. *Information Processing Machines.* Includes dictation, transcription, composer, phototypesetter, personal computers, dedicated word processors, offset press, and machines maintenance. Two hours lecture, two hours laboratory. Prereq.: BET 521. 3 q.h.

620. *Typewriting IV.* Advanced typing problems. One hour of lecture, two hours of laboratory. Prereq.: BET 522. 2 q.h.

621. *Typewriting V.* Advanced typing problems. Two hours of lecture. Prereq.: BET 620. 2 q.h.

622. *Typewriting VI.* Advanced specialized typewriting in the technical, medical, legal, or executive office. Prereq.: BET 621 or consent of instructor. 2 q.h.

630. *Shorthand II.* Beginning transcription and dictation. A dictation speed of 80 words a minute should be attained. Students must spend an additional three hours per week in open student-monitored lab. Four hours of lecture. Prereq.: BET 521 and BET 530 or equivalent. 4 q.h.

631. *Shorthand III.* Emphasis on dictation speed and transcription. A dictation speed of 100 words a minute should be attained. Students must spend an additional three hours per week in individualized lab. Prereq.: BET 630 or equivalent. 4 q.h.

635. *Machine Shorthand V.* Emphasis on dictation speed and transcription. A dictation speed of 140 words a minute should be attained. Prereq.: BET 538. 3 q.h.

636. *Machine Shorthand VI.* Emphasis on dictation speed and transcription. A dictation speed of 160 words a minute should be attained. Prereq.: BET 635. 3 q.h.

637. *Machine Shorthand VII.* Emphasis on dictation speed and transcription. A dictation speed of 175 words a minute should be attained. Prereq.: BET 636. 3 q.h.

638. *Machine Shorthand VIII.* Emphasis on dictation speed and transcription. A speed of 200-225 words a minute should be attained for competency in job level skills. Prereq.: BET 637. 3 q.h.

640. *Concepts of Word Processing.* Fundamentals of word processing: feasibility study, equipment selection, center design, employee selection, training and motivation, interdepartmental relationships of work flow, and forms design and control. 4 q.h.

641. *Magnetic Media.* Intensive study and operation of automatic keyboards in word processing center. Recording, logging, proofreading, and temporary and permanent revisions of word processing. Applications must be mastered on each piece of hardware. Prereq.: BET 615. 3 q.h.

642. *Advanced Applications in Magnetic Media.* Issues in information processing and related technologies are discussed and explored. Specialized industry applications on text editing typewriters, shared logic system, and OCR. Logging, formatting decisions, recording and extensive revisions on legal, medical, financial applications using input from rough drafts and dictation media. 2 hours lecture, 2 hours lab. Prereq.: BET 641 within one year. 3 q.h.

643. *Electronic Files Management.* File structures and design; input and output formats; media selection; storage, safety and security issues; migration techniques, technologies, communication capabilities and user information requirements. Prereq.: BET 510 or BT 500. 3 q.h.

650. *Reprographics.* Equipment use, forms design, cost comparison, copy life, and quality of material. Prereq.: BET 615. 3 q.h.

690. *Court Reporting Practicum.* Supervised courtroom experience. Student will take testimony as recorded by court reporter and transcribe. One hour seminar, and ten hours of courtroom dictation per week. Prereq.: BET 638 and dictation proficiency of 225 wpm. 6 q.h.

Upper Division Courses

704. *Business Communications.* The mechanics, psychology, and principles of effective letter and report writing and oral communication in business. Four hours lecture only. Prereq.: English 550, BET 505 or equivalent. 4 q.h.

706. *Business Law.* The role of law in business; basic fundamentals of business law. Prereq.: BET 510 or BT 500. 4 q.h.

710. *Business Computer Systems II.* Advanced concepts and vocabulary of information processing. Topics include office automation, data communications, networking, decision support systems, hardware and software evaluation criteria, and applications utilizing structured BASIC. Prereq.: BET 513. 4 q.h.

718. *Automated Office Systems.* Students organize and operate an information/word processing center utilizing office automation components including decision-making skills and information systems procedures. Prereq.: BET 641. 4 q.h.

720. *Organizational Behavior.* A study of interrelationships in business. Topics include: communications, motivation, perception, leadership, and personal dynamics. Prereq.: Sophomore standing or permission of instructor. 4 q.h.

730. *Shorthand IV.* Emphasis is on dictation speed and transcription and refinement of transaction skills. A speed of 120 words a minute should be attained. Students must spend an additional three hours in individualized laboratory. Prereq.: BET 620 and BET 631 or equivalents. 4 q.h.

731. *Specialized Dictation.* Dictation and transcription in specialized fields: law, medicine, etc. Includes machine transcription. Four hours lecture only. Open student-monitored lab. Prereq.: BET 539 or 631, BET 620, or permission of instructor. 4 q.h.

740. *Records Management.* Includes electronic filing, micrographics, information management and interactive processing. Prereq.: BET 710 or permission of instructor. 3 q.h.

760. *Office Work Experience for Teacher Certification.* To give Business Education students the opportunity to earn work experience hours to apply toward the one-year requirement for vocational certification. Students will work 200 hours in a supervised situation during the quarter. The course may be taken twice for a maximum of 400 work-experience hours. Prereq.: Educ 501 and BET 522. 3 q.h.

762. *Independent Study for Teacher Certification.* To give Business Education students the opportunity to earn work experience hours to apply toward the one-year requirement for vocational certification. Each quarter hour of credit is equivalent to 125 work-experience hours, with a maximum of 500 work-experience hours for this course. Credit hours will be dependent upon the complexity of the study undertaken and the course may be repeated for a maximum of 4 quarter hours' credit. Prereq.: Junior standing. 1-4 q.h.

805. *Office Practicum.* Terminal course for refinement of secretarial skills and techniques in simulated office procedures. Prereq.: BET 615 and 620. 4 q.h.

810. *Techniques in Teaching Typewriting.* Includes demonstration and practice of techniques in teaching typewriting, with emphasis on the psychology of skill development and currently accepted theories. Prereq.: Junior standing and BET 522. 2 q.h.

820. *Techniques of Office Simulation Procedures.* Prepares students to teach in an office simulation environment. The student will participate in a simulation package. Prospective teachers gain insight into problems encountered by students during simulation exercises. Prereq.: Educ. 704. (Offered as needed) 4 q.h.

826. *Teaching Intensive and Cooperative Office Education.* Organization, administration, implementation, and evaluation of Intensive and Cooperative Office Education programs at the secondary and adult education levels. Selection, instruction, curriculum, and placement of vocational students. Also listed as ED 826. Prereq.: ED 706 and 706L. 4 q.h.

830. *Techniques of Teaching Shorthand.* Examines research in methods and techniques of teaching shorthand and its related areas. Includes techniques necessary for dictation, and criteria for transcription evaluation. Prereq.: Junior standing and BET 630. 2 q.h.

831. *Alternate Shorthand Systems.* The fundamentals of Century 21, notehand, and other kinds of shorthand and how they differ from Gregg shorthand. Intended for business education majors and graduate students. Three hours lecture only. Prereq.: Junior Standing and BET 630. 3 q.h.

860. *Principles and Problems of Business Education.* The principles underlying the complete area of business education and its sub-areas: including such topics as nature, purposes, history and development, curriculum, educational levels, materials, equipment, administration and supervision standards, evaluation, guidance, public relations, job placement, research, teacher qualifications, legislation, and cooperation with business. Prereq.: Educ. 704 or graduate standing. 3 q.h.

Business Technology

Lower Division Courses

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 business and industry with discussions of legal, societal, and environmental factors related to overall operational success. 4 q.h.

501. *Introduction to Transportation.* A survey course on the development of all modes of transportation. Includes location analysis, warehousing, inventory management, and materials handling. Analysis of the role of transportation in the national and international economic development. 4 q.h.

502. *Fundamentals of Occupational Safety.* An overview of the broad concept of safety to provide a proper foundation for understanding the different philosophies of and approaches to safety management. Analysis of providing a safe place of employment with discussions of current federal, state, and local laws and regulations; total loss-control approaches, operational-error approaches, system safety approaches, and psychological and societal implications. 4 q.h.

510. *Real Estate Principles and Practices.* Introduction to real estate as a profession, stressing essential principles and practices, and the view of its legal, physical and economic characteristics. Particular attention is given to license law. Provides foundation for further study and for licensure. 3 q.h.

511. *Real Estate Problems.* Transactions encountered in the profession of real estate: topics include proration of taxes, area and volume appraising, mortgage amortization, and closing statements. Prereq.: Mathematics 506. 3 q.h.

512. *Concepts of Real Estate Listing.* Concepts of listing and selling approach with emphasis on a customer-oriented, problem-solving, need-satisfying theory of selling and listing. Two hours of lecture and three hours of laboratory a week. Prereq.: BT 510. 3 q.h.

530. *Introduction to Advertising.* Introduction to layouts, copywriting, and production of the advertising message. Includes advertising media, marketing research, statistics, management functions, and government regulations. Prereq.: BT 500 or concurrent with BT 500. 4 q.h.

533. *Fundamentals of Public Relations.* Introduction to public relations — its development, definitions, practice and tools. Prereq.: BT 500. 4 q.h.

540. *Principles of Marketing.* Introduction to marketing's role in society and within the firm; an overview of marketing strategy and planning. Includes international markets, forecasting targets, market potential, and sales. Prereq.: BT 500 or concurrent with BT 500. 4 q.h.

541. *Sales Principles.* Overview of the selling function and its role in marketing. Application of the selling process and sales psychology. Prereq.: BT 500 or concurrent with BT 500. 4 q.h.

560. *Business Management Technology.* Concepts and methods in the general management of business enterprises. The influence of size, type and business purpose on management principles and practices. Prereq.: BT 500 or concurrent with BT 500. 4 q.h.

580. *Elementary Accounting Tech. I.* Basic principles, concepts, and terminology of accounting for assets, liabilities, and owner's equity. 4 q.h.

581. *Elementary Accounting Tech. II.* Basic principles applied to partnership and corporation. Includes cost relationships, statement analysis, and special reports. Prereq.: BT 580. 4 q.h.

582. *Elementary Accounting Tech. III.* Extensive treatments of inventory, depreciation, cash proof journal, payroll. Prereq.: BT 581. 4 q.h.

586. *Financial Management.* Financial planning, problem analysis, capital budgeting, management of short and long-term financial assets. Prereq.: BT 582. 4 q.h.

603. *Real Estate Brokerage.* A survey of the principles underlying management functions of planning, organizing, staffing, directing and controlling a brokerage office, training and retention of sales personnel, reading, discussion, and research topics. Prereq.: BT 510. 3 q.h.

604. *Real Estate Appraisal I.* The intricacies of real estate appraisals, with emphasis on the theory of value, the service orientation for real estate sales, and the appraisal function as a tool relative to residential and commercial real estate sales and brokerage operations. Prereq.: BT 510. 3 q.h.

610. *Real Estate Law.* Areas of law needed by real estate personnel; including the law of agency as applied to real estate brokers and salesmen, law of fixtures, estates (including leases), conveyancing of real estate, and license law of the state of Ohio, zoning, cooperatives, and condominiums. 3 q.h.

611. *Real Estate Finance.* A study of instruments, financial institutions, mortgage market, and procedures involved in financing real estate, as well as the nature and characteristics of mortgage loans. Course content follows guidelines from the Ohio Real Estate Commission. Prereq.: BT 510 and BT 610. 3 q.h.

620. *Special Topics in Real Estate.* A seminar-type course as a "capstone" to review, coordinate, and synthesize the subject matter of all the prescribed real estate courses, and/or to expand certain areas where necessary. The student is required to demonstrate his/her knowledge of real estate by preparing a term paper presentation on a particular research topic. Prereq.: BT 603. 3 q.h.

630. *Advertising Copywriting.* Examination of advertising appeals and application to creative problems in advertising copywriting. Prereq.: BT 530. 4 q.h.

631. *Advertising Layout.* Introduction to visualization and layout. Practical experience in preparing layouts for printed media, direct mail, outdoor advertising, and broadcast media. Prereq.: BT 530. 4 q.h.

632. *Media Planning and Buying.* Techniques of planning and executing local, regional, and national advertising campaigns. Topics include syndicated media research, rate card structures, and distribution of media. Prereq.: BT 530. 4 q.h.

633. *Retail Advertising.* Preparation of retail advertising for a variety of media. Includes development of store image, advertising planning and direct mail advertising. Prereq.: BT 530. 4 q.h.

635. *Visual Presentation.* The principles involved in interior, industrial, and window display of merchandise; organization, functions, and management of display departments, and their importance and placement in both retail and industrial settings. Prereq.: BT 530. 3 q.h.

637. *Radio and TV Advertising.* Study of radio and television as advertising media. Selecting stations, times, approaches, preparation and production of a variety of commercials. Prereq.: BT 530. 4 q.h.

640. *Warehousing and Traffic Management.* Examination of transportation, warehousing, materials handling, containerization, inventory control, purchasing, and warehouse location. Prereq.: BT 540. 4 q.h.

641. *Retail Merchandising.* Marketing functions as they relate to retail businesses. Includes types of retail outlets, organizational charts, systems and controls used, store location and layout. Prereq.: BT 540. 4 q.h.

642. *Industrial Merchandising.* Marketing functions as they relate to industrial organizations. Includes pricing, marketing channels, legal controls and planning. Prereq.: BT 540. 4 q.h.

643. *Purchasing.* "Marketing in reverse," including buying quantity, inspection and quality control, and sources and assurance of supply. Prereq.: BT 540. 4 q.h.

644. *Consumer Behavior.* Analysis of buyer behavior from the viewpoint of the seller. Techniques used to influence institutional buyers, industrial buyers, and consumers. Prereq.: BT 540. 4 q.h.

648. *Sales Management.* Procedures and techniques necessary to manage the sales force, including recruitment, orientation, compensation, supervision, and organization. Prereq.: BT 541. 4 q.h.

660. *Personnel Practices.* Principles, policies, and practices in administering the functions of recruiting, selecting, training, compensating, and appraising the human resources of organizations. Prereq.: BT 560. 4 q.h.

662. *Operations and Production Management.* Management concepts used to manage the resources required to produce the products or services provided by an organization. Prereq.: BT 560. 4 q.h.

663. *Office Management.* Principles and practices for effective office systems. Includes integrated office systems, alternative office designs, information management, and change techniques. Prereq.: BT 560 or BET 640. 4 q.h.

667. *Small Business Management.* Management functions as related to starting and successful operations of small enterprises. Prereq.: BT 560. 4 q.h.

669. *Case Problems in Management.* Analysis of case material for the purpose of developing procedures for solving management problems. Prereq.: BT 540, BT 560, BT 586, BT 660 and BT 662. 4 q.h.

680. *Accounting Analysis.* Income determination, current asset and current liabilities valuation. Prereq.: BT 582. 4 q.h.

681. *Accounting Systems for Small Businesses.* Spreadsheet analysis and integrated accounting systems. Applications on microcomputers. Prereq.: BT 680. 4 q.h.

683. *Cost Accounting.* Estimating, planning and controlling cost processes. Includes standards, analysis of variances, cost and profit selection, product pricing, budgets, distribution, and control. Prereq.: BT 560 and 582. 4 q.h.

684. *Tax Accounting.* Application of current federal tax law. Also includes federal, state, and local tax treatments. Prereq.: BT 581. 4 q.h.

685. *Nonprofit Accounting.* Concepts and reporting practices of non-profit organizations. Prereq.: BT 582. 4 q.h.

698. *Special Topics.* An in-depth study of areas of accounting, advertising, management or marketing. Topics will vary each quarter. May be repeated for different topics. Prereq.: Sophomore standing. 1-4 q.h.

699. *Internship.* Supervised internship in a cooperating selected field of your major area of specialization. Practical application of classroom theory. Prereq.: minimum of 2.50 GPA, sophomore standing and permission of faculty committee. Also student will work seven hours per week at an approved business location for one quarter hour credit. 1-4 q.h.

Labor Studies Technology

Lower Division Courses

501. *Introduction to Organized Labor.* An overview of the labor studies program designed to introduce the student to the many facets of the labor movement. 4 q.h.

502. *History of the Labor Movement.* Historical review of the labor movement. Origin of crafts and guilds, rise of industrial unionism, struggle for political

effectiveness, and labor's civic responsibilities. Listed also as History 502. 4 q.h.

510. *Union Leadership Skills.* An introduction to basic leadership skills with emphasis on human relations, motivation, communication skills, decision-making, problem-solving, parliamentary procedure. 4 q.h.

515. *Labor Law.* A preliminary study of the legal agencies of government as they relate to the labor movement. Federal and state labor law, statutory and common, and how it applies to unions, employees, and employers. Prereq.: LS 501 or relevant field experience. 4 q.h.

520. *Union Democracy.* An introduction to the membership rights under present law and the protection of those rights with emphasis on various union structures, constitutions, trusteeships, disciplinary procedures, and fair representation claims. 4 q.h.

530. *Negotiations.* Review of the background of collective bargaining, bargaining goals (union and management); legal basis; wages — prices — profits — productivity; preparation of collective bargaining proposals, responsibilities of the parties in the bargaining process; strike procedures in bargaining. Prereq.: LS 501 or relevant field experience. 4 q.h.

610. *Administration of Unions.* A general study of the characteristics of democratic leadership; jurisdictional lines, finances; administration (local, international, elections, constitutional conventions, membership); checks and balances; federations; political action. Prereq.: LS 501 or permission of instructor. 4 q.h.

620. *Contract Administration.* Study of contract content: fringe-benefit and non-fringe areas; working conditions; training local union representatives to administer the contract; human relations at the workplace; fair representation; the grievance procedure and its function. Prereq.: LS 515. 4 q.h.

630. *The Grievance Procedure.* The grievance procedure as a part of collective bargaining; fair representation; skills required in grievance handling; practice in grievance-writing; arguing the case at lower, intermediate, and arbitration levels. Prereq.: LS 515. 4 q.h.

640. *Labor Studies Seminar.* Study of selected issues and problems on the basis of interest and need. May be repeated for a maximum of 12 q.h. Prereq.: LS 501 or permission of instructor. 4 q.h.

CURRICULUMS

The following curriculums lead to the Associate in Applied Business degree except for the Labor Studies Technology curriculum which leads to the Associate in Labor Studies degree. All electives must be approved in advance by the department chairman or a BE & T advisor.

BUSINESS TECHNOLOGY

Business Technology curriculums include the following:

Accounting Technology
Business Management Technology
  Small Business Management
Marketing Technology
  Graphics
  Real Estate

General University requirements for all Business Technology curriculums:

	Cr. Hrs.
English 550, 551, Basic Composition I and II	8
Psych. 560, General Psychology	4
Econ.. 520, Principles of Econ. I	4
HPE 590, Health Education	3
Math 642, Applied Finite Math	5
Totol Credit Hours	**24**

ACCOUNTING TECHNOLOGY

	Cr. Hrs.
BT 500 Survey of American Business	4
BT 560 Business Management Technology	4
BT 580 Elementary Accounting Technology I	4
BT 581 Elementary Accounting Technology II	4
BT 582 Elementary Accounting Technology III	4
BT 586 Financial Management	4
BT 680 Accounting Analysis	4
BT 681 Accounting Systems for Small Businesses	4
BT 683 Cost Accounting	4
BT 684 Tax Accounting	4
BT 685 Nonprofit Accounting	4
BET 513 Business Machines	4
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Introduction to Data Processing	4
BET 720 Organizational Behavior	4
BET 740 Records Management	3
ECON 621 Principles of Economics II	3
ECON 622 Principles of Economics III	3
SPCH 652 Business & Professional Speech	3
Total Credit Hours	**100**

BUSINESS MANAGEMENT TECHNOLOGY

	Cr. Hrs.
BT 500 Survey of American Business	4
BT 540 Principles of Marketing	4
BT 560 Business Management Technology	4
BT 580 Elementary Accounting Technology I	4
BT 581 Elementary Accounting Technology II	4
BT 582 Elementary Accounting Technology III	4
BT 586 Financial Management	4
BT 660 Personnel Practices	4
BT 662 Production Management	4
BT 669 Case Problems in Management	4

BT 683 Cost Accounting 4
BT Approved Elective 4
BET 513 Business Machines 4
BET 704 Business Communications 4
BET 706 Business Law 4
BET 710 Introduction to Data Processing 4
BET 720 Organizational Behavior 4
ECON 621 Principles of Economics II 3
ECON 622 Principles of Economics III 3
LS 501 Introduction to Organized Labor 4

Total Credit Hours 102

Alternate requirements for Small Business Concentration:

BT 530 Introduction to Advertising instead of BT 662 Production Management
BT 667 Small Business Management instead of BT 683 Cost Accounting
(LS 501 not required)

Total Credit Hours 98

MARKETING TECHNOLOGY

	Cr. Hrs.
BT 500 Survey of American Business	4
BT 530 Introduction to Advertising	4
BT 540 Principles of Marketing	4
BT 541 Sales Principles	4
BT 580 Elementary Accounting Technology I	4
BT 581 Elementary Accounting Technology II	4
BT 640 Warehousing and Traffic Management	4
BT 641 Retail Merchandising *or*	
BT 642 Industrial Merchandising	4
BT 643 Purchasing	4
BT 644 Consumer Behavior	4
BT Approved Elective	4
BET 513 Business Machines	4
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Introduction to Data Processing	4
BET 720 Organizational Behavior	4
ECON 621 Principles of Economics II	3
ECON 622 Principles of Economics II	3
LS 501 Introduction to Organized Labor	4
Total Credit Hours	**98**

GRAPHICS TECHNOLOGY

	Cr. Hrs.
ART 501 Drawing 1	3
ART 510 Color and Design I	4
ART 612 Silk Screen	4
ART 623 Graphic Design I	3
ART 624 Graphic Design II	3
ART 625 Graphic Design III	3
ART 727 Graphic Design IV	3
ART 728 Graphic Design V	3
ART 780 Photography I	4
BT 500 Survey of American Business	4
BT 530 Introduction to Advertising	4
BT 540 Principles of Marketing	4
BT 541 Sales Principles	4
Bt 580 Elementary Accounting Technology I	4
BT 581 Elementary Accounting Technology II	4
BT 630 Advertising Copywriting	4
BT 631 Advertising Layout	4
Bt 635 Visual Presentation	3
BT 644 Consumer Behavior	4
ECON 621 Principles of Economics II	3
Total Credit Hours	**96**

REAL ESTATE

Students wishing to have a concentration area in Real Estate may substitute the following courses for BT 640 and BT 641 in the Marketing Technology curiculum:

BT 510 Real Estate Principles and Practices
BT 610 Real Estate Law

LABOR STUDIES

General University requirements for Labor Studies Technology:

	Cr. Hrs.
English 550, 551, Basic Coomposition I & II	8
Psych 560, General Psychology	4
HPE 590, Health Education	3
Science elective	4
Humanities elective	4
Math elective	5
Approved elective	4
	32

Other Requirements for Labor Studies Technology;

	Cr. Hrs.
BT 502 Fundamentals of Occupational Safety	4
BT 560 Business Management Technology	4
BT 580 Elementary Accounting Technology I	4
ECON 520 Principles of Economics I	4
ECON 621 Principles of Economics II	3
ECON 622 Principles of Economics III	3
LS 501 Introduction to Organized Labor	4
LS 502 History of the Labor Movement	4
LS 510 Union Leadership Skills	4
LS 515 Labor Law	4
LS 520 Union Democracy	4
LS 530 Negotiations	4
LS 610 Administration of Unions	4
LS 620 Contract Administration	4
LS 630 Grievance Procedure	4
LS 640 Labor Studies Seminar	4
SPCH 652 Business & Professional Speech	3
Technical Elective	4
Total Credit Hours	**101**

SECRETARIAL STUDIES PROGRAM

General University requirements for all associate degree secretarial curriculums:

	Cr. Hrs.
English 550, 551 Basic Composition I, II	8
PSYCH 560 General Psychology	4
ECON 520 Principles of Economics I*	4
HPE 590 Health Education	3
Math 506 Math of Business**	5
	24

EXECUTIVE SECRETARIAL STUDIES

BT 580 Elementary Accounting Technology I	4
BT Electives	8
BET 510 Office Procedures	4
BET 513 Business Machines	4
BET 522 Typewriting III	2
BET 615 Information Processing Machines	3
BET 620 Typewriting IV	2
BET 621 Typewriting V	2
BET 622 Typewriting VI	2
BET 630 Shorthand II	4
BET 631 Shorthand III	4
BET 641 Magnetic Media	3
BET 643 Elec. Files Management	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Introduction to Data Processing	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 731 Specialized Dictation	4
BET 740 Records Management	3
BET 805 Office Practicum	4
Total Credit Hours	**100**

INFORMATION/WORD PROCESSING

	Cr. Hrs.
BT 500 Survey of American Business	4
BT 560 Business Management Technology	4
BT 580 Elementary Accounting Technology I	4
BT 663 Office Management	4
BET 506 Word Processing Skills	3
BET 510 Office Procedures	4
BET 513 Business Machines	4
BET 522 Typewriting III	2
BET 615 Information Processing Machines	3
BET 620 Typewriting IV	2
BET 621 Typewriting V	2
BET 622 Typewriting VI	2
BET 640 Concepts of Word Processing	4
BET 641 Magnetic Media	3
BET 642 Advanced Applications in Magnetic Media	3
BET 650 Reprographics	3
BET 704 Business Communications	4
BET 710 Introduction to Data Processing	4
BET 718 Automated Office Systems	4
BET 720 organizational Behavior	4
BET 731 Specialized Dictation	4
BET 740 Records Management	3
BET 805 Office Practicum	4
Total Credit Hours	**102**

LEGAL SECRETARIAL STUDIES

	Cr. Hrs.
BT 580 Elementary Accounting Technology I	4
BET 510 Office Procedures	4
BET 513 Business Machines	4
BET 522 Typewriting III	2
BET 615 Information Processing Machines	3
BET 620 Typewriting IV	2
BET 621 Typewriting V	2
Bet 622 Typewriting VI	2
BET 630 Shorthand II	4
BET 631 Shorthand III	4
BET 641 Magnetic Media	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Introduction to Data Proccessing	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 731 Specialized Dictation	4
BET 805 Office Practicum	4
CJ 500 Introduction to Criminal Justice	4
CJ 621 Evidence	4
CJ 720 Legal Terminalogy & Research	4
SPCH 652 Business & Professional Speech	3
Total Credit Hours	**101**

MEDICAL SECRETARIAL STUDIES

	Cr. Hrs
BT 580 Elementary Accounting Technology	4
BET 510 Office Procedures	4
BET 513 Business Machines	4
BET 522 Typewriting III	2
BET 615 Information Processing Machines	3
BET 620 Typewriting IV	2
BET 621 Typewriting V	2
BET 622 Typewriting VI	2
BET 630 Shorthand II	4
BET 641 Magnetic Media	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Introduction to Data Processing	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 731 Specialized Dictation	4
BET 805 Office Practicum	4
MA 501 Medical Terminalogy	4
MA 502 Law & Ethics	4

*Students cconcentrating in Medical Secretarial Studies will take History 699, History of Science & Medicine, instead of Econ. 520, Principles of Econ. I.

**Students concentrating in Office Information Systems Management will take Math 642, Applied Finite Math, instead of Math 506.

MA 600 Medical Records & Insurance Forms . . . 3
MA 610 Paramedical Patient Care I 4
SPCH 652 Business & Professional Speech 3

Total Credit Hours 100

OFFCE INFORMATION SYSTEMS MANAGEMENT

	Cr. Hrs.
BT 500 Survey of American Business	4
BT 560 Business Management Technology	4
BT 580 Elementary Accounting Technology I	4
BT 581 Elementary Accounting Technology II	4
BT 582 Elementary Accounting Technology III	4
BT 586 Financial Management	4
BT 660 Personnel Practices	4
BT 663 Office Management	4
BET 513 Business Machines	4
BET 522 Typewriting III	2
BET 615 Information Processing Machines	3
BET 640 Concepts of Word Processing	4
BET 641 Magnetic Media	3
BET 642 Advanced Applications in Magnetic Media	3
BET 643 Elec. Files Management	3
BET 704 Business Communications	4
BET 710 Introduction to Data Processing	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 740 Records Management	3
SPCH 652 Business & Professional Speech	3
SPCH 756 Principles of Effective Interviewing	4
Total Credit Hours	**104**

COURT/CONFERENCE REPORTING

General University requirements:

	Cr. Hrs.
English 550, 551 Basic Composition I and II	8
Political Science Elective	4
HPE 590 Health Education	3
Social Studies Elective	3
Science/Math Elective	5
	23

Other requirements:

	Cr. Hrs.
BT 500 Survey of American Business	4
BET 510 Office Procedures	4
BET 522 Typewriting III	2
BET 535 Machine Shorthand I	3
BET 536 Machine Shorthand II	3
BET 537 Machine Shorthand III	3
BET 538 Machine Shorthand IV	3
BET 615 Information Processing Machines	3
BET 620 Typewriting IV	2
BET 621 Typewriting V	2
BET 622 Typewriting VI	2
BET 635 Machine Shorthand V	3
BET 636 Machine Shorthand VI	3
BET 637 Machine Shorthand VII	3
BET 638 Machine Shorthand VIII	3
BET 690 Court Reporting Practicum	6
BET 704 Business Communications	4
BET 706 Business Law	4
CJ 602 American Criminal Courts	4
CJ 621 Evidence	4
CJ 720 Legal Terminology & Research	4
MA 501 Medical Terminology	4
Total Credit Hours	**96**

DEPARTMENT OF CRIMINAL JUSTICE

Professors Lateef and Swank; Associate Professors Cummings (Chairman), Pierce, Stanko and Waldron.

Youngstown State University offers two undergraduate programs in Criminal Justice: a two-year program in Police Science Technology leading to the degree Associate in Applied Science and a four-year program leading to the degree Bachelor of Science in Applied Science in Criminal Justice. The four-year degree is built upon a core-track concept with emphasis (track) areas in Law Enforcement Administration, Corrections, Legal Processes in Justice and Security/Safety (Loss Prevention) Administration.

The department also offers minors in three emphasis areas: general criminal justice, law enforcement administration, and corrections.

A certificate in private security and public safety is also available. A departmental advisor should be consulted about the requirements.

In each undergraduate area and certificate program, a grade of C or better must be received in each required Criminal Justice course.

A graduate program leading to the Master of Science degree in Criminal Justice with emphasis in police administration, correctional administration, and program planning and evaluation is also available. Refer to the Graduate School catalog for details.

ASSOCIATE IN APPLIED SCIENCE DEGREE

The Police Science Technology program is considered appropriate for persons preparing for employment in most municipal, state, and private law enforcement agencies. The program consists of 95 quarter hours, 16 of which are in the subjects listed below. Transfer students must take at least 46 quarter hours of Criminal Justice coursework at Youngstown State University. Students who have satisfactorily completed the Police Science Technology program may enter the four-year program if they so desire. The Police Science Technology curriculum is given below.

BACHELOR OF SCIENCE IN APPLIED SCIENCE DEGREE

All Bachelor of Science in Applied Science students must complete a minimum of 56 quarter hours of criminal justice courses of which 20 quarter hours or more must be taken from upper division courses.

Transfer students must complete a minimum of 20 hours in criminal justice courses at YSU. All majors must complete the core requirements: CJ 500, 601, 602, 603, 630, 712, 715, 719 plus one emphasis area. Each major must also complete the courses required in the emphasis area selected.

The purpose of each emphasis area is as follows:

The program in Law Enforcement Administration is designed for persons preparing for employment in municipal, state, and private agencies; federal law enforcement agencies; administrative postitions in municipal or state agencies; or as instructors in police education programs. Courses required: CJ 615, 615L, 622 and 870.

The program in Corrections is offered for students preparing for a career in probation, parole, or institutional services with either adults or juveniles. Courses required: CJ 701, 702, 703 and 875.

The program in Legal Processes in Justice is designed for students preparing for law school, court administration, para-legal work or legal research positions. Courses required: CJ 621, 622, 720, 825 and and 890.

The program in Security/Safety (Loss Prevention) Administration is offered to students preparing for a career in private security or the protection of assetss in corporate, retail, or industrial settings. Courses required: CJ 648, 700, 748 and 848.

Minors — A minor consisting of 21 hours must also be selected. The student must choose a minor from a department other than Criminal Justice. The general catalog and departmental advisors should be consulted for minor requirements.

In addition to the requirements for a minimum of 45 hours of C grades or better in the major, a grade of C or better must be received in each required Criminal Justice course in order to satisfy the departmental requirements for the degree.

In addition to the requirements for a minimum of 45 hours of C grades or better in the major, a grade of C or better must be received in each required Criminal Justice course in order to satisfy the departmental requirement.

Lower Division Courses

500. *Introduction to Criminal Justice.* An overview of the American criminal justice process with emphasis upon its constitutional foundations, its constitutional limits, and the rights of the individual from arrest through sentencing and release. 4 q.h.

601. *Law Enforcement and Investigatory Concepts.* An examination of law enforcement responsibility in the United States. Topics include historical foundation of federal, state and local enforcement agencies, organizational and jurisdictional limitations, law enforcement philosophy and role in a democratic society, contemporary issues including technological and social impact on law enforcement and basic investigatory concepts. Prereq.: CJ 500. 4 q.h.

602. *American Criminal Courts.* The structure and function of criminal courts in the American society, perceptions of national commissions, organization, administration, and caseflow relationships with appropriate social agencies. Prereq.: CJ 500 or permission of the instructor. 4 q.h.

603. *Corrections in America.* Development and description of the American correctional systems' history and philosophy: the constitutional foundations of its control, and the rights of those within it. An overview of treatment approaches. Prereq.: CJ 500. 4 q.h.

615. *Forensic Science Investigation.* Scientific study of the significance of the physical materials that are associated with specific acts or conditions in investigative situations, qualitative and quantitative analytical concepts in the examination of the physical evidence, criminal investigative and identification techniques. Prereq.: CJ 601. 4 q.h.

615L. *Forensic Science in Investigation Laboratory.* Techniques and procedures in crime scene processing with special emphasis upon legal and scientific aspects of the physical evidence. Experiments concerning the examination of the physical and chemical properties of physical evidence such as body fluids, hair fibers, paints, toxic materials and physical impressions, etc. Two laboratory classes per week of 3 hours each. Prereq.: Taken concurrently with CJ 615. 2 q.h.

621. *Evidence.* The admissibility of evidence, the hearsay rule and its exceptions, opinion evidence, circumstantial evidence, documentary evidence, presumptions, corpus delicti, and evidentiary privileges. Prereq.: CJ 500. 4 q.h.

622. *Criminal Procedure.* Legal and practical applications of the laws of arrest, criminal procedure, search and seizure, court structures, and federal civil rights. Prereq.: CJ 602. 4 q.h.

630. *Criminology.* Study of the social context of crime in American society, including a review of historical theories offered in explanation of criminal behavior. Identical with Sociology 630. 4 q.h.

646. *Law Enforcement Techniques.* Legal and practical aspects of lineups and eyewitness identification, techniques, defense tactics, police communication. Familiarization with firearms and chemical and nonlethal weapons. Prereq.: CJ 601. 4 q.h.

648. *Introduction to Security.* Basic concepts in private security. Emphasizes the role of the private security officer. 4 q.h.

653. *Traffic Law and Investigation.* Study of traffic laws concerning operator licensing equipment requirements, and vehicle-related offenses; legal considerations and enforcement philosophy; accident investigation techniques, reports and records; evaluation of accident problems and determining offenses involved. Prereq.: CJ 615, 615L. 4 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 the 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. Prereq.: Sociology 500 and Psych. 560. 4 q.h.

670. *Community Intervention Resources.* Community-based resources designed to prevent, control, or rehabilitate the delinquent or adult offender. Prereq.: CJ 500. 4 q.h.

Upper Division Courses

700. *Fire and Safety.* Municipal, industrial, and other fire protection services: fire detection and suppression systems, and special emphasis on fire safety at industrial and commercial locations. 4 q.h.

701. *Probation and Parole.* An examination of the theory and practices of probation and parole with juvenile and adult offenders. Prereq.: CJ 603. 4 q.h.

702. *Institutional Services in Corrections.* Contemporary theory and practice in the administration of juvenile and adult correctional institutions. Prereq.: CJ 603. 4 q.h.

703. *Correctional Case Management.* Theory and techniques of counseling and interviewing the correctional client. Field and clinical situations are simulated to provide experience in interviewing and report writing. Prereq.: CJ 603. 4 q.h.

707. *Criminal Justice Internship.* Observational and participating experiences in an appropriate criminal justice agency under the direction of experienced and qualified personnel. In addition there will be an orientation at the beginning of the quarter and a debriefing during the last week of the quarter. Prereq.: For Corrections majors: CJ 701, 702, 703; for Law Enforcement Administration Majors: CJ 715. File application prior to registration. 4-12 q.h.

710. *Social Statistics I.* Cross-listed with Sociology 701. 4 q.h.

711. *Social Statistics II.* Cross-listed with Sociology 702. 4 q.h.

712. *Criminal Justice Research.* Analysis of the major components of social research, such as selection of research design, sampling, measurement, data collection, and analysis and interpretation of findings, with emphasis on topics related to criminal justice. 4 q.h.

715. *Criminal Justice Management Concepts* Modern criminal justice management theory; organizational behavior, organizational development, personnel management, executive decision making, supervision problems. Prereq.: CJ 601. 4 q.h.

719. *Criminal Law.* Development, theories, and purposes of criminal law; elements of a crime, parties to a crime. Prereq.: CJ 602. 4 q.h.

720. *Legal Terminology and Research.* History, meaning, and usage of terms for legal secretaries, court reporters, and paralegals. Emphasis will be given to the vocabulary of legal research and the vocabulary of legal writing with application to research problems in labor, business real estate, and criminal law. Prereq.: CJ 630 or permission of instructor. 4 q.h.

735. *Juvenile Delinquency.* Social and Psychological factors underlying delinquency; the juvenile court and probation; treatment and preventative measures. Cross-listed with Sociology 735. Prereq.: Sociology 600. 4 q.h.

748. *Commercial and Industrial Security.* Plant protection, merchandising safety and security; credit and insurance investigative procedures. Prereq.: CJ 648. 4 q.h.

749. *Drug Abuse.* Causes and effects of drug abuse. Problems of law enforcement and dangers to public safety caused by drug abuse. Identifications, classification and characteristics of different types of drugs. Impact of drug abuse on American criminal justice system. Prereq.: CJ 601. 4 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.: CJ 615. 4 q.h.

770. *Ohio Criminal Code.* Examination of code, noting construction of statutes, procedural rules, proof required for charges, defenses, basis of criminal liability, and the 11 degrees of offenses, penalties, and criteria for sentencing. Prereq.: CJ 719. 4 q.h.

776 *American Judicial Process.* Identical with Political Science 702. 3 q.h.

777. *American Constitutional Law.* Identical with Political Science 703. 4 q.h.

799. *Directed Individual Study.* The individual study or research of a special problem or issue related to the criminal justice field. Application must be made to the department prior to registration. May be repeated once for a maximum of five quarter hours of credit. Prereq.: Senior standing, 20 hours of criminal justice courses, and approval of instructor. 2-3 q.h.

820. *Prevention and Control of Deviant Behavior.* Criminal behavior viewed as deviation from political, moral, and conduct norms. Forces that produce conformity and of the process whereby certain forms of conduct are officially prescribed and controlled through social intervention. Prereq.: CJ 735. 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 decision, state and federal legislation affecting criminal law. Prereq.: Senior standing. 4 q.h.

826. *Forensic Science and the Criminal Justice System.* A review of the impact of forensic science on the criminal justice system, discussion of future applications, constitutional considerations and the significance of physical evidence. Emphasis is given to management responsibilities with respect to the criminalistics laboratory. Prereq.: Senior standing. 4 q.h.

710. *Social Statistics I.* Cross-listed with Sociology 701. 4 q.h.

836. *Theory of Criminal Behavior.* An analysis of theory and research on epidemiology and etiology of crime. Prereq.: CJ 630. 4 q.h.

848. *Legal and Managerial Aspects of Security.* Emphasis on security standards, policy, and regulation at the state and federal levels as they impact on the security function. Administrative decisions regarding implementation of a security program in view of legal, technological, and behavioral considerations. Applications focus on selected public and private enterprises. Prereq.: CJ 748 or senior standing. 4 q.h.

850. *Contemporary Problems in Criminal Justice.* Lectures on contemporary issues in the criminal justice area. Topics are announced prior to enrollment. Prereq.: Senior standing or permission of instructor. 4 q.h.

870. *Law Enforcement Administration.* Detailed examination of the administration of line and staff services of law enforcement agencies and the role of technology in administration. Prereq.: CJ 715. 4 q.h.

875. *The Juvenile Justice System.* An in-depth analysis of the specialized agencies and procedures developed to deal with problems of juveniles from a historical and philosophical perspective. Consideration is given to the juvenile court, community-based programs, as well as to institutionalization. Prereq.: Senior standing. 4 q.h.

890. *Judicial Administration.* Court management is studied in light of structure, judicial responsibility and the inherent power of the courts. Consideration is given to case flow, case management, automation and judicial staffing. Prereq.: CJ 602 and senior standing or instructor's permission. 4 q.h.

POLICE SCIENCE TECHNOLOGY CURRICULUM

DEPARTMENTAL REQUIREMENTS

	Cr. Hrs.
500 Introduction to Criminal Justice	4
601 Law Enforcement and Investigatory Concepts	4
602 American Criminal Courts	4
615 Forensic Science in Investigation	4
615L Forensic Science in Investigation Laboratory	2
622 Criminal Procedure	4
630 Criminology	4
653 Traffic Law and Investigation	4
665 Human Relations in Criminal Justice	4
719 Criminal Law	4
Any Criminal Justice Electives	8
Minimum Required Hours	**46**

GENERAL DEGREE REQUIREMENTS

	Cr. Hrs.
English:	
550 Basic Composition I	4
Health and Physical Education:	
590 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, Psychology, Sociology, and Black Studies I	16
Science:	
Astronomy, Biology, Chemistry, Geology, or Physics	8
Other:	
*BET 520 Typing I	2
Electives	13
	49
Total Credit Hours	**95**

DEPARTMENT OF ENGINEERING TECHNOLOGY

Professors Barsch (Chairman), Chrobak, Crum, Gardner; Associate Professor Kumar; Assistant Professors Hankey, Wino; Instructors Gaydos, Iyer, Krygowski, Maguire, Messuri, Politzer, and Zupanic.

The Department of Engineering Technology offers "two-plus-two" programs in engineering technology and computer technology. Students in these programs may work toward a two-year associate degree or a four-year bachelor's degree, as they prefer. The programs include both classroom and laboratory experiences which stress the application of established engineering and computer knowledge and methods to the solution of problems. They include study of the sciences

*If taken in high school, waived; but two hours must be added to general elective requirements.

and mathematics necessary to support a technology, as well as study of the methods, processes, skills, and materials used in that technology. The programs are designed to prepare graduates for a cluster of job opportunities in industry. Demands developed by an expanding technology place graduates of these programs in one of the fastest-growing occupational groups in the country.

Associate in Applied Science Degree

The department offers two-year programs in:

Civil Engineering Technology
Computer Technology
Drafting and Design Technology
Electrical Engineering Technology
Mechanical Engineering Technology

Graduates of these programs are awarded the Associate in Applied Science degree and serve as engineering or computer technicians.

Computer technicians serve as computer programmers, associate systems analysts, or operators in both the business and scientific data-processing fields. They may develop, code, and maintain computer programs using any of several high-level computer languages. They assist in the design and development of business systems, computer models, and operating systems.

Engineering technicians function as aides or professional associates in support of scientists and engineers. Their work is in the design, drafting, development, testing, and production phases of engineering projects. Their tasks include laboratory testing, data gathering, evaluation, and instrument calibration. They may perform quality control tests, serve as technical sales representatives, or serve as technical writers in the formulation of specifications or trade manuals.

Drafting and design graduates work with engineers, architects, and technicians in converting ideas, designs, and sketches into workable plans and specifications.

Bachelor of Science in Applied Science Degree

The Civil, Electrical, and Mechanical Engineering Technology programs and the Computer Technology program are based on the "two-plus-two" educational system which provides the student with the flexibility of earning an associate degree or a bachelor's degree according to the student's needs. After completing the requirements of the two-year associate degree, the student may elect to either enter industry or, through an added two years of part-time or full-time study, earn the Bachelor of Science in Applied Science degree. The student's career potential will then have increased to that of an engineering technologist or computer systems analyst.

In some instances technologists are directed by engineering professionals, but those assigned to production frequently work independently. They may develop specifications for materials and methods, serve as production supervisors, or serve as liaison among development, engineering, and production departments. Tasks related to the installation, operation, and maintenance of production machinery are often supervised by technologists.

Based on an evaluation of their work, transfer students who have a related associate degree from a regionally accredited institution will be admitted to the bachelor's degree program at the junior level.

Accreditation

The Civil, Electrical, and Mechanical Engineering Technology associate and bachelor programs are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. Graduates are qualified to sit for the National Institute for Certification in Engineering Technologies (NICET) Part A examination and are exempt from Part B. In many states, Bachelor degree graduates with sufficient work experience are qualified to take the Engineer in Training (EIT) exam and the Professional Engineers (PE) exam.

Certificate Programs

Certificate programs of 45 quarter hours are available in:

Architectural and Construction Technology
Architectural/Mechanical Drafting Technology
Computer Technology
Electrical Power
Electronics
General Industrial Technology
Machine Design
Plant Engineering Technology
Tool Design
Urban Planning Technology

These programs are designed to provide a concentration of technical knowledge in a specific area. Details on these programs are available at the department office.

Admission Requirements

Admission to Computer Technology requires at least two years of high school algebra and one year of geometry with grades of C or better. In addition transfer students must have at least a 2.30 point average.

Admission to Engineering Technology programs requires at least one year of high school algebra and one year of high school geometry with grades of C or better. In addition, transfer students must have at least a 2.3 point average.

Prospective engineering technology students are urged to enroll in the ET 505 course. It is designed to acquaint students with the nature of this career area, and therefore assist prospective students in determining the level of their interest. ET 505 is required of all Engineering Technology majors.

Engineering Technology

505. *Elements of Engineering Technology.* The role of the technician, technologist, and their relationships to the engineer; technical methods as applied to analysis, design, layout and testing; an introduction to BASIC programming on microcomputers; a study of the basic mathematical, scientific, computer, and communicative techniques as applied to the work of engineering technicians. Three hours lecture, three hours laboratory per week. Prereq. or concurrent: Math 512. 4 q.h.

615. *Design Project.* The student undertakes a project designed to utilize principal methods studied in previous courses. The subject of the project will be determined jointly by the student and instructor and developed formally by the student. The course is normally taken during the final stages of the student's program. Prereq.: Consent of instructor. 4 q.h.

Civil Engineering Technology

Professor Crum (Program Coordinator) and Instructor Zupanic.

The Civil Engineering Technology program is developed on the "two-plus-two" system. Students may choose to terminate their formal education after completing two years of study and earning the Associate in Applied Science degree, or they may continue full or part-time to a bachelor's degree.

Associate Degree Program

The associate degree program prepares technicians to support civil engineers in structural design, public works, construction, transportation, and environmental engineering. Most graduates are hired by government agencies, consulting engineers, architects, and contractors.

Bachelor's Degree Program

The bachelor's program in Civil Engineering Technology allows students to increase their potential to that of an engineering technologist and broaden their knowledge in several technical and non-technical areas. The student can also concentrate in urban planning, architecture, construction, or transportation as interests dictate.

604. *Properties and Strength of Materials.* Introduction to the physical and chemical structures of materials and their behavior under load. 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 and three hours of laboratory per week. Prereq.: MET 515, Chemistry 501. (F,SP) 4 q.h.

607. *Solid Mechanics I.* Elementary theory in resistance of solids to external loading. Relationships among load, deformation, stress and strain in tension, compression, torsion, and bending. Prereq.: CET 604, (F,W) 4 q.h.

610. *Structural Analysis I.* Fundamental and systematic determination of loads and deflections in beams, frames, trusses, and arches. Influence diagrams. Practice in analysis of existing structures in area. Three hours lecture, three hours laboratory per week. Prereq. or concurrent: CET 607. (W) 4 q.h.

612. *Structural Design and Drafting.* Design methods in Steel. Familiarization with AISC, CRSI, SJI codes. Selection of members and connections in accordance with manuals and specifications. Design and drafting projects include simple members, connections, and more complex structures. Prereq.: CET 610. (SP) 3 q.h.

612L. *Structural Design and Drafting Laboratory.* Supervised individual on-the-board instruction in design/drafting principles and techniques. Three hours laboratory per week. Must be taken concurrently with CET 612. (SP) 1 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. Prereq.: CET 604. (W) 3 q.h.

615L. *Soil Mechanics Laboratory.* Practice in soil identification and soil properties. Use and care of basic soil testing equipment. Three hours per week. Concurrent with CET 615. (W) 1 q.h.

617 *Construction Methods and Materials.* Methods and planning of construction, estimating, and scheduling of materials, equipment, and labor. Familiarization with building codes. Prereq.: CET 604. (F) 3 q.h.

617L. *Construction Methods and Materials Laboratory.* Physical testing of construction materials: concrete, wood, bituminous materials. Three hours per week. Concurrent with CET 617. (F) 1 q.h.

622. *Advanced Surveying.* Precise surveying instrument and practice. Land and city surveying. Plane coordinate systems in cadastral surveying. Topographic mapping. Prereq.: CE 610. 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.* Analysis of problems in public works. Water supply and waste management and their impact on land use planning. Analysis of water distribution systems, drainage systems, and waste water treatment processes. Prereq.: MET 615, Chem. 501. (SP) 4 q.h.

707. *Solid Mechanics II.* A continuation of CET 607. Practical solutions to more complex structural members and load applications. Emphasis on understanding AISC and CRSI formulas. Prereq.: CET 607 or equivalent. 4 q.h.

710. *Structural Analysis II.* A continuation of CET 610. Emphasis on practical analysis techniques for common building structures. Introduction to classical

approaches to statically indeterminant structures. Three hours lecture, three hours laboratory per week. Prereq.:CET 610 or equivalent. 4 q.h.

712. *Architectural Technology I.* Overall planning and layout techniques. Reading of building and plot plans. Relationships among the planner, architect, engineer, constructor, owner, and pertinent public agencies or governments. Two hours of lecture and four hours laboratory per week. Prereq.: CET 617 or consent of instructor. 4 q.h.

717. *Underground Construction.* Design and construction procedures for foundations, retaining walls, caissons, tunnels and other underground structures. Prereq.: CET 615, 610. 4 q.h.

724. *Public Works Technology.* Technological aspects of public works, emphasizing overall environmental design. Accountability of public works agencies to society in providing services and mobility. Natural resources and waste management will be heavily emphasized. Prereq.: CET 624. 4 q.h.

730. *Transportation Technology.* Application of construction materials and environmental analysis to transportation planning. Principles of traffic system analysis. Collecting and analyzing traffic and travel data. Volume and capacity studies. Signalization. Prereq.: CET 624. 4 q.h.

800. *Building Systems.* The relationship between the environmental and structural systems of building structures, water supply and drainage systems, sanitary systems, heating and air-conditioning systems, electrical and electronic systems, lighting and sound systems, transportation systems, and security systems. Three hours of lecture and three hours of laboratory per week. Prereq.: EET 501. or EET 625 and Junior standing. 4 q.h.

812. *Concrete Design Techniques.* Fundamental design and layout techniques of plain and reinforced concrete foundations, columns and beams. Three hours of lecture and three hours of laboratory a week. Prereq.: CET 612, 707. 4 q.h.

817. *Construction Management.* A continuation of CET 617 with emphasis on planning, estimating, and scheduling. Contracts and specifications. Relationships among architect, builder, engineer, and owner. Field trips to observe the duties of technologists and supervisors in construction. Prereq.: CET 617, 724. 4 q.h.

824. *Environmental Technology.* A course to assist students in preparing for employment as environmental technologists. Emphasis on industrial wastewater management. Laboratory and field environmental testing. Three hours lecture and three hours laboratory per week. Prereq.: CET 724 or Equivalent. 4 q.h.

850. *Computing for Civil Technologists.* Computer solutions to problems in all fields of Civil Engineering Technology. Students will develop programs for various problems with which they are familiar in the fields of solid mechanics and fluid mechanics, structural analysis & design, soil mechanics & foundations, environmental analysis & planning and construction management. Three hours lecture and three hours laboratory per week. Prereq.: Completion of six upper division CET major courses including CET 730 and CET 817. 4 q.h.

ASSOCIATE IN APPLIED SCIENCE DEGREE

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Math. 512 Intermediate Algebra	4
Social Studies Elective*	3
ET 505 Elements of Engineering Technology	4
Chem. 501 Survey of Chemistry	4
Chem. 510 Survey of Chemistry Lab	1
	16

SECOND QUARTER

	Cr. Hrs.
Math 520 Trigonometry	5
Engl. 550 Basic Comp. I	4
Soc. Sc. 502 Intro. to Economics	3
MET 515 Mechanics I	4
	16

THIRD QUARTER

	Cr. Hrs.
Math. 570 Applied Math I	5
MET 516 Mechanics II	4
CET 604 Properties & Strength of Materials	4
D & D 602 Civil & Architect. Drafting	4
	17

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
MET 615 Fluid Mechanics	3
MET 615L Fluid Mechanics Lab	1
CET 607 Solid Mechanics I	4
CET 617 Construction Methods and Materials	3
CET 617L Construction Methods and Materials Lab	1
CE 610 Surveying I	4
CE 610L Surveying I Lab	1
	17

FIFTH QUARTER

	Cr. Hrs.
CET 610 Structural Analysis I	4
CET 615 Soil Mechanics	3
CET 615L Soil Mechanics Lab	1
Speech 652 Business & Professional Speech	3
H&PE 590 Health Education	3
Phys. 502 Fundamentals of Physics II	3
Phys. 502L Fundamentals of Physics II Lab	1
	18

SIXTH QUARTER

	Cr. Hrs.
Social Studies Elective*	3
CET 612 Structural Design and Drafting	3
CET 612L Structural Design and Drafting Lab	1
CET 624 Environmental Analysis	4
CE 711 Surveying II	3
CE 711L Surveying II Lab	1
	15
Total Credit Hours	**99**

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

	Cr. Hrs.
Engl. 551 Basic Composition II	4
Math. 670 Applied Math. II	4
EET 625 Electrical Systems I	4
CET 707 Solid Mechanics II	4
H&PE Activity Course	1
	17

EIGHTH QUARTER

	Cr. Hrs.
Math. 770 Applied Math. III	4
MET 700 Physical Measurements	4
CET 730 Transportation Technology	4
CET 710 Structural Analysis II	4
	16

NINTH QUARTER

	Cr. Hrs.
Humanities Elective	4
Science Elective	4
CPT 601 Scientific Programming I	4
CET 817 Construction Management	4
H&PE Activity Course	1
	17

FOURTH YEAR
TENTH QUARTER

	Cr. Hrs.
Geog. 726 Urban Geography	4
MGT 725 Fundamentals	4
CET 800 Building Systems	4
CET Elective (700/800 Level)	4
H&PE Activity Course	1
	17

ELEVENTH QUARTER

	Cr. Hrs.
Geog. 660 Intro. to Cartography or Geog. 808 Land Use and Transportation	4
MGT 604 Legal Environment of Business	4
EET 810 Electrical Systems Design	4
CET 812 Concreted Design Techniques	4
	16

TWELFTH QUARTER

	Cr. Hrs.
Humanities Elective	4
Geog. 732 Advanced Cartography or CET 700/800 Elective	4
CET 717 Underground Construction	4
CET Elective (700/800 Level)	4
	16
Total Credit Hours	**198**

*Social Studies Elective: Select Social Science 501, 502, and 503, or select Social Studies courses from Geography, History, Political Science, Psychology, Sociology, or Economics.

Computer Technology

Professor Chrobak (Program Coordinator); Associate Professor Kumar; Assistant Professor Wino; Instructors Gaydos and Maguire.

The Computer Technology program is based on the "two-plus-two" concept. This provides students the opportunity to earn a two-year Associate in Applied Science degree, and then if desired, to continue for two more years of study toward the Bachelor of Science in Applied Science degree.

ASSOCIATE DEGREE PROGRAM

The associate degree program produces a graduate skilled to meet the needs of the electronic data-processing industry. Most graduates are employed as programmers or operators in computer centers related to business or science.

BACHELOR'S DEGREE PROGRAM

Students completing the associate degree program may elect to complete an additional two years on either a full- or part-time basis. Students are then awarded the Bachelor of Science in Applied Science degree and are prepared to function as systems analysts.

500. *Data Processing Concepts.* A survey of the computer data-processing system. Input/output devices, data communication, stored program concepts, structured programming, program logic, and a programming language. Computer programs prepared and computer processed. (F, W) 4 q.h.

502. *Computer Concepts.* Basic data representation, Hollerith. 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.

510. *Introduction to Computers and Computer Applications.* An overview of practical applications of computers. Discusses hardware and software, operating systems, multiprogramming and processing, system analysis applications, use of computing power, and uses in decision-making. Educational media

including home television. University based video cassette lessons, and student-teacher lecture sessions. 1-4 q.h.

601. *Scientific Programming I.* An introductory course in computer programming using the science-oriented language known as Fortran. Three hours of lecture and three hours of laboratory per week. Prereq.: Math. 512 or consent of instructor. 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. Prereq.: CPT 601 or consent of instructor. (W) 4 q.h.

607. *Business Programming I.* An introductory Cobol programming course using structured and top-down programming. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 500 or consent of instructor. (F, W, SP) 4 q.h.

608. *Business Programming II.* The application of Cobol Language to the solution of advanced problems in business. Techniques of programming using mass storage devices. Prereq.: CPT 607 or consent of instructor. (W) 4 q.h.

609. *Interactive Computing Applications.* The study and use of interactive computing methods in commercial and technical applications. Emphasis on Terminal programming of higher level languages such as Cobol and Basic. Prereq.: CPT 607 or consent of instructor. (F) 4 q.h.

611. *Programming S/370 Assembler.* Use of the Assembler language in writing, testing, and running of programs on this computer system. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 601 or CPT 607. 4 q.h.

612. *Programming PL/1.* Detailed study of the PL/1 language; demonstration of its applicability to engineering, mathematical, and commercial problems. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 601 or CPT 607. (W) 4 q.h.

613. *Programming RPG.* A detailed study of the Report Program Generator (RPG) language. Applications programs ranging from card-to-printer listings to updating of master files are prepared for use with card, tape, and disk systems. Prereq.: CPT 607 or consent of instructor. (F) 4 q.h.

614. *Business Systems and Procedures.* Study of methods of analysis and evaluation of information flow in real-life information systems including forms design, use of equipment, and employee training. Prereq.: CPT 608. (SP) 3 q.h.

616. *Operating Systems.* Study and use of Job Control Language; operating systems including translators, compilers, high-level language processing, batch processing, realtime processing, and multiprogramming. Prereq.: CPT 611. 4 q.h.

618. *Data-Processing Application.* Business data-processing applications: payroll, accounts payable, budget control, inventory control, production control, etc. Three hours of lecture and three hours of laboratory per week. Prereq.: CPT 608 and CPT 611. (SP) 4 q.h.

622. *Utility Programs.* General purpose programs found in computer installations, including sort/merge routines, report generators, magnetic tape routines, supervisory routines, and random-access utility programs. Prereq.: CPT 611. (SP) 4 q.h.

624. *BASIC Programming.* An introduction to programming in the BASIC language. Stresses a modular approach to programming applications in areas such as information processing and character string manipulation. Symbolic and numeric oriented problems will be considered in both the conversational and unconversational mode. Prereq.: CPT 601 or CPT 607, or consent of instructor; and CPT 609. (W) 4 q.h.

700. *Data System Management.* Conventional data files and integrated data organization through structured representation of data and programs. Tasks and related table management. Prereq.: CPT 601 and CPT 612. 4 q.h.

701. *Science Programming Applications.* Use of computers to solve basic technical problems in electrical, chemical, structural, and mechanical design. Three hours of lecture and three hours of laboratory a week. Prereq.: CPT 601, Math 570 or equivalent. (F) 4 q.h.

711. *Advanced Assembler Programming.* Advanced symbolic programming techniques, exercises, and case studies. Prereq.: CPT 611. (F) 4 q.h.

716. *Advanced Operating Systems.* An advanced study of operating systems with emphasis on systems generation, control languages, time-sharing, and multiprogramming. Prereq.: CPT 616. (W) 4 q.h.

720. *Telecommunications.* Principles behind the different types of data-transmission hardware and techniques, with communication links in time-sharing and realtime systems. Prereq.: CPT 611 or consent of instructor. (SP) 4 q.h.

802. *Programming of Numerical Techniques.* Numerical methods used for solutions of mathematical equations pertaining to engineering applications and analysis of tabulated data. Error analysis, evaluation of determinants and matrices, and differential techniques. Prereq.: CPT 701 or consent of instructor. (W) 4 q.h.

804. *Programming in Operations Research Applications.* Basic operations-research techniques and programming. Linear programming, queuing, mathematical modeling, and network analysis. Prereq.: CPT 802. (SP) 4 q.h.

810. *Special Topics.* The content of this course will vary from term to term. It will be concerned with various topics to allow a student to remain current with

the changing computer technology. Subject material will be announced in advance. Prereq.: CPT 611 or consent of instructor. May be repeated up to 8 q.h. 1-4 q.h.

814. *Advanced Business Systems and Procedures.* Processing of data in an integrated management information system environment with emphasis on the source, flow, dissemination, and interrelationship of data. Prereq.: CPT 614. (W) 4 q.h.

818. *Development of Data Bases.* The basic structure, design, development, implementation, and modification of data bases for use in management information systems. Prereq.: CPT 618. (W) 4 q.h.

820. *Computer Center Operations.* The organization of a computer center: machine selection and layout, scheduling; training and supervision of personnel; development of program descriptions, and establishment of standards. Prereq.: CPT 720. (SP) 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Math. 512 Intermediate Algebra	4
Engl. 550 Basic Composition I	4
H&PE 590 Health Education	3
CPT 500 Data Processing Concepts	4
	15

SECOND QUARTER

	Cr. Hrs.
Math. 520 Trigonometry	5
Speech 652 Business & Professional Speech	3
BT 500 Survey of American Business	4
CPT 607 Business Programming I	4
	16

THIRD QUARTER

	Cr. Hrs.
Math 570 Applied Math I	5
Science Elective*	4
Soc. Sci. 502 Intro to Economics	3
CPT 608 Business Programming II	4
	16

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
Acctg. 605 Elementary Accounting I	5
CPT 601 Scientific Programming I	4
CPT 609 Interactive Comp. Appl.	4
CPT 613 Programming — RPG	4
	17

*Science Elective: Select one from Physics, Chemistry or Biology.

FIFTH QUARTER

	Cr. Hrs.
Econ. 624 Economics & Social Statistics	4
CPT Elective	4
CPT 611 Programming S/360 Assembler	4
CPT Elective	4
	16

SIXTH QUARTER

	Cr. Hrs.
Social Studies Elective**	4
CPT 614 Business Systems & Procedures	3
CPT 608 Data Processing Applications	4
CPT 616 Operating Systems	4
	15
Total Credit Hours	**95**

CPT Electives:

CPT 602 Scientific Prog. II	4 q.h.
CPT 612 Programming PL/1	4 q.h.
CPT 701 Scientific Programming Applications	4 q.h.
CPT 720 Telecommunications	4 q.h.
EET 620 and 620L Digital Fundamentals	4 q.h.
EET 645 and 645L Microprocessor Systems I	4 q.h.

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

	Cr. Hrs.
Math 670 Applied Math. II	4
Acctg. 606 Elementary Accounting II	5
Engl. 551 Basic Composition II	4
CPT 711 Advanced Assembler Programming	4
	17

EIGHTH QUARTER

	Cr. Hrs.
Humanities Elective	4
Mgmt. 725 Fundamentals of Management	4
Science Elective (Non-Math)	4
CPT 716 Advanced Operating Systems	4
	16

NINTH QUARTER

	Cr. Hrs.
Acct. 711 Basic Cost Accounting	4
Mgmt. 735 Comm. for Mgmt.and Business	4
Social Studies Elective	4
CPT 720 Telecommunications	4
	16

**Social Studies Elective: Select one from Geography, History, Political Science, Psychology, Sociology, Social Science, Black Studies I, or Economics.

FOURTH YEAR
TENTH QUARTER

	Cr. Hrs.
Humanities Elective	4
Elective (700/800 Level)*	4
Social Studies Elective (700/800 Level)	4
H&PE Activity Course	1
CPT 700 Data Systems Management	4
	17

ELEVENTH QUARTER

	Cr. Hrs.
Elective (700/800Level)*	4
Mgmt 789 Operations Management I	4
H&PE Activity Course	1
CPT 818 Development of Data Bases	4
CPT Elective ** (700/800 Level)	4
	17

TWELFTH QUARTER

	Cr. Hrs.
Mgmt 737 Management Science or Mgmt 820 Operations Management II	4
H & PE Activity Course	1
CPT 820 Computer Center Operation	4
CPT Elective**	4
	13

Drafting and Design Technology

Instructor Zupanic (Program Coordinator).

This program prepares students to function as design draftsmen in either the mechanical or civil-architectural field. They study design (the determination of size, form, and clearance) and drafting (the conversion of ideas, sketches, and specifications into plans). They also become acquainted with cost of materials, estimating and specifications writing. Graduates earn the associate degree and are employable in industries relating to the fabrication and production of building structures and metal products. Graduates interested in further technical education should consider the "two-plus-two" bachelor's degree program in Civil or Mechanical Engineering Technology.

560. *Statics and Properties of Materials.* Introduction to physical and chemical properties of engineering materials and their behavior under load including the study of forces, resultant force systems, mechanical equilibrium and concepts of stress and strain. Three hours lecture, three hours lab per week. Prereq.: ET 505, concurrent with Math 520. 4 q.h.

602. *Civil and Architectural Drafting.* Drafting associated with environmental designs such as land surveys, highways, and plot plans. Architectural symbols, foundations, and floor, wall, and roof systems. Three hours of lecture and three hours of laboratory per week. Prereq.: ME 501. 4 q.h.

603. *Piping & HVAC CAD.* The basic principles and drafting techniques used to design and represent mechanical building systems and process piping. Application of techniques on computer-aided drafting system. Three hours lecture and three hours lab per week. Prereq.: DD 560 or equivalent. 4 q.h.

605. *Computer Aided Drafting Technology.* Basic instruction in the use of a computer-aided drafting system. Application of techniques in laboratory on individual workstations. Includes input, output, modifications, symbol libraries and rotations in 2-D and 3-D. Three hours lecture, three hours laboratory per week. Prereq.: ME 500 or equivalent or consent of instructor. 4 q.h.

608. *Machine Elements.* Design and drafting of machine elements common to mechanical equipment, including bending, torsion and bearing concepts and practice. Three hours lecture and three hours lab per week. Prereq.: D & D 560 or equivalent. 4 q.h.

611. *Specifications and Estimating.* The fundamentals of specifications writing, cost estimating, and material requirements estimating. Prereq.: CET 617, MET 630, or consent of instructor. 4 q.h.

613. *Electronic & Elect. CAD.* The basic principles and drafting techniques used to design and represent electrical building systems and electronic systems. Layout of PC boards including integrated circuits. Application of techniques on a computer aided drafting installation. One and one-half hours lecture; four and one-half hours laboratory per week. Prereq.: ME 500 or equivalent or consent of instructor. 3 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Mech. Engr. 501 Engineering Drawing	3
ET 505 Elements of Engr.Technology	4

*Free Elective — Should be selected so as to complete a minor (21 q.h. of C or better) in Mathematics, Accounting or Management

**CPT Electives:

CPT 602 Scientific Prog. II	4 q.h.
CPT 612 Programming PL/1	4 q.h.
CPT 622 Utility Programs	4 q.h.
CPT 701 Scientific Programming Applications	4 q.h.
CPT 802 Programming of Numerical Techniques	4 q.h.
CPT 804 Programming in Operations Research	4 q.h.
CPT 810 Special Topics	4 q.h.
CPT 814 Advanced Business Systems & Procedures	4 q.h.
EET 620 and 620L Digital Fundamentals	4 q.h.
EET 645L Microprocessor Systems I	4 q.h.
EET 745L Microprocessor Systems II	4 q.h.

Math. 512 Intermediate Algebra 4
Social Studies Elective* 4

15

SECOND QUARTER

	Cr. Hrs.
MET 515 Mechanics I	4
Engl. 550 Basic Composition I	4
Math. 520 Trigonometry	5
Mech. Engr. 504 Graphic Science and Design	4
	17

THIRD QUARTER

	Cr. Hrs.
Speech 652 Business & Professional Speech	3
DD 602 Civil & Architectural Drafting	4
CET 604 Properties and Strength of Materials	4
H&PE 590 Health Education	3
Social Studies Elective	3
	17

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
MET 630 Manufacturing Techniques	3
MET 630L Manufacturing Techniuqes Lab	1
Social Studies Elective*	4
CET 617 Construction Methods and Materials	3
CET 617L Construction Methods and Materials Lab	1
CET 607 Solid Mechanics I	4
	16

FIFTH QUARTER

	Cr. Hrs.
DD 608 Machine Elements	4
DD 611 Specifications & Estimating	4
MET 550 Advanced Drawing	4
DD 603 Systems Drafting	4
	16

SIXTH QUARTER

	Cr. Hrs.
DD 613 Building Systems Drafting	3
ET 615 Design Project	4
CET 612 Structural Drafting and Design	3
CET 612L Structural Drafting and Design Lab	1
MET 620 Tool Design	3
Science Elective	4
	18
Total Credit Hours	**99**

*Social Studies Elective — Select one course in each of any three of Geography, History, Political Science, Psychology, Sociology, Social Science or Economics.

Electrical Engineering Technology

Professor Gardner (Program Coordinator); Assistant Professor Hankey; Instructors Messuri and Politzer.

The Electrical Engineering Technology program is based on the "two-plus-two" concept. This provides students the opportunity to pursue two years of full-time study leading to the Associate in Applied Science degree, and then, if they desire, to continue for two more years of full-time study, at which time the Bachelor of Science in Applied Science degree is awarded.

Associate Degree Program

Graduates of the two-year Electrical Engineering Technology program generally function as assistants to 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 manufacturing companies in general.

Bachelor's Degree Program

The last two years in the Electrical Engineering Technology bachelor's program provide the student with broader technical and business management background. Graduates generally assume more responsibility in the design and testing of electrical systems, and may function independently in some areas.

501. *Circuit Theory I.* Fundamental electrical definitions and units; electrical energy sources, Ohm's Law, Kirchoff's Laws; analysis of direct current circuits; network theorems; magnetic circuits and permanent magnets. Prereq.: Math. 512, ET 505. (W, SP) 3 q.h.

501L. *Circuit Theory I Laboratory.* 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 a week. Taken concurrently with EET 501. (W, SP) 1 q.h.

502. *Circuit Theory II.* Analysis of elementary magnetic circuits; capacitance; inductance; analysis of simple RC and RL transient circuits; alternating current and voltage; average and effective values; phasor representation of sinusoidal waveforms; phasor algebra, impedance. Prereq.: EET 501. Prereq. or concurrent: Math 520. (F, SP) 3 q.h.

502L. *Circuit Theory II Laboratory.* Experiments of the measurement of inductance and capacitance; simple transient circuits; hysteresis curves; average and effective values; A.C. impedance. Three hours of laboratory per week. Taken concurrently with EET 502. (F, SP) 1 q.h.

503. *Circuit Theory III.* Analysis of A.C. Circuits (steady state solution); phasor diagrams; network theorems; power, power factor; series and parallel

resonant circuits; polyphase circuits; mutually coupled circuits. Prereq.: EET 502. Prereq. or concurrent: Math. 570. (F, W) 3 q.h.

503L. *Circuit Theory III Laboratory.* The measurement of voltage, current and power in A.C. single phase series and parallel circuits; resonant circuits mutually coupled circuits. Three hours a week. Taken concurrently with EET 503. (F, W) 1 q.h.

600. *Measurements.* Measurement errors; basic meter in D.C. measurement; basic meter in A.C. measurement; D.C. and A.C. bridges; electronic voltage and current meters; cathode ray oscilloscope; counting and digital display instruments; transducers. Prereq.: EET 605. (S) 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 a week. Taken concurrently with EET 600. (F). 1 q.h.

605. *Electronics I.* The physical basis for semiconductor devices; the semiconductor diode and common diode circuits; the Zener diode and voltage regulator circuits; the bipolar-junction transistor and biasing circuits. Prereq.: EET 502. Concurrent with EET 605L. 3 q.h.

605L. *Electronics Laboratory.* Instruction on the use of the oscilloscope and the volt-ohmmilliammeter; experiments involving semiconductor diodes, power supplies, clippers and clampers, and Zener diode regulators. Three hours of laboratory per week. Taken concurrently with EET 605. 1 q.h.

606. *Electronics II.* Transistor h-parameters and the analysis of transistor amplifiers; decibels, frequency response, Miller effect and the transistor switch; circuits used in linear ICs; the design and analysis of IC operational-amplifier circuits. Prereq.: EET 503, EET 605. Concurrent with EET 606L. 3 q.h.

606L. *Electronics II Laboratory.* Experiments involving the measurement of transistor parameters; the construction and testing of several types of transistor amplifiers; time measurements of a switching circuit, and the uses of the modern IC operational amplifier. Three hours of laboratory per week. Taken concurrently with EET 606. 1 q.h.

607. *Electronics III.* Linear oscillator circuits; the field-effect transistor-its parameters and common circuits; the SCR and its common circuits; optoelectronic devices; display technology; electronic noise; negative-feedback amplifiers; filters; cathode-ray tubes and switching regulators. Prereq.: EET 606. Concurrent with EET 607L. 3 q.h.

607L. *Electronics III Laboratory.* Experiments involving several types of oscillators; measurements of and use of the field-effect transistor; the voltage regulator and the SCR. Three hours of laboratory per week. Taken concurrently with EET 607. 1 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 502. (W) 3 q.h.

610L. *Direct Current Machines Laboratory.* Experiments with direct current machinery, characteristics, operation, efficiency, control. Three hours per week. Taken concurrently with EET 610. (W) 1 q.h.

611. *Alternating Current Machines.* Transformer construction design; standards, operational characteristics; three-phase transformers; alternators; induction, synchronous, and single-phase motors. Prereq.: EET 503, 610. (SP) 3 q.h.

611L. *Alternating Current Machines Laboratory.* Experiments with transformers, alternators; induction and synchronous motors. Three hours per week. Taken concurrently with EET 611. (SP) 1 q.h.

614. *Industrial Electronics.* Electronic control circuits in industry; analog and digital time-delay circuits; silicon-controlled rectifier circuits; photoelectric devices; phase-shift control. Prereq. or concurrent: EET 606. (W) 4 q.h.

616. *Industrial Controls.* Manual and automatic starting and speed control of AC and DC motors; overload protection; magnetic and solid state switching systems. Prereq.: EET 614. Concurrent: EET 611. (SP) 4 q.h.

620. *Digital Fundamentals.* An introductory study of number systems and conversions, codes, Boolean algebra, and logic gates. Includes Boolean function simplication, truth tables, Karnaugh maps, and combination circuits. Prereq.: Math. 570. 3 q.h.

620L. *Digital Fundamentals Laboratory.* Experiments utilizing digital integrated circuits to implement various logic functions discussed in EET 620 lecture. Taken concurrently with EET 620. Three hours of lab per week. 1 q.h.

625 and 625L. *Electrical Systems I and Laboratory.* A survey of the major topics in electrical circuits, electronics, and electromechanics. Emphasis on AC/DC networks and magnetics. Three hours of lecture and three hours of laboratory per week. Prereq.: Math. 570. 4 q.h.

645. *Microprocessor Systems I.* An introduction to microprocessor architecture and organization. Emphasis on machine/assembly language programming. Prereq.: EET 620 or CPT 500. Concurrent with EET 645L. 4 q.h.

645L. *Microprocessor Systems I Laboratory.* Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in EET 645. Three hours laboratory per week. Taken concurrently with EET 645. 0 q.h.

710. *Networks.* An introduction to the Laplace transform and its application to the analysis of electrical networks, including coupled circuits, filters, attenuators, and equalizers. Prereq.: EET 503; Prereq. or concurrent: Math. 770. Concurrent with EET 710L. 4 q.h.

710L. *Networks Laboratory.* Laboratory exercises dealing with applications of concepts developed in EET 710. Three hours of laboratory per week. Taken concurrently with EET 710. 0 q.h.

720. *Pulse Circuit Design.* A study in the analysis and design of active circuits employed in electronic switching applications and in the generation of nonsinusoidal waveforms. Prereq.: EET 607. Concurrent with EET 720L. 4 q.h.

720L. *Pulse Circuit Design Laboratory.* Laboratory exercises dealing with applications of concepts developed in EET 720. Three hours of laboratory per week. Taken concurrently with EET 720. 0 q.h.

725. *Electrical Systems II.* A continuation of EET 625 with emphasis on AC/DC machinery, electronics, and controls. Prereq.: EET 625. 4 q.h.

730. *Logic Systems Design.* To study the characteristics and applications of integrated circuit logic families and various memory devices. Emphasis on the design of digital systems with SSI, MSI, and LSI as system components. Prereq.: EET 605, EET 620. Concurrent with EET 730L. 4 q.h.

730L. *Logic Systems Design Laboratory.* Laboratory exercises dealing with applications of concepts developed in EET 730. Three hours of laboratory per week. Taken concurrently with EET 730. 0 q.h.

740. *Microprocessor Fundamentals.* An introductory treatment of microprocessor software and hardware: microprocessor components, systems, programming and application. Three hours of lecture and three hours of laboratory. Prereq.: EET 620. 4 q.h.

745. *Microprocessor Systems II.* Continuation of EET 645 with emphasis on advanced programming techniques, memory mapping, I/O ports, and basic I/O interfacing. Prereq.: EET 645, EET 607. Concurrent with EET 745L. 4 q.h.

745L. *Microprocessor Systems II Laboratory.* Laboratory excercises utilizing a microcomputer to provide practical applications of concepts developed in EET 745. Three hours laboratory per week. Taken concurrently with EET 745. 0 q.h.

780. *Communication System Fundamentals.* Audio signals, noise, untuned and R.F. amplifiers, amplitude, frequency, pulse modulation, transmission lines, antennas, and multiplexing of communication channels. Prereq.: EET 607. 4 q.h.

810. *Electrical System Design.* A course concerning the design and layout of electrical systems for power, light, heat, signals, and communications in commercial, industrial, and residential buildings. Three hours of lecture and three hours of laboratory per week. Prereq.: EET 607, 611. 4 q.h.

820. *Power Transmission.* An introduction to power systems analysis, transmission line parameters and calculations, and steady-state power system representation. Prereq.: EET 611. 4 q.h.

840. *Microprocessor Applications.* An introductory study of microprocessor applications in the commercial, industrial, and residential areas. Both hardware and software are discussed. Prereq.: EET 740. 4 q.h.

845. *Microprocessor Systems III.* Continuation of EET 745 with emphasis on real data acquisition, A/D and D/A conversions, and industrial applications. Prereq.: EET 745, EET 730. Concurrent with EET 845L. 4 q.h.

845L. *Microprocessor Systems III Laboratory.* Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in EET 845. Three hours laboratory per week. Taken concurrently with EET 845. 0 q.h.

850. *Integrated Circuit Applications.* An introduction to integrated circuits technology and typical application. Prereq.: EET 607. Concurrent with EET 850L. 4 q.h.

850L. *Integrated Circuit Applications Laboratory.* Laboratory exercises dealing with applications of concepts developed in EET 850. Three hours of laboratory per week. Taken concurrently with EET 850. 0 q.h.

870. *Process Controls Technology.* An introduction to process control technology dealing with elements and evaluation. Topics include signal conditioning, transducers, control elements, and controller principles. Prereq.: EET 607, 611. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Math. 512 Intermediate Algebra	4
Engl. 550 Basic Composition I	4
ME 500 Drawing Fundamentals	3
ET 505 Elements of Engineering Technology	4
	15

SECOND QUARTER

	Cr. Hrs.
Math. 520 Trigonometry	5
Social Studies Elective*	4
CPT 601 Scientific Programming I	4
EET 501 Circuit Theory I	3
EET 501L Circuit Theory I Laboratory	1
	17

*Social Studies Elective — Select Social Science courses from Geography, History, Political Science, Psychology, Sociology or Social Science.

THIRD QUARTER

	Cr. Hrs.
Math. 570 Applied Math. I	5
Phys. 501 Fundamentals of Physics I	4
Social Studies Elective*	4
EET 502 Circuit Theory II	3
EET 502L Circuit Theory Laboratory	1
	17

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
H&PE 590 Health Education	3
Speech 652 Business & Professional Speech	3
EET 503 Circuit Theory III	3
EET 503L Circuit Theory III Lab	1
EET 605 Electronics I	3
EET 605L Electronics I Lab	1
EET 620 Digital Fundamentals	3
EET 602L Digital Fundamentals Lab	1
	18

FIFTH QUARTER

	Cr. Hrs.
Phys. 503 Fundamentals of Physics III	3
Phys. 503L Fundamentals of Phys. III Lab	1
EET 600 Measurements	3
EET 600L Measurements Lab	1
EET 606 Electronics II	3
EET 606L Electronics II Lab	1
EET 610 Direct Current Machines	3
EET 610L Direct Current Machines Laboratory	1
	16

SIXTH QUARTER

	Cr. Hrs.
Social Studies Elective	4
EET 607 Electronics III	3
EET 607L Electronics III Lab	1
EET 611 Alternating Current Machines	3
EET 611L Alternating Current Machines Lab	1
EET 645 Microprocessor Sys I	3
EET 645L Microprocessor Sys I Lab	1
	16
Total Credit Hours	**99**

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

	Cr. Hrs.
Math. 670 Applied Math. II	4
CPT 701 Scientific Programming Applications	4
CET 604 Properties & Strength of Materials	4
EET 720 Pulse Circuit Design	4
	16

*Social Studies Elective — Select Social Science courses from Geography, History, Political Science, Psychology, Sociology or Social Science.

EIGHTH QUARTER

	Cr. Hrs.
Math. 770 Applied Math. III	4
MET 630 Manufacturing Techniques	3
MET 630L Manufacturing Techniques Lab	1
Science Elective**	4
EET 730 Logic Systems Design	4
H&PE Activity Course	1
	17

NINTH QUARTER

	Cr. Hrs.
Econ. 624 Economics & Social Statistics I	4
Humanities Elective	4
EET Elective (700 Level)	4
EET 710 Networks	4
	16

FOURTH YEAR
TENTH QUARTER

	Cr. Hrs.
Engl. 551 Basic Composition II	4
CET 800 Building Systems	4
EET 745 Microprocessor Sys. II	4
EET 745L Microprocessor Sys. II Lab	0
EET Elective (700 Level)	4
H&PE Activity Course	1
	17

ELEVENTH QUARTER

	Cr. Hrs.
MGT 725 Fundamentals of Management	4
MET 700 Physical Measurements	4
EET Elective (700 Level)	4
EET 810 Electrical Systems Design	4
H&PE Activity Course	1
	17

TWELFTH QUARTER

	Cr. Hrs.
Technical Elective	4
Humanities Elective	4
MGMT 789 Operations Management I	4
EET 820 Power Transmission	4
	16
Total Credit Hours	**198**

Mechanical Engineering Technology

Professor Barsch; Instructor Krygowski (Program Coordinator).

**Science Elective to be selected from Chemistry (excluding Chem. 500) or Physics (excluding Phys. 500).

The Mechanical Engineering Technology program is designed as a "two-plus-two" program. Students completing the first two years of the program are awarded the Associate in Applied Science degree and are prepared to support engineers as technicians in various industrial activities including drafting, design, and production. Graduates are employed in a wide variety of industries, most often by manufacturers of industrial components or consumer products..

Bachelor's Degree Program

Students completing the associate degree program may elect to complete the remaining two years on either a full- or part-time basis. Upon successful completion of the second two years of the program, students are awarded the Bachelor of Science in Applied Science degree and are prepared to function as technologists in industrial positions of greater responsibility and potential.

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, and internal forces. Prereq.: ET 505, concurrent: Math. 520. (W) 4 q.h.

516. *Mechanics II.* Continuation of MET 515 with applications of basic principles of statics, introduction to dynamics of solids, study of various types of motion, Newton's second law, concept of work and energy, impulse, and momentum. Prereq.: MET 515. (SP) 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 of lecture and three hours of laboratory per week. Prereq.: Math. 570, MET 516. 4 q.h.

606. *Machine Design I.* Study and design of machine elements such as bolts, screws, shafts, and welded connections. Three hours of lecture and three hours of laboratory per week. Concurrent: 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.* Study of common mechanical equipment such as heat exchangers, refrigerators, pumps, and internal combustion engines. Prereq.: MET 605 or MET 615. (SP) 3 q.h.

610L. *Mechanical Equipment Laboratory.* Tests and applications of equipment covered in MET 610. Three hours of laboratory per week. Concurrent with MET 610. (SP) 1 q.h.

615. *Fluid Mechanics.* Fundamental concepts: fluid statics; the basic laws of fluid mechanics and their application to incompressible flow in pipes and channels; dimensional analysis, fluid measurements. Prereq.: MET 516. (F) 3 q.h.

615L. *Fluid Mechanics Laboratory.* Tests and applications of concepts covered in MET 615. Three hours laboratory per week. Concurrent with MET 615. (F) 1 q.h.

620. *Tool Design.* Practice and procedure in design and selection of tools such as cutting tools, jigs, fixtures, and dies used in industry. Prereq.: MET 630. (SP) 3 q.h.

630. *Manufacturing Techniques.* The study of manufacturing methods, tooling, equipment and processes, including casting, heat treatment, welding, hot and cold working. (F) 3 q.h.

630L. *Manufacturing Techniques Laboratory.* Practice and procedures of machine tool operation including lathes, drill presses, shapers, and milling machines. Three hours laboratory per week. Concurrent with MET 630. (F) 1 q.h.

700. *Physical Measurements.* Practice in the use and selection of instruments measuring pressure, temperature, strain, force and flow rate including the interpretation of data and the fundamentals of Statistical Quality Control. Three hours lecture and three hours laboratory per week. Prereq.: EET 625 and Econ. 624 or Math 714. 4 q.h.

715. *Fluid Power Systems.* Principles of fluid power systems, including the practices of device selection and application. Typical industrial systems are constructed and tested. Three hours of lecture and three hours laboratory per week. Prereq.: MET 615. 4 q.h.

720. *Mechanisms.* Graphical and analytical solution of problems involving displacement, velocity, and acceleration in machine mechanisms. Design of linkages to provide required motions of machine members. Three hours of lecture and three hours laboratory per week. Prereq.: Met 607, Math 570. 4 q.h.

810 *Manufacturing Systems Analysis.* Study of manufacturing systems including process, design value analysis, manufacturing process analysis, selection, and sequencing; machine tool cost and functions, manufacturing economics, system characteristics, and post production analysis. Prereq.: MET 630. 4 q.h.

812. *Numerical Control I.* A study of the programming of numerically-controlled machine tools. Students prepare and verify programs for controlling NC machines using computer-assisted languages such as Compact II. Three hours of lecture and three hours of laboratory per week. Prereq.: MET 630 or consent of instructor. 4 q.h.

813. *Numerical Control II.* A continuation of MET 812 with emphasis on advanced programming methods in numerical control, using Compact II or similar such languages. Prereq.: MET 812. 4 q.h.

820. *Machine Systems.* Analysis and design of complex machine systems incorporating electrical,

pneumatic, hydraulic sub-systems. Students work on comprehensive projects. Three hours of lecture and three hours of laboratory per week. Prereq.: MET 715, MET 720, EET 725. 4 q.h.

830. *Advanced Tool Design.* Advanced tool design projects including the design of bending, forming, and drawing dies, inspection and gauging and associated subsystems and material feed mechanisms. Three hours of lecture and three hours of laboratory per week. Prereq.: MET 620. 4 q.h.

840. *Mechanisms II.* Computer-aided techniques of analysis and design of mechanisms to perform desired machine motions. Consideration of elementary complex number methods, atlas techniques, and algebraic design procedures. Prereq.: MET 720, CPT 601. 4 q.h.

850 *Air-Conditioning Principles and Practices.* The practical techniques used in the design of heating, ventilating, and air-conditioning systems, including load calculations, unit selection, and duct system layout. The laboratory work includes the use of design charts and manufacturer's catalogs in a project. Three hours of lecture and three hours of laboratory per week. Prereq.: MET 610. 4 q.h.

860. *Robotics Technology.* An introduction to the technology and use of industrial robots including classification, tooling, sensors, interfacing, programming and safety. Prereq.: MET 820. 4 q.h.

870. *Applied Finite Element Method.* Basic concepts of the finite element method and their applicattion to the analysis of plane structures and two-dimensional continuum problems in heat transfer, fluid flow, and elasticity. Computer-aided techniques of analyzing the problems in heat transfer, structural analysis, and mechanical design. Three hours lecture and three hours laboratory per week. Prereq.: Math 785; and MET 607 or CET 610. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Math. 512 Intermediate Algebra	4
ME 501 Engineering Drawing	3
ET 505 Elements of Engineering Technology	4
Chem. 501 Survey of Chem. I	4
Chem. 510 Survey of Chem. Lab	1
	16

SECOND QUARTER

	Cr. Hrs.
Math. 520 Trigonometry	5
Engl. 550 Basic Composition I	4
Soc. Studies Elective*	3
MET 515 Mechanics I	4
	16

THIRD QUARTER

	Cr. Hrs.
Math. 570 Applied Math I	5
Social Studies Elective*	3
MET 516 Mechanics II	4
CET 604 Properties/Strength of Materials	4
	16

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
MET 630 Manufacturing Techniques	3
MET 630L Manufacturing Techniques Laboratory	1
MET 615 Fluid Mechanics	3
MET 615L Fluid Mechanics Laboratory	1
CET 607 Solid Mechanics	4
Social Studies Elective*	3
	15

FIFTH QUARTER

	Cr. Hrs.
MET 605 Thermodynamics	4
MET 606 Machine Design I	4
MET 550 Advanced Drawing	4
Phys. 502 Fundamentals of Physics II	3
Phys. 502L Fundamentals of Physics II Laboratory	1
	16

SIXTH QUARTER

	Cr. Hrs.
MET 610 Mechanical Equipment	3
MET 610L Machine Equipment Laboratory	1
MET 607 Machine Design II	4
MET 620 Tool Design	3
Speech 652 Business and Professional Speech	3
H&PE 590 Health Education	3
	17
Total Credit Hours	**96**

THIRD YEAR
SEVENTH QUARTER

	Cr. Hrs.
Math. 670 Applied Math II	4
CPT 601 Scientific Programing I	4
EET 625 Electrical Systems I	4
MET 715 Fluid Power	4
H&PE Activity Course	1
	17

EIGHTH QUARTER

	Cr. Hrs.
Math. 770 Applied Math. III	4
CPT 701 Scientific Programing Applications	4
EET 725 Electrical Systems II	4

*Social Studies Elective — Select courses from Economics, Geography, History, Political Science, Psychology, Sociology or Social Science.

Engl. 551 Basic Composition II 4
H&PE Activity Course 1

17

NINTH QUARTER

	Cr. Hrs.
Econ. 624 Economics & Social Statistics I	4
MET 720 Mechanisms	4
Humanities Elective	4
Physics 503 Fundamentals of Physics III	3
Physics 503L Fundamentals of Physics III Lab	1
H&PE Activity Course	1
	17

FOURTH YEAR
TENTH QUARTER

	Cr. Hrs.
Social Studies Elective*	4
Mgmt. 725 Funds of Management	4
MET 810 Manufacturing Systems Analysis	4
CET 800 Building Systems	4
	16

ELEVENTH QUARTER

	Cr. Hrs.
MET 700 Physical Measurements	4
MGT 789 Operations Management I	4
MET 812 Numerical Controls I	4
MET Elective (700 Level)	4
	16

TWELFTH QUARTER

	Cr. Hrs.
MET 820 Machine Systems	4
MET 830 Advanced Tool Design	4
Humanities Elective	4
Free Elective (700 Level)	4
	16

Total Credit Hours 195

DEPARTMENT OF HOME ECONOMICS

Professors Feldmiller and Beaubien (Chairman); Associate Professor Horvath; Assistant Professors Aboul-Ella, Hassell and Varma; Instructor Elias.

The Department of Home Economics offers five programs: two-year programs in Child Care and in Dietetic Technology, each leading to the Associate in Applied Science degree; four-year programs in Food and Nutrition (Dietetics) and in Home Economics Services, each leading to the Bachelor of Science in Applied Science degree; and (in conjunction with the School of Education) a four-year program in Vocational Home Economics Education, leading to the Bachelor of Science in Education degree with the major in Home Economics.

Non-majors may elect home economics courses for general educational purposes.

For any degree, associate or baccalaureate, the student must satisfy the general University requirements (See "General Requirements and Regulations") as well as the particular requirements for the special field or fields. Curriculum sheets for all programs are available at the department office or from faculty advisors.

Child Care

Professor Beaubien (Coordinator).

This two-year program qualifies graduates to manage preschools and day-care centers. The program may also be applied toward the four-year program in Home Economics Services or in Home Economics Education.

Dietetic Technology

Associate Professor Horvath (Coordinator).

Graduates of this program are qualified to work as technicians under the supervision of a registered dietitian (R.D.) in dietary departments of hospitals and nursing homes, and are also employable in commercial food-service systems. They are eligible for technician membership in the American Dietetic Association.

A suggested schedule is provided at the end of this section. Application for the practicum (Home Econ. 628) must be filed two quarters in advance, and a permit is required for registration for it. Permits are issued only to students with a 2.5 average, 80 hours completed, and all PR's converted. All the courses can be applied toward the B.S. in A.S. degree with a major in Food and Nutrition (Dietetics).

Food and Nutrition (Dietetics)

This four-year program meets the Plan IV requirements of the American Dietetic Association, and graduates are eligible to apply for internships in clinical or general dietetics.

Upon completion of a fifth-year dietetic internship, or after employment for three years under supervision of registered dietitians, students may apply for the registration examination given by the American Dietetic Association. Successful completion of the written examination brings designation as a registered dietitian (R.D.).

It is recommended that Food and Nutrition majors complete the courses leading to the two-year dietetic technician degree.

In addition to the general University requirements, the courses required for the four-year Food and Nutrition program are: Home Economics 549, 550, 551, 551L, 601, 603, 603L, 609, 611, 731, 751, 751L, 759, 760, 780, 810, 850, 858, 862, 872; Accounting 605 or Acctg. Tech. 580; Anthropology 602; Biology 551, 552, 604; Chemistry 502, 503, 705; Computer Technology 500, Mathematics 714; Economics 520 ; Management 725, 750, 804; Psychology 560, 709; Sociology 500; Electives.

*Social Studies Elective — Select courses from Economics, Geography, History, Political Science, Psychology, Sociology or Social Science.

Coordinated Undergraduate Program (CUP) in Dietetics

Assistant Professor Hassell (Coordinator).

This program which prepares students for general dietetic practice and includes clinical as well as didactic study is accredited by The American Dietetic Association. Each student spends 900 hours in approved clinical sites during the two years of the CUP. Graduates are eligible to take the examination to become registered dietitians.

Admission to CUP is restricted since only a limited number of students can be accommodated. Satisfactory completion of a minimum of 96 quarter hours (to qualify for junior status) is required before the student begins the program. Detailed information regarding criteria and procedures is available from the Department of Home Economics. Students are admitted to CUP only in Fall, and start the program during Fall quarter. The current closing date for applications and all credentials is:

March 1 - for the succeeding Fall Quarter

In addition to the general University requirements and those required for the four year Food and Nutrition program are:

Home Economics 618, 750, 759L, 760L, 801, 858L 860, 860L, 872L 873, 874, 874L 885

The prescribed sequence of CUP courses, which must be followed by all students, appears at the end of this section.

Home Economics Services

Home Economics Services leads to a Bachelor of Science in Applied Science degree. Options in community or consumer services are available.

Courses required in addition to University requirements are: Home Economics 550, 551 or 502, 601, 705, 731, 763, 764, 780, 835, 850, 852 and 16-30 hours of Home Economics electives.

Community Services:

1. Choose Home Economics electives from: 512, 531, 532, 631, 652, 664, 672, 706, 770, 830, 853, 862, 872, 873.

2. A minor in Sociology, Anthropology, Social Work, Psychology of at least 21 hours.

Consumer Services:

1. Choose Home Economics electives from: 508, 604, 640, 642, 702, 703, 704, 731, 770, 771, 810, 830.

2. A minor from one department of Williamson School of Business Administration or the suggested business minor for non-business students, of 21-31 hours. Other minors must have departmental approval.

Vocational Home Economics Education

For this four-year program, the student must meet the general requirements for the Bachelor of Science in Education degree, as well as all School of Education and Ohio certification requirements (see the School of Education section).

A student in this program is considered a major in Home Economics in the College of Applied Science and Technology until 90 hours have been completed with a grade point average of at least 2.35. Application for transfer to the School of Education must then be made. The graduate is eligible for a teaching certificate in vocational consumer-homemaking.

Courses required for this major are: Home Economics 506, 508, 531, 532, 550, 551, 601, 604, 652, 705, 706, 731, 763, 764, 770, 771, 780, 800, 850, 852, 853, 864; Biology 604, and a four-hour biology or chemistry elective; Chemistry 502; Psychology 560, 709, 755; and Art 510, Soc. 500, Anthro. 602, and Econ. 520.

Lower Division Courses

502. *Nutrition Fundamentals.* Basic nutrition principles and their relation to growth, development, and the maintenance of health. Open to Child Care Technology students and non-majors. (F, SP) 4 q.h.

506. *Clothing Selection.* Image enhancement through selection, purchase and care of clothing. Influences on consumer clothing decisions throughout the life span. 3 q.h.

507. *Basic Clothing Techniques.* Operation of the sewing machine, use of commercial patterns, accurate measuring processes. Three hours lecture-laboratory weekly. 1 q.h.

508. *Basic Clothing Construction.* Study and use of commercial patterns, basic alterations, fundamental processes and skills required for proficiency in construction of simple garments. Two hours of lecture and two hours of laboratory per week. Prereq.: HE 507 or proficiency exam score of 75% or higher. 3 q.h.

512. *Orientation to Child Care.* The professional role of the child care giver, each aspect of the day care center as it interfaces with family relationships and the development of the child. (F, W) 3 q.h.

525. *The World of Fashion.* Social, cultural and business aspects of fashion in apparel, home furnishings and food; careers in retailing of products which make up the near environment. Identical with MKTG 525. (F, S) 2 q.h.

531. *Infant and Toddler Care.* Guiding principles in the care of infants from conception to age two, with special attention to planned infant stimulation. Lecture, demonstrations, and observation. (F, W) 3 q.h.

532. *Pre-School Child Care.* Care and guidance of the preschool child, with emphasis on group care of 2-to-5-year-old children. Lecture and observation. (W, SP) 3 q.h.

543. *Personal Nutrition.* The principles and practices of basic normal nutrition which contribute to total wellness. Emphasis on valid nutrition information and healthful food selections. 1 q.h.

549. *Orientation to the Health Care Food-Service Field.* Introduction to the role of the health care foodservice professional. Study of the professional role and relationship to other personnel; the health care delivery system in the community; and duties and responsibilities of staff members. This course includes a clinical component of 10 hours. (F, W) 2 q.h.

550. *Home Economics Profession.* History, philosophy, current trends and careers; interrelationships of the specialized areas of home economics. 1 q.h.

551. *Normal Nutrition I.* The fundamentals of normal nutrition as they apply to requirements for essential nutrients; contribution of food groups; selection of an adequate nutriture; importance of diet in achieving and maintaining optimum health. Prereq.: Chem. 501 or equivalent with a grade of C or better. 4 q.h.

551L. *Nutrition Laboratory.* Evaluation of diets through analysis and calculation of content in addition to computation of body fat content from anthropometric data. Four hours of laboratory a week. Prereq.: Math 511, 512 or high school equivalent; Home Ec. 551 (or concurrent). 2 q.h.

601. *Principles of Food Preparation.* The physical and chemical properties of food; basic principles and methods in selection, purchase, and preparation. Two hours of lecture and four hours of laboratory a week. Prereq.: Math 509 or equivalent. 4 q.h.

603. *Diet Therapy.* The purpose of diet therapy; policies and procedures for diet modifications; modified diet patterns in various types of settings. Four hours lecture. Must be taken concurrently with 603L. Prereq.: Home Ec. 551; Biol 552; Chem 503; all with a grade of C or better. 4 q.h.

603L. *Diet Therapy Lab.* Application of basic principles of diet therapy; nutritional assessment; diet calculations. Two hours laboratory per week. Must be taken concurrently with H.E. 603. 1 q.h.

604. *Advanced Clothing Construction.* Advanced skills required for making garments with detailed design features; the use of special fabrics and couture techniques; fitting and alteration of garments. Two hours of lecture and three hours of laboratory a week. Prereq.: Home Ec. 508 or examination. (W) 3 q.h.

609. *Food Systems I: Operations.* The fundamentals of food system operations including menu planning, purchasing of foods and equipment, care of foods and equipment; efficient work methods, budget and cost control in food service departments. Prereq.: Home Ec. 549 and 601. 4 q.h.

610. *Organization and Management.* Concepts of organization and management related to food service; selecting, training, and supervising personnel. Prereq.: Home Ec. 549. 3 q.h.

611. *Food Systems II: Production.* Standards, principles and techniques in quantity food production. Must be taken concurrently with H.E. 611L. Prereq.: Home Ec. 609. 2 q.h.

611L. *Food System II: Laboratory.* Application of quantity food production principles and procedures to the preparation and service of regularly scheduled luncheons for groups in the Home Economics facilities. Nine hours of laboratory a week. Must be taken concurrently with Home Ec. 611. 3 q.h.

613L. *Nutritional Care Laboratory.* Planning therapeutic diets for patients with specific nutritional needs; diet counseling and calculations. Six hours of clinical laboratory per week. Must be taken concurrently with Home Ec. 603. Prereq.: Home Ec. 618. 2 q.h.

618. *Pre-clinical Skills.* Skill development essential to health care practitioners and home economists in preparing clients to assume more control over dietary and other personal life style choices. One hour lecture and three hours laboratory per week. Prereq.: H.E. 551 plus 5 hours credit in a professionally oriented field. 2 q.h.

619. *Food Systems I: Laboratory.* Experience in selecting, training and supervising personnel; menu planning; purchasing and care of food and equipment, budget and cost control. Six hours clinical laboratory per week. Prereq.: Bus Tech 580 with a grade of C or better, Prereq. or concurrent with HE 609 and 610. 2 q.h.

625. *Food and Beverage Management.* Managerial duties and responsibilities in setting goals; forecasting, controlling quality and costs, and establishing policy in the successful operation of a food and beverage department. Prereq.: Home Ec. 601. 3 q.h.

626. *Food Service Management.* Employee and client education, labor relations management, affirmative action, quality control, marketing services and development of materials and resource files for the clinical setting; computer applications. Prereq.: H.E. 610, 611. 4 q.h.

628. *Practicum in Dietetic Technology.* Experience in supervision of food production, assisting in the assessment of the individual patient, and participating with health care professional in documentation and teaching. Student will work 21 hours at assigned facilities and complete written assignments. For placement in a hospital practicum, the student must have a 2.7 overall average. Prereq.: H.E. 610, 611, 626 and application filed with the instructor one quarter prior to registration in the course. 4 q.h.

631. *Parent Involvement.* Planning experiences and activities with and for parents which will provide continuity of child care between the home and the day care center. Prereq.: Engl. 551. (Sp) 4 q.h.

632. *Child Health and Safety.* Health and safety practices applied to child care in group facilities or homes; communicable disease management; home nursing skills for non-health care personnel. Three hours lecture-laboratory per week. Prereq.: HPE 590. 2 q.h.

635. *Fashion Experience.* A practical view of the fashion industry through lecture, library research, interviews with fashion industry professionals, and field trips. Prereq.: H.E. 525, MKTG 625. Identical with MKTG 635. 2 q.h.

642. *Applied Fabric Design.* The use of dyes and needlework in clothing and home furnishings. 3 q.h.

650. *Seminar in Dietetic Technology.* The role of the dietetic technician in the health care delivery system, how the system functions in a community, structure of agencies, delivery, and trends in the industry. Overview of current opportunities in the foodservice field. Prereq.: H.E. 628 or equivalent. 2 q.h.

652. *Family Food Management.* Nutritional, aesthetic, social and economic factors in meeting family food needs. Two hours of lecture and four hours laboratory per week. Prereq.: Home Ec. 601 or Home Ec. 502 or Home Ec. 551. 4 q.h.

663. *Practicum in Child Care.* Supervised participation in all functions in a child care center. Two hours lecture-discussion and fourteen laboratory hours per week. Prereq.: Home Ec. 706 and Elem. Ed. 630. Application must be filed with program coordinator one quarter prior to registration for the course. 4 q.h.

664. *Management of Child Care.* The philosophy and organization of a total child-care center to include management, scheduling, provision of services, staffing, and record-keeping. Prereq.: Home Ec. 512; H.E. 706 or Elementary Education 630. (F) 3 q.h.

670. *Special Topics in Home Economics.* Selected home economics topics based on needs and interests of students. May be repeated for a total of eight quarter hours with change of topics. Not applicable to Home Economics major. 2-4 q.h.

672. *Nutrition and the Pre-School Child.* Study of the nutritional needs of the developing child in the home and pre-school setting. Emphasis on nutrition education for development of desirable food habits. Not applicable to food and nutrition major. Prereq.: Home Economics 502 or 551. (W) 4 q.h.

Upper Division Courses

702. *Design and Flat Pattern Making.* Developing greater understanding and skill in designing, fitting, and constructing garments. Making a basic pattern and creating new designs by the use of it. Two hours of lectures and four hours laboratory per week. Prereq.: Home Ec. 508. 4 q.h.

703. *Tailoring.* Fundamental techniques in the construction of tailored coats and suits. Two hours of lecture and four hours of laboratory per week. Prereq.: Home Ec. 604. 4 q.h.

704. *Design by Draping.* Creating new dress designs through the draping technique. Prereq.: Home Ec.604. 4 q.h.

705. *Basic Textile Science.* Fundamentals of fibers, yarns, construction and finishes of natural and synthetic fabrics as they relate to selection, serviceability, care and use. Fiber testing; government regulations. Three hours lecture, two hours laboratory. Prereq.: Chem. 501 or high school equivalent. 4 q.h.

706. *Child Development Laboratory.* Participation in the campus early child development laboratory. One hour lecture and 6 hours laboratory per week. Prereq. or concurrent: Psych. 755. 3 q.h.

730. *Social and Psychological Aspects of Clothing.* Interdisciplinary study of clothing within the comprehensive context of its cultural, social, psychological, physical, economic and aesthetic relationships. Prereq.: Socio 500, Psych 560. 4 q.h.

731. *Individual and Family Development.* Functional approach to individual and family development across the life span, with focus in process-oriented change. Prereq.: Psych. 560. (F, SP) 4 q.h.

750. *Orientation to Dietetics.* Orientation to the clinical and administrative aspects of the dietetic profession. Prereq.: Admission into CUP. 1 q.h.

751. *Advanced Food Preparation.* Advanced study of the interrelationship of principles used in food preparation. Must be taken concurrently with 751L. Prereq.: Chem. 501 and Home Ec. 601. 2 q.h.

751L. *Advanced Foods Laboratory.* Application of principles from Advanced Food Preparation. Must be taken concurrently with HE 751. Three hours laboratory weekly. Prereq.: Chem 501 and HE 601. 1 q.h.

759. *Normal Nutrition II.* Designed to broaden and extend the student's knowledge of the science of nutrition, with emphasis on the metabolism of nutrients at the cellular level. Current research in the field of nutrition will be included. Prereq.: HE 551, Biol. 552, Chem. 705 (or concurrent). (F) 4 q.h.

759L. *Normal Nutrition II Laboratory.* Selected clinical experiences providing opportunities for developing an understanding and working knowledge of the nutritional care process with focus on problems encountered in normal nutrition. Three hours of clinical experience per week. Taken concurrently with HE 759. (F) 1 q.h.

760. *Clinical Nutrition.* The nature and etiology of diseases and the relationship of diet to good health and to disease processes; the special dietary needs of

abnormal conditions. Prereq.: Home Ec. 603, 759. 4 q.h.

760L. *Clinical Nutrition Laboratory.* Selected clinical experiences providing opportunities for developing an understanding and working knowledge of the nutritional care process with focus on problems encountered in normal nutrition. Three hours of clinical experience per week. Taken concurrently with HE 759. 1 q.h.

761. *Nutrition and the Athlete.* Facets of nutrition of special relevance to athletes, such as carbohydrate-loading, protein intake, electrolyte imbalances, and crash diets. Not applicable to Food & Nutrition major. Prereq.: Biol. 552 or permission of instructor. 3 q.h.

763. *Technology in the Home.* Household equipment in residential design; includes planning of kitchen, laundry and home computer centers. Three hours of lecture and two hours laboratory per week. Prereq.: Art 510. 4 q.h.

764. *Family Housing.* Planning the home environment to meet family needs and resources; consumer decisions in selection of residences, floor plans, color schemes and furnishings. Two hours of lecture and two hours of laboratory per week. Prereq.: Psych 560. 3 q.h.

771. *Presentation Techniques for Home Economists.* Methods of communicating Home Economics related information to target groups from pre-schoolers to adults in school settings and non-school settings. Includes demonstration techniques, preparation of materials and operation of audiovisual equipment. Prereq.: Eight hours of Home Economics credit. (F) 4 q.h.

780. *Consumer Economics.* Managing the family's economic resources through use of the decision-making process. Current consumer issues and sources of information for consumers. Prereq.: Econ 520. (Sp) 4 q.h.

795.*Fashion Tour.* Concentrated on-site study of the fashion industry with tours of laboratories, designer workrooms, showrooms, buying offices and related organizations. Pre-tour orientations and written report of experience will be required. Prereq.: HE/MKTG 525 and acceptance of written application. 1-2 q.h.

799. *Vocational Home Economics Education.* History, philosophy, scope and requirements of vocational home economics programs. Prereq.: Home Ec. 550 or Educ 501. 1 q.h.

800. *Consumer and Homemaking Education.* Methods of organization, instruction and evaluation in vocational consumer home economics programs. Prereq. or concurrent: Home Ec. 799. 3 q.h.

801. *Nutrition in Clinical Care.* Interdisciplinary activities in applied nutrition are incorporated into the clinical preparation of students in medicine, nursing, dietetics and other allied health professions. Two hours of lecture and four hours clinical experience per week. Prereq.: Junior standing and enrollment in Dietetics, Medicine, Nursing or another Allied Health program. (S) 4 q.h.

810. *Experimental Foods.* Advanced study of food science as well as the application of scientific principles and experimental procedures to cooking processes. Three hours lecture and three hours laboratory per week. Prereq.: Chem. 503, Home Ec. 601 and a minimum of 20 hours of Home Economics credit. 3 q.h.

825. *Current Nutrition Concepts.* Readings and critical appraisal of research literature in nutrition. Prereq.: Home Ec. 759, Chem. 705. 4 q.h.

830. *Homemaker Rehabilitation.* Analysis of the changes needed for the worker and the work environment of the home. Consideration of the personal and financial costs of homemaker disability to the individual and the family. Prereq.: Home Economics 731 or equivalent. 4 q.h.

835. *Field Experience in Home Economics.* Experience in a community agency or commercial enterprise related to Home Economics. Seven hours of experience or two hours of seminar weekly equal one credit hour. May be repeated up to eight (8) hours of credit. Prereq.: Twelve hours of Home Economics credit. Student must file application one quarter prior to registering. 2-8 q.h.

850. *Contemporary Issues in Home Economics.* Interrelationships of the specializations in the home economics field in addressing public policy issues as they impact on the family and the profession. Prereq.: Home Ec. 550 and 731. 2 q.h.

852. *Family Resource Management.* A systems view of family functioning with emphasis on managerial decision-making and effective use of resources. Prereq.: Home Ec. 731 or Psych 707 or Soc. 705. 4 q.h.

853. *Family Management Experience.* Participation, observation and consultation in consumer and homemaking activities with families. Four hours of experience per week equal one credit hour. May be repeated up to 6 hours with families of different forms, socioeconomic levels or stages of life cycle. Prereq.: Home Ec. 618 and Home Ec. 852. 2-6 q.h.

858. *Foodservice Systems Management.* Advanced foodservice systems management principles and processes as they relate to resources and operating subsystems. Focus will be on subsystem interrelationships. Prereq.: H. E. 611 and a minimum of 20 hours of Home Economics credit. (F) 6 q.h.

858L. *Food Service Systems Management Laboratory.* Clinical experiences providing application of the management process to the institutional foodservice system. Thirty hours of clinical experience per week. To be taken concurrently with HE 858.(F) 6 q.h.

860. *Advanced Clinical Nutrition.* Advanced study of the nature and etiology of disease conditions with focus on the complex dietetic problems accompany

ing them. Prereq.: HE 760 or permission of instructor. (Sp) 4 q.h.

860L. *Advanced Clinical Nutrition Laboratory.* Clinical experiences providing opportunities for application of nutritional care process to individuals exhibiting complex abnormal nutritional needs. Ten hours of directed practice per week. To be taken concurrently with HE 860. (Sp) 2 q.h.

862. *Cultural and Nutritional Aspects of Food.* Food patterns and practices of selected world cultures. Evaluation of these patterns in meeting dietary needs with consideration of the existing social, economic, and environmental conditions. Three hours of lecture and two hours of laboratory a week. Prereq.: Home Ec. 601, Anthr. 602. (Sp) 4 q.h.

866. *Administration of Early Childhood Centers.* The role of the administrator of an early childhood center in coordination, management, budgeting, curriculum development, research, evaluation, advocacy and public policy formation. Prereq.: HE 706 & 664, or El Ed 841, or Sec Ed 842. 4 q.h.

870. *Home Economics Workshop.* Special workshops in a professional area of Home Economics as needed. Prereq.: Junior standing. 2-4 q.h.

871. *Nutrition in Family Medicine.* A life cycle approach to contemporary nutrition as applied to disease prevention and health promotion of individuals encountered in family practice. Stresses nutritional needs, assessment and problems; factors affecting the nutritional status; identification of the 'high risk' individuals and recommendations for appropriate nutritional care. Prereq.: CHEM 796 or 712 or 705.4 q.h.

872. (W)*Maternal and Child Nutrition.* Fundamental nutritional needs of mother and child at all stages of development, with special attention to problems of prematurity and malnutrition in children. Indices of growth and development, with consideration for the child's individuality. Prereq.: Senior Standing or consent of instructor. (W) 4 q.h.

872L. *Pediatric Nutrition Laboratory.* Clinical experiences providing opportunities for application of nutritional care process to the pediatric population. Five hours of clinical experience per week will be conducted in hospitals and/or community settings. Taken concurrently with HE 872. (W) 1 q.h.

873. *Nutrition and Aging.* The nutrition needs of the adult, and the process of aging. The influences of food availability, intake, economics, culture, chronic disease, and physical and social conditions as they affect the ability of the aged to cope with living situations. Prereq.: H.E. 551 or permission of instructor. (W) 4 q.h.

874. *Community Nutrition.* Public health nutrition programs and their services to the community. Special emphasis on needs of at-risk population groups such as the elderly. Prereq.: HE 603. (W) 2 q.h.

874L. *Community Nutrition Laboratory.* Clinical experiences providing opportunities for application of the nutritional care process to individuals in the community setting. Five hours of directed practice per week will be conducted in out-patient and/or community settings. Must be taken concurrently with HE 874. (W)1 q.h.

875. *Directed Individual Study.* Individual study or research of a special problem or issue related to home economics. Application must be made with the department prior to registration. Prereq.: 12 hours of Home Economics credit and Senior Standing. 1-3 q.h.

885. *Practicum in Dietetics.* Clinical experiences providing opportunities to integrate content and process principles of management and clinical dietetics into dietetic practice. Emphasis in the classroom is placed on current trends and practice in the field. Two hours of lecture and twenty-eight hours of clinical experience per week. Prereq.: 860L, 858L, and Senior Standing. (Sp) 6 q.h.

888. *Historic Costume and Furnishings.* Clothing, accessories, homes and furnishings from antiquity to the present, including the influence of social, political and economic conditions on elements in the near environment. Three hours lecture and three hours of laboratory weekly. Prereq.: Eight hours of humanities and eight hours of social studies and junior standing. 4 q.h.

890. *Occupational Home Economics Education.* Methods of organization, instruction and evaluation in food service, fabric service, child care, community and home service, and multi-area cooperative home economics programs. Prereq. or concurrent: Home Ec. 799. 3 q.h.

892. *Community Programming.* Development of home economics programs for special populations including adults, aging, disadvantaged, displaced homemakers, teenage parents, handicapped and others with special needs. Prereq.: H.E. 731. 4 q.h.

895. *International Studies in Home Economics.* Professional areas of home economics and their relationship to native cultures are the focus of travel to designated countries. Class sessions and travel as well as pre-tour and post-tour assignments and evaluation based on course objectives are supervised by Home Economics faculty. Prereq.: H.E. 731, Junior Standing, and permission of instructor and H.E. Department chair. 2-6 q.h.

CHILD CARE CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Engl. 550 Basic Composition I	4
Home Ec. 502 Nutrition Fundamentals	4
Home Ec. 512 Orientation to Child Care	3
Home Ec. 531 Infant & Toddler Care	3
	14

SECOND QUARTER

	Cr. Hrs.
Engl. 551 Basic Composition II	4
Home Ec. 532 Preschool Child Care	3
Psych. 560 General Psychology	4
Music 521 Intro. to Fundamentals	3
Soc. 500 Fundamentals	4
	18

THIRD QUARTER

	Cr. Hrs.
Biology 505 Biology & Modern Man	4
Psych. 755 Developmental Psychology I (Child)	4
Home Ec. 706 Child Development Lab	3
H&PE 590 Health Education	3
Technical Elective	4
	18

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
El. Ed. 630 Creative Experiences in the Pre-School	4
Music 722 Music Ed. for Early Childhood	3
Speech 705 Speech Problems of Children	3
Home Ec. 632 Child Health & Safety	2
Sp. Ed. 731 Ed. of Young Handicapped Children	3
	15

FIFTH QUARTER

	Cr. Hrs.
Home Ec. 663 Practicum in Child Care	4
Home Ec. 672 Nutrition & the Pre-School Child	4
Soc. 601 Social Problems or Soc. 620 Intro. to Social Work	4
Art 759 Arts & Crafts-Pre School	4
	16

SIXTH QUARTER

	Cr. Hrs.
Home Ec. 631 Parent Involvement	4
Home Ec. 664 Management of Child Care	3
Home Ec. 731 Ind. & Fam. Dev.	4
H&PE 623 Physical Education for the Pre-School Child	3
Elective	4
	18
Total Credit Hours	**99**

DIETETIC TECHNOLOGY CURRICULUM

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Eng. 550 Basic Composition I	4
Home Ec. 551 Normal Nutrition 1	4
Home Ec. 551L Nutrition Laboratory	2
Home Ec. 549 Orientation to Health Care Food Service Field	2
Chem 502 Survey of Chemistry II	4
	16

SECOND QUARTER

	Cr. Hrs.
Engl. 551 Basic Composition II	4
Home Ec. 601 Principles of Food Preparation	4
Chem 503 Survey of Chemistry III	4
Home Ec. 610 Organization & Management	3
Elective	3
	18

THIRD QUARTER

	Cr. Hrs.
Home Ec. 609 Food Systems I: Operations	4
Home Ec. 619 Food Systems I: Laboratory	2
Biol 551 Anatomy & Physiology	4
Psych. 560 General Psychology	4
Biol 604 Food Microbiology	4
	18

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
HPE 590 Health & Physical Education	3
Home Ec. 611 Food Systems II: Production	5
Biol. 552 Anatomy & Physiology II	4
Home Ec. 618 Preclinical Skills	2
Econ 520 Principles I	4
	18

FIFTH QUARTER

	Cr. Hrs.
Home E. 751 Advanced Food Preparation	2
Home Ec. 751L Advance Foods Laboratory	1
Home Ec. 603 Diet Therapy	5
Home Ec. 603L Diet Therapy Lab	2
Home Ec. 626 Foodservice Management	4
BET 580 Elementary Accounting Technology 1	4
	18

SIXTH QUARTER

	Cr. Hrs.
Home Ec. 628 Practicum	4
Home Ec. 650 Seminar in Dietetic Technology	2
Electives	5-8
	11-14
Total Credit Hours	**99-102**

COORDINATED UNDERGRADUATE PROGRAM (CUP) IN DIETETICS

THIRD YEAR
FIRST QUARTER

	Cr. Hrs
Home Ec. 750 Orientation to Dietetics	1
Home Ec. 759 Normal Nutrition II	4
Home Ec. 759L Normal Nutrition II Lab	1
Chem 705 Nutritional Biochemistry	4
Mgt 725 Fundamentals	4
HPE Activity	1
	15

SECOND QUARTER

	Cr. Hrs.
Home Ec. 760 Nutrition in Disease	4
Home Ec. 760L Clinical Nutrition Lab	2
Mgt 750 Human Behavior in Organizations	4
Math 714 Probability/Statistics	5
HPE Activity	1
	16

THIRD QUARTER

	Cr. Hrs
Home Ec. 860 Advanced Clinical Nutrition	4
Home Ec. 860L Advanced Clinical Nutrition Lab	2
Home Ec. 862 Cultural & Nutrition Aspects	4
Mgt 804 Personnel Management	4
HPE Activity	1
	15

FOURTH QUARTER

	Cr. Hrs.
Home Ec. 801 Nutrition in Clinical Care	4
	4

FOURTH YEAR
FIFTH QUARTER

	Cr. Hrs.
Home Ec. 858 Foodservice Systems Mgt	6
Home Ec 858L Foodservice Systems Lab	6
Humanities Elective	4
	16

SIXTH QUARTER

	Cr. Hrs.
Home Ec. 810 Experimental Food Studies	3
Home Ec. 872 Maternal & Child Nutrition	4
Home Ec. 872L Pediatric Nutrition Lab	1
Home Ec. 873 Nutrition & Aging	4
Home Ec. 874 Community Nutrition	2
Home Ec. 874L Community Nutrition Lab	1
Home Ec. 850 Seminar in Home Economics	2
	17

SEVENTH QUARTER

	Cr. Hrs.
Home Ec. 885 Practicum in Dietetics	6
Electives	6-8
	12-14

NURSING

Associate Professors Engelhardt and Kennedy; Assistant Professors McCarthy (Chairman) and Erickson; Instructors Bateman, Ferris, Mitchell, Mosca, Schuster, Shipton and Zehr.

The Department of Nursing at Youngstown State University offers two degrees: Associate in Applied Science degree with a major in Nursing and Bachelor of Science in Nursing degree.

The ADN and RN completion programs are accredited by the National League for Nursing. The RN Completion Program will be terminated following Spring 1989 and is not accepting students.

ACADEMIC REQUIREMENTS FOR THE NURSING PROGRAMS

Admission into the Associate in Applied Science and the Bachelor of Science in Nursing degree programs is on a restricted basis, since only a limited number of students can be accommodated. Detailed information about criteria and procedures is available from the Department of Nursing and the Admissions Office. Malpractice insurance is required for all clinical nursing experience and is available through the University.

Students are admitted to the programs only at limited times during the year. The current closing date for applications and all credentials is:

March 1 — For the succeeding Fall Quarter

ASSOCIATE DEGREE PROGRAM

All applicants for the associate degree nursing program must meet the following requirements:

1. The general University pre-college requirements for the Associate in Applied Science degree.

2. Rank in the upper quarter of high school graduation class, with grades of C or higher in all subjects required for admission to the program.

3. Minimum score of 20 in all areas tested on the American College Test. SAT scores of at least 500 in each test category (verbal composition and mathematics) may be substituted for performance on the ACT Test.

4. Physical and dental examinations.

Transfer applicants and current and former YSU students must:

1. Have completed Chemistry 502 with a grade of C or higher, or an equivalent college chemistry course.

2. Have a cumulative overall and nursing grade point average of at least 2.50 when all grades from any and all colleges and/or universities are included.

Former students who have satisfactorily completed one or more nursing courses and are seeking readmission to the nursing program will be considered on an individual basis.

Students transferring from another associate degree nursing program should consult the Department of Nursing before applying to the University.

A grade of C or better is required in all courses. One repetition of a nursing course and one repetition of a non-nursing course will be permitted within the associate degree program.

Progression in the associate degree program requires a cumulative point average of 2.0 or above. Students who earn less than a 2.0 cumulative point average and/or fail more than one nursing and non-nursing course are transferred to another department.

BACCALAUREATE DEGREE PROGRAM

Provisional admission for the baccalaureate degree program takes place in the fall quarter, sophomore year. Final admission takes place in the winter quarter, sophomore year.

Applicants for the baccalaureate degree program must meet the following requirements:

1. General University pre-college requirements for the Bachelor of Science in Nursing degree.
2. Minimum ACT composite scores of 20.
3. Minimum of a "C" in all pre-nursing courses with an overall GPA of 2.5 in these courses.
4. Cumulative GPA of 2.0 in all college work.
5. Evidence of current CPR certification.
6. Complete a personal data sheet including physical and dental examination.

Pre-nursing courses include:

Biology 506, 507, 710, 702 or 787 and 787L, and 792

Chemistry 502 and 503

Psychology 560 and 755

English 550 and 551

Philosophy 600

Home Economics 551

Sociology 500

Nursing 640 and 641

Consult nursing advisor for information on progression. Former and transfer students are considered on an individual basis.

An RN track will admit a limited number of students Fall 1986. Contact the college advisor for information regarding this track.

Students admitted Fall 1985 to the RN Completion Program are expected to complete the program within three academic years. This program admitted its last class Fall of 1985. Eight hundred (800) level nursing courses will be offered for the last time 1986-87.

Lower Division Courses

510. *Nursing Process I.* Introduction to the nursing process. Identification of nursing within the health care system exploring a person's holistic needs during varying degrees of stress and adaptation. Concurrent with nursing 510L and Biology 551. Prereq.: Eng. 550 (or concurrent) 4 q.h.

510L. *Nursing Process I Laboratory.* Selected clinical experience provides opportunity for beginning application of the nursing process to clients' needs during varying degrees of stress and adaptation. Nine hours of laboratory per week. Concurrent with Nursing 510, Biology 551. Prereq.: English 550 (or concurrent) 3 q.h.

511. *Nursing Process II.* Nursing process and nursing within the health care system continued. Promotion of adaptation to holistic man's needs during varying degrees of stress. Concurrent with Nursing 511L and Biology 552. Prereq.: Nursing 510 and 510L. 4 q.h.

511L. *Nursing Process II Laboratory.* Selected clinical experience provides opportunity for further application of the nursing process to clients' needs during varying degrees of stress and adaptation. Nine hours of laboratory per week. Concurrent with Nursing 511. 3 q.h.

512. *Nursing Process III.* Application of nursing process to holistic man's need during varying degrees of stress and adaptation. Concurrent with Nursing 512L and Psychology 755. Prereq.: Nursing 511 and 511L; Psych. 560; Home Ec. 551. 5 q.h.

512L. *Nursing Process III Laboratory.* Selected clinical experiences provide opportunity for application of the nursing process to clients' needs during varying degrees of stress and adaptation. Portions of clinical experience in mental health settings. Nine hours of laboratory per week. Concurrent with Nursing 512. 3 q.h.

620. *Nursing I.* Application of nursing process, with emphasis on the maternal/child health cycle. Concurrent with nursing 620L. Prereq.: Nursing 512 and 512L; Biol. 560; Home Ec. 551, English 551. 6 q.h.

620L. *Nursing I Laboratory.* Clinical application of nursing process as covered in Nursing 620. Twelve hours of laboratory per week. Concurrent with Nursing 620. Prereq.: Nursing 512 and 512L, Biol. 560, Home Ec 551, English 551 4 q.h.

621. *Nursing II.* Utilization of nursing process throughout the life cycle emphasizing varying degrees of stress and subsequent adaptation. Concurrent with Nursing 621L. Prereq.: Nursing 620 and 620L, Chem 502, Psych 756. 6 q.h.

621L. *Nursing II Laboratory.* Clinical application of nursing process to clients throughout the life cycle experiencing varying degrees of stress and adaption.

Twelve hours of laboratory per week. Concurrent with Nursing 621. Prereq.: Nursing 620 and 620L, Chem 502, Psych 756. 4 q.h.

622. *Nursing III.* A continuation of Nursing 621. Concurrent with Nursing 622L. Prereq.: Nursing 621 and 621L; Chem. 503. 6 q.h.

622L. *Nursing III Laboratory.* A continuation of Nursing 621L. Twelve hours of laboratory per week. Concurrent with Nursing 622. 4 q.h.

623. *Registered Nurse's Role.* The associate degree nurse's role as a registered nurse practitioner. Trends in nursing, career opportunities, legal and ethical responsibilities. Concurrent with Nursing 622 and 622L. 3 q.h.

640. *Introduction to Nursing.* An introduction to professional nursing and the health care delivery system from a historical perspective. The philosophy and conceptual framework of the program are also introduced. Open to non-nursing majors. 3 q.h.

641. *Concepts and Theories of Self-Care I.* Concepts and theories related to Orem's conceptual framework are presented from a health focus of wellness. Open to non-nursing majors. 2 q.h.

641L. *Concepts and Theories of Self-Care Laboratory.* Application of self-care framework in various clinical settings, through clinical performance and use of the nursing process. To be taken concurrently with or following N641. Three hours of laboratory per week. Prereq. or concurrent with N641. 1 q.h.

642. *Health Deviation Self-Care Requisites.* Knowledge from basic and clinical science is applied to the understanding of biological alterations which affect individuals' ability to perform self-care activities. Prereq.: Admission to the BSN-G Program. Biology 710, 792, 702 or 787/787L. 4 q.h.

643. *Therapeutic Self-Care Requisites.* Interpersonal, communication and psychomotor skills necessary to comprehensively assess self-care agency, and communicate the assessment are presented. To be taken concurrently with 643L. Prereq.: Admission to the BSN-G Program. 3 q.h.

643L. *Therapeutic Self-Care Requisites Laboratory.* Selected laboratory learning experiences are provided for the application of skills related to the comprehensive assessment of self-care agency, and communication of the same. Three hours of laboratory each week. To be taken concurrently with N643. Prereq.: Admission to the BSN-G Program. 1 q.h.

645. *Nursing Systems I.* Fundamental nursing assistive actions and the system of nursing care are studied with adults in a partly compensatory and educative-supportive nursing situation. The health focus is wellness/disease prevention. To be taken concurrently with Nursing 645L, Psych 757. Prereq.: N642, N643, Psych 613 (or concurrent). 3 q.h.

645L. *Nursing Systems I Laboratory.* Selected clinical experiences are provided for the application of the system of nursing care with adults in a partly compensatory and educative-supportive nursing situation. The health focus is wellness/disease prevention. Nine hours of laboratory each week. To be taken concurrently with N645, Psych 757. 3 q.h.

Upper Division Courses

700. *Maintaining Homeostasis.* In-depth view of selected major health problems, with implications for nursing assessment; analysis of the aging process. Prereq.: Registered nurses only. 4 q.h.

701. *Advanced Nursing Process I.* Expanded treatment of the nursing process with emphasis on assessment and nursing diagnosis with individuals experiencing maximum health at various stages of the life cycle. Beginning understanding nursing research. Leadership — emerging roles identified. Pre-req.: For registered nurses only, upon satisfactory completion of validation tests. To be taken concurrently with Nursing 701L. 6 q.h.

701L. *Advanced Nursing Process I Laboratory.* Selected clinical experiences provide an opportunity for application of the nursing process to healthy individuals at various stages of the life cycle. Six hours of laboratory per week. To be taken concurrently with Nursing 701. 2 q.h.

702. *Advanced Nursing Process II.* Expanded treatment of the nursing process continued with emphasis on planning, implementing, and evaluating with individuals experiencing maximum health at various stages of the life cycle. Understanding of nursing research is continued. Coordination role in nursing leadership explored. Prereq.: Nursing 701 and 701L. To be taken concurrently with 702L. 6 q.h.

702L. *Advanced Nursing Process II Laboratory.* Selected clinical experiences provide an opportunity for application of the nursing process to healthy individuals at various stages of the life cycle (a continuation of nursing 701L). Six hours of laboratory per week. To be taken concurrently with Nursing 702. 2 q.h.

703. *Advanced Nursing I.* Utilization of the nursing process with individuals/families experiencing acutely diminished health at various stages of the life cycle. Healthy family functioning explored. Collaborative role in nursing leadership explored. Prereq.: Nursing 702 and 702L. To be taken concurrently with Nursing 703L. 5 q.h.

703L. *Advanced Nursing I Laboratory.* Selected clinical experiences provide an opportunity for application of the nursing process to individuals/families experiencing acutely diminished health at various stages of the life cycle. Collaborative nursing role applied. Six hours of laboratory per week. To be taken concurrently with Nursing 703. 2 q.h.

704. *Nursing and the Social Order.* Current trends, issues, and problems in professional nursing practice

are considered within a historical perspective. Includes introduction to the emerging nursing roles. Prereq.: Registered nurses only. 4 q.h.

740. *Concepts and Theories of Self-Care II.* Concepts and theories related to Orem's conceptual framework are presented from a health focus of recovery, illness of undetermined origin, and active treatment. To be taken concurrently with N741, N741L. Prereq.: N641, N645, Psych 614(or concurrently). 2 q.h.

741. *Nursing Systems II.* Fundamental nursing assistive actions and the system of nursing care are studied with adults and families in a partly compensatory and educative-supportive nursing situation. The health foci are recovery and illness of undetermined origin. To be taken concurrently with N740, N741L. Prereq.: N641, N642, N645, Psych 614 (or concurrent). 3 q.h.

741L. *Nursing Systems II Laboratory.* Selected clinical experiences are provided for the application of the system of nursing care with adults and families in a partly compensatory and educative-supportive nursing situation. The health foci are recovery and illness of undetermined origin. Nine hours of laboratory each week. To be taken concurrently with N740, N741. 3 q.h.

742. *Nursing Systems III.* Nursing assistive actions and the system of nursing care are studied as they apply to acutely ill adults. This course focuses upon health deviation requisites as well as other therapeutic self-care requisites within partly compensatory and educative supportive situations. To be taken concurrently with N742L, N743. Prereq.: Home Ec. 551, Psych 755, Psych 756, N741. 3 q.h.

742L. *Nursing Systems III Laboratory.* Selected clinical experiences provide for the application of the system of nursing care in partly compensatory and educative supportive nursing situations. The health foci are recovery, illness of undetermined origin, and active treatment. Nine hours of laboratory each week. To be taken concurrently with N742, N743. 3 q.h.

743. *Leadership.* Leadership concepts, theories and roles are explored as they relate to the practice of professional nursing. To be taken concurrently with N742 and N742L. Prereq.: Home Ec. 551, Psych. 755, 756, N741. 3 q.h.

744. *Nursing Systems IV.* Nursing assistive actions and the system of nursing care are studied as they relate to clients experiencing developmental and health-deviation self-care requisites in the antepartum, intrapartum, and post-partum phases. To be taken concurrently with N744L, N745, N745L. Prereq.: N742, N743, Biology 721. 3 q.h.

744L. *Nursing Systems IV Laboratory.* Selected clinical experiences provide for the application of the system of nursing care with clients experiencing developmental and health-deviation self-care requisites in the antepartal, intrapartal, and post-partal phases. Nine hours of laboratory each week. To be taken concurrently with N744, N745, N745L. 3 q.h.

745. *Nursing Systems V.* Nursing assistive actions and the system of nursing care are studied as they relate to children experiencing developmental and health-deviation self-care requisites. To be taken concurrently with N745L, N744, N744L. Prereq.: N742, N743, Biology 721. 3 q.h.

745L. *Nursing Systems V Laboratory.* Selected clinical experiences provide for the application of the system of nursing care with children experiencing developmental and health-deviation self-care requisites. Nine hours of laboratory each week. To be taken concurrently with N745, N744, N744L. 3 q.h.

746. *Systems of Nursing Care for Elderly Clients.* An in-depth view of the aging person with implications for determining systems of nursing care and for interpreting the impact of current theories of aging upon current nursing practices. Prereq.: N740. 3 q.h.

808. *Advanced Nursing II.* Utilization of the nursing process with individuals/families experiencing chronically diminished health at various stages of the life cycle. Dysfunctional family explored. Continued study of collaborative nursing leadership role. Prereq.: Nursing 703 and 703L. To be taken concurrently with 808L. (F) 5 q.h.

808L. *Advanced Nursing II Laboratory.* Selected clinical experiences provide an opportunity for application of the nursing process to individuals/families experiencing chronically diminished health at various stages of the life cycle. Collaborative nursing role applied. Six hours of laboratory per week. To be taken concurrently with Nursing 808. (F) 2 q.h.

809. *Advanced Nursing III.* Utilization of the nursing process with individuals/families experiencing depleted health at various stages of the life cycle. Appropriate nursing research explored. Group dynamics and process explored. Consultant role in nursing leadership examined. Prereq.: Nursing 808 and 808L. To be taken concurrently with Nursing 809L. (W) 6 q.h.

809L. *Advanced Nursing III Laboratory.* Selected clinical experiences provide an opportunity for application of the nursing process to individuals/families experiencing depleted health at various stages of the life cycle; includes a group of clients. Consultant nursing role applied. Research findings utilized. Six hours of laboratory per week. To be taken concurrently with Nursing 809. (W) 2 q.h.

810. *Advanced Nursing IV.* Utilization of the nursing process with the community. Appropriate research applied. Change agent, client advocate and facilitator nursing roles explored. Prereq.: Nursing 809 and 809L. To be taken concurrently with Nursing 810L. (S) 6 q.h.

810L. *Advanced Nursing IV Laboratory.* Selected clinical experiences provide an opportunity for

application of the nursing process to the health care needs of a community. Leadership roles of facilitator, change agent, and patient advocate applied. Existing research findings utilized. Six hours of laboratory per week. To be taken concurrently with Nursing 810. (S) 2 q.h.

812. *Nursing Research Seminar.* Research strategies and methodologies are explored through the identification and development of a researchable problem. Prereq.: Nursing 809 and 809L. (or permit). (S) 3 q.h.

840. *Nursing Systems VI.* Nursing assistive actions and the system of nursing care are studied as they relate to acutely ill adults. This course focuses upon health deviation requisites as well as other therapeutic self-care requisites in wholly compensatory systems. To be taken concurrently with N840L, N841. Prereq.: N744, N745. 3 q.h.

840L. *Nursing Systems VI Laboratory.* Selected clinical experiences provide for the application of the system of nursing care in all three types of nursing situations. The health foci are recover, illness of undetermined origin, and active treatment. Nine hours of laboratory each week. To be taken concurrently with N840, N841. 3 q.h.

841. *Nursing Research.* Methods and techniques of research in the solution of nursing problems are explored. Included are steps in the research process, and the preparation of a research proposal. To be taken concurrently with N840, N840L. Prereq.: N744, N745, Phil 725 (or concurrent), Psych 614, BET 710 or CPT 500. 3 q.h.

842. *Nursing Systems VII.* Nursing assistive actions and the system of nursing care are studied as they apply to clients experiencing therapeutic self-care requisites related to intrapersonal, interpersonal, family and social deficits. To be taken concurrently with N842L, N843, N843L. Prereq.: N840, N841. 3 q.h.

842L. *Nursing Systems VII Laboratory.* Selected clinical experiences are provided for application of the system of nursing care with clients experiencing intrapersonal, interpersonal, family, and social deficits. Nine hours of laboratory each week. To be taken concurrently with N842, N843, N843L. 3 q.h.

843. *Nursing Systems VIII.* Nursing assistive actions and the system of nursing care are studied as they relate to adult clients experiencing chronic developmental and health-deviation self-care requisites. To be taken concurrently with N843L, N842, N842L. Prereq.: N840, N841. 3 q.h.

843L. *Nursing Systems VIII Laboratory.* Selected clinical experiences are provided for the application of the system of nursing care to adult clients experiencing chronic developmental and health-deviation self-care requisites. Nine hours of laboratory each week. To be taken concurrently with N843, N842, N842L. 3 q.h.

844. *Nursing Systems IX.* Nursing assistive actions and the system of nursing care are studied as they apply to communities and clients within the community experiencing therapeutic self-care requisites. To be taken concurrently with N844L, N845, N847, N847L. Prereq.: N743, N841, N842, N843. 3 q.h.

844L. *Nursing Systems IX Laboratory.* Selected laboratory experiences are provided for the application of the system of nursing care to communities and individuals within the community experiencing therapeutic self-care requisites. Nine hours of laboratory each week. To be taken concurrently with N844, N845, N847, N847L. 3 q.h.

845. *Professional Issues.* Contemporary issues related to the practice of professional nursing and the emerging roles on the nurse are analyzed. To be taken concurrently with 844, 844L, 847, 847L. Prereq.: 743, 841, 842 and 843. 2 q.h.

847. *Nursing Systems Synthesis.* Synthesis of the professional practice of nursing as it relates to clinical practice in a variety of nursing situations. To be taken concurrently with N847L, N844, N844L, N845. Prereq.: N743, N841, N842, N843. 1 q.h.

847L. *Nursing System Synthesis Laboratory* Selected clinical experiences provide for synthesis of the roles of the professional nurse in a variety of nursing situations. Nine hours of clinical laboratory experience each week. To be taken concurrently with N847, N844, N844L, N845. 3 q.h.

848. *Advanced Nursing Systems I.* Emphasizes selected study of the anatomy and physiology of the heart and circulation, bioelectricity, electrocardiography, and psychosocial aspects of nursing care of the acute myocardial infarction patient. Prereq.: N840, R.N., or consent of instructor. 4 q.h.

849. *Advanced Nursing Systems II.* This course prepares the registered nurse for knowledgeable and competent nursing care in Intensive Care Units. It focuses on the nursing process: assessment and intervention of individuals with needs arising from multiple disruptions among body systems. Prereq.: N840, R.N., or consent of instructor. 4 q.h.

850. *Advanced Nursing Systems III.* Emphasizes the mechanisms of interpreting the 12 Lead ECG and recognition of non-specific changes and common abnormal findings. Prereq.: N840, R.N., or consent of instructor. 2 q.h.

Nursing Electives

705. *Child Health Maintenance.* Current trends, issues and approaches in pediatric nursing practice are considered from a wellness perspective. Emphasis is on prevention of developmental health problems. Nursing roles in child health specialties are explored. Prereq.: Registered nurse. 4 q.h.

725. *Health Assessment.* The assessment phase of the nursing process, from data gathering to problem list is presented. Anatomical and physiological basis

of health history, the physical examination and nursing diagnosis is discussed. Designed specifically for registered nurses. Current BSN students may not enroll. Prereq.: For registered nurses only. 2 q.h.

725L. *Health Assessment Laboratory.* Selected learning experiences will be provided in a laboratory setting for the application of the assessment phase of the nursing process. Interviewing techniques of health history, the psychomotor skills of physical examination, and use of developmental assessment tools will be demonstrated and practiced. To be taken concurrently with Nursing 725. 1 q.h.

CURRICULUM LEADING TO THE ASSOCIATE IN APPLIED SCIENCE DEGREE

FIRST YEAR
FIRST QUARTER

	Cr. Hrs.
Biol. 551 Physiology and Anatomy of Man I	4
Home Ec. 551 Normal Nutrition I	4
Eng. 550 Basic Composition I	4
Nurs. 510 Nursing Process I	4
Nurs. 510L Nursing Process I Laboratory	3
	19

SECOND QUARTER

	Cr. Hrs.
Biol. 552 Physiology and Anatomy of Man II	4
Psych. 560 General Psychology	4
Eng. 551 Basic Composition II	4
Nurs. 511 Nursing Process II	4
Nurs. 511L Nursing Process II Laboratory	3
	19

THIRD QUARTER

	Cr. Hrs.
Biol. 560 Paramedical Microbiology	5
Psych. 755 Developmental Psychology I (Child)	4
Nurs. 512 Nursing Process III	5
Nursing 512L Nursing Process III Laboratory	3
	17

SECOND YEAR
FOURTH QUARTER

	Cr. Hrs.
Chem. 502 Survey of Chemistry II	4
Psych. 756 Developmental Psychology II (Adolescence)	4
Nurs. 620 Nursing I	6
Nursing 620L Nursing I Laboratory	4
	18

FIFTH QUARTER

	Cr. Hrs.
Chem. 503 Survey of Chemistry III	4
Humanities Elective (Except Speech)	3
Nurs. 621 Nursing II	6
Nurs. 621L Nursing II Laboratory	4
	17

SIXTH QUARTER

	Cr. Hrs.
Soc. 500 Fundamentals of Sociology	4
Nurs. 622 Nursing III	6
Nurs. 622L Nursing III Laboratory	4
Nurs. 623 Registered Nurse's Role	3
	17
Total Credit Hours	**107**

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN NURSING DEGREE - For Registered Nurses Only

JUNIOR YEAR
FALL QUARTER

	Cr. Hrs.
Humanities Elective (600 or 700 Level)	4
Nurs. 704 Nursing and the Social Order	4
Nurs. 701 Adv. Nursing Process I	6
Nurs. 701L Adv. Nursing Process I Laboratory	2
	16

WINTER QUARTER

	Cr. Hrs.
Speech 652 Business and Professional Speech Communication	3
Elective	3
Psych. 707 The Psychology of Marriage and Family Relations, or Soc. 705 The Family	4
Nurs. 702 Adv. Nursing Process II	6
Nurs. 702L Adv. Nursing Process II Laboratory	2
	18

SPRING QUARTER

	Cr. Hrs.
Nurs. 700 Maintaining Homeostasis	4
Pol. Sc. 601 American National Government, or Elective	4
Nurs. 703 Adv. Nursing I	5
Nurs. 703L Adv. Nursing I Laboratory	2
	15

SENIOR YEAR
FALL QUARTER

	Cr. Hrs.
Elective	4
Psych. 700 Social Psychology (4 q.h.), or Soc. 700 Minority Groups (5 q.h.), or Soc. 709 Social Control (4 q.h.)	4/5
Nurs. 808 Adv. Nursing II	5
Nur. 808L Adv. Nursing II Laboratory	2
	15/16

WINTER QUARTER

	Cr. Hrs.
Phil. 600 Introduction to Philosophy, or Phil. 711 Ethical Theories, or Phil. 713 Making of the Modern Mind	4
Psych. 709 Psychology of Education	4
Nurs. 809 Adv. Nursing III	6
Nurs. 809L Adv. Nursing III Laboratory	2
	16

SPRING QUARTER

	Cr. Hrs.
Nurs. 810 Adv. Nursing IV	6
Nurs. 810L Adv. Nursing IV Laboratory	2
Elective	4
Nurs. 812 Nursing Research Seminar	3
	15

Minimum Total Credit Hours 186

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN NURSING DEGREE

FRESHMAN YEAR
FALL QUARTER
(pre-nursing)

	Cr. Hrs.
Biol. 506 or 507 Principles of Biology I or II	4
Chem. 502 Survey of Chemistry II	4
Eng. 550 Composition I	4
Soc. 500 Fundamentals of Sociology	4
	16

WINTER QUARTER
(pre-nursing)

	Cr. Hrs.
Biol. 507 or 506 Principles of Biology II or I	4
Chem. 503 Survey of Chemistry III	4
Engl. 551 Composition II	4
Health & Physical Education Activities	1+1+1
	15

SPRING QUARTER
(pre-nursing)

	Cr. Hrs.
Biol. 710 Mammalian Anatomy	4
Biol. 702 or 787/787L Microbiology or Diagnostic Microbiology/ Lab	4
Psych. 560 General Psychology	4
Phil. 600 Introduction to Philosophy	4
	16

SOPHOMORE YEAR
FALL QUARTER
(pre-nursing)

	Cr. Hrs.
Home Ec. 551 Normal Nutrition I	4
Biol. 792 Introduction to Animal Physiology	5
Psych. 755 Developmental Psychology I - Child	4
Nurs. 640 Introduction to Nursing	3
Nurs. 641 Concepts and Theories of Self-Care I	2
	18

WINTER QUARTER
(nursing major)

	Cr. Hrs.
Psych. 756 Developmental Psychology II - Adolescent	4
Spch. 550 Theory and Practice of Public Speaking	4
Nurs. 643 Universal Self-Care Requisites	3
Nurs. 643L Universal Self-Care Requisites Lab	1
	12

SPRING QUARTER
(nursing major)

	Cr. Hrs.
Psych. 757 Developmental Psychology III - Adult	4
Nurs. 642 Health Deviation Self-Care Requisites	4
Psych. 613 Statistical Methods in Psychology I	3
Nurs. 645 Nursing Systems I	3
Nurs. 645L Nursing Systems I Laboratory	3
	17

JUNIOR YEAR
FALL QUARTER
(nursing major)

	Cr. Hrs.
BET 710 Introduction to Data Processing or CPT 500	4
Psych. 614 Statistical Methods in Psychology II	4
Nurs. 740 Concepts and Theories of Self-Care II	2
Nurs. 741 Nursing Systems II	3
Nurs. 741L Nursing Systems II Laboratory	3
	16

WINTER QUARTER
(nursing major)

	Cr. Hrs.
Electives	4
Nurs. 742 Nursing Systems III	3
Nurs. 742L Nursing Systems III Laboratory	3
Nurs. 743 Leadership	3
Biol. 721 Genetics	4
	17

SPRING QUARTER
(nursing major)

	Cr. Hrs.
Phil. 725 Biomedical Ethics	4
Nurs. 744 Nursing Systems IV	3
Nurs. 744L Nursing Systems IV Laboratory	3

Nurs. 745 Nursing Systems V 3
Nurs. 745L Nursing Systems V Laboratory 3

16

SENIOR YEAR
FALL QUARTER
(nursing major)

	Cr. Hrs.
Electives	8
Nurs. 840 Nursing Systems VI	3
Nurs. 840L Nursing Systems VI Laboratory	3
Nurs. 841 Nursing Research	3
	17

WINTER QUARTER
(nursing major)

	Cr. Hrs.
Electives	4
Nurs. 842 Nursing Systems VII	3
Nurs. 842L Nursing Systems VII Laboratory	3
Nurs. 843 Nursing Systems VIII	3
Nurs. 843L Nursing Systems VIII Laboratory	3
	16

SPRING QUARTER
(nursing major)

	Cr. Hrs.
Nurs. 844 Nursing Systems IX	3
Nurs. 844L Nursing Systems IX Laboratory	3
Nurs. 845 Professional Issues	2
Nurs. 847 Nursing Synthesis	1
Nurs. 847L Nursing Synthesis Laboratory	3
	12

SOCIAL SERVICES TECHNOLOGY

The College of Applied Science and Technology in cooperation with the Department of Sociology, Anthropology, and Social Work offers a two-year program in Social Services Technology leading to the degree Associate in Applied Science. Students are advised in the Department of Sociology, Anthropology, and Social Work.

The primary purpose of this program is to provide a formal two-year degree for those currently employed as social worker aides who wish to increase their professional qualifications, and for those who are entering the field of social work in the less complex positions.

The student must meet the general degree requirements and department course requirements as follows:

Department Course Requirements

	Cr. Hrs.
620 Introduction to Social Work	4
621 Human Development and Social Environment	4
719 Health Care Systems	3
721 Social Policy	4
722 Methods of Social Work Practice	3
723 Intervention With Groups	3
724 Community Intervention	3
725 Field Work in Social Services	7
734 Field Work Seminar	2
	33
Other Technical Subjects	12
	45

General University Requirements

	Cr. Hrs.
English 550, 551 Basic Composition I & II	8
Science Elective	4
Science/Math. Elective	4
Psychology 560 General Psychology	4
H&PE 590 Health Education	3
BE 520 or 521 Typing I or II	2
BE 510 Office Procedures	4
Home Ec. 502 Nutrition Fundamentals	4
Soc. 500 Fundamentals of Sociology	4
Electives	10
Humanities Elective	4
	51
Total Credit Hours	**96**

The 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:

Department of Biological Sciences
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 Mathematical and Computer Sciences
Department of Military Science
Department of Philosophy and Religious Studies
Department of Physics and Astronomy
Department of Political Science and Social Science
Department of Psychology
Department of Sociology, Anthropology and Social Work

OBJECTIVES OF THE COLLEGE OF ARTS AND SCIENCES

Within Youngstown State University the College of Arts and Sciences strives to prepare students for full and productive lives by helping them develop the skills of observation, analysis, and making rational judgements. The college further attempts to familiarize students with the ways in which these skills have contributed and continue to contribute to knowledge and progress in a civilized society. To these ends students are introduced to a reasonably wide range of studies, while getting intensive training in their chosen areas. Students are thus given not only a basis for competence in a career, but the ability to function well in a world which requires understanding in areas beyond their specialties.

MAJOR AND MINOR FIELDS

For the A.B. degree. The major may be in any of the departments listed above (except Military Science) with each foreign language, and each discipline in a multi-discipline department, being regarded as a separate department for this purpose. It may be an interdepartmental or combined major in American Studies, Black Studies, Classical Studies, Combined Science, Earth Science, The Humanities, Labor Relations, or Social Studies.

For the B.S. degree. Majors are possible in Biology, Chemistry, Computer Science, Geology, Mathematics, Physics, and Psychology 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 principle field and are advised by that department 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 discipline or disciplines (other than that of the major) in which it is possible to take 21 quarter hours.

Students whose needs are not completely met by existing conventional programs may wish to investigate and apply for the individualized curriculum program. (See General Requirements and Regulations.)

REQUIREMENTS FOR DEGREES

It is the student's responsibility to see that all the graduation requirements for the degree sought are satisfied. For the A.B. and B.S. degrees, these comprise:

1. The pre-college or preparatory courses for each degree are normally taken in high school, but any that were not may be made up before the junior year in the University. They are listed below; for further information see *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 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.

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

The B.S. in Ed. degree requirements are given in the School of Education section.

PROFICIENCY IN A FOREIGN LANGUAGE

The student's proficiency in a foreign language is determined by the successful completion of either the elementary and/or intermediate courses in the language or a proficiency examination administered by the Department of Foreign Languages. 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 in one foreign language, or two units of each of two languages, satisfies the requirement with no further study at the university level. A student who has *three high school units in one language* can meet this requirement by successfully completing either the second intermediate course in that language or the first full year of a second foreign language. A student with *two high school units in one language* can meet the requirement by completing either the two intermediate courses in that same language or the first full year of a second language. A student with *one unit of high school language* can meet the requirement by taking either the last elementary course and both intermediate courses in that language, or the last elementary course in that language and the full first year of another language, but he receives no university course credit for the last elementary course. A student with *no units of high school foreign language* must take the three elementary and two intermediate courses in one language, or the three elementary courses of each of two languages, but in either case he receives no university course credit for the first three courses.

For the Bachelor of Science degree: either three or four years of one high school foreign language, or *two years each of two high school foreign languages,* satisfies the requirement with no further study at the university level. A student with *two high school units in one foreign language* may meet the requirement for this degree by taking either the first intermediate course

in the same language or the first full year of another foreign language. A student with *one high school unit in a foreign language* may meet the requirement by successfully completing either the last elementary and the first intermediate course in that language or the last elementary course in that language and the first full year of another language, but he receives no university course credit for the last elementary course. A student with *no units of high school foreign language* must take the three elementary courses and one intermediate course in one language, or the three elementary courses of each of two languages, but in either case he receives no university course credit for the first three courses. (Note: For the Bachelor of Science degree only, German 505, 506 are the equivalent of the full elementary course in German.)

Repetition of high school course work. A student may repeat for full university course credit any course which is the equivalent of a course he has already completed in high school. At this University, courses 501 and 502 in a foreign language are the equivalent of the first year course in that language in high school, 503 is the equivalent of the second year, 601 of the third year, and 602 of the fourth year.

The knowledge of the foreign language does not have to be the result of enrollment in classes; it may have been acquired through some other means. Students who have acquired the knowledge of a foreign language through other means than course work, may elect to take a proficiency examination to fulfill part — or all — of the requirement, but they receive no course credit for that part of it. Detailed information about these examinations is available in the Department of Foreign Languages. Only students who can show evidence of reasonable preparation will receive permission to take the examinations.

DEGREE REQUIREMENTS

Requirements for completion of a baccalaureate degree within the College of Arts and Sciences include all University requirements detailed in the **General Requirements and Regulations** section of this bulletin (i.e., requirements regarding pre-college units, total university credits, course levels, majors and minors, grade point average, residency and degree applications). Specific requirements for each major in the College of Arts and Sciences are listed by department. However, all Arts and Sciences' baccalaureate degrees require completion of the following General Requirements:

BASIC COURSES (Same as under General Requirements and Regulations)	**Quarter Hours of Credit**	
	A.B.	**B.S.**
English 550-551, Basic Composition I-II	8	8
Health and Physical Education 590, Health Education	3	3
Health and Physical Education Activity Courses	3	3
AREA COURSES		
See Table of Courses under General Requirements and Regulations for specific details.		
Humanities Courses in at least two of the following areas: literature courses in English or Humanities, literature in a Foreign Language, Philosophy and Religious Studies, history and/or appreciation courses in the College of Fine and Performing Arts, and Black Studies 601. Students seeking a high school teaching certificate must take at least one course in each of two of the following areas: Fine Arts, Philosophy, and/or Religious Studies.	16	16
Social Studies Courses in at least two of the following departments and/or areas: Economics, Geography (except Physical Geography); History; Political Science and Social Science; Psychology; Sociology, Anthropology, and Social Work; and Black Studies 600.	20	20
Science/Mathematics (at least 8 q.h. of Science) Courses in at least two of the following departments: Biological Sciences, Chemistry, Geology, Geography (Physical only), Physics, and Astronomy, and Mathematical and Computer Sciences. (No more than eight quarter hours may be in Mathematics and/or Computer Science.	16	Included in the major

OTHER COURSES (In addition to those under General Requirements and Regulations)

A Foreign Language For the A.B. degree, the requirement is the successful completion of the two intermediate courses (or equivalent) if the language is the one used to fulfill the entrance requirement. If a different language is used, the requirement is different (See *Proficiency in a Foreign Language*, above). For the B.S. degree, the requirement is the successful completion of the first quarter of the intermediate course (or equivalent) of the same language used to fulfill the entrance requirement, or the complete 3-quarter elementary course (or equivalent) if a different language is elected. If the entrance requirement has not been met, see *Proficiency in a Foreign Language*, above.	8-20	4-16
Balance required for graduation The student allots these hours, in accordance with requirements and desires, to completing a major, one or more minors, teaching fields, other special objectives, and elective courses anywhere in the University for which the student can satisfy the prerequisites and which are acceptable toward the degree. (Prospective high school teachers must allot 41 of these hours to courses required for teacher education; see *Required Courses for a High School Provisional Certificate*.	100-112	95-107

COURSES OF INSTRUCTION AND CURRICULUMS

In the following department sections, the course requirements for the various majors are given, but other requirements are not repeated from the list above.

The student should be familiar with the course-numbering system and its significance, as well as the abbreviations used to indicate the amount of credit. These are explained in the General Requirements and Regulations section.

AMERICAN STUDIES

Professor Dale (Advisor).

Advisory Committee: *Assistant Professor Green, English; Professor Muntean, Sociology; Professor Rhonda, History; Professor Shipka, Philosophy.*

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 value 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.

The major is designed to stimulate realistic and critical comprehension of American culture through focusing on America's multiplicity, learning its historical roots in western civilization, and acquiring enough knowledge of a foreign culture to make meaningful comparisons.

For the combined major in American Studies one of the following programs is to be completed.

Option I:

A. Required Courses:

1. History 605, 606, 655, 656.
2. English 613, 614.
3. A foreign civilization course.
4. Geography 722.
5. American Studies 801, 802, 803.

B. One course from each of the following groups:

1. The Humanities
   a. An upper division American Literature course.
   b. English 650, 755.
   c. Journalism 815.
   d. Linguistics 750.
   e. Philosophy 713, 715, 749, 811, 812, 820, or 830.
2. American History (Upper Division).
3. Sociology, Anthropology, or Economics.
   a. Sociology 500, 600, 700, 707, 760, 761, 789.
   b. Anthropology 602, 711, 716, 775, 822.
   c. Economics 520, 621, 622, 708, 802, 806, 807, or 808.
4. Political Science: A course in American or Comparative Government.

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

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 the sophomore year work out with the advisor an individual pattern of courses appropriate to the problem. The student must initiate the 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.

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 teachers. 3+3+3 q.h.

ANCIENT LANGUAGES AND LITERATURE

See Greek; Humanities; Latin; Philosophy and Religious Studies.

ANTHROPOLOGY

See Sociology, Anthropology, and Social Work.

ARTS AND SCIENCES

A&S 700. *Human Values in Medicine.* A behavioral science and humanities perspective on individual and social issues which affect medical care delivery. In addition to classes, seminars, and workshops, it may include field projects, participation in health related investigations and presentations, and personal development programs.

Credit toward fulfillment of the area requirements will be determined by the Dean of the College of Arts and Sciences and will be based upon the selection of courses. May be repeated once. Prerequisite: Psych. 560 and Philosophy 600 or consent of Dean. For current students. 1-10 q.h.

ASTRONOMY

See Physics and Astronomy.

A major in Astronomy is not offered, but a combined major in Physics and Astronomy is possible. Students interested in training for planetarium operation may consult the Planetarium Director.

BIOLOGICAL SCIENCES

Professors Van Zandt (Chairman), Kelley, Kreutzer, MacLean, Peterson, Schroeder, Sobota, Toepfer, Yemma; Associate Professors Cannon, Chuey, Fishbeck, Karas, Rufh, Sebastiani; Assistant Professors Brennan, Leipheimer, Sich and Sturm.

Courses in the Department of Biological Sciences may be applied toward a Bachelor of Arts or Bachelor of Science degree. The department offers specialized study areas that provide information needed by students planning to enter the fields of Botany, Dentistry, Health-Related Careers, Nursing, Medicine, Medical Technology, Microbiology, Molecular Biology, and Veterinary Medicine. Suggested programs suitable to these fields are available at the department office or from any of the department advisors.

For the Master of Science degree program in the Biological Sciences, see the *Graduate School Catalog.*

For the B.A. degree, the major in Biology comprises Biology 506, 507, 508 and at least 33 other hours of Biology, of which 21 hours must be in upper division courses. Also required is Chemistry 515, 516, 517. Recommended courses in other sciences are Chemistry 719, 720, 721 (Organic) and a year of Physics (501, 502, 502L, 503, 503L); a mathematics course in statistics, Mathematics 714, is also recommended.

For the B.S. degree, the Biology major must include Biology 506, 507, 508 and at least 41 other hours of Biology, of which 30 must be in upper division courses. Also required are Chemistry 515, 516, 517 and 719, 720, 721; Physics 501, 502, 502L, 503, 503L; and Mathematics 550 and 714.

Students seeking admission to medically-related professional schools should complete the B.S. program. Elective courses under either program may be in any disciplines, however, Earth Science, Computer Science, Advanced Mathematics, and Psychology are particularly recommended.

The mathematics and physics courses may not be taken under the credit/no-credit option. (For general University requirements, see the General Requirements and Regulations section of this catalog.)

Recommended curriculum meeting science requirements of medically-related professional schools.

BIOLOGY

506 — Principles of Biology I
507 — Principles of Biology II
508 — Principles of Biology III
721 — Genetics
790 — Molecular-Cellular I
836 — Molecular-Cellular II
702 — Microbiology
713 — Vertebrate Histology
770 — Vertebrate Zoology
775 — Comparative Anatomy
792 — Introduction to Animal Physiology
834 — Vertebrate Physiology I
835 — Vertebrate Physiology II

CHEMISTRY

515, 516, 517 — General Chemistry
719, 720, 721 — Organic Chemistry
603, 604 — Quantitative Analysis
711, 712 — Biochemistry
801 — Elements of Physical Chemistry

MATHEMATICS

520 — Trigonometry
550 — Calculus for Social, Managerial, and Life Sciences I
714 — Probability and Statistics

PHYSICS

501, 502, 502L, 503, 503L — Fundamentals of Physics I, II, III

For a curriculum leading to certification for high school teaching in the Biological Sciences, see the School of Education section of this catalog.

For curriculums in the Health Sciences, see the College of Applied Science and Technology section of this catalog.

Lower Division Courses

504. *Human Evolution and Genetics.* Mendelian genetics as it applies to man and his evolutionary history, including the genetic problems and evolutionary relationships of mankind. Not applicable to the Biology major. Four hours lecture a week. 4 q.h.

505. *Biology and the Modern World.* Findings, applications, and thinking of the science of Biology as related to problems today. Primarily for the science area requirement. Not applicable to the Biology major. Four hours lecture a week. 4 q.h.

506, 507, 508. *Principles of Biology I, II, III.* A laboratory course in general biology providing comprehensive coverage of basic life science for students who need biology for entrance into various specialty schools. Three hours lecture and two hours laboratory a week. 4+4+4 q.h.

551, 552. *Physiology and Anatomy of Man.* Structure and function of the human organism. Prereq.: High school chemistry and biology, or equivalent. Registration by permit only. Not applicable to the Biology major. Three hours lecture and two hours laboratory a week; must be taken in sequence. 4+4 q.h.

560. *Paramedical Microbiology.* Characteristics, epidemiology, and pathology of viruses, rickettsiae, bacteria, and protozoa of medical significance. Not applicable to the Biology major. Three hours lecture and one three-hour laboratory-discussion period a week. Registration by permit only. 5 q.h.

565. *Introductory Forestry.* An introduction to forestry in the United States. Contribution of forestry to the national economy. Discussion of the principles of forest tree management. Not applicable for students who have taken Biol. 564. 4 q.h.

599. *Orientation to Medicine.* An introduction to the philosophy of medicine through examination of ideas ancient to modern. The Hippocratic Ideal, The Oath of Maimonides, The Meaning of Knowledge, Humanism in Medicine, Independent Thought in Medicine, and The Uncertainty Factor. One hour of lecture a week. Prereq: Admission to the NEOUCOM-YSU Program or consent of the instructor and the department chairman. 1 q.h.

604. *Food Microbiology.* Role of microbes in food preservation, fermentation, spoilage, sanitation, and food poisoning. Two hours lecture, four hours laboratory a week. Prereq.: For Home Economics majors. Registration by permit only. Not applicable to the Biology major. 4 q.h.

661. *Economic Botany.* Enumeration, ecology, culture, distribution, use and biological significance of plants that serve useful purposes for man as food, fiber, wood, drugs, or ornament. Designed for the University science requirement. Four hours lecture a week. 4 q.h.

665. *Coniferous Dendrology.* A study of the important species of gymnosperms in the United States with emphasis on range, identification, and silvical characteristics. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 506 or consent of instructor. 4 q.h.

666. *Hardwood Dendrology.* A study of the major types of angiosperms in the United States, with emphasis on range, identification, and silvical characteristics. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 506 or consent of instructor. 4 q.h.

676. *Silvics.* The influence of location factors on forest cover and the effect of forest vegetation on the site. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 506 or consent of instructor. 4 q.h.

686. *Introductory Soil Science.* Fundamentals of the biological, chemical, and physical properties that influence soil productivity. Laboratory work includes observation, evaluation, and quantitative determination of soil properties that influence plant growth. Three hours lecture and two hours laboratory a week. Prereq.: Chem. 516 or consent of instructor; Geol. 505 recommended. 4 q.h.

692. *Human Sexuality.* An interdisciplinary approach to the study of human sexuality. Holistic approach dealing with questions that concern the college student of today. Includes problems in sex education, the nature of sexuality, the relationship of sex to personal identity, and sexual mobility. Factual information will be given in the areas of physiological reproduction, contraception, venereal disease, sexual disfunctions, techniques, and response. Listed also as Health Education 692, Psychology 692 and Sociology and Anthropology 692. Prereq.: H&PE 590. Does not count toward general University requirements. 4 q.h.

699. *Medical Applications Case Studies.* Applications of biological and chemical concepts in the practice of medicine. May be repeated to a total of three hours credit. Prereq.: Admission to NEOUCOM-YSU Program, or consent of instructor and department chairman. 1 q.h.

Upper Division Courses

700. *Non-Vascular Plants.* A presentation of classification, morphology, reproduction, ecology, and economic aspects of algae, fungi, and mosses. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

701. *Invertebrate Zoology.* Essentials of structure, function, and classification of invertebrates. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

702. *Microbiology.* Scope and evolution of microbiology: microscopy, anatomy, cultivation of bacteria, reproduction and growth, bacterial metabolism, microbial genetics, viruses, resistance and immunity, and control. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508, or admission to NEOUCOM-YSU program. 4 q.h.

703. *Clinical Immunology.* Fundamentals of antigen antibody reactions applied to serological procedures performed in the clinical laboratory. Two hours lecture per week. Must be taken concurrently with Biol. 703L. Identical with MLT 703. Prereq.: Biol. 506, 507, and 508. 2 q.h.

703L. *Clinical Immunology Laboratory.* Laboratory work includes VDRL, ASO, febrile, latex, pregnancy, and viral tests. Techniques practiced include flocculation, precipitation, complement fixation, and titration procedures used in the clinical laboratory. Three hours of laboratory a week. Must be taken concurrently with Biol. 703. Listed also as Medical Laboratory Technology 703L. 1 q.h.

710. *Mammalian Anatomy.* A composite study of the anatomical systems of mammals, based on the cat. Two hours lecture and four hours laboratory a week. Prereq.: Consent of instructor. 4 q.h.

713. *Vertebrate Histology.* The microscopic study of mammalian tissue. Four hours lecture a week. prereq.: Biol 710. 4 q.h.

713L. *Vertebrate Histology Laboratory.* The preparation of mammalian tissue using various histological techniques. Students prepare their own slides for study. Four hours laboratory a week. Prereq. or concurrently: Biol. 713. 2 q.h.

715. *Aquatic Entomology.* Introduction to the morphology, phylogentic relationships and evolutionary adaptions of aquatic insects and their ecological role in aquatic ecosystems. Laboratory exercises and field trips will investigate collection methods and the identification of the major orders and families of aquatic insects. Two hours lecture and four hours laboratory a week. Prereq.: Biol 506, 507, 508. 4 q.h.

721. *Genetics.* Genetic material, reproductive cycles, sex determination, mitosis, meosis, mendelism, probability, linkage, genes in populations, mutation, evolution. Four hours lecture a week. Prereq.: Biol 506, 507, 508, or admission to NEOUCOM-YSU program, or consent of instructor. 4 q.h.

721L. *Genetics Laboratory.* Experiments with subjects such as corn, fruit flies, and higher organisms; preparation and study of chromosomes; statistical analysis of crossing and mutation experiments. Four hours laboratory a week. Prereq. or concurrent: Biol. 721. 2 q.h.

762. *Field Botany.* Identification, ecology, and significance of local plants. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

765. *Vascular Plants.* Structure, function, reproduction, and phylogenic relationships of representative vascular plants. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

770. *Vertebrate Zoology.* Taxonomic presentation of phylum chordata with emphasis on the relationships and significance of vertebrates. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 4 q.h.

771. *Entomology.* An introduction to the morphology, physiology, development, and control of insects. Survey of insect orders and families. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

775. *Comparative Vertebrate Anatomy.* Comparison of morphology of vertebrates, emphasizing evolutionary development of organ systems. Three hours lecture and four hours laboratory a week. Prereq.: Biol 770 or consent of instructor. 5 q.h.

780. *Introduction to Ecology.* Principles governing the relationship of organisms to their environment. A holistic approach to ecology framed in the concepts of ecosystems. Three hours lecture and one three-hour laboratory — discussion period a week. Prereq.: Biol. 506, 507, 508. 5 q.h.

787. *Diagnostic Microbiology.* An examination of the major disease producing microorganisms encountered in the clinical laboratory. The areas will include a study of the frequency, clinical sources, treatment and control of these pathogenic organisms. Listed also as Medical Laboratory Technology 787. Students who have taken Biol. 788 will not receive credit for Biol. 787. Must be taken concurrently with Biol. 787L. Prereq.: Biol. 702. 2 q.h.

787L. *Diagnostic Microbiology Laboratory.* A clinical approach to the study of bacteria, fungi, and other microorganisms, including the identification of organisms encountered in the clinical laboratory. Listed also as Medical Laboratory Technology 787L. Students who have taken Biol. 788 will not receive credit for Biol. 787L. Must be taken concurrently with Biol. 787. Prereq.: Biol. 702. 2 q.h.

789. *Man and the Technological Society.* An interdisciplinary critical examination of man in the modern technological society from the perspectives of the social, engineering, and life sciences. The topics will be (1) The 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 Sociology and Chemical Engineering 789. Prereq.: Junior standing or consent of instructor. 4 q.h.

790. *Molecular-Cellular I.* Cellular and macromolecular function in relation to cell replication and its control, information theory, regulation of cellular activity, interaction between organelles and the nucleus, and control of cellular differentiation. Two hours lecture a week. Prereq.: Biol. 506, 507, 508, or admission to NEOUCOM-YSU program or consent of instructor. 2 q.h.

790L. *Molecular-Cellular I Laboratory.* The quantitative determination of protein, deoxyribonucleic acid, and ribonucleic acid in cultures of microorganisms subjected to antibiotic treatments. Four hours laboratory a week. Prereq. or concurrent: Biol. 790, or admission to NEOUCOM-YSU program, or consent of instructor. 2 q.h.

792. *Introduction to Animal Physiology.* Concepts of homeostatis, physiological regulation, body fluid distribution and composition, and the nervous, endocrine, muscular and cardiovascular systems that participate in physiological regulation. Four hours lecture and two hours laboratory a week. Prereq.: Biol 506, 507, 508 or admission to the NEOUCOM-YSU program, or consent of instructor. 5 q.h.

801. *Environmental Microbiology.* The activities of microorganisms, primarily bacteria, in air, soil, water, and sewage. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 702. 4 q.h.

803. *Population and Community Ecology.* Current concepts of animal population and community ecology, including statistical analysis of field-collected data. Students who have had Biol. 802 will not receive credit for Biol. 803. Three hours lecture and four hours laboratory a week. Prereq.: Biol 780 or 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 environment. Four hours lecture a week. Prereq.: Biol. 780 or consent of instructor. 4 q.h.

804L. *Aquatic Ecology Laboratory.* Field and laboratory studies of structure and function of selected aquatic ecosystems in northeastern Ohio. Four hours laboratory a week. Prereq. or concurrent: Biol 804, or consent of instructor. 2 q.h.

805. *Ichthyology.* The ecology, evolution, and taxonomy of fishes, especially those of the midwestern United States. Three hours lecture and two hours laboratory a week. Prereq.: Biol. 780. 4 q.h.

806. *Field Ecology.* A field course to study ecosystems that are distinctly different from the deciduous forest-human systems of northeastern Ohio. Parameters of ecosystem structure are measured to better understand the fundamental properties of ecosystems. Pre- and post-trip lectures, specified experiments, independent study, a written report, and an oral presentation of the independent study project during a post-trip seminar. Prereq.: Biol. 780. 5 q.h.

808. *Embryology.* Identification of mechanisms: analysis of control of developmental events and processes. Interaction of egg and sperm, penetration and activation of the egg, theories of induction, models of tissue interaction, gene action, and the fate of informational molecules during development. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 770 or admission to the NEOUCOM-YSU program, or consent of instructor. 4 q.h.

809. *Concepts of Developmental Biology.* The study of recent advances in developmental biology with emphasis on submolecular, organismal, and gross differentiation. Two hours lecture and four hours laboratory per week. Prereq.: Biol. 808 or consent of instructor. 4 q.h.

812. *Mycology.* Morphology, physiology, classification, ecology, and economic and medical importance of fungi. Laboratory investigation of morphology and physiology. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 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. Laboratory exercises include extensive field collections. Three hour lecture and four hours laboratory a week. Prereq.: Biol. 765. 5 q.h.

821. *Plant Anatomy.* Comparative anatomy and histology of the vascular plants. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508, or consent of instructor. 5 q.h.

822. *Plant Physiology.* Physiochemical nature of life processes of plants. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 506, 507, 508, and Chem. 517, or 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. Four hours lecture a week. Prereq.: Biol. 721 or consent of instructor. 4 q.h.

824. *Bacterial and Viral Physiology.* Physiological processes of bacteria and viruses, with emphasis on their relationship to disease. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 702. 4 q.h.

825. *Radioisotopes in Biology.* Use of radioactive isotopes as tracers of vital substances within biological systems. Students employ autoradiography, liquid scintillation, and gas flow techniques to study uptake, movement, and biosynthesis of substances. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 790. 4 q.h.

830. *Immunology.* Fundamentals of immunological systems, including both humoral and cellular immunological phenomena. Three hours lecture and four hours laboratory a week. Prereq.: Biol. 702 and Chem. 721. 5 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.

833. *Mammalian Endocrinology.* A detailed examination of the hormones of the hypothalamus, pituitary, thyroid, paraputative endocrine function. The course will focus on the physiological functions of hormones and their mechanisms of action with emphasis on the human. Four hours lecture a week. Prereq.: Biology 792 or consent of instructor. 4 q.h.

834. *Vertebrate Physiology I.* Detailed study of cardiovascular, respiratory and digestive systems with emphasis on human physiology. Two hours lecture, four hours laboratory per week. Prereq.: Biol. 792, or consent of instructor. 4 q.h.

835. *Vertebrate Physiology II.* Continuation of Vertebrate Physiology I. Detailed study of energy exchange and temperature regulation, renal physiology and physiology of water, electrolyte, and acid-base balance. Two hour lecture, four hours laboratory a week. Prereq.: Biol. 834; or consent of instructor. 4 q.h.

836. *Mollecular-Cellular II.* Physical limits, relationship of cell morphology to function, cell organization and structure, physiochemical environment, bioenergetics, metabolism, and membrane transport systems. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 790, or admission to the NEOUCOM-YSU program, or consent of instructor. 4 q.h.

837. *Cytology and Techniques.* A study of the structure and organization of protoplasm, using current methods of preparing and observing living and fixed cells. Two hours lecture and four hours laboratory a week. Students who have had Biol. 832 will not receive credit for Biol. 837. Prereq.: Chem. 721. 4 q.h.

838. *Biology of Enzymes.* Enzymes in biological systems and the interrelationships of enzymes with metabolism, cell membrane function, and cellular development. Two hours lecture and four hours laboratory a week. Prereq.: Biol. 836 and Chem. 721. 4 q.h.

841. *Animal Parasitology.* The biological implications of parasitism. Diagnosis, morphology, and life histories of the parasites of humans and domestic animals. Two hours lecture and four hours laboratory a week. Prereq.: Consent of instructor. 4 q.h.

842. *Advanced Parasitology.* The host-parasite interphase at the evolutionary, ecological, physiological, and molecular levels. A synthesis is developed of the current concepts of the parasitic niche. Prereq.: Biol 841. 4 q.h.

850. *Problems in Biology.* Special biological problems for which materials and equipment are avilable and for which the student is qualified. Available at all times. Prereq.: Recommendation of staff. 1-4 q.h.

853. *Biometry.* Application of fundamental theory and procedures to the statistical analysis of biological data. Prereq.: Consent of instructor. 4 q.h.

860. *Evolution.* Genetic and ecological forces in the evolutionary process. Prereq.: Biol. 721. 4 q.h.

872. *Protozoology.* Morphology, phylogeny, and bionomics of protozoa. Two hours lectures and four hours laboratory a week. Prereq.: Biol. 721 or 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 Biol. 772 cannot receive credit for this course. Two hours lecture and four hours laboratory per week. Prereq.: Biol. 770. 4 q.h.

PRE-FORESTRY

There are several ways in which a student may pursue interests in forestry or plant science at YSU:

4 + 1 Program

A student may elect to obtain a B.S. degree at YSU in plant-related courses. Upon receiving the B.S. degree, and if qualified, the student may then enroll in a master's program at a forestry and plant science school.

2 + 2 Program

A student may concentrate on a pre-forestry program at YSU for two years and then transfer to a forestry or plant science school.

Duke University Co-operative Program (3 + 2)

YSU has a co-operative program in forestry with Duke University in which the student attends YSU for three years, and then transfers to Duke University for the remaining two years. Successful completion of this program gives the student a B.S. degree from YSU in Biology and an M.S. degree from Duke in Forestry or environmental management.

Many of the courses in the Department of Biological Sciences at YSU apply toward degrees in the agricultural and plant sciences at other schools.

For further information about forestry, plant science, and related agricultural programs, contact the pre-forestry advisor, Department of Biological Sciences, Youngstown State University, Youngstown, Ohio 44555; Telephone (216) 742-1941.

BLACK STUDIES

Professor Bright (Director).

The purpose of this interdisciplinary major is to facilitate academic investigation and analysis of the historical, social, and aesthetic impact of the people of African descent on American society and the world. It also provides for the systematic study of the problems confronting the modern multi-ethnic world.

MAJOR IN BLACK STUDIES

The major in Black Studies is part of a program leading to the Bachelor of Arts degree, and students electing the major must satisfy all other requirements for that degree. The major must include a minimum of 48 hours in Black Studies courses and other courses approved for Black Studies. At least 28 hours must be in upper division courses. A grade of C or better is required in every course counted toward either the major or a minor in Black Studies.

All Black Studies majors must complete the following courses:

I. CORE Courses (16 Quarter Hours)

Black Studies 600 . . . . . 4 q.h.
Introduction to Black Studies I
Black Studies 601 . . . . . 4 q.h.
Introduction to Black Studies II
Black Studies 700 Special Topics in Black Studies . . . . . 4 q.h.
History 663 African Civilization . . . . . 4 q.h.

II. 8-16 hours from among the following social studies courses (for course descriptions, see the various department listings):

*American Studies 801, 802, 803 . . . . . 3+3+3 q.h.
Perspectives on America
Anthropology 770 . . . . . 4 q.h.
African Cultures
Education 879 . . . . . 4 q.h.
Educational Sociology Seminar
Education 880 . . . . . 3 q.h.
Inner-City Educational Workshop
Geography 726 . . . . . 4 q.h.
Regional Urban Geography of Black Africa
History 630 . . . . . 4 q.h.
The Black Experience in American History
*History 801 . . . . . 4 q.h.
Select Problems in American History
History 820 . . . . . 4 q.h.
History of West Africa to 1800
History 821 . . . . . 4 q.h.
History of West Africa Since 1800
History 822 . . . . . 4 q.h.
History of Modern South Africa in the Sahara
*History 860 . . . . . 4 q.h.
Select Problems in Third World History
Political Science 706 . . . . . 3 q.h.
Minority Group Politics
Psychology 745 . . . . . 4 q.h.
The Minority Individual
Social Work 726 . . . . . 4 q.h.
The Black Family
Social Work 727 . . . . . 4 q.h.
The Black Community
Sociology 700 . . . . . 5 q.h.
Minority Groups

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 (for course descriptions, see the various department listings):

Art 742 . . . . . 3 q.h.
African Art
Art 744 . . . . . 3 q.h.
African-American Art
Humanities 620 . . . . . 4 q.h.
Introduction to African Literature
*English 699 . . . . . 4 q.h.
Selected Studies in Literature and Language
English 871 . . . . . 4 q.h.
The Black Experience in American Literature
Music 510 . . . . . 3 q.h.
Survey of Jazz
Religious Studies 708 . . . . . 4q.h.
The 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 courses directly relevant to Black Studies, the major may include as many as 16 hours in any other courses approved by the director of the Black Studies program.

Suggested Minor

A minimum of 21 hours in courses listed above including the four CORE courses.

Lower Division Courses

600. *Introduction to Black Studies I.* The social-historical and intellectual heritage of black people in Africa and the Americas. This course is applicable to the University requirement in the social studies area. 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 area. 4 q.h.

Upper Division Course

700. *Black Studies Colloquium.* A seminar focusing on the cultural, economic, educational, political, or social aspects of the experiences of people of African descent. Prereq.: Blk. St. 600 or 601 and consent of

*When applicable and approved by the director of the Black Studies program.

black studies director. This course may be used for upper division elective hours only. May be repeated once with different content. 4 or 8 q.h.

BOTANY

See Biological Sciences.

CHEMISTRY

Professors Cohen, Del Bene, Dobbelstein (Chairman), Foldvary, Gebelein, Koknat, Lukin, Mahadeviah, Mettee, Phillips, Reeder, Schildcrout, F. W. Smith, R. K. Smith, Spiegel, von Ostwalden, Yingst; Associate Professor Mincey.

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 below after the course descriptions. The Bachelor of Arts degree is recommended for those who plan to go into a medical or dental field and for those who plan to enter business or secondary education careers related to chemistry. The required courses for a B.S. degree with a major in Chemistry are listed in the B.S. curriculum. The courses required for an A.B. degree are those listed in the A.B. curriculum below. The courses for an A.B. degree in Chemistry that meets recommendations for preparation for the medically-related professional schools are listed in the curriculum below. Chemistry majors may not count Chemistry 500 or 501 toward the 186 quarter hours required for the baccalaureate degree.

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

Credit may not be received for more than one course or sequence of the following pairs: Chem. 500/501; Chem. 591, 592/515, 516, 517; Chem. 791, 792, 793/719, 720, 721; Chem. 796, 797/711, 712; Chem. 801/739.

The segments of all chemistry courses extending through more than one quarter must be taken in sequence, unless otherwise indicated.

Lower Division Courses

Chemistry 500, 501, 502, 503, and 510 may be counted toward the University science-area requirement, but are not intended for Chemistry or Engineering majors.

500. *Introduction to Chemistry.* A one-quarter, nontechnical introduction to chemistry ranging from the scientific basis of its laws and theories to the impact of chemical technology on society. Four hours lecture-discussion; no laboratory. 4 q.h.

501. *Survey of Chemistry I.* An introductory course for students who have not had high-school chemistry and intend to continue with chemistry 502 or 515. Modern chemical concepts and principles with their relation to the properties of simple chemical systems. Four hours lecture-recitation; no laboratory. Prereq.: Algebra I, and Algebra II or Geometry. 4 q.h.

502, 503. *Survey of Chemistry II, III.* Principles of general, organic, and biological chemistry for students in allied health and other fields not needing more advanced courses in chemistry. Three hours lecture and three hours laboratory with discussion. Prereq.: Chem. 501 or one unit of high school chemistry. 4+4 q.h.

510. *Survey of Chemistry Laboratory I.* Designed to accompany Chemistry 501 for those who desire laboratory experience. Three hours laboratory-discussion. Prereq. or concurrent: Chem. 501. 1 q.h.

515, 516, 517. *General Chemistry I, II, III.* The fundamental principles and the more important elements and compounds; qualitative analysis. Intended for majors in the natural sciences and engineering. Three hours lecture and three hours laboratory-discussion. Prereq.: Three units of high school algebra and geometry (or Math. 511 and 510 or their equivalents), and one unit of high school chemistry or Chem. 501 or 502. 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 in greater depth. Three hours lecture and three hours laboratory-discussion. Prereq.: For 515H, the same as for Chem. 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.

591, 592. *Principles of Chemistry I, II.* Fundamental principles of chemistry and introduction to inorganic chemistry. Three hours lecture. Prereq.: Admission to the NEOUCOM-YSU program, or equivalent qualification with consent of instructor and department chairman. Concurrent: Chem. 593 with 591; 594 with 592. 3+3 q.h.

593, 594. *Principles of Chemistry Laboratory I, II.* Introduction to laboratory techniques, including inorganic chemistry and qualitative and quantitative analysis. Three hours laboratory-discussion. Concurrent: Chem. 591 with 593, 592 with 594. 1+1 q.h.

603, 604. *Quantitative Analysis I, II.* Chemical equilibrium, stoichiometry, theory of errors, and volumetric and gravimetric procedures as applied to quantitative determinations. Introduction to electroanalytical and spectrophotometric methods. Emphasis on development of technique. Three hours lecture and six hours laboratory. Prereq.: Chem. 517 or 592 for 603; Chem 603 or 692 for 604. 5+5 q.h.

691. *Introduction to Physical Chemistry.* Elements of thermodynamics, equilibria, states of matter, kinetics, and spectroscopy. Prereq.: Chem. 592 or a

3.60 average in Chem. 515, 516, 517, and Math. 681 or equivalent. 3 q.h.

692. *Instrumental Techniques.* The use of instrumentation in the study of chemical systems, including spectrometric, electrometric, chromatographic, and thermometric methods. Six hours laboratory-discussion. Concurrent: Chem. 691. 2 q.h.

699. *Medical Application Case Studies.* Applications of biological and chemical concepts in medicine. May be repeated to a total of three hours credit. Prereq.: Admission to NEOUCOM-YSU program, or consent of instructor and department chairman. 1 q.h.

Upper Division Courses

705. *Nutritional Biochemistry.* 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 laboratory-discussion. Prereq.: Chem. 503. 4 q.h.

711, 712. *Biochemistry I, II.* The chemistry and metabolism of living organisms, with laboratory work to illustrate modern biochemical methods. Primarily designed for Biology and Medical Technology majors. Two hours lecture and three hours laboratory-discussion. Prereq.: Chem. 603 or 692; Chem. 721 or 793; and Biol. 506, 507, 508 or equivalent. 3+3 q.h.

713. *Clinical Biochemical Techniques.* Advanced clinical techniques designed for Medical Technology majors. Two three-hour laboratories. Prereq.: Chem. 712 or 799. 2 q.h.

719, 720, 721. *Organic Chemistry I, II, III.* Organic compounds, reactions, and theories. Typical preparations and procedures of analysis. Three hours lecture and three hours laboratory. Prereq.: Chem. 517 or 592. 4+4+4 q.h.

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

730. *Clinical Radiochemistry.* An introductory and systematic study of radioisotopes in clinical practice. Three hours lecture. Prereq.: Chem. 517 or 592. 3 q.h.

730L. *Clinical Radiochemistry Laboratory.* Methods of detection and measurement of radiation, with emphasis on the development of techniques and safety in a clinical radiation laboratory. Three hours laboratory. Prereq. or concurrent: Chem. 730. 1 q.h.

739, 740, 741. *Physical Chemistry I, II, III.* Principles and applications of physical chemistry. Three hours lecture and three hours laboratory. Prereq.: Chem. 603 or 692; Phys. 610, 611, 610L, 611L or Phys. 650, 502L, 503L. Prereq. or concurrent: Math. 674. 4+4+4 q.h.

791, 792, 793. *Principles of Organic Chemistry I, II, III.* Organic compounds, reactions, and theories, including an introduction to biochemistry. Three hours lecture. Prereq.: Admission to NEOUCOM-YSU program or consent of instructor and department chairman, and either Chem. 592 concurrently or Chem. 515, 516 with A's. Concurrent: Chem. 794 with 791, 795 with 793. 3+3+3 q.h.

794, 795. *Principles of Organic Chemistry Laboratory I, II.* Synthetic and analytical procedures of organic chemistry. Three hours laboratory-discussion concurrent: Chem. 791 with 794, 793 with 795. 1+1 q.h.

796. *Fundamentals of Biochemistry I.* Amino acids, nucleic acids, enzymes, and coenzymes; biochemical energetics. Three hours lecture. Prereq.: Admission to NEOUCOM-YSU program or consent of instructor and department chairman, plus Chem. 691 or equivalent and either 721 or 793. 3 q.h.

797. *Fundamentals of Biochemistry II.* Metabolism of carbohydrates, lipids, proteins, and nucleic acids, with special emphasis on mammalian systems. Three hours lecture. Prereq.: Chem. 796. 3 q.h.

798, 799. *Fundamentals of Biochemistry Laboratory I, II.* Analysis and separation techniques of biochemistry. Three hours laboratory-discussion. Prereq.: Chem. 692 and 795 or equivalent. Concurrent: Chem. 796 with 798, 797 with 799. 1+1 q.h.

801. *Elements of Physical Chemistry.* An introduction to thermodynamics, chemical structure, reaction rates, and other physical properties of chemical systems, emphasizing applications in biology and health-related fields. Four hours lecture. Prereq.: Chem. 517 or 691; Phys. 503; Math. 550 or 681; and senior standing. 4 q.h.

803, 804. *Chemical Instrumentation I, II.* The theoretical foundations of instrumental procedures and use of instruments in analytical work. Chem. 803: Two hours lecture and six hours laboratory. Chem. 804: Two hours lecture and three hours laboratory. Prereq.: Chem. 604 and 741. 4+3 q.h.

805. *Applied Spectroscopy.* Infrared, ultraviolet, nuclear magnetic resonance, electron spin resonance, mass spectrometry, and methods of current interest as applied to chemical systems. Three hours lecture. Prereq.: Chem. 721 or 793; Prereq. or concurrent: Chem. 740 or permission of instructor. 3 q.h.

807. *Chemical-Instrumentation Interfacing.* An introduction to the use of microprocessor-based equipment for data acquisition and manipulation and for instrument control in chemical experimentation. Interfacing requirements will be stressed. Three hours lecture and three hours laboratory. Prereq.: Chem. 804. 4 q.h.

810. *Chemical Literature.* The development of skills necessary to effectively use the primary sources of chemical information and supporting abstracts, indices,

and computer-based search systems. Scientific writing. Prereq.: Chem. 720 or 792. 2 q.h.

813. *Thermodynamics and Kinetics.* Fundamentals of chemical thermodynamics and kinetics with applications in both ideal and real chemical systems. Three hours lecture. Prereq.: Chem. 740. 3 q.h.

821. *Intermediate Organic Chemistry.* An introduction to advanced study in organic reactions and theories. Three hours lecture. Prereq.: Chem. 721 or 793; Prereq. or concurrent: Chem. 739 or 801. 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-discussion. Prereq.: Chem. 721 or 795. 3 q.h.

823. *Organic Synthesis.* Preparations of organic compounds and applicable instrumental techniques. One hour lecture and six hours laboratory with discussion. Prereq.: Chem. 721 or 795. 3 q.h.

824. *Polymer Chemistry.* Polymerization processes and polymer structure-property relationships. Prereq.: Chem. 720 or 792. 3 q.h.

825. *Polymer Chemistry Laboratory.* Preparation and characterization of some polymers. One hour lecture and six hours laboratory. Prereq.: Chem. 824. 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.: Chem. 729, 741. 2+2 q.h.

831. *Inorganic Chemistry Laboratory.* Preparation of typical inorganic compounds and their characterization. Six hours laboratory-discussion. Prereq.: Chem. 729; Prereq. or concurrent: Chem. 741. 2 q.h.

835. *Nuclear Chemistry and Its Applications.* Nuclear structure and reactions, types of radioactive decay, radiation detection, measurements, and techniques in handling radioactive materials. Prereq.: Chem. 740 or 801. 3 q.h.

836. *Chemical Bonding and Structure.* Application of molecular orbital theory and symmetry to chemical bonding, structure, and spectroscopy. Prereq.: Chem. 740. 3 q.h.

850. *Undergraduate Research.* Research participation under the direction of a faculty member. May be repeated to a maximum of nine q.h. Prereq.: Chem. 603 or 719 and approval of department chairman. 2 or 3 q.h.

864. *Chemical Toxicology.* An introduction to the clinical, forensic, industrial, and environmental aspects of chemical toxicology. The therapeutic and toxic limits of drugs. The actions, control, and treatment of poisons and environmental agents. Prereq.: Chem. 721 or 793, and either 604 or 692 or permission of instructor. 3 q.h.

Each student 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 and choice of a minor or minors.

All chemistry majors are urged to consult their advisors regularly to avoid curricular problems.

In each of the following three curriculums, the electives must satisfy all the general requirements for the degree sought (see Requirements for Degrees). German is strongly recommended for meeting the foreign language requirement in the B.S. curriculum.

RECOMMENDED CURRICULUM LEADING TO A B.S. DEGREE WITH A MAJOR IN CHEMISTRY

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 550, 551	8
Mathematics 571, 572, 673	14
Health and Physical Education 590	3
Electives	11
	48

SECOND YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 603, 604	10
Physics 510, 610, 610L, 611, 611L	14
Mathematics 674	4
Electives	5
	45

THIRD YEAR	Hrs.
Chemistry 739, 740, 741	12
Chemistry 729	3
Health and Physical Education Activities	3
Electives	30
	48

FOURTH YEAR	Hrs.
Chemistry 803, 804	7
Chemistry 829 or 830	2
Chemistry 822 or 823	3
Electives	33
	45

NOTE: The electives must include at least three quarter hours of chemistry laboratory, of which no more than one quarter hour may be undergraduate research (Chem. 850). Three additional quarter hours of these electives must be either in 800-level chemistry or in upper division mathematics and physics.

RECOMMENDED CURRICULUM LEADING TO THE A.B. DEGREE WITH A MAJOR IN CHEMISTRY

This curriculum provides the minimum chemical background needed for pursuing career goals in business, secondary education, and other technical fields. A listing of suggested electives for various minors is available in the Chemistry Department Office.

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 550, 551	8
Mathematics 571, 572, 673	14
Health and Physical Education 590	3
Electives	11
	48

SECOND YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 603, 604	10
Mathematics 674	4
Physics 510, 610, 610L, 611, 611L	14
Electives	8
	48

THIRD YEAR	Hrs.
Chemistry 739, 740, 741	12
Chemistry 729	3
Health and Physical Education Activities	3
Electives	27
	45

FOURTH YEAR	Hrs.
Electives	45

RECOMMENDED CURRICULUM LEADING TO THE A.B. DEGREE WITH A MAJOR IN CHEMISTRY

Meeting recommendations for preparation for the medically-related professional schools.

FIRST YEAR	Hrs.
Chemistry 515, 516, 517	12
English 550, 551	8
Mathematics 571, 572	9
Biology 506, 507, 508	12
Health and Physical Education 590	3
Electives	3
	47

SECOND YEAR	Hrs.
Chemistry 719, 720, 721	12
Chemistry 603, 604	10
Physics 510, 610, 610L, 611, 611L	14
Mathematics 673, 674	9
	45

THIRD YEAR	Hrs.
Chemistry 739, 740, 741	12
Biology 790, 721, 808	13
Chemistry 729	3
Health and Physical Education Activities	3
Electives	16
	47

FOURTH YEAR	Hrs.
Biology 702, 834, 836	12
Electives	35
	47

COMBINED B.S./M.D. PROGRAM

This is a six-year program. Students enroll as candidates for the combined B.S./M.D. program and are so identified during their first two years. After eight quarters of college-level work they are eligible for admission to the second or medical-school phase of the program. Each student successfully completing the program will be awarded the B.S. degree from this institution and the M.D. degree from the College of Medicine. See: The Northeastern Ohio Universities College of Medicine, and Combined Science.

COMBINED SCIENCE

A Combined Science major leading to the Bachelor of Arts or Bachelor of Science degree comprises 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 sciences listed above. Only courses designated as applicable to the major may be utilized in meeting the requirement.

(2) An additional 16 q.h. in any of the sciences listed above, or in other related courses such as astronomy, mathematics, or meteorology.

The students must also satisfy all other requirements for the degree sought (see *Requirements for Degrees).*

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.

A student completing the combined B.S./M.D. program normally receives the Bachelor of Science degree with the major in Combined Science. This special program satisfies all the requirements listed above but follows a prescribed curriculum (available in the College of Arts and Sciences Dean's Office).

COMPUTER SCIENCE

See *Mathematical and Computer Sciences.*

EARTH SCIENCE

Professor C. Singler (Supervisor).

Earth Science may be the major for the Bachelor of Arts degree or the Bachelor of Science in Education degree.

It is designed to meet the needs of students desiring a broad background in Earch Science. The major also

provides the necessary background for graduate students and for a teaching field in Earth Science.*

An Earth Science major consists of a minimum of 70 quarter hours of science courses distributed as follows:

A) 50 quarter hours of required courses.

B) A minimum of nine quarter hours from at least two courses from Geology electives, and

C) A minimum of 11 quarter hours in electives in other sciences. Courses for Earth Science major:

Required

Astr	504	Descriptive Astronomy	4
Astr	608	Moon and Planets	4
Chem	515	General Chemistry I	4
Geogr	630	Weather	4
Geol	505	Physical Geology	4
Geol	506	Historical Geology	4
Geol	602	Introduction to Oceanography	4
Geol	604	Megascopic Petrography	6
Geol	607	Geology Laboratory	4
Geol	701	Geomorphology	6
Geol	705	Principles of Paleontology	6

Geology Electives

702	Glacial Geology	4
703	Physiography of the United States	6
704	Structural Geology	5
706	Geology of Economic Mineral Deposits	5
801	Mineralogy	6
802	Stratigraphy and Sedimentation	4
811	Environmental Geology	4
812	Sedimentology	2
	A 700 or 800 level accredited field geology course	3-8

Science Electives

Biol	506	Principles of Biology I	4
Biol	507	Principles of Biology II	4
Biol	508	Principles of Biology III**	4
Chem	516	General Chemistry II	4
Geogr	603	Conservation of Natural Resources	4
Geol	707	Applied Geophysics	4
Math	714	Probability and Statistics	5
Phys	501	Fundamentals of Physics I	4
Phys	502	Fundamentals of Physics II	3
Phys	503	Fundamentals of Physics III	3
Phys	502L	Fundamentals of Physics Lab II	1
Phys	503L	Fundamentals of Physics Lab III	1

*Interested students should consult the Chairman of the Department of Geology.

**Recommended.

ECONOMICS

Professors Kermani, Liu, Mehra, Stocks (Chairman); Associate Professors Bee, Koss, Milley, Ronaghy, Smythe; Assistant Professors Morris, Petruska, Porter, Riley, Usip.

The Department of Economics offers majors in Economics and in Labor Relations.

Economics

A major in Economics comprises 48 quarter hours. Required courses are 520, 621, 622; 624, 705, 710, 712 and either 824, 825, 850 or 853. Math 550 or equivalent is a prerequisite for Economics 709, 710 or 712. The following courses may be applied toward a major in Economics: History 714 and Marketing 703.

The major is designed to prepare students for research and statistical work in business or government; and for graduate study leading to careers in law, journalism, government and international affairs, teaching, industrial relations, and business economics.

The Labor Relations major incorporates a multidisciplinary approach to employer-employee relations and consists of 71 quarter hours in the departments of Economics, Management, Political Science, Psychology, Sociology and Career Guidance.

The program is designed to provide a broad perspective for practitioners in the human resource areas in organizing in the private, quasi-public, and public sectors of the economy.

Lower Division Courses

510. *Economic Theory and the Individual.* Micro-theory's relation to the market place decisions. The micro-economic theories of utility maximization, savings, individual capital formation, cost structures, and information costs as they relate to an individual. 4 q.h.

520. *Principles of Economics I.* (Formerly 500). Basic principles of economics with emphasis on macro-economics; demand and supply analysis; employment theory; fiscal and monetary policy. 4 q.h.

621. *Principles of Economics II.* (Formerly 603). Micro-economics: Market structures of industry, price and output determination, resource allocation, pricing, and employment of resources. Prereq.: Econ. 520. 3 q.h.

621H. *Principles of Economics II, Honors.* An honors course in micro-economics with more emphasis on the analytical aspects and methods than in Economics 621. Prereq.: Econ. 520 completed with a B grade or better. 3 q.h.

622. *Principles of Economics III.* (Formerly 602). Economic problems in labor, agriculture, competition and monopoly, social welfare, urban environment, growth, international trade and finance, underdeveloped countries, poverty, and comparative economic systems. Prereq.: Econ. 621. 3 q.h.

622H. *Principles of Economics III, Honors.* An honors course in Principles III with additional reading and independent research on economic problems. Prereq.: Econ. 621 or 621H with a B grade or better. 3 q.h.

624. *Economics and Social Statistics I.* (Formerly 704). Probability theory with emphasis upon uncertainty in estimating parameters and testing hypotheses. Evaluation, single-sample estimating. Prereq.: Sophomore standing. 4 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 theory. Monetary policy as a determinant of national income. Prereq.: Econ. 622. 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 taxation, 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.: Econ. 622. 4 q.h.

703. *Energy Economics.* A study of the role of economic theory in making energy policy. Topics include sources of supply, trends in demand, and the price of energy resources. Special attention is given to the economic issues of nonrenewable resources, environment, industrial performance, and growth. Prereq.: Econ. 622. 4 q.h.

705. *Economics and Social Statistics II.* Continuation of estimating and testing using small sample techniques. Correlation, simple and multiple regression, time series, index numbers, nonparametric statistics, and introduction to decision theory. Prereq.: Econ. 624. 4 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 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. Price theory and growth, as applied to industries. Prereq.: Econ 622. 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, fundamentals of differential and integral calculus as applicable to the macro- and micro-economic theory. Prereq.: Econ 622 and Math 550. 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.: Econ 622 and either Econ. 709 or Math. 550. 5 q.h.

712. *Intermediate Macro-Economics.* 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. Prereq.: Econ. 622 and either Econ. 709 or Math. 550. 5 q.h.

724. *Economics of Public Utilities.* An analysis of the economic and legal bases of the public utility concept with emphasis on the rate-making process. The effectiveness of commission control. Problems in, and a survey of river-basin and public and power development. Prereq.: Econ. 702 or 708 or 710. 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 Soc. 787. Prereq.: Junior standing. 4 q.h.

801. *Economics of Industrial Organization (Formerly Economics 803).* A systematic analysis of the structure, conduct, and performance of American industry. A quantitative analysis plus a comprehensive review of theoretical models of the market, firm behavior, and performance. Prereq.: Economics 622. 4 q.h.

802. *Comparative Economic Systems.* Capitalism, socialism, and other major economic systems, giving particular attention to basic processes such as resource allocation and product distribution, frequent references to existing cases such as the U.S., U.S.S.R., and Britian. Prereq.: Economics 622. 4 q.h.

803R. *Business and Government.* The influence of the common law and the development, growth, and present status of competition; imperfect competition, and monopoly in the American economy. Prereq.: Economics 801 or consent of the instructor. 4 q.h.

804. *The Economics of Central Planning.* History and development of centrally planned type economics as a substitute and decentralized market systems; theories of central planning; their analysis and evaluation; central planning and its operation in a particular command-type economy such as the Soviet Union, Red China, or 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.: Econ. 622 or consent of the instructor. 4 q.h.

805. *Business Cycles and Economic Growth.* The nature, causes, and measurements of economic fluctuation. Cycle theories, and the use of difference and differential equations to study the generation of business cycles as a part of the growth process. Prereq.: Econ. 712 or consent of the instructor. 4 q.h.

806. *History of Economic Thought I.* Ancient beginnings, The Middle Ages, Mercantilism, The Physiocrats, The Forerunners of Adam Smith, English Classical School, and Utilitarianism. Prereq.: Econ. 622. 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.: Econ. 622. 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.: Econ. 622. 3 q.h.

809. *Current Problems in Money, Banking, and Financial Markets.* The financial market system, including money and capital markets. Current problems are associated with trends in theory and practice. Theories of the interest rate and monetarism. Prereq.: Econ. 701 or consent of the instructor. 4 q.h.

810. *Managerial Economics. (Formerly Business Economics).* An application of economic analysis to business problems. Emphasis upon executive decisions for the allocation of resources. Prereq.: Econ. 622. 4 q.h.

811. *International Trade.* Theories of international trade and specialization; free trade v. protectionism; tariff and non-tariff barriers to international trade; international balance of payments and its components; the role of multinational enterprises in contemporary trade pattern; regional economic integrations and world trade; U.S. commercial policies. Prereq.: Econ. 622 or consent of instructor. 4 q.h.

812. *International Finance and Economic Development.* Theories of foreign exchange and capital movements; transfers of international payments; adjustment mechanism in international balance of payments; international organizations facilitating international finances; capital movements and the developing nations; obstacles to and policies for an accelerated economic development. Prereq.: Econ. 622 or consent of instructor. 4 q.h.

817. *Economics of Transportation.* Economic aspects of domestic transportation are analyzed and examined against a framework of economic theory. Additional topics include urban transportation, travel-decision making, investment appraisal, and pricing. Prereq.: Econ. 702 or 708 or 710. 4 q.h.

820. *Regional Economic Analysis.* The forces that promote or deter the growth of a region, and the techniques for measuring and projecting development. Prereq.: Econ. 622. 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. Prereq.: Econ. 820. 4 q.h.

822. *Urban Economics.* Economic analysis of the problems of urbanized areas, using benefit-cost and micro-economic techniques. Prereq.: Econ. 622 and one of the following: 624, 702, or consent of the instructor. 4 q.h.

824. *Applied Time Series Analysis of Economic and Business Data.* In-depth analysis of time series models and their applications to problems in economics and business. Emphasis on forecasting. Extensive use of standard computer programs. Prereq.: Econ. 621 and 705. 4 q.h.

825. *Economic Data and Business Data Analysis.* An introduction to the applications of various data analysis techniques for confirming as well as exploring structural relationships among social and economic variables. Prereq.: Econ. 721 and 705. 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.: Econ. 622. 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.: Econ 622. 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.: Econ. 622. 4 q.h.

841. *State and Federal Health and Safety Legislation.* The economic ramifications of occupational health and safety legislation on the efficiency of the American economy. Prereq.: Econ. 622. 4 q.h.

843. *Fair Employment Opportunity and Income Security.* The economics of discrimination in employment, and the economic consequences of government anti-discrimination programs and programs directed toward the achievement of guaranteed and stabilized income. Prereq.: Econ. 622. 4 q.h.

845. *Theory, Operation, and Problems of Labor Organizations.* Economic theory and operation of labor organizations in maintaining and expanding the economic rights and benefits of American workers in a dynamic economy. Prereq.: Econ. 831 or 833 or 835 or Mgmt. 750. 4 q.h.

849. *Seminar/Workshop in Labor Relations.* An analysis of selected issues such as union interests in the investment of funds accumulated through private and public pension plans; the effect of multi-national corporations on traditional union tactics and strategies; the effect of wage-price guidelines and controls, etc. Prereq.: Econ 831 or 833 or 835 or Mgmt. 750. 4 q.h.

850. *Introduction to Decision Analysis.* The study of rational decision-making under economic uncertainty: theory of utility, value of information, normal and extensive analysis, sampling. Bayesian Analysis. Prereq.: Econ. 621 and 624. 4 q.h.

853. *Applied Econometrics.* Construction and estimation of economic models with public and business applications, using standard computer programs. Programming ability not required. Prereq.: Econ. 621 and 705. 4 q.h.

899. *Individual Study in Economics.* Individual study of a topic, area, or problem requiring in-depth reading, and a written project. May be repeated once with a different topic, area, or problem. Prereq.: Junior or senior standing, and consent of instructor and department chairman. 2-5 q.h.

CURRICULUMS

The following curriculum leads to the degree of Bachelor of Arts with a major in Labor Relations.

LABOR RELATIONS

FIRST YEAR	Cr. Hrs.
Engl. 550-551 Basic Composition I, II	8
Econ. 520, 621, 622 Principles I, II, III	10
Psych. 560 General Psychology	4
Humanities Requirement	8
Math. 642 Applied Finite Math	5
Foreign Language Requirement	8
Soc. 500 Fundamentals of Sociology	4
	47

SECOND YEAR	Cr. Hrs.
Econ. 624, 705 Econ. & Soc. Stat. I, II	8
Pol. Sci. 601 American Nat. Govt.	4
Acctg. 605, 606 Elementary Acctg. I, II	10
H&PE 590 Health Education	3
H&PE Activity Courses	3
Math. 550 Calculus Soc. Managerial	5
Comp. Sci. 600 Intro to Programming	4
Mgmt. 604 Legal Envir of Business*,or Mgmt. 715 Business Law 1*	4
Soc. 600 Principles of Sociology	4
Electives	3
	48

THIRD YEAR	Cr. Hrs.
Econ. 831 Labor Markets*	4
Econ. 833 Collect Barg & Arb.*	4
Econ. 841 Occup. Safety & Health*	4
Pol. Sci. 707 Interest Group Pol.*	3
Psych. 712 Industrial Psych.*	3
Mgmt. 725 Fund. of Management*	4
Mgmt. 750 Human Behavior in Org.*	4
Soc. 706 Industrial Sociology*	4
Humanities Requirement	4
Science Requirement	8
Electives	4
	46

FOURTH YEAR	Cr. Hrs.
Econ. 835 Labor Legislation*	4
Econ. 843 Equal Employment Oppor.*	4
Econ. 845 Theory, Oper. & Problems of Labor Organizations*	4
Econ. 849 Seminar/Wksp. in Lab. Rel.*	4
Mgmt. 804 Personnel Management	4
Humanities Requirement	4
Guid. Carer Ed. & Guidance*	4
Electives	18
	46

The following curriculums all lead to the degree of Bachelor of Arts with a major in Economics.

SPECIALIZATION IN INTERNATIONAL TRADE

FIRST YEAR	Cr. Hrs.
Econ. 520 Principles I	4
Engl. 550, 551 Basic Composition I, II	8
Math. 550 Calc/Soc. Mgt. Sci. I	5
Science Requirement	4
Social Studies Requirement	8
Humanities Requirement	4
Foreign Language or Elective	12
H&PE Activity Courses	3
	48

SECOND YEAR	Cr. Hrs.
Econ. 621, 622 Principles II, III	6
Econ. 701, Money and Banking	4
Comp. Sci. 600, Intro to Programming	4
Social Studies	12
Humanities Requirement	4
Foreign Language or Elective	8
Science Requirement	4
H&PE 590 Health Education	3
	45

THIRD YEAR	Cr. Hrs.
Econ. 702, Public Finance	4
Econ. 624, 705, Statistics I, II	8
Econ. 709 Mathematical Economics	4
Econ. 710 Intermediate Micro	5
Econ. 712 Intermediate Macro	5
Humanities Requirement	8

*Courses required for major in Labor Relations.

Science Requirement 4
Minor or Elective** 10

48

FOURTH YEAR	Cr. Hrs.
Econ. 802 Comparative Systems	4
Econ. 787 or 803 Population	4
Econ. 810 Managerial Economics	4
Econ. 811 Theory of International Trade	3
Econ. 812 International Finance	3
Econ. 820 Regional Economic Analysis	4
Econ. 824 Applied Time Series Analysis	4
Mktg. 845 International Marketing or Elective	4
Elective or Minor**	15
	48

SPECIALIZATION IN MONEY AND BANKING

FIRST YEAR	Cr. Hrs.
Econ. 520, 621 Principles I, II	7
Engl. 550, 551 Basic Composition I, II	8
Math. 550 or 570 Calc/Soc. Mgt. Sci. I or Applied Math I	5
Comp. Sci. 600 Intro to Programming	4
Humanities Requirement	8
H&PE Activity Courses	3
H&PE 590 Health Education	3
Foreign Language or Electives	10-11
	48-49

SECOND YEAR	Cr. Hrs.
Econ. 622 Principles III	3
Acctg. 605, 606 Elem. Acctg. I, II	10
Econ. 624 Statistics I	4
Humanities Requirement	6
Science Requirement	12
Comp. Sci. 601 Advanced Programming	4
Foreign Language or Electives	9
	49

THIRD YEAR	Cr. Hrs.
Comp. Sci. 620 Computers and Programming	4
Comp. Sci. 700 Data Structures	4
Econ. 701 Money and Banking	4
Econ. 702 Public Finance	4
Econ. 705 Statistics II	3
Econ. 710 Intermediate Micro	5
Econ. 712 Intermediate Macro	5
Electives	18
	47

FOURTH YEAR	Cr. Hrs.
Acctg. 701, 702 Intermediate Accounting I, II	10
Comp. Sci. 701 Systems Programming	5
Econ. 809 Current Problems	4
Econ. 812 International Finance	3
Econ. 824 Applied Time Series Analysis of Economic and Business Data	4
Fin. 720 Business Finance	4
Fin. 835 Advanced Business Finance	4
Electives	18
	52

**Courses in geography, anthropology, history or political science are recommended for a minor or as electives.

SPECIALIZATION IN REGIONAL AND URBAN ANALYSIS*

FIRST YEAR	Cr. Hrs.
Econ. 520 Principles I	4
Engl. 550, 551 Basic Composition I, II	8
Geog. 650 Econ. Geography	4
Humanities Requirement	7
Math. 550 Calc/Soc. Mgt. Sci. I.	5
Science Requirement	12
H&PE Activity Courses	3
H&PE 590 Health Education	3
Electives	3
	49

SECOND YEAR	Cr. Hrs.
Comp. Tech. 601, 602 Scientific Programming I, II	8
Econ. 621, 622 Principles II, III	6
Econ. 624 Statistics I	4
Humanities Requirement	7
History 605, 606 History of U.S. I, II	8
Pol. Sci. 601 American Gov't	4
Foreign Language or Electives	8-12
	45-49

THIRD YEAR	Cr. Hrs.
Econ. 705, Statistics II	4
Econ. 710 Intermediate Micro	5
Econ. 712 Intermediate Macro	5
Geog. 640 Human Geography	4
Geog. 726 Urban Geography	4
History 714 Economic History of the U.S.	4
History 744 History of American Business	4
Pol. Sci. 706 Minority Group Politics	3
Pol. Sci. 721 Urban Government	3
Foreign Language or Electives	8
	48

FOURTH YEAR	Cr. Hrs.
Econ. 702 Public Finance	4
Econ. 820 Regional Analysis	4
Econ. 821 Location Theory	4
Econ. 822 Urban Economics	4
Econ. 825 Economic Data and Business Data Analysis	4
Geog. 808 Land Use and Transportation	4

*Students taking a specialization in regional and urban analysis should consider participation in the urban internship program under the direction of the Department of Political Science and Social Science. This program offers on-the-job training in local government units in the Youngstown area as well as financial assistance to those selected.

Geog. 809 City and Regional Planning	4
History 736 Urban History	4
Pol. Sci. 722 State & Local Gov't	3
Electives	11
	46

SPECIALIZATION IN QUANTITATIVE METHODS

FIRST YEAR	Cr. Hrs.
Econ. 520, 621, 622 Principles I, II, III	10
Engl. 550, 551 Basic Composition I, II	8
Humanities Requirement	8
Science Requirement	8
H&PE Activity Courses	3
H&PE 590 Health Education	3
Foreign Language or Electives	6
	48

SECOND YEAR	Cr. Hrs.
Comp. Tech. 601, 602 Scientific Programming I, II	8
Econ. 624, 705, Statistics I,II	8
Humanities Requirement	6
Math. 550 Calc/Soc Mgt. Sci. I	5
Mktg. 703 Fund. of Marketing	5
Foreign Language or Electives	16
	48

THIRD YEAR	Cr. Hrs.
Econ. 701 Money and Banking	4
Econ. 710 Intermediate Micro	5
Econ. 712 Intermediate Macro	5
Econ. 709 Mathematical Economics	4
Mgmt. 737 Management Science	4
Math. 685 Applied Matrix Algebra	4
Foreign Language or Electives	20
	46

FOURTH YEAR	Cr. Hrs.
Economics 702 Public Finance	4
Econ. 811 International Trade	3
Econ. 824 Applied Time Series Analysis of Economic and Business Data	4
Mktg. 815 Marketing Research	4
Math. 743, 744 Mathematical Statistics I, II	8
Electives	24
	47

ENGLISH

Professors Baird-Lange, Brothers (Chair), Budge, Hankey, Henke, Houck, Kelty, McCracken, Murphy, Secrist and Sniderman; Associate Professors Brown-Clark, Copeland, Finney, Gay, Knapp, Salvner, Shale and Wilkinson; Assistant Professors Bowers, Green, Greenway, Holbrook, Martindale, Monseau, Moore, Murray, Nelson, Stephan and van Gorder.

Beyond the freshman sequence the English major comprises at least 45 hours, including the following distribution.

	Cr. Hrs.
I. English 600	4
II. Linguistics: 755, and 757 or 758 or 859	8
III. American Literature: 771, 772, 776, 815, or 871	4
IV. Genre: 777, 778, 866, 868, 895	4
V. Period Courses in British Literature: 885, 887, 888, or 891	4
VI. Major Figures: 760, 761, 783, or 860	3-4
VII. Writing Courses: 622, 740, 746, or 747	3-4
	30-32

The remaining 13-15 hours may be made up of any 600-, 700-, or 800-level English, Humanities, Journalism, or Linguistics courses (except 625 or 650, which do not carry credit toward the English major).

In addition, students planning to teach must complete Education 883, Education 704 and English 740, offered together as a block course each fall. They should select two world literature courses (see Humanities) as part of the 13-14 hours of electives. English majors take Education 800E. They should not register for Education 800G. For further information about certification requirements in Education, see Secondary Education.

Only those courses which the student has completed with a grade of *C* or better can count toward the 45 hours needed for the major, but distribution requirements for the major may be fulfilled with courses the student has received a *D* in.

In addition, all English majors must show evidence of having written two critical papers of approximately 3000 words each in different upper division literature courses in English or Humanities. The papers must deal with primary and secondary sources, be documented according to the *MLA Handbook*, and have received a grade of at least *C*. Students may submit any papers that meet these requirements, or they may request that one be assigned in any upper division literature course they are enrolled in, even if such a paper is not a regular part of the course work. A professor accepting a paper must place in the student's file in the English Office a statement of the paper's title, the course the paper was done in, the date it was accepted, and the grade given. Students should check to make sure that at least two such statements are in their file.

Literature courses count toward the general requirement in the humanities area, but courses in linguistics and composition do not.

Foreign students whose first language is not English may get credit toward graduation for English courses in which teachers feel that the students have achieved the general objectives of the course, even though their written English may not be entirely satisfactory. (This credit is entered in the student's permanent record

without the usual letter grade, with an indication that credit has been allowed and with a notation on the student's final transcript which makes clear the reason for the exception.)

Because the discipline of English involves study of the controlled use of the language, students are expected to demonstrate their writing skills in all English courses.

A quarterly newsletter with detailed descriptions of forthcoming course offerings is available at the department office.

The Department of English maintains a writing center for supplemental, non-credit instruction in writing. English majors can apply for student employment as peer tutors in the center. (See the General Information Section for details.)

International Students' Courses

500L. *Grammatical Exercises in English as a Second Language.* Intensive drills and exercises in basic English grammar for those whose native language is not English, with emphasis on individual problems and difficulties. To be taken, as needed, in conjunction with English 501, 502, 503 until English proficiency requirements are met: Until then, a grade of *PR* or *F* is given. *Does not count toward a degree.* 3 q.h.

501, 502, 503. *English as a Second Language.* Lessons in grammatical analysis, vocabulary enhancement, semantic structure, idiomatic usage, and reading comprehension for native speakers of other languages whose English is not yet adequate for the needs of the college classroom. To be taken until English proficiency requirements are met; until then, the grade of *PR* or *F* is given. *Does not count toward a degree.* 4+4+4 q.h.

501L, 502L, 503L. *Writing English as a Second Language.* Extensive practice in basic English writing for those whose native language is not English, with emphasis on individual problems and difficulties. To be taken in conjunction with English 501, 502, 503 until English proficiency requirements are met; until then, a grade of *PR* or *F* is given. *Does not count toward a degree.* 2+2+2 q.h.

Lower Division Courses

520. *Basic Writing Workshop.* Instruction in the skills necessary for accurate and effective writing. Focus is on the writing of syntactically well-formed and properly punctuated sentences and on the development of a variety of effective sentence patterns coherently arranged within compositions. Students meet three hours per week for lecture and three hours per week for individualized instruction. *Does not count toward the graduation requirement in composition.* Open to students on the basis of English Placement Test Results. Grading for English 520 will be *A,B,C/NC.* 4 q.h.

540. *Introductory College English.* Practice in developing the reading and writing skills necessary to begin Engish 550. Focus is on using active reading strategies including the writing of precis, summary, paraphrase, and short essays to demonstrate comprehension, retention, and application of college-level reading material. *Does not count toward the graduation requirement in composition.* Open to students on the basis of English Placement Test results or upon successful completion of English 520. Grading for English 540 will be *A,B,C/NC.* 4 q.h.

550 *Composition I.* Strategies for writing essays, from the earliest planning stages to final revisions and editing with emphasis on the roles of writer, audience, and purpose as they affect a piece of writing. Most essays are written in response to assigned readings. Open to students on the basis of English Placement Test results or upon successful completion of English 540. Grading for English 550 will be *A,B,C,/NC.* 4 q.h.

550H. *Honors Composition I.* Strategies for writing essays, from the earliest planning stages to final revision and editing, with emphasis on the roles of writer, audience and purpose as they affect a piece of writing. Writing assignments treat a broad range of ideas, especially in response to the reading of essays by masters of English prose. Stylistic experimentation is encouraged so that each student can develop a distinctive writing style. Prereq.: eligibility for the Honors Program and permit on the basis of English Placement Test results or upon recommendation of 550 instructor. Grading for English 550H will be *A,B,C/NC.* 4 q.h.

551. *Composition II.* Practice in writing with emphasis on the process of investigation: exploration of topics, formulation of tentative theses, collection of data from suitable primary and secondary sources, and clear and appropriate presentation of the results of these inquiries. Prereq.: English 550 or equivalent or permit on the basis of English Placement Test results. Grading for English 551 will be *A,B,C/NC.* 4 q.h.

551H. *Honors Composition II.* Executing research on a topic of some depth, resulting in a substantial investigative paper. Research is conducted independently and focused on a single project. Prereq.: Eligibility for the Honors Program and one of the following: English 550H or equivalent, permit on the basis of English Placement Test results, or recommendation of 550 or 551 instructor. Grading for English 551H will be *A,B,C/NC.* 4 q.h.

590. *Introduction to Women's Studies.* Introduces students to key concepts, theoretical frameworks, and inter-disciplinary research drawn from current scholarship about women. The course includes cross-cultural and historical analyses but concentrates on major issues relevant to the status and roles of contemporary American women including an examination of the effects of sexism, racism, ethnicity, and class distinction. *Does not count toward the English major; does not fulfill the humanities requirement.* Prereq.: English 550. 4 q.h.

600. *Introduction to Literary Study.* Introduction to the principles of literary study and to the skills used

in reading literature and writing literary analysis; reading and discussion of literary theory. Materials drawn from several historical periods. Prereq.: English 551. 4 q.h.

601. *Intermediate Composition.* An intermediate course to increase proficiency in writing expository prose, based upon readings and with emphasis upon the constraints of context and evidence. For students intending to meet School of Education requirements. Prereq.: English 551 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 18th century. Prereq.: English 551. 4 q.h.

612. *Survey of English Literature II.* Major works of poetry and prose from the Romantic Period to the present. Prereq.: English 551. 4 q.h.

613. *Survey of American Literature I.* Major works of poetry and prose from Colonial times through the Civil War. Prereq.: English 551. 4 q.h.

614. *Survey of American Literature II.* Major works of poetry and prose from the Civil War to the present. Prereq.: English 551. 4 q.h.

615. *Introduction to Literature: Fiction and Poetry.* A non-technical, non-historical course in which important short stories, novels, and poems are read and discussed critically for enjoyment and understanding. For non-English majors, to help fulfill the humanities area requirement. Prereq.: English 550 and sophomore standing. 4 q.h.

616. *Introduction to Literature: Film and Drama.* A non-technical, non-historical course in which important films and plays are examined and discussed critically for increased enjoyment and understanding. For non-English majors, to help fulfill the humanities area requirement. Prereq.: English 550 and sophomore standing. 4 q.h.

617. *Women in Literature.* Examination of works by and about women, drawn primarily from American and English writers. Prereq.: English 550 and sophomore standing. 4 q.h.

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

622. *Basic Journalism.* Identical with Journalism 622. 4 q.h.

623. *Make-up and Design.* Identical with Journalism 623. 4 q.h.

624. *Press Law and Ethics.* Identical with Journalism 624. 4 q.h.

625. *Selected Topics in Journalism.* Identical with Journalism 625. 3-5 q.h.

631. *Mythology in Literature.* Identical with Humanities 631. 4 q.h.

640. *Science Fiction/Fantasy.* A literary study of significant novels and short stories, primarily modern, which treat of futuristic, fanciful, or whimsical worlds. Prereq.: English 551. 4 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 757, 758 or 859.* Prereq.: English 551. 5 q.h.

699. *Selected Studies in Literature and Language.* Exploration of a specific topic or area in literature, literary theory, or language not usually covered in other 600-level courses. The topic is announced each time the course is offered. May be repeated once with change in topic. Prereq.: English 551. 4 q.h.

Upper Division Courses

Prerequisite to the following courses, unless otherwise stated: English 600, or consent of the department chair.

708. *Children's Literature.* A study of the development of children's literature, giving the prospective elementary teacher some ways of judging books for children. Required of all elementary education candidates. Prereq.: English 551 or its equivalent. 4 q.h.

709. *Adolescent Literature.* A study of the development of adolescent literature, giving the secondary teacher some ways of judging these books and some insight into the problems of making adolescent literature a meaningful experience for young people. Prereq.: English 551 or its equivalent. 4 q.h.

716. *Feature Writing.* Identical with Journalism 716. 4 q.h.

717. *Editorial and Opinion Writing.* Identical with Journalism 717. 4 q.h.

721L. *Journalism Workshop.* Identical with Journalism 721L. 3 q.h.

735. *Epic and Romance.* Identical with Humanities 735. 4 q.h.

736. *Comedy and Satire.* Identical with Humanities 736. 4 q.h.

737. *Tragedy and the Absurd.* Identical with Humanities 737. 4 q.h.

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

743. *Technical Communication.* An intermediate composition course to introduce students to the essential elements in the technical writing process: the technology (e.g., word processing and graphics), formats, style, and techniques of gathering, interpreting,

and presenting information. Prereq.: English 551 or its equivalent. 4 q.h.

743L. *Text Processing.* A lab-based introduction to word/information processing to be taken concurrently with English 743. Two-hour laboratory. 1 q.h.

744. *Proposal and Report Writing.* Application of general rhetorical strategies to the preparation of texts in two specific professional communication genres: the policy/procedure report and the solicited/unsolicited proposal. Prereq.: English 743. 4 q.h.

746. *Creative Writing: Fiction.* An opportunity for students to write original short stories and have them discussed by their classmates. May be repeated twice. Prereq.: English 551. 3 q.h.

747. *Creative Writing: Poetry.* An opportunity to study the metrics, structure, and language of poetry and apply the results to the writing of original poems. May be repeated twice. Prereq.: English 551. 3 q.h.

749. *Professional and Technical Editing.* A study of the skills needed to make appropriate editorial changes in the grammar, mechanics, style, format, and organization of manuscripts for scholarly, trade, and professional publications. The course will introduce stages in the publishing process, mechanical and substantive editing, and the use of house or press style. Practice in copy editing, design, and proofreading will be provided. Prereq.: English 743. 4 q.h.

750. *Language and Culture.* Identical with Linguistics 750. 4 q.h.

755. *Principles of Linguistic Study.* Identical with Linguistics 755. 4 q.h.

757. *Development of the English Language.* Identical with Linguistics 757. 4 q.h.

758. *English Grammar.* Identical with Linguistics 758. 4 q.h.

760. *Shakespeare I.* The plays of the first half of Shakespeare's career — e.g. *The Merchant of Venice, Richard III, Julius Caesar,* and *Hamlet.* 3 q.h.

761. *Shakespeare II.* The plays of the second half of Shakespeare's career — e.g. *All's Well That Ends Well, Othello, Macbeth, King Lear.* 3 q.h.

765. *Advanced Film: Literature and Criticism.* In-depth study of film as literature; principles and methods of film criticism. Prereq.: any literature course in English or Humanities or consent of department chair. 4 q.h.

771. *American Romantics.* Emphasis on pre-civil war writers such as Edward Taylor, Cooper, Poe, Emerson, Thoreau, Whitman, Hawthorne, and Melville. 4 q.h.

772. *American Realists.* Emphasis on the period between the Civil War and World War I: writers such as Franklin, DeForest, Twain, Howells, James, Crane, and Dreiser. 4 q.h.

776. *Modern American Fiction.* Important U.S. novelists and short story writers since 1920 (e.g., Faulkner, Hemingway, Fitzgerald). 4 q.h.

777, 778. *The English Novel I, II.* The history and development of the novel in England. 777: From the beginnings through Jane Austen; 778: From Sir Walter Scott through Thomas Hardy. 4+4 q.h.

783. *Milton.* A study of *Paradise Lost, Paradise Regained, Samson Agonistes,* minor poems, and selected prose. 4 q.h.

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

820. *Advising Student Publications.* Identical with Journalism 820. 4 q.h.

859. *Topics in English Linguistics.* Identical with Linguistics 859. 4 q.h.

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

866. *Modern American and British Drama.* Important 20th-Century playwrights. 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 Experience in American Literature.* Literature by and about blacks in America. 4 q.h.

885. *Sixteenth and Seventeenth Centuries.* The English Renaissance to 1660, excluding Milton and the drama, with emphasis on Spenser, Jonson, and Donne. 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.

888. *Restoration and Eighteenth Century.* Important works in poetry and prose, including the drama but not the novel, from 1660 to the beginning of the romantic period, with emphasis on Dryden, Congreve, Swift, Johnson, and Burns. 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. *Modern British Fiction.* The important writers of fiction from 1900 through W.W. II: the literary and social trends (e.g., Conrad, Lawrence, Joyce, Woolf, Waugh). 4 q.h.

898. *Professional Writing Internship.* Supervised work-and-learning experience in professional communication under the direction of a University faculty member and an employee of a participating firm. Ten to twenty hours a week of student time are expected. Enrollment is contingent upon the availability of internships. Students will be selected on the basis of personal qualifications, including GPA, courses

taken, recommendations and an interview. With approval of the department chair, the course may be repeated. Prereq.: 16 q.h. in Journalism and/or Technical Writing. 2-4 q.h.

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

FOREIGN LANGUAGES

Professors Aliberti, Linkhorn, Viehmeyer (Chairman);Associate Professors del Pozo, Loud, Veccia; Assistant Professors Becerra, Corbe', Smith.

For courses see French, German, Greek, Italian, Latin, Russian, and Spanish. For Literature in Translation, see Humanities.

FRENCH

Professor Linkhorn; Assistant Professor Corbe'.

A major in French comprises 45 quarter hours above the elementary level, including French 710, 750, 755, and at least one 800-level literature course.

No native speaker who has completed high school in a French-speaking country may receive credit for French 501, 502, 503, 504, 510, 601, or 602.

Courses in French literature (615, 705, 706, 820, 830, 845, 850, 873) and 885 (if the topic deals with literature) satisfy the Humanities requirement.

See General Requirements and Regulations for precollege foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

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 is on aural-oral facility. The prerequisite for 502 is French 501 or equivalent; the prerequisite for 503 is French 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary French.* A review course covering the material of French 501, 502 and 503 in one quarter. Students who have received credit for French 503 cannot receive credit for French 504. Prereq.: 2 years of high school French. 4 q.h.

510. *Functional Approach to French.* Basic French for travel and everyday situations. Development of speaking ability and listening comprehension through practice, with a minimum of grammar. No prerequisite. *Does not count toward the foreign language requirement for the A.B. or B.S. degree, nor toward the major.* 5 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.: French 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.

640. *Selected Topics.* Development of language skills through study of a topic that has practical applications to some area such as business, social studies, cultural trends, etc. May be taken three times for credit if topics are different, for a maximum of 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: French 602 or equivalent, or permission of instructor. 2-4 q.h.

655. *Conversational French I.* 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. 4 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.: French 615 or permission of instructor. 4 q.h.

710. *Applied French Phonetics.* A systematic study of French phonetics to correct defects in pronunciation and intonation and give students a better understanding of the differences between the French and English sound systems. Prereq.: French 602. 4 q.h.

740. *Introduction to Business French.* A survey of business practices specific to French-speaking countries, with emphasis on France and Canada; development of oral communication in business situations; principles of effective letter and report writing. Prereq.: French 675 or equivalent. 4 q.h.

750. *French Civilization and Culture.* A study of contemporary French civilization and culture, focusing on what the French consider typical of their character, as exemplified by their traditions, magazines, films, and heroes. Readings and class work in French. Prereq.: French 602, or consent of instructor. 4 q.h.

755. *Conversational French II.* Development of auditory comprehension through the use of taped materials featuring a variety of native voices; development of speaking ability through discussion of

pre-assigned topics of current interest. Prereq.: French 655, or consent of instructor. 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. for 771: French 675 or consent of instructor; for 772, French 771. 4+4 q.h.

820. *Selected Topics in 18th Century French Literature.* The study of major works from the "Age of Enlightenment," focusing on one of the following: one or more genres; themes; literary movements; specific authors; or some other areas of interest. Topic announced each time course is offered. May be taken twice if topics are different. Prereq.: French 615, and one of the following: French 675, 705, 706, 750, 771, 772. 4 q.h.

830. *Selected Topics in 19th Century French Literature.* The study of major works of the 19th century, focusing on one of the following: one or more genres; themes; literary movements; specific authors; or some other area of interest. Topic announced each time course is offered. May be taken twice if topics are different. Prereq.: French 615 and one of the following: French 675, 705, 706, 750, 771, 772. 4 q.h.

845. *Selected Topics in 20th Century French Literature.* The study of major 20th century works, focusing on one of the following: one or more genres; themes; literary movements; specific authors; or other areas of interest. Topic announced each time course is offered. May be taken three times if topics are different. Prereq.: French 615 and one of the following: French 675, 705, 706, 750, 771, 772. 4 q.h.

850. *Selected Topics in French Literature Outside of France.* The study of major works written in the 20th century (or late 19th century) by French-speaking authors from one or more of these geographical areas: Africa, Belgium, Canada, The Caribbean, Lebanon, Louisiana, Luxembourg, Southeast Asia, Switzerland, and including such genres as novels, short stories, poetry, essays, the theatre. Topic announced each time course is offered. May be taken twice if topics are different. Prereq.: French 615 and one of the following: French 675, 705, 706, 750, 771, 772. 4 q.h.

873. *Textual Analysis.* Detailed study of excerpts from prose, drama, poetry, and non-literary texts, focusing on stylistic devices, structures, and vocabulary. Development of skills in various critical methods and techniques. Prereq.: French 615 and one of the following: French 705, 706, 771, 772. 4 q.h.

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

885. *Special Topics.* Studies in French language, literature, or civilization ranging from medieval to modern times. Topic announced each time course is offered. May be taken three times for credit if content is not repeated. Prereq.: A 700-level French course appropriate to the current topic, or consent of instructor. 2-4 q.h.

GEOGRAPHY

Associate Professor Manton, Stephens; Assistant Professor Humbertson (Chairman), Maraffa; Instructor Middlekauff.

Students majoring in Geography earn the Bachelor of Arts degree. In addition to the usual University requirements, a student must complete a minimum of 48 hours in geography. Required courses are: Geography 503, 640, 650, 660, 750, 813 and either 820, 821, or 822. At least 30 quarter hours must be earned in upper division courses.

The department offers specialized areas of study that provide information and skills needed by students planning to enter the fields of Cartography, Climatology, City and Regional Planning, Elementary and Secondary Education, Earth Sciences, Environmental Studies, Meteorology, and Regional Studies. Suggested curricula for the above fields are available from the department office.

Physical Geography

The University's Science/Mathematics requirements are satisfied by the following geography courses: 503, 603, 630, 730 and 820.

Lower Division Courses

503. *Introduction to Physical Geography.* An introductory analysis of selected elements of man's natural habitat and their distributions. The course examines topography, soil, vegetative cover and the hydrographic components of the natural landscape. 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. Prereq.: Geography 503. 4 q.h.

630. *Weather.* An examination of basic weather elements — temperature, pressure, wind and precipitation. It includes experiences in data acquisition, analysis, and elementary forecasting principles. Replaces Geography 625. Students who receive credit for Geography 625 may not receive credit for Geography 630. 4 q.h.

Upper Division Courses

730. *Regional Climatology.* A study of the distribution, modification and classification of the earth's climates. Prereq.: Geography 503 and 630 or equivalent. 4 q.h.

820. *Special Problems in Physical Geography.* An in-depth study of a specific problem in physical geography. The problem will be dependent upon the student's interest and competence, availability of faculty supervision and departmental equipment. Prereq.:

Twelve hours of physical geography and consent of the chairman. 1-4 q.h.

Human and Regional Geography

The University's Social Science requirements are satisfied by the following courses.

Lower Division Courses

626. *World Geography.* A comparative study of representative regions of the world. Attention is focused on an examination of the physical, cultural, social and political attributes of selected regions. 4 q.h.

640. *Human Geography.* An examination of the place to place variation in man's utilization of the earth. Topics examined include the distribution of man, spatial variations in culture, urbanization and politization of space. Replaces Geography 502. Students who have received credit for 502 may not receive credit for 640. 4 q.h.

650. *Economic Geography.* A study of the place to place variation in economic activities on the earth. Particular emphasis is placed on the spatial attributes of industrial, wholesale and retail activities. Replaces Geography 519. Students who have completed 519 may not take 650 for credit. 4 q.h.

660. *Introduction to Map Making and Cartography.* An introduction to cartography and mapping processes with emphasis on problems of data collection, scale, compilation and selection of cartographic method. Replaces Geography 731. Students who have completed 731 may not take 660 for credit. Prereq.: Four hours of geography. 4 q.h.

661. *Introduction to Remote Sensing.* An introduction to the interpretation of physical and cultural phenomena as recorded by remote sensing systems. Emphasis is placed upon conventional aerial photography. Prerequisite: Four hours of Geography. 4 q.h.

Upper Division Courses

722. *Historical Geography.* A study of the methodologies used in historical geography and applied to selected regions. Prereq.: Geography 640. 4 q.h.

723. *Political Geography.* Geographical characteristics of nation states. Geographic factors in the evolution, structure, and function of states. Relation of geopolitics to political geography. Prereq.: Geography 640. 4 q.h.

726. *Urban Geography.* A study of the changing spatial patterns associated with the rise of urbanism, comparative urban developments and cities as a part of the urban system. Prereq.: Geography 640. 4 q.h.

732. *Advanced Cartography.* A course emphasizing projection selection, data manipulation, new cartographic technologies and map production. Prereq.: Geography 660. 4 q.h.

740. *Marketing Geography.* An investigation of the spatial manifestations of marketing. Particular stress is placed on the delimiting and measurement of markets. Both industrial and retail marketing are examined. Prereq.: Geography 650. 4 q.h.

750. *Topics in Regional Geography.* Application of the regional methodology to selected areas of the world. Topic is announced each time the course is offered. May be taken four times for credit if content is not repeated. Maximum credit: twelve hours. Replaces Geography 627, 712, 713, 714, 716, 717, 719, 720, 721 and 724. Prereq.: Geography 626 or 640. 1-12 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 inter-relationship between regions themselves. These factors will be examined in context of the spatial distribution of economic and social activities. Prereq.: Four hours of Physical Geography and four hours of Human Geography, and junior standing. 3 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. Prereq.: Geography 726. 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. Prereq.: Geography 726. 4 q.h.

813. *Field Methods.* Practical experiences in geographic data collection. Emphasis is on applying the techniques of observation, sampling, interviewing and mapping to both physical and human phenomena having geographical dimensions. Students will apply these techniques at several scales: The local campus, the Youngstown-Warren SMSA, a larger metropolitan region, and other nearby regions. Participation in field trips is mandatory. Prereq.: junior standing, eight hours of geography, and consent of instructor. 4 q.h.

821. *Special Problems in Human Geography.* An in-depth study of a specific problem in Human Geography. The problem will be dependent on the student's interest and competence, availability of faculty supervision and departmental equipment. Prereq.: Twelve hours of Human Geography and consent of the chairman. 1-4 q.h. (Limit 4 q.h.)

822. *Special Problems in Cartography.* An in-depth study of a specific problem in cartography. The problem will be dependent on the student's interest and competence, availability of faculty supervision and departmental equipment. Prereq.: Geography 732 and consent of the chairman. 1-4 q.h. (Limit 4 q.h.)

850. *International Area Study.* A course in the geography and history of a selected international area with emphasis on cultural development by traveling in the selected region. The class *and travel* is supervised by the Geography and/or History faculty. The course grade is based upon a term paper which must be submitted within 60 days after the end of the course. Prereq.: *By permit only.* 4-12 q.h.

GEOLOGY

Professors Singler (Chairman), Khawaja; Associate Professors Abram, A. Harris, E. Harris.

Geology may be the major for the degree of Bachelor of Science or Bachelor of Arts.

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.

For the Bachelor of Science degree the student majoring in Geology must complete, in addition to the general University requirements, a minimum of 64 quarter hours of courses in geology, of which 60 are specified and 4 are elective. The specified courses are Geology *505, *506, *604, *607, 701, *704, 705, 706, 801, 802, 803, and a course in Field Geology. The latter must carry a minimum of four quarter hours of transferable credit (see University Limitations on Transfer of Credit Under Candidacy for a Degree: Residence). Electives may be chosen from the following: Geology 602, 702, 703, 707, 804, 806, 811, and 812. The subject area for a minor may be Astronomy, Biology, Chemistry, Civil Engineering, Computer Science, Mathematics, or Physics.

The Field Camp and the specific courses for the minor are chosen in consultation with the advisor and the department curriculum committee.

Required courses outside the department are: Chemistry 515, 516, 517; Mathematics 571, 572; Physics 501, 502, 503, 502L, 503L, or 510, 610, and 611; and one elective course chosen in consultation with the advisor and the department curriculum committee.

For the Bachelor of Arts degree the student majoring in Geology must complete, in addition to the general University requirements, a minimum of 62 quarter hours of courses in Geology, of which 54 are specified and 8 are elective. The specified courses are: Geology *505, *506, *604, *607, 701, *704, 705, 706, 801, 802, and a course in Field Geology. The latter must carry a minimum of four quarter hours of transferable credit (See University limitations on transfer of credit under "Candidacy for a Degree: Residence'). Electives may be chosen from the following: Geology 602, 702, 703, 707, 803, 804, 806, 811, and 812. The students may choose any minor desired. Required courses outside the department are: Chemistry 515, 516, 517; Mathematics 550, Physics 501, 502, 503, 502L and 503L.

The Field Camp and the specific courses for the minor are chosen in consultation with the advisor and the department curriculum committee.

A comprehensive examination will be made available two quarters before graduation to those who wish to take such an examination prior to graduation.

Geology 505, 506, 510 and 602 are recommended to satisfy the University science requirement.

All Geology courses apply towards a science requirement.

*These courses must be completed prior to attending the course in Field Geology.

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. 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. Prereq.: Geology 505. 4 q.h.

508. *Geology of Gem Stones and Allied Materials.* Formation, occurrence, and distribution of gem materials. Properties and identification of gem stones; factors affecting their value. Introduction to synthetic/artificial gem materials. Not applicable toward a Geology major. 4 q.h.

510. *Geology of National Parks.* Geologic history of national parks; geologic processes observed in North American parks and Hawaii. Simulated field trips to several major parks. Not applicable toward a Geology major. 4 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. 4 q.h.

604. *Megascopic Petrography.* A study of igneous, sedimentary, and metamorphic rocks based on their megascopic characteristics, with attention to classification, modes of occurrence, and constituent minerals. Five hours of lecture and four hours of laboratory a week. Prereq.: C or better in Geol. 607. 6 q.h.

607. *Geology Laboratory.* Identification of minerals, rocks, and fossils, and the use of topographic and geologic maps plus outside work on geologic techniques. A student who has received credit for Geology 507 may not receive credit for Geology 607. Four hours of laboratory and two hours of lecture a week. Prereq. or concurrent: Geol. 506. 4 q.h.

611. *Geology for Engineers.* Study of geologic principles, processes, and materials; focus on recognition

geologic factors as they apply to engineering operations and projects. Laboratory work includes examination of minerals, rocks, maps, and case histories. Three hours of lecture and three hours of laboratory a week. 4 q.h.

699. *Individual Study.* The introductory study of problems or issues in geology, or a review of literature relating to a specific geologic topic. A maximum of 4 quarter hours may be taken. Prereq.: 12 q.h. in geology in appropriate courses, consent of Geology Department Chairman and Instructor. 1-4 q.h.

Upper Division Courses

701. *Geomorphology.* A detailed study of various landforms and their origins. The laboratory work consists of utilization of aerial photographs and topographic maps in recognizing and interpreting landforms. Five hours of lecture and four hours of laboratory a week. Prereq.: Geol. 607. 6 q.h.

702. *Glacial Geology.* A study of glacier types: their origin, movement, erosional/depositional contributions, and their relationship to various non-glacial features. Emphasis is on the Pleistocene glacial succession in North America. Field trips are an integral part of the course. Prereq.: Geol. 505. 4 q.h.

703. *Physiography of the United States.* A study of the physiographic regions of the United States. Maps, diagrams, and aerial photographs are used in laboratory work. Five hours of lecture and four hours of laboratory a week. Prereq.: Geol. 607. 6 q.h.

704. *Structural Geology.* A descriptive study of rock structures, their geometry and significance; mechanical properties; the nature of faults, folds, and deformation in the earth's crust; stress-strain relationships. Laboratory work includes solution of 3-dimensional problems in geology, methods of structural analysis, and field techniques. Four hours of lecture and two hours of laboratory a week. Prereq.: Geol. 607. 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 a week. Prereq.: Geol. 607 or consent of instructor. 6 q.h.

706. *Geology of Economic Mineral Deposits.* A study of the occurrence, origin, and distribution of mineral deposits; with special attention to their economic utilization. Field trips are mandatory. A student who has received credit for Geology 601 may not receive credit for Geology 706. Prereq.: Geol. 607. 5 q.h.

707. *Applied Geophysics.* Applications of geophysics to geological problems; geophysical exploration for mineral and fuel resources. The study will include fundamentals of terrestrial electricity, seismology, geomagnetism, terrestrial heat, and terrestrial gravity in addition to the structure and composition of the earth as determined by geophysical methods. Prereq.: Geol. 505, Phys. 503; Math. 571 recommended. 4 q.h.

801. *Mineralogy.* The crystallography, physical and chemical properties, occurrence, and use of the more common minerals. Qualitative analysis of minerals using blow-pipe, borax bead tests, and flame tests. Five hours of lecture and four hours of laboratory a week. Prereq.: Geol. 607, Chem. 515. 6 q.h.

802. *Stratigraphy and Sedimentation.* The formation and physical characteristics of stratified rocks; principles of correlation; criteria for classification of sedimentary rocks, depositional environments, and paleogeographic reconstructions. Three hours of lecture and two hours of laboratory a week. Prereq.: Geol. 607 and 8 other hours of geology. 4 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 a week. Prereq.: Geol. 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. Prereq.: Geology 607. 5 q.h.

805. *Special Problems in Geology.* A study in depth of a specific problem in one of the branches of geology. The problem will depend on the student's interest and qualifications and the equipment available. A maximum of 10 quarter hours may be taken. Prereq.: Consent of the department chairman and the consent of the instructor. 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 and of inorganic and organic materials. Two hours of lecture and three hours of laboratory a week. Prereq.: Geol. 801 or consent of the department chairman. 3 q.h.

811. *Environmental Geology.* Study of earth processes, earth resources, and properties of earth materials as they relate to human activities and man as a geological agent. Geological consequences of industrialization; geological factors in environmental management. Prereq.: Geol. 706 and senior standing or permission of the department chairman. 4 q.h.

812. *Sedimentology.* Study of the geology of sedimentary deposits, including sedimentary tectonics, petrology, and environments; emphasis on clastic and carbonate rocks. Two hours of lecture and one hour of laboratory a week. Prereq. or concurrent: Geol. 802 or permission of instructor. 2 q.h.

GERMAN

Professor Viehmeyer (Chairman).

A major in German comprises 45 quarter hours above the elementary level.

No native speaker who has completed high school in a German-speaking country may receive credit for German 501, 502, 503, 504, 505, 506, 510, 601 or 602.

Courses in German literature (615, 750, 751, 860, 861, 875) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

Lower Division Courses

501, 502, 503. *Elementary German I, II, III.* A basic study of the German language stressing the fundamental skills of speaking, reading, writing, and understanding the spoken language as well as an introduction to German culture. The prerequisite for German 502 is German 501 or equivalent; the prerequisite for German 503 is German 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary German.* A review course covering the material of German 501, 502 and 503 in one quarter. Students who have received credit for German 503 cannot receive credit for German 504. Prereq.: 2 years of high school German. 4 q.h.

505, 506. *German Reading for Translation I, II.* An introduction to German grammar stressing techniques of translation into English, including general, technical, and scientific texts, vocabulary and word formation to facilitate reading skills. The prerequisite for German 506 is German 505 or equivalent. 4+4 q.h.

510. *Functional Approach to German.* Basic German for travel and everyday situations. Development of speaking ability and listening comprehension through practice, with a minimum of grammar. No prerequisite. *Does not count toward the language requirement for the A.B. or B.S. degree. Not applicable to the major.* 5 q.h.

601, 602. *Intermediate German I, II.* A review of fundamental grammatical principles with further development of abilities in sentence structure, reading, writing, speaking and understanding the spoken language. The prerequisite for German 601 is German 503 or 2 years of high school German or equivalent; prerequisite for German 602 is German 601 or 3 years of high school German or equivalent. 4+4 q.h.

610. *German Translation.* Techniques of translating complex sentence structures into English from general, business, technical, and scientific materials. Prereq.: German 503 or German 506, or equivalent. 4 q.h.

615. *Intermediate German Readings.* Designed to improve reading ability in German. The readings are from a wide range of interest areas. Prereq.: Germ. 602 or equivalent. 4 q.h.

618. *Intermediate German Conversation.* Practice in speaking German based upon directed conversation. Listening comprehension, pronunciation and vocabulary building are emphasized. Prereq.: German 602 or equivalent. 4 q.h.

620. *Intermediate German Composition.* Designed to develop skill in writing German through directed composition. Prereq.: Germ. 602 or equivalent. 4 q.h.

640. *Selected Topics.* Development of language skills through the study of a topic, with practical applications to some area such as business, social studies, cultural trends, etc. May be taken three times for credit if the topics are different. Total credit in German 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: Germ. 602 or equivalent, or permission of instructor. 2-4 q.h.

Upper Division Courses

730. *Advanced German Grammar.* An intensive study and practice of selected problems in German grammar. Prereq.: German 620. 4 q.h.

750. *German Cultural Heritage I.* A survey of German civilization from the beginnings to 1949, including such topics as literature, history, music, and art. Prereq.: German 615. 4 q.h.

751. *German Cultural Heritage II.* A survey of German civilization since 1949, including such topics as literature, history, music, and art. Prereq.: German 615. 4 q.h.

755. *Advanced German Conversation.* Continued practice in oral expression and listening comprehension through prepared and spontaneous exercises, discussions and situational dialogues. Prereq.: German 618, or German 615 and permission of instructor. 4 q.h.

860. *Selected Masterpieces of German Literature.* A critical study of an author, a genre, or a period of German literature from the ninth century to World War II. Topic will be announced each time the course is offered. May be taken twice for credit if content is not repeated. Prereq.: German 615 or permission of instructor. 4 q.h.

861. *Contemporary German Literature.* A critical study of an author, a genre, or a literary trend since World War II. Topic will be announced each time course is offered. May be taken twice for credit if content is not repeated. Prereq.: German 615 or permission of instructor. 4 q.h.

874. *Advanced German Composition.* Practice in original German composition with emphasis on appropriate stylistics. Prereq.: German 730, or German 620 and permission of instructor. 4 q.h.

875. *German-American Studies.* A survey of Germans in America since the colonial period, including Pennsylvania German language, literature and culture. Prereq.: German 615 or permission of instructor. 4 q.h.

885. *Special Topics.* Studies in German language, literature, or civilization ranging from medieval to modern times. Topic announced each time course is offered. May be taken for a maximum of 12 hours credit, if content is not repeated. Prereq.: Germ. 615 or permission of instructor. 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* or *Humanities.*

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

Lower Division Courses

501, 502, 503. *Elementary Greek I, II, III.* Grammar, syntax, and simple composition; readings from various Greek writers and the New Testament. The prerequisite for Greek 502 is Greek 501 or equivalent; the prerequisite for Greek 503 is Greek 502 or equivalent. 4+4+4 q.h.

601. *Intermediate Greek I.* Readings in one or more authors; some review of elementary Greek if needed. Prereq.: Greek 503 or equivalent, or consent of instructor. 4 q.h.

602. *Intermediate Greek II.* Continuation of Greek 601. Prereq.: Greek 601 or equivalent, or consent of instructor. 4 q.h.

HEALTH AND PHYSICAL EDUCATION

Professors Longmuir, Philipp and Ringer; Associate Professors Barret, Kocinski, Laborde, Liptak, Whitney and Wright (Chairman); Assistant Professors Carver, Hemminger, Kittleson, Mines, Ramsey and Wedekind; Instructors Neville, Wagman and Walker.

The Department of Health and Physical Education seeks to contribute toward 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

Six hours of credit in health and physical education are required for graduation. Three credit hours are in a health education class (HPE 590), and three credit hours are in physical activity classes. However, the following three-hour courses will also fulfill the three hours in physical activities: HPE 630, 631, 632.

The form of activity is chosen by the student. Activity courses are listed in each quarter's *Schedule of Classes.*

Students with physical disabilities that prevent them from engaging in a regular activity class should register for HPE 614, a classroom course which meets the activity requirement. A handicapped student who is able to take some kind of activity class is urged to see the nurse in the Health Services Office, Beeghly 200, and review activities which might be appropriate. If students have questions about how their personal doctor's recommendations may relate to the activity courses, the nurse in the Health Office may be able to make suggestions. Handicapped students are encouraged to focus on their physical abilities and consider the social and physical benefits that accrue from physical activities and games.

If a student finds only one appropriate activity class, the student may request permission at the Department Office (Beeghly 307) to take the same class three times for three credits. Otherwise the student will be expected to take three different activities.

Veterans who have served at least one full year can receive health and physical education credit for service. This is detailed under the heading "Veterans" in the YSU catalog. The following military science courses may be used to meet the activity requirement: 510 — 1 Hr., 520 — 1 Hr., 530 — 1 Hr., 610 — 1 Hr., or 615 — 1 Hr.

Members of the men's varsity baseball, basketball, cross country, football, golf, soccer, tennis and wrestling squads, and women's varsity basketball, cross country, softball, swimming, tennis, and volleyball may receive physical activity credit through enrollment in 549, varsity competition.

Locker and towel service is available. 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 education classes is available for use without charge. A student wishing to use their own racket, golf clubs, bow, etc. may do so but is advised to consult with the instructor before buying new equipment.

Physical Examinations

The Department of Health and Physical Education 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. This medical examination meets the requirement for a four-year period. Any student who is involved in a major accident, or has 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.

Health Education

Professional Teacher Education Program

Youngstown State University is fully approved by the Ohio State Department of Education for the preparation of health education teachers for public schools. The degree of Bachelor of Science in Education with a major in Health Education leads to either an Ohio State High School or Special Provisional Certificate.

Students interested in majoring or minoring in Health Education should consult with the Health and Physical Education Department Chairman. The Health Education minor requires approximately 39 quarter hours of specified course work.

Those students seeking teaching certificates in Health must formally apply to the Health and Physical Education Department when they have completed 75 to 100 hours of credit. Application forms and other information for formal admittance to the Health and Physical Education Department may be obtained in the Departmental Office, Room 307, Beeghly Center.

HEALTH EDUCATION, B.S. IN EDUCATION MAJOR CURRICULUM GUIDE

Students should average 48 quarter hours per year.

FIRST YEAR	Hrs.
English 550, 551	4 + 4
Fine Arts Elective	4
Humanities Elective	4
Biology 551, 552	4 + 4
Education 501	4
H&PE 590, 601	3 + 3
Activity Elective	1 + 1 + 1
Chemistry 501	4
Home Economics 551	4
Math. Elective	4
General Electives*	

SECOND YEAR	Hrs.
Speech 554	4
Biology 560	5
Psych 560, 709	4 + 4
Psych 755, 756	4 + 4
Sociology 500	4
H&PE 680, 690, 701	4 + 4 + 1

THIRD YEAR	Hrs.
Educ 700, 702, 730	2 + 1 + 2
Educ 704, 708	3 + 4
Educ 706, 706L	4 + 3
Educ 721, 790	3 + 4
H&PE 791, 794	4 + 4

FOURTH YEAR	Hrs.
H&PE 801 (Elective)	2
H&PE 892, 899	3 + 2
Educ 710, 730	4 + 2
Education 845	15
General Electives	

*Electives should be applied toward minor field.

BACHELOR OF ARTS DEGREE PROGRAM

This program is for students seeking careers in health education outside the public school setting. The Bachelor of Arts degree offers a program with specialization in Community Health. Students interested in this specialization should consult with an advisor in the Health and Physical Education Department.

HEALTH EDUCATION, A.B. DEGREE

In addition to HPE 590, all majors must take the following health education courses: HPE 601, 680, 690, 701, 730, 790, 791, 892, and 899. Additional courses are required dependent upon the degree in which the student is majoring.

Students majoring in the AB Health Education Program, with a Community Health emphasis must, in addition to the core courses, take HPE 799 and 891, as well as Biology 551, 552, and 560, Psychology 560 and 700, Sociology 500, Social Work 620, 622, 719, and 724, Chemistry 501, Home Economics 551, Speech 653, Management 725, and two of the following: Psychology 755, 756, or 757. Students must also take one statistics course.

COURSES

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

596. *Foundations of Health Education.* An overview of Health Education including its principles and objectives in school and community settings. 2 q.h.

601. *First Aid and Emergency Care.* Personal safety and emergency care practices. Advanced certification will be offered. 2 hours lecture and 2 hours laboratory. Taught by Health and Physical Education instructors, same as MS 503. 3 q.h.

604. *Cardio-Pulmonary Resuscitation.* Basic life-support methods including artificial circulation and clearing obstructed airways. Certification will be offered. Two hours laboratory practice per week. 1 q.h.

680. *School Health Program.* School health programs with emphasis on school health services, healthful school living, and administration. Prereq.: HPE 590. 4 q.h.

690. *Personal Health I.* Personal health information for the future health educator. Emphasis placed upon mental and physical problems and concerns including safety, personal hygiene and reproduction. Prereq.: HPE 590. 4 q.h.

692. *Human Sexuality.* An interdisciplinary approach to the study of human sexuality. Holistic approach dealing with questions that concern the college student of today. Includes problems in sex education, the nature

of sexuality, the relationship of sex to personal identity, and sexual mobility. Factual information will be given in the areas of physiological reproduction, contraception, venereal disease, sexual disfunctions, techniques, and response. Listed also as Biology 692, Psychology 692, and Sociology & Anthropology 692. Prereq.: H&PE 590. Does not count toward general University requirements. 4 q.h.

701. *Pre-Professional Laboratory Experience in Health Education.* Students assist in a YSU Health Education course under faculty supervision. The students must attend regularly and teach small groups or parts of lessons when appropriate. Prereq.: HPE 690 and consent of instructor. 1 q.h.

721. *Health Education in the Elementary Grades.* Curricula, principles, planning, methods and materials for the teaching of health in the elementary schools. Approximately 15 hours of laboratory and/or field work required. Prereq.: HPE 590 and either admission to upper division status in the School of Education or El. Ed. 630. 3 q.h.

730. *Personal Health II.* Personal health information for the future health educator. Emphasis placed upon current health problems including consumer health, drug use and abuse, and fitness. H&PE 793 will not be considered as a substitute for H&PE 730. Prereq.: H&PE 680. 4 q.h.

790. *Health and Disease.* The study of the human body in health and how it is affected by chronic and communicable disease. Prereq.: Biology 551 and 552. 4 q.h.

791. *Community Health.* A study of the need for organized community health efforts: problems of chronic and communicable diseases, environmental health, world health, etc., and the public and private agencies involved in their solutions. Prereq.: HPE 590. 4 q.h.

794. *Secondary School Health Education.* Curriculums, principles, planning, methods, and materials for teaching health in secondary schools. Laboratory and/or field work required. Two hours lecture, four hours laboratory a week. Prereq.: HPE 701. 4 q.h.

799. *Health Promotion in the Community Setting.* Philosophy, principles, planning, methods and evaluation of health education and/or health promotion programs in community settings including patient education, community health education, and industrial health. Three hours lecture, two hours lab. per week. Prereq.: HPE 690 4 q.h.

801. *Field Work in Health Education.* Designed to provide the health education major with a supervised teaching or agency experience. Four hours per week is required. Prereq.: HPE 791 and either 794 or 799. 2 q.h.

891. *Community Health Internship.* Supervised experience designed to provide an opportunity to plan, implement and evaluate a program in a community health setting. Approximately 35 hours per week. Prereq.: H&PE 791, 799, and Sociology 724. 12 q.h.

892. *The Teaching of Controversial Topics in Health Education.* To prepare educators to teach in such areas as human sexuality, alcohol, drugs, and values. Two hours lecture and two hours lab. Prereq.: Any education methods course or H&PE 721, or H&PE 794. 3 q.h.

893. *Workshop in Health Education.* Concentrated study of a selected topic related to health education. The department will select and announce the topic and determine the credit hours based on frequency and duration of workshop meetings. May be repeated for a maximum of eight hours with change in topic. Prereq.: HPE 721 or consent of instructor. 1-4 q.h.

899. *Seminar: Health.* Special and current problems in health education. Prereq.: senior standing and consent of instructor. 2 q.h.

Physical Education

Physical Examinations

Each physical education major is required to have a medical examination, the results of which must be on file in the University Health Center. Students without this physical examination on file will not be admitted to activity classes. This medical exam meets the requirement for a four-year period.

Professional Teacher Education Program

Youngstown State University is fully approved by the Ohio State Department of Education for the preparation of physical education teachers for public schools. The degree of Bachelor of Science in Education with a major in Physical Education leads to either an Ohio State School or Special Provisional Certificate.

Students interested in majoring or minoring in Physical Education should consult with the Health and Physical Education Department chairman. The Physical Education minor requires approximately 38 quarter hours of specified course work.

Those students seeking teaching certificates in Physical Education must formally apply to the Health and Physical Education Department when they have completed 75 to 100 hours of credit. Application forms and other information for formal admittance to the Health and Physical Education Department may be obtained in the Department Office, Room 307, Beeghly Center.

PHYSICAL EDUCATION, B.S. IN EDUCATION MAJOR CURRICULUM GUIDE

Students should average 48 quarter hours per year

FIRST YEAR	Hrs.
English 550, 551	4 + 4
Biology 506, 507	4 + 4

Education 501	4
Fine Arts Elective	3-5
Speech 554	4
H&PE 590, 595, 601	3 + 2 + 3
Gymnastics Activities	2
Team Sport Activities	4
Individual & Dual Sports Activities	2
H&PE 524 or 528	1
H&PE 545	1
H&PE Aquatics	1
Math, Elective	4

SECOND YEAR	Hrs.
Humanities Elective	3-5
Biology 551, 552	4 + 4
Psych 560, 709	4 + 4
Psychology 755 or 756	4
Social Science Elective	4
H&PE 550, 551, 661	1 + 1 + 2
H&PE 670, 750	2 + 2
Activity Elective	2
Individual & Dual Sports Activities	3

THIRD YEAR	Hrs.
Education 704, 706, 708	3 + 4 + 4
Education 700, 702, 730	2 + 1 + 2
H&PE 680, 780	4 + 2
H&PE 766, 767, 768	3 + 3 + 2
H&PE 791, 795	4 + 4
General Electives	

FOURTH YEAR	Hrs.
H&PE 860	4
H&PE 895, 896, 897	3 + 4 + 2
H&PE 850, 855	4 + 4
Education 845	15
General Electives*	

COACHING MINOR

The coaching minor is avilable for those students interested in coaching. (Not applicable for physical education majors.) State of Ohio Department of Education Certificate is not available for coaching. Students interested in the coaching minor should consult with an advisor in the Health and Physical Education Department.

BACHELOR OF ARTS DEGREE PROGRAMS IN PHYSICAL EDUCATION

These programs are for students seeking careers in physical education outside the public school setting. The Bachelor of Arts degree offers programs with specialization in Physical Education (non-teaching), Fitness Management and Sports Management. Students interested in any of these specializations should consult with an advisor in the Health and Physical Education Department.

*Electives should be applied toward minor field.

Students seeking an AB degree in Physical Education must complete the following core courses: HPE 595, 601, 618, 670, 795, 850, 855, 860, 895, 896, 897, 898, and 7 activity courses from designated groups. Additional courses are required for each area of specialization. For a specific list please contact the Health and Physical Education Department.

Activity Classes

The following activity classes meet the University activity requirement and are scheduled as two contact hours a week for one hour's credit.

502. *Volleyball I.* Basic rules and fundamental skills of volleyball including serves, bump, overhead pass, and block. 1 q.h.

503. *Basketball.* Fundamental skills and techniques in basketball. Offensive and defensive team play and strategy. 1 q.h.

507. *Volleyball II.* Intermediate-to-advanced volleyball skills including diving, rolling, and various team offensive and defensive strategies. Prereq.: HPE 502 or equivalent. 1 q.h.

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

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

512. *Bowling I.* Fundamentals of bowling the straight ball. Equipment selection, correction of errors, and scoring. Classes meet at McGuffey Bowling Lanes. A fee is charged. For beginning bowlers. 1 q.h.

513. *Bowling II.* Intermediate bowling. Refinement of bowling skills and use of the hook delivery. Tournament planning, team strategy, and competition. Classes are at McGuffey Bowling Lanes. A fee is charged. Prereq.: HPE 512 or 100 average. 1 q.h.

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

515. *Fencing II.* Intermediate techniques and strategy of foil fencing and bouting. Prereq.: HPE 514 or consent of instructor. 1 q.h.

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

517. *Gymnastics II.* Fundamental techniques and methods of appropriate gymnastic apparatus and routine composition. Prereq.: HPE 516 or consent of instructor. 1 q.h.

518. *Gymnastics III.* Techniques of coaching, spotting, and/or performing, with emphasis on methods and advanced skills. Prereq.: HPE 517 or competition experience or consent of instructor. 1 q.h.

519. *Racquetball.* Racquetball rules and techniques for singles and doubles play. Basic strategy and skill development are emphasized. 1 q.h.

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

521. *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.: HPE 520 or intermediate skill. 1 q.h.

524. *Figure Control and Exercise Programs.* Individualized and group exercise programs designed to modify the figure and improve general fitness. 1 q.h.

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

526. *Marksmanship.* The safety and practice of handling firearms. Target shooting in prone, kneeling, and standing positions. Same as military science 610. 1 q.h.

527. *Handball.* Handball rules and techniques for singles and doubles play. Basic strategy and skill development are emphasized. 1 q.h.

528. *Physical Conditioning.* Strenuous large group activities including body-contact sports (such as wrestling and deck hockey) to develop strength and improve cardiovascular condition. 1 q.h.

529. *Recreational Games.* Fundamentals, skills, techniques, strategy, and rules of racquetball, paddle tennis, table tennis, shuffleboard, and other recreational games. 1 q.h.

530. *Aquatics I.* Introduction to swimming and survival skills, floating, drownproofing, basic swim strokes (side, elementary back and front crawl), beginning diving, and simple aquatic games. This course is designed for the student who cannot swim; it is not open to swimmers. 1 q.h.

531. *Aquatics II.* Intermediate Swimming. Introduction to back crawl, breaststroke, and butterfly. Techniques in underwater swimming; use of mask, snorkle, and fins. Elementary lifesaving skills and refinement of basic springboard diving. Prereq.: HPE 530 or its equivalent. 1 q.h.

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

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

537. *Swim-Trim.* Fitness through swimming and conditioning exercises tailored to the individual needs of the student. Prereq.: Ability to swim 50 yards. 1 q.h.

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

541. *Modern Dance II.* Intermediate dance techniques, composition, and improvisation. Prereq.: HPE 540 or consent of instructor. 1 q.h.

542. *Dance Composition.* Basic principles of form and structure to choreography. Prereq.: HPE 541 or consent of instructor. 1 q.h.

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

546. *Folk and Square Dance II.* Intermediate and advanced folk and country dances, materials, and practice. Prereq.: HPE 545 or consent of instructor. 1 q.h.

547. *Advanced Balkan and Mediterranean Folk Dance.* Traditional dances of the Balkan and Mediterranean countries, with emphasis on style and refinement of skills. Prereq.: HPE 546 or consent of instructor. 1 q.h.

548. *Aerobic Dance.* Rhythmic exercises and conditioning activities performed to music. Designed to improve cardiovascular fitness, flexibility and general muscle tone. 1 q.h.

550. *Children's Dance.* Appropriate dance and rhythmical activities for the elementary school child: exploratory movement, simple locomotive skills, and rhythmical activities using hand apparatus. 1 q.h.

551. *Elementary School Gymnastics.* Gymnastic activities for the elementary school child: exploratory work on mats and apparatus. 1 q.h.

555. *Jogging.* A holistic approach to the theory and practice of jogging with emphasis on the physiological benefits. 1 q.h.

556. *Racquetball II.* Advanced racquetball techniques, strategy, conditioning, and mental preparation for singles, doubles, and tournament play. Emphasis is on use of various advanced shots, positioning and officiating. Prereq.: Racquetball I or intermediate skill level. 1 q.h.

557. *Weight Training.* Introduction to progressive resistive exercise for men and women. Topics covered include strength training, types of equipment, exercise techniques, circuit training, competitive weightlifting, body building, and injury prevention. 1 q.h.

561. *Cross-Country Skiing.* The skills of cross-country ski touring and recreational cross-country skiing. A cost will be incurred by those who have to rent equipment. 1 q.h.

564. *Bicycling.* Instruction and practice in bicycling skills, techniques, and procedures necessary for intermediate or long trips. Students must provide their own three-, five-, or ten-speed bicycle. 1 q.h.

565. *Self-Defense.* The defensive techniques of Judo and Aikido signed to counter attacks with a club, knife, gun, or bare fist. Balance, control, safety, and falling are stressed. 1 q.h.

570. *Musical Theatre Dance I.* Principles and practices of the basic techniques of tap dance, soft shoe, jazz, and combinations of the fundamental forms of movement. Designed to introduce the student to various forms of dance and movement combinations performed in musical theatre. Prereq.: HPE 540 or consent of instructor. May be applied as 2 q.h. toward the fulfillment of the University HPE activity requirement. This course is identical with Speech 663. 2 q.h.

571. *Musical Theatre Dance II.* Emphasizes basic tap combinations and routines. Continuation of HPE 570. Prereq.: HPE 570 or consent of instructor. May be applied as 2 q.h. toward the fulfillment of the University HPE activity requirement. This course is identical with Speech 664. 2 q.h.

572. *Ballet I.* Theory and practice of classical ballet with emphasis on body placement and muscular awareness. Stressing fundamentals of vocabulary, structure, and placement. This course may be applied as 2 q.h. toward the fulfillment of the University activity requirement. Identical with Speech 568. 2 q.h.

573. *Ballet II.* Continuation of HPE 572, expanding upon vocabulary and establishing patterns of balletic movement. Prereq.: Ballet I or consent of instructor. This course may be applied as 2 q.h. toward the fulfillment of the University activity requirement. Identical with Speech 569. 2 q.h.

580. *Tennis III.* Theory and practice of advanced skills, strategy and play. Prereq.: Tennis II or consent of instructor. 1 q.h.

615. *Freestyle Orienteering.* Introduction to the sport of orienteering: negotiating unfamiliar terrain by combining compass and map skills with physical fitness. Identical with Military Science 615. 1 q.h.

622. *Motor Skill Analysis for the Elementary Teacher.* Performance and analysis of locomotor, nonlocomotor, and manipulative skills. Basic movement, movement education, and materials for elementary children. Characteristics of children and their relation to physical education and concept development. Credit can be applied toward University physical education requirement. Prereq.: sophomore standing, Elementary Education major, or permission of instructor. 1 q.h.

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

The following activity classes meet the University activity requirement and are scheduled as three contact hours per week for one hour's credit, to allow for travel time and/or weather conditions.

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

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

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

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

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

508. *Ice Skating.* Ice skating for the novice or nonskater. Classes at Mill Creek Park Skating Rink. Students must furnish their own skates or rent them there. 1 q.h.

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

523. *Tennis II.* Theory and practice of intermediate-to-advanced tennis skills and play. Prereq.: HPE 522 or intermediate skill level. 1 q.h.

Activity Classes (Other)

The following classes also meet the University activity requirement.

549. *Varsity Competition.* Credit toward the University Physical Education Activity requirement may be obtained through competition in varsity athletic programs. Prereq.: Consent of the coach. 1 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.

630. *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. Prereq.: ability to swim 100 yards with each of the following strokes with correct form: front crawl, back crawl, side stroke, elementary back stroke, and breast stroke. 3 q.h.

631. *Water Safety Methods for Instructors.* Techniques for teaching and supervising swimming, lifesaving, and skin-diving. Poolside safety and first aid; introduction to pool maintenance and management. A swimming and lifesaving instructor's certificate granted upon satisfactory completion. Prereq.: an active lifesaving certificate. 3 q.h.

632. *Skin and Scuba Diving.* Basic skin-diving with the use of mask, fins, and snorkle. Scuba diving skills with the use of tank and regulator. Emphasis on diving physics, physiology, lifesaving, first aid, and safety skills related to skin and scuba diving. Two hours of lecture and two hours of lab. Student must furnish mask, fins, and snorkle. Prereq.: 400-yard swim within 15 minutes. 3 q.h.

Non-Activity Classes

589. *Scientific Principles of Personal Fitness.* An opportunity to discover the benefits and scientific reasons for life-long participation in fitness-enhancing activities.

Individualized to meet the needs of each participant. Scheduled on an arranged basis with 2 hours of exercise in a fitness laboratory and 1 hour of lecture per week. Applicable to the Physical Education activity requirement. 2 q.h.

595. *Introduction and Concepts of Physical Education.* An introduction to physical education and related professions. The concepts, goals, and objectives upon which various types of programs are based. 2 q.h.

618. *Practicum.* A supervised experience in an approved fitness or sports related program (e.g. health spa or racquetball club) under the direction of a qualified individual. This is designed to give the student a controlled field experience with periodic observation by an assigned full-time faculty member. May be repeated for a maximum of 6 hours. This course will involve at least 4-8 hours per week. Prereq.: HPE 595 and 4 activity classes. 2 q.h.

623. *Physical Education for the Pre-School Child.* Methods, materials, equipment, and class management techniques appropriate for pre-school age children, including field experience with pre-school children. Two hours lecture and two hours of lab and/or field experience. 3 q.h.

635. *Openwater Scuba Diving.* Practical experiences in physiological and psychological stress, underwater navigation, effects of hypothermia, decompression, repetitive diving, and rescue techniques. Students completing this course receive basic scuba certification. Five hours of lecture and 10 hours of laboratory quarterly. Prereq.: HPE 632. 1 q.h.

650. *Techniques of Officiating Soccer.* Analysis and interpretation of rules; theory and practice of officiating soccer. Prereq.: HPE 501. 2 q.h.

651. *Techniques of Officiating Basketball.* Analysis and interpretation of rules; theory and practice of officiating basketball. Prereq.: HPE 503. 2 q.h.

653. *Techniques of Officiating Football.* Analysis and interpretation of rules; theory and practice of officiating football. Prereq.: HPE 505R. 2 q.h.

655. *Techniques of Officiating Track and Field.* Analysis and interpretation of rules; theory and practice of officiating track and field. Prereq.: HPE 506. 2 q.h.

656. *Techniques of Officiating Volleyball.* Analysis and interpretation of rules; theory and practice of officiating volleyball. Prereq.: HPE 502. 2 q.h.

658. *Techniques of Officiating Gymnastics.* Analysis and interpretation of rules and skills; theory and practice of judging gymnastics. Prereq.: HPE 517. 2 q.h.

659. *Techniques of Officiating Baseball and Softball.* Analysis and interpretation of rules; theory and practice of officiating baseball and softball. Prereq.: HPE 504. 2 q.h.

660. *Techniques of Officiating Field Hockey.* Analysis and interpretation of rules; theory and practice of officiating field hockey. Prereq.: HPE 500. 2 q.h.

661. *Games Analysis.* The selection, adaptation and creation of games appropriate for varying developmental levels and environmental situations in K-12 physical education. Large group, coeducational and self-challenging activities are included. Four hours lab. per week. Prereq.: 6 HPE activity credits. 2 q.h.

670. *Analysis of Movement Patterns.* Designed to help the prospective physical educator critically analyze movement patterns and their relationship to motor learning. Common motor patterns are studied and applications to teaching are made in laboratory sessions. One hour lecture, two hours lab. per week. Prereq.: 10 activity credits. 2 q.h.

697. *Camping.* The specific skills and problems encountered in camping: shelter, clothing, food, transportation, and site selection. One hour of lecture and two hours of laboratory. 2 q.h.

699. *Sport in American Culture.* Sport in American culture from the colonial period to the present as it relates to such areas as education, literature, film and drama, minorities, politics, professional sport, religion and urbanization. 4 q.h.

722. *Physical Education in Elementary Grades for the Classroom Teacher.* Principles, methods, materials, and organization of activities for elementary school children. Active participation required, including approximately 15 hours of field work in area schools. Prereq.: HPE 622 and third-quarter sophomore standing. 3 q.h.

750. *General Techniques of Coaching.* 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.* Theory, methods, techniques, and organization of coaching football. Prereq.: HPE 750. 2 q.h.

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

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

756. *Coaching of Individual Sports.* Theory, methods, organization, and techniques of teaching, and coaching individual sports such as golf, tennis, and swimming. Prereq.: HPE 750. 2 q.h.

763. *Internship in Elementary Physical Education.* Supervised elementary school experiences including teaching, video tape evaluations, use of media, team teaching and interdisciplinary approaches. Requires practical experience in elementary schools. Prereq.: HPE 768. 3 q.h.

766. *Curriculum Development in P.E.* Aims, objectives, procedures, implementation, and evaluation for curriculum development in physical education and movement education (K-12). Criteria for the selection of specific content, for lesson and unit planning are covered with reference to the cognitive, psychomotor and affective domains of learning. Prereq.: HPE 550 or 551, 595, 661, and 670. 3 q.h.

767. *Instruction and Teacher Behavior in P. E.* Methods of instruction including direct teaching, guided discovery and problem solving and the development and analysis of teacher behavior. Two hours lecture, two hours lab. per week. Prereq.: HPE 766. 3 q.h.

768. *Field Experience in Physical Education.* Supervised school experiences at both the elementary and secondary levels including planning, teaching and analysis of teaching through video tapes, audio tapes, observations and other techniques. Four hours lab. per week. Prereq.: HPE 767. 2 q.h.

780. *Methods of Teaching Dance.* Rhythm and movement fundamentals; methods and materials of teaching folk, 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.

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.

802. *Internship.* A full-time culminating experience in an approved fitness or sports related setting (i.e., health spa or racquetball club) under the direct supervision of a qualified individual and coordinated by a supervising faculty member. This course will require 40 hrs. per week. Prereq.: HPE 618, 795 and senior standing. 15 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 Programs.* Organizational patterns and administrative methods of physical education, including instructional programs, intramurals and recreation. Prereq.: Upper division status in P. E. 4 q.h.

860. *Tests and Measurements.* The various tests in the fields of health and physical education, including uses and interpretation of elementary statistical techniques. Prereq.: Senior standing. 4 q.h.

888. *Selected Topics in Physical Education.* The in-depth study of special subject matter within the field of physical education. Topics will be announced each time the course is offered. May be repeated for a maximum of 8 q.h. with change in topic. Prereq.: Senior standing or consent of instructor. 1-4 q.h.

894. *Workshop in Physical Education/Athletics.* Concentrated study of a selected topic related to physical education and/or athletics. The department selects and announces the topic and determines the credit hours based on frequency and duration of workshop meetings. May be repeated for a maximum of eight hours with change in topic. Prereq.: HPE 750, 768, or consent of instructor. 1-4 q.h.

895. *Adapted Physical Education.* The organization of physical education activities selected to meet the individual needs of exceptional students. Approximately 15 hours of field work required. Prereq.: HPE 795. 3 q.h.

896. *Physiology of Exercise.* Physiological bases and function of the body during exercises, stress, and muscular activity. Prereq.: HPE 795 and 860. 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. One hour of lecture and two hours of laboratory per week. Prereq.: HPE 795. 2 q.h.

898. *Seminar: Physical Education.* Special and current problems in physical education. Prereq.: senior standing. 2 q.h.

HISTORY

Professors Beelen (Chairman), Berger, Blue, Domonkos, Earnhart, Friedman, Huang, Jenkins, Kulchytsky, Roberts, Ronda, Satre; Associate Professors Darling and May; Assistant Professors Beyan and Viehe.

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 Section), the following group requirements listed below. It is recommended that the student select courses with assistance from an advisor, since certain courses are preferable 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:

601, 630, 701, 702, 704, 706, 708, 710, 712, 713, 714, 717, 718, 720, 721, 725, 726, 732, 733, 736, 738, 739, 740, 741, 742, 743, 744, 747, 748, 762, 801.

Group C — Select three courses from the following courses:

699, 752, 753, 754, 755, 758, 759, 761, 762, 765, 766, 767, 768, 769, 777, 778, 779, 780,

781, 782, 790, 791, 792, 793, 850, 851.

Group D — Select three courses from the following courses:

611, 661, 662, 663, 727, 728, 729, 740, 770, 771, 772, 776, 789, 796, 797, 799, 820, 821, 822, 860.

NOTE: No course can be counted in more than one group.

Students transferring 30 or more quarter hours in history to YSU from another institution must meet the group requirements listed above to obtain a major in History for graduation. At least five of the courses in groups B, C, and D must be taken at YSU.

It is recommended that the student in choosing 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

500. *Introduction to World History.* A study of unifying historical themes and personalities through the ages. Not applicable to the History Major. 4 q.h.

502. *History of the Labor Movement.* Identical with Labor Studies 502. Not applicable to the History major. 4 q.h.

590. *Introduction to Women's Studies.* Introduces students to key concepts, theoretical frameworks, and inter-disciplinary research drawn from current scholarship about women. The course includes cross-cultural and historical analyses but concentrates on major issues relevant to the status and roles of contemporary American women including an examination of the effects of sexism, racism, ethnicity, and class distinction. DOES NOT COUNT TOWARD THE HISTORY MAJOR: does not fulfill the SOCIAL STUDIES requirement. Prereq.: English 550. 4 q.h.

601. *American Military History.* A survey of American military history from the origin of the United States Army to the present, with emphasis on how military policies and strategies have been influenced by the domestic and foreign affairs of the United States. Identical with Military Science 601. 4 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. Hist. 605 is not a prerequisite. 4 q.h.

611. *Latin America.* A survey of Latin America from its beginnings to the present. Emphasis is on late 19th and 20th century developments. 4 q.h.

630. *The Black Experience in American History.* A historical study of black people's roles in and contribution to the political, social, and economic development of American society. Credit for 630 will not be given to students who have taken either 730 or 731. 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. History 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 on nationalist movements in these regions in the past two centuries. 4 q.h.

662. *History of Asian Civilization.* Institutions and cultures of East Asia from ancienct times to date. Emphasis on modern times. 4 q.h.

663. *African Civilization.* A survey of the cultural, political, social, and economic development of Africa from antiquity to the present, viewed in the context of world history. 4 q.h.

699. *History of Medicine.* Practices and theories of healing, and their relation to social and intellectual context, from ancient times to the present. 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 18th century, with special emphasis on colonial social structure, economic patterns, and political behavior. Prereq.: Hist. 605. 4 q.h.

702. *The Revolution and the Constitution.* The causes of the American Revolution, both British and Colonial, and its consequences; the origins of the Constitution and the creation of the American Republic. Prereq.: Hist. 605. 4 q.h.

704. *The Age of Jefferson and Jackson.* An intensive study of the age of Jefferson and Jackson, covering the period 1789 to 1840. Prereq.: Hist. 605. 4 q.h.

706. *America Before the Civil War, 1840-1860.* An intensive study of the deepening sectionalism of the country culminating in the outbreak of the Civil War. Prereq.: Hist. 605. 4 q.h.

708. *The Civil War and Reconstruction.* An intensive study of the war's military aspects; problems of the confederacy: the effects of the war on American

society; and problems of reconstruction in both North and South. Prereq.: Hist. 605. 4 q.h.

710. *Emergence of Modern America.* The United States from reconstruction to the Treaty of Versailles: the transformation of this nation from a rural to an urban society and the role played by immigrant-ethnic-minority groups in early 20th century political development. Emphasis will be placed on historical interpretation. Prereq.: Hist. 606. 4 q.h.

712. *Recent America.* Domestic and international affairs from World War I through World War II, with emphasis on historical interpretation of the twenties and thirties. Prereq.: Hist. 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.: Hist. 606. 4 q.h.

714. *Economic History of the United States.* A historical examination of the economy of the United States from colonial times to the present. Special emphasis is placed on the impact of the Industrial Revolution upon both individuals and the society in general. Prereq.: Hist. 605 or 606 or consent of instructor. 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: the formation and evolution of the constitution by judicial decisions and the influence of political change. Prereq.: Hist. 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 since the Civil War, 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.: Hist. 605 for 720; 606 for 721. 4+4 q.h.

723. *History of American Sports.* An examination of sports within America from earliest times to the present. Special emphasis will be placed upon the manner in which sports and society have influenced each other, such as racial and class relationships, social mobility, politics, religion, and foreign policy. Prereq.: Hist. 605 or 606. 4 q.h.

725. *Lyrics in American Folk Music.* A historical survey of the content, development, and significance of American folk music lyrics within a historical framework by means of the historical method. Types of folk music, such as ballads, blues, country, protest, and contemporary, are the tools for a historical examination of the stabilizing and divisive elements that are a part of the American heritage. Prereq.: Hist. 605 or 606, or consent of instructor. 4 q.h.

726. *History of Women in the United States.* Analysis of the various roles and contributions of women in American history. Prereq.: Hist. 590 or 606. 4 q.h.

727. *Mexico and the Caribbean.* Includes Mexico, Colombia, Venezuela, and the Central American Republics. Special consideration is given to 20th-century Mexico. Prereq.: Hist. 611 or consent of instructor. 4 q.h.

728. *History of South America.* The Spanish-American Republics and Brazil. Prereq.: Hist. 611 or consent of instructor. 4 q.h.

729. *History of Latin American-United States Relations.* Survey of Latin American-U.S. relations from the founding of the New World to the present, with greatest emphasis on the 20th century. Prereq.: Hist. 611 or consent of instructor. 4 q.h.

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

733. *The West in American History II.* The advancing 19th-century frontier in the United States and its effect on the political, economic, and social conditions of the country with emphasis on the role of the Indian. Prereq.: Hist. 605. 4 q.h.

736. *Urban History in the United States.* The history of cities in the United States since 1607. Prereq.: Hist. 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 (I) through the Civil War, and (II) since then. Emphasis is on the period 1800-1865 and on the problems faced by the southern regional attitude following reconstruction. Special attention is given, in 739, to the difficulty the South faced in the 20th century. Prereq.: Hist. 605 for 738; 606 for 739. 4+4 q.h.

740. *The Vietnam War.* American involvement in Southeast Asia from the days of French rule to the fall of the Saigon government and beyond. Includes the war debate at home, and other consequences of the war. Prereq.: Hist. 606 or 656 or 662. 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 (I) to 1900 and (II) since 1900. Prereq.: Hist. 605 for 741; 606 for 742. 4+4 q.h.

743. *Labor in American History.* The impact of labor and the labor movement upon American history, with emphasis on the historical context surrounding labor conditions and on the political and social implications of the labor movement. Prereq.: Hist. 606. 4 q.h.

744. *The History of American Business.* Business enterprise and its historical setting from 1800 to the

present: the interaction of economic and political forces as a factor in the position occupied by business enterprise in American society today. Prereq.: Hist. 605 or 606. 4 q.h.

747. *History of the United States and Pennsylvania.* The History of Pennsylvania and its position in American history. Prereq.: Hist. 605 or 606. Open to those seeking a Pennsylvania Teaching Certificate. 3 q.h.

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

752. *History of Greece.* Aegean civilization from the third millennium to 275 B.C. Prereq.: Hist. 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. Prereq.: Hist. 655. 4 q.h.

754. *Early Middle Ages.* History of the Mediterranean world from the fourth to the tenth century. The course will examine the causes of the decline of the Roman Empire as well as the rise of Christianity and Islam, the Germanic invasions, the development and decline of the Carolingian Empire and the emergence of a Western European culture following the disintegration of the Mediterranean world. Prereq.: Hist. 655. 4 q.h.

755. *High Middle Ages.* History of western and eastern Europe from the tenth to the fourteenth century. The course will emphasize the following developments: the rise of the feudal monarchies and of the Papacy, the growth of urbanization and trade, the Renaissance of the Twelfth Century, the flowering of Romanesque and Gothic architecture and the appearance of vernacular literature. Prereq.: Hist. 655. 4 q.h.

758. *Renaissance Europe.* A survey of European history from the end of the High Middle Ages to the sixteenth century. Emphasis will be on the rise of humanism and of Renaissance culture in Italy, its dissemination beyond the Alps as well as the development of national states and the flowering of the Late Medieval tradition in western and eastern Europe. Prereq.: Hist. 655. 4 q.h.

759. *The Reformation Era.* The history of Europe from the Lutheran Revolt to the Peace of Westphalia in 1648. The major themes of study will be the causes of the Reformation, the impact of Luther, Calvin and of the Radical Reformation, the Catholic Reform movement, the Wars of Religion and the rise of the modern secular states. Prereq.: Hist. 655. 4 q.h.

761. *The French Revolution and Napoleon (1789-1815).* The French Revolution is examined in detail, especially from its outbreak to the fall of Robespierre. The last portion deals with the rise of Napoleon, his political role, his military campaigns, the reconstruction of Europe, and his fall at Waterloo. Prereq.: Hist. 656. 4 q.h.

762. *The Second World War.* An examination of the war's diplomatic and ideological origins; social, economic, and political factors; and strategic, tactical, and technological dimensions of the conflict in all major theaters. Prereq.: Hist. 606 or 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.: Hist. 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 anti-semitism, and the images of war; the Bismarckian international order and its suicide. Prereq.: Hist. 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, Fascism, and Stalinism in the making of the Cold War and World War II. Prereq.: Hist. 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.: Hist. 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.: Hist. 662 or consent of instructor. 4 q.h.

771. *China in Traditional Times.* China's history, arts, philosophy, religion, political and social institutions, and international relations from beginnings to the mid-19th century. Prereq.: Hist. 662, Anthr. 772, or consent of instructor. 4 q.h.

772. *History of Modern China.* China 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.: Hist. 662 or consent of instructor. 4 q.h.

776. *History of Modern Japan.* 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.: Hist. 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 empire, with special attention to the Russian Revolution. Prereq.: Hist. 655 for 777; 656 for 778 or consent of instructor. 4+4 q.h.

779. *History of the Soviet Union.* Soviet history, diplomacy, and tactics from the Bolshevik Revolution to the present; the achievements and shortcomings of Communism in Russia, its satellites, and non-Russian Soviet nations. Prereq.: Hist. 656 or consent of instructor. 4 q.h.

780, 781. *History of Eastern Europe I, II.* The histories of the varying nations that have made up Eastern Europe from earliest times to 1600 and from 1600 to the present, and their contributions to world civilization. Prereq.: Hist. 655 for 780; 656 for 781 or consent of instructor. 4+4 q.h.

782. *History of the Balkans.* Southeastern Europe from the fourth century to the present, including the Byzantine and Ottoman influence on this area, with stress on developments prior to and since World War I. Prereq.: Hist. 656 or consent of instructor. 4 q.h.

789. *Jewish History.* An overview of Jewish history in the past twenty centuries, with emphasis on achievements in the arts, sciences, and politics, and on precedents for the Holocaust. Prereq.: Hist. 655, 656. 4 q.h.

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

791. *English History II.* Great Britain from the accession of the Hanovers to the present. 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.: Hist. 656. 4 q.h.

792, 793. *The British Empire and Commonwealth I, II.* British Empire from the collapse of the old empire in 1783 to 1867, and from 1867 to the present. Colonial institutions, colonial policy, suppression of slave trade, expansion of empire, growth of colonial nationalism, and evolution of the Commonwealth. Prereq.: Hist. 656. 4+4 q.h.

796. *The Ancient Near East.* Civilizations in Mesopotamia and Egypt from the fourth millennium B.C. to the Graeco-Persian Wars, with emphasis on literary materials from Sumer, Babylon, and Egypt. Prereq.: Hist. 661. 4 q.h.

797. *Early Islamic Civilization.* The Middle East from the Jahiliyah Period to the Mongol invasions, with special emphasis on the religious reformation of Muhammad and Islamic culture under the Abbasids. Prereq.: Hist. 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.: Hist. 661. 4 q.h.

801. *Select Problems in American History.* Specific problems in American History in such areas as economics, political theory, and cultural and intellectual history. May be repeated with different content. Prereq.: Consent of instructor. 4 q.h.

820. *History of West Africa I.* West Africa to 1800, focusing on the people, cultural traditions, economic and political developments, state-building, and early contacts with the West. Prereq.: Hist. 663. 4 q.h.

821. *History of West Africa II.* The significance of West Africa since 1800, with emphasis on the 19th century and on such topics as slave trade, commercial revolution, religious and imperialistic rivalry, and the reaction of West Africans. Prereq.: Hist. 663. 4 q.h.

822. *History of Modern Africa South of the Sahara.* The impact of colonialism on the people of Africa south of the Sahara, especially in the 20th century: colonial administration, rise of nationalism, Pan-Africanism, decolonization, and problems of modern Africa. Prereq.: Hist. 663. 4 q.h.

850. *International Area Study.* A course in the geography and history of a selected international area with emphasis on cultural development by traveling in the selected region. The class *and travel* is supervised by the Geography and/or History faculty. The course grade is based upon a term paper which must be submitted within 60 days after the end of the course. Prereq.: *By permit only.* 4-12 q.h.

851. *Select Problems in European History.* Specific problems in European history in such areas as economics, political theory, and cultural and intellectual history. May be repeated with different content. Prereq.: Consent of instructor. 4 q.h.

860. *Select Problems in Third World History.* Specific issues in African, Asian, Latin American, or Middle Eastern History in such areas as economics, political theory, and cultural and intellectual history. May be repeated once, with different content. Prereq.: Consent of instructor. 4 q.h.

HUMANITIES

Professor Brothers (Chair); English Faculty.

The humanities courses study works of many literatures, chosen for their relevance to contemporary culture. Works not written in English are read in translation.

The University offers a minor and a combined major in Humanities. A comprehensive teaching field in

humanities (90 quarter hours) is also possible. For detailed requirements for the major or the teaching field, the student should consult Professor Brothers.

Full credit for all humanities courses is acceptable toward a major in English and toward the University general requirement in the humanities area. Humanities 631 is acceptable toward a major in Latin at the discretion of the Chair of the Department of Foreign Languages. Humanities courses may also be used to fulfill the philosophy/theology/fine arts requirement for teacher certification.

The completion of English 551 or its equivalent is a prerequisite to any humanities course — except 610, which may be taken by students with sophomore standing who have completed English 550.

Lower Division Courses

610. *Introduction to World Literature.* A non-technical, non-historical course in which important works are read in translation and discussed critically for increased enjoyment and understanding. For non-English majors, to fulfill their humanities area requirement. Prereq.: English 550 and sophomore standing. 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 551. 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 551. Listed also as English 631. 4 q.h.

Upper Division Courses

Prerequisite to the following courses: any literature course in English or Humanities, or junior or senior standing, or consent of the English Department Chair.

735. *Epic and Romance.* A study of love and war in great works of Western literature from the classical through the modern period. Readings in translation of such works as the *Iliad, Song of Roland, the sagas, The Romance of the Rose,* Lermontov's *A Hero of Our Time,* and Garcia Marquez's *A Hundred Years of Solitude.* Listed also as English 735. 4 q.h.

736. *Comedy and Satire.* A study of great humorous and satirical works of Western literature from the classical through the modern period. Readings in translation of such writers as Aristophanes, Moliere, Voltaire, Mann, Hesse, and Giraudoux. Listed also as English 736. 4 q.h.

737. *Tragedy and the Absurd.* A study of great works in Western literature which portray the rebellion of men and women against an implacable universe. Readings in translation of such writers as Sophocles, Goethe, Strindberg, Brecht, Beckett, and Solzhenitsyn. Listed also as English 737. 4 q.h.

ITALIAN

Professor Aliberti, Associate Professor Veccia.

A major in Italian comprises 45 quarter hours above the elementary level.

No native speaker who has completed high school in an Italian-speaking country may receive credit for Italian 501, 502, 503, 504, 510, 601 or 602.

Courses in Italian literature (708, 709, 801, 802, 830, 840) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

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 is on aural-oral facility. The prerequisite for Italian 502 is Italian 501 or equivalent; the prerequisite for Italian 503 is Italian 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary Italian.* A review course covering the material of Italian 501, 502 and 503 in one quarter. Students who have received credit for Italian 503 cannot receive credit for Italian 504. Prereq.: 2 years of high school Italian. 4 q.h.

510. *Functional Approach to Italian.* Basic Italian for travel and everyday situations. Development of speaking ability and listening comprehension through practice, with a minimum of grammar. No prerequisite. *Does not count toward the language requirement for the A.B. or B.S. degree.* Not applicable to the major. 5 q.h.

601. *Intermediate Italian I.* Elementary composition and conversation based on grammar review. Reading material is chosen both to furnish a basis for study of Italian literature and to provide a working knowledge of the modern language. Prereq.: Italian 503 or equivalent. 4 q.h.

602. *Intermediate Italian II.* A continuation of Italian 601. Prereq.: Italian 601 or equivalent. 4 q.h.

640. *Selected Topics.* Development of language skills through the study of a topic with practical applications to some area such as business, social studies, cultural trends, etc. May be taken three times for credit if topics are different. Total credit in Italian 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: Italian 602 or equivalent, or permission of instructor. 2-4 q.h.

Upper Division Courses

708. *Italian Civilization I.* A condensed study of the geography, history, literature, and social heritage of Italy, from the fall of the Roman Empire to the end of the 16th century. The course is taught in Italian; includes class discussion for improvement of oral facility. Prereq.: Italian 602 or equivalent. 4 q.h.

709. *Italian Civilization II.* A condensed study of the geography, history, literature, and social heritage of Italy, from the beginning of the 17th century to the present. The course is taught in Italian and includes class discussion. Prereq.: Italian 602 or equivalent. 4 q.h.

720, 721. *Advanced Italian Grammar and Composition.* Study in depth of Italian grammar through exercises and original composition. Need not be taken in sequence. Prereq.: Italian 602 or equivalent. 4+4 q.h.

730, 731. *Conversational Italian.* Designed to develop oral facility through exercises and discussion of assigned topics, and through prepared and extemporaneous situational dialogues. Need not be taken in sequence. Prereq.: Italian 602 or equivalent. 4+4 q.h.

801. *Italian Literature of the 14th Century.* A study of the Italian literature of the 14th century with concentration on Dante's *Divine Comedy.* Prereq.: One 700-level Italian course. 4 q.h.

802. *Italian Literature of the 16th Century.* A course dealing with the literature of the Renaissance and concentrating on Ariosto, Bandello, Machiavelli, and Tasso. Prereq.: One 700-level Italian course. 4 q.h.

830. *Italian Literature of the 19th Century.* A study of the literature of the 19th century with concentration on Leopardi, Manzoni, Pascoli, and Carducci. Prereq.: One 700-level Italian course. 4 q.h.

840. *Italian Literature of the 20th Century.* A study of the literature of the 20th century and its movements and innovations, with concentration on D'Annunzio, Ungaretti, Quasimodo, Montale, Moravia, and Pirandello. Prereq.: One 700-level Italian course. 4 q.h.

885. *Special Topics.* Studies in Italian language, literature, or civilization ranging from medieval to modern times. Topic announced each time course is offered. May be taken three times for credit if content is not repeated. Prereq.: One 700-level Italian course. 2-4 q.h.

JOURNALISM

Professor Brothers (Chair); Associate Professor J. Mason; Assistant Professors Martindale and Murray; English Faculty.

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

All Journalism courses except 625 give full credit in English.

Lower Division Course

622. *Basic Journalism.* A study of news reporting and writing, with emphasis on journalistic style, development of news judgment, interviewing, and coverage of special story types. Prereq.: English 551. Listed also as English 622. 4 q.h.

623. *Make-up and Design.* The practice of copy editing, headline writing, layout and design, photo editing, caption writing. *Does not count toward a major in English.* Prereq.: Journalism 622. Listed also as English 623. 4 q.h.

624. *Press Law and Ethics.* A study of First Amendment rights of the press; examination of laws concerning libel, privacy, copyright, obscenity, censorship, open meetings and open records in Ohio; and a discussion of press responsibilities. *Does not count toward a major in English.* Prereq.: Journalism 622. Listed also as English 624. 4 q.h.

625. *Selected Topics in Journalism.* Study of unusual approaches to reporting and of special kinds of journalistic publications not covered in depth in other journalism courses. Topic announced each time course is offered. May be repeated once with change in topic. *Does not count toward a major in English.* Prereq.: English 551. Listed also as English 625. 3-5 q.h.

Upper Division Courses

716. *Feature Writing.* Development of techniques of writing feature stories, including generating feature ideas, gathering information, and polishing feature style. Practice in writing various types of features. Prereq.: Journalism 622. Listed also as English 716. 4 q.h.

717. *Editorial and Opinion Writing.* Techniques, approaches and practice in writing reviews, editorials, and opinion columns. Exercises in criticism of the arts, editorial research, editorial style will be included. Prereq.: Journalism 622. Listed also as English 717. 4 q.h.

721L. *Journalism Workshop.* Application through student publications of the principles of Journalism 622. The course may be repeated once. Prereq. or concurrent: Journalism 622. Listed also as English 721L. 3 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 708 or 709), or junior or senior standing, or consent of department chairman. Listed also as English 815. 4 q.h.

820. *Advising Student Publications.* A study of the role and responsibilities of the publication advisor in the high school and college. Topics to include the relationship of the student press to academic administration, legal rights of the student press, personnel management, location and utilization of equipment, and budget. *Does not count toward a major in English.* Prereq.: Journalism 622 or permission of English Department Chair. Enrollment limited to students seeking certification to teach Journalism. Listed also as English 820. 4 q.h.

LABOR RELATIONS

See *Economics.*

LATIN

Associate Professor Veccia.

A major in Latin comprises 45 quarter hours of Latin above the elementary level. With the consent of the department chairman, some of these hours may be taken in relevant courses other than Latin. The inclusion of ancient Greek is recommended.

Students who plan to teach high school Latin must complete 30 hours of Latin above the elementary level.

Courses in Latin Literature (707, 708, 709, 809) and Latin 885 (if the topic deals with literature) satisfy the University humanities area requirement.

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

Lower Division Courses

501, 502, 503. *Elementary Latin I, II, III.* Essentials of Latin grammar and some reading of connected prose. Designed for pre-law students and English and modern language majors as well as for students planning to continue in Latin. The prerequisite for Latin 502 is Latin 501 or equivalent; the prerequisite for Latin 503 is Latin 502 or equivalent. 4+4+4 q.h.

601. *Intermediate Latin I.* A rapid review and expanded study of Latin grammar, with prose exercises, accompanied or followed by careful reading of selections from Catullus, Ovid, and other writers. Prereq.: Latin 503 or equivalent. 4 q.h.

602. *Intermediate Latin II.* Reading of selections from Cicero and other writers. Prereq.: Latin 601 or equivalent. 4 q.h.

Upper Division Courses

707. *Cicero.* Selections from the *Letters, De Senectute,* or comparable work, and composition based on review of case usage and the moods and tenses. Prereq.: Latin 602 or equivalent. 4 q.h.

708. *Pliny the Elder and Pliny the Younger.* Selections from *Naturalis Historia* of Pliny the Elder and from the *Letters* of Pliny the Younger, and composition based on review of mood, tense, and case usage. Prereq.: Latin 602 or equivalent. 4 q.h.

709. *Latin Poetry.* Selections from Horace's *Odes,* Ovid's *Metamorphoses,* and works of other writers, with attention to style, method, and content. Prereq.: Latin 602 or equivalent. 4 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.

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. Prereq.: Any 700-level Latin course. 3 q.h.

885. *Special Topics.* Studies in Latin language, literature, or Roman civilization. Topic is announced each time course is offered. May be taken three times for credit, if content is not repeated. Prereq.: Any 700-level Latin course. 4 q.h.

LINGUISTICS

Professors Hankey, Murphy, Secrist and Viehmeyer; Associate Professor Knapp; English and Foreign Language Faculties.

The University does not offer a major in Linguistics, but enables a student to elect a minor in Linguistics. Students planning such a minor should consult their major advisor, especially to determine whether a course offered in both Linguistics and the major department should be counted as Linguistics or not.

Upper Division Courses

750. *Language and Culture.* Language structure as an instrument in human behavior and social institutions. Prereq.: English 551 or equivalent, and Anthropology 602 or equivalent. Listed also as English 750 and Anthropology 750. 4 q.h.

752. *Anthropology: Historical Linguistics.* A survey of the theory and techniques of comparative linguistics with emphasis on the establishment of genetic relationships, procedures for sub-grouping, internal reconstruction, and glottochronology. Prereq.: Anthr. 602 or 705. Listed also as Anthropology 752. 4 q.h.

753. *Anthropological Linguistics.* Identical with Anthropology 753. 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 551 or equivalent. Listed also as English 755. 4 q.h.

757. *Development of the English Language.* Sounds, vocabulary, grammar, and usage — from old to contemporary English. Prereq.: Engl. 755. Listed also as English 757. 4 q.h.

758. *English Grammar.* Descriptions and analysis of English language structure. Prereq.: Engl. 755. Listed also as English 758. 4 q.h.

859. *Topics in English Linguistics.* Such topics — announced when offered — as dialects, stylistics, semantics, graphemics. May be repeated for different topics. Prereq.: Engl. 755. Listed also as English 859. 4 q.h.

885. *Special Topics.* Identical with French 885, German 885, Italian 885, and/or Spanish 885, when the special topic is linguistic. 4 q.h.

MATHEMATICAL AND COMPUTER SCIENCES

Mathematics

Professors Barger, Brown, Buoni, Burden (Chairman), Dandapani, Dillon, Faires, Klein, Knauf, Kozarich, Mavrigian, Santos; Associate Professors Altinger, Biles, Demen, Hurd, Mortellaro, Poggione, Rodabaugh, Rodfong, Subramanian, Whipkey; Assistant Professors Cleary, Gubbi, Kent, Piotrowski, Stanek, Wingler.

Mathematics may be the major subject for the following degree programs: Bachelor of Science (B.S.), Bachelor of Arts (A.B.), and Bachelor of Science in Education (B.S. in Ed.).

In addition to satisfying the general University requirements (see Requirements for the Degree, at the beginning of the College of Arts and Sciences section of this Bulletin), all students majoring in Mathematics must complete the following courses: Mathematics 571, 572, 673, 674, 721, 722, 725, 743, 751, 752; also Computer Science 600 or 610.

Additional requirements, specified for the individual degree programs include:

BS Degree Program: Math 896 and 12 additional quarter hours of coursework selected from Math 706, 760, 827, 838, 841, 842, 843, 844, 845, 860, 861, 872, 875, 880, 895. The total number of hours of credits in Mathematics is 52. The minor field of study must be selected from one of the following disciplines: Biology, Chemistry, Computer Science, Economics, Physics, or one Engineering specialty (from Chemical and Metallurgical, Civil, Electrical, Industrial, Mechanical).

AB Degree Program: 12 additional quarter hours of Mathematics at the upper division, with at least two courses at the 800 level. The total number of hours of credits in Mathematics is 50. The minor field of study may be any discipline.

BS in Ed. Degree Program: 12 additional quarter hours of Mathematics at the upper division, which includes either Math 730 or Math 732; also Educ. 800M (Special Methods — Mathematics) or Educ. 800G. The total number of hours of credit in Mathematics is 50.

In selecting the elective Mathematics courses, the student should consult a departmental advisor, since certain courses are to be preferred according to whether the student contemplates graduate study, secondary school teaching, or a career in business, industry, or government. Further, in selecting elective courses in Mathematics, the student should note that certain courses are not applicable towards the major in Mathematics.

Students who plan to go on to graduate work in Mathematics should study at least one of the languages: French, German or Russian.

Students receiving transfer credit from another institution for courses in Mathematics should consult the department chairman to determine how this credit will apply toward the major requirements.

Statistics. Students with a major in Mathematics can elect to concentrate in statistics by taking the following courses: Mathematics 743, 841, 843, 844, 845. Mathematics 815 is also recommended but does not count toward the minimum requirements for a Mathematics major. Non-Mathematics majors, including students under the individualized curriculum program , may obtain counseling in statistics from the Department of Mathematical and Computer Sciences.

Mathematics Minors. Recommended Mathematics courses for students who minor in Mathematics are as follows:

For scientific applications: Mathematics 571, 572, 673; and two more of 674, 705, 725, 743, 841, 760, 861.

For business applications: Mathematics 642, 550, 650; and two of 685, 714, 815.

For mathematical theory: Mathematics 571, 572, 673, 725, 751, and 752.

Lower Division Courses

506. *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 year of high school mathematics. 5 q.h.

508. *Elementary Algebra.* Arithmetic of integers and rational numbers; linear equations and inequalities in

one variable, word problems; polynomials and factoring; algebraic fractions; radicals and quadratic equations; linear systems in two variables and graphs. Grading will be CR/NC. A student taking this course must take an additional 5 quarter hours to complete the requirements for the degree. 5 q.h.

509, 510. *Elementary Algebra A, B.* A slower paced version of Mathematics 508. Credit will not be given for both 508 and 510 nor for both 508 and 509. Grading will be CR/NC. Mathematics 509 is the prerequisite for Mathematics 510. A student taking both of these courses must take an additional 8 quarter hours to complete the requirements for the degree. 4+4 q.h.

511. *Geometry.* A first course in Geometry. Grading will be CR/NC. Prereq.: one unit of high school algebra or Mathematics 508 or Mathematics 510. A student taking this course must take an additional 5 quarter hours to complete the requirements for the degree. 5 q.h.

512. *Intermediate Algebra.* Relations and functions with emphasis on graphing by algebraic techniques; exponential and logarithmic functions with graphs and applications; selected topics. Prereq.: One unit of high school algebra or Mathematics 508 or 510 and one unit of high school Geometry or Mathematics 511. 4 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 geometries. Additional topics may include algebra, number theory, probability and statistics. Prereq.: Mathematics 511 and 512 or equivalent. 515 is required for 516. 5+4 q.h.

520. *Trigonometry.* An analytical study of trigonometric functions and their inverses, identities, equations, and applications. Prereq.: Mathematics 512 or equivalent. 4 q.h.

523, 524. *Survey of Mathematics I, II.* Courses for non-science majors emphasizing some of the basic ideas in mathematics. The stress is on concepts rather than on manipulatory skills. Prereq.: Mathematics 512 or equivalent. 4+4 q.h.

523H, 524H. *Honors Survey of Mathematics I, II.* Honors courses for non-science majors stressing fundamental concepts of mathematics. The approach is more sophisticated than that of Mathematics 523, 524. Prereq.: Honors standing based upon high school mathematics achievement and the score on the ACT or CEEB examination or performance in Mathematics 512. 4+4 q.h.

525. *Precalculus Mathematics.* Concepts and techniques required for the calculus sequence. Topics to be covered include solution of inequalities, graphing of algebraic and transcendental functions, and a brief review of other subjects from algebra, trigonometry and analytic geometry which will be needed for the study of calculus. Prereq.: High school trigonometry or Mathematics 520. 4 q.h.

550. *Calculus for Social, Managerial, and Life Sciences I.* A short course in calculus of algebraic functions of one variable with applications. The course is intended for students in business, those in 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.: Mathematics 512 or equivalent. 5 q.h.

570, 670, 770. *Calculus for Engineering Technology I, II, III.* The elements of differential and integral calculus, with emphasis on applications. Analytical geometry, differentiation and integration techniques, series representations, and numerical methods. Introduction to differential equations, transform calculus, and to Fourier analysis. This is a basic methods course particularly adopted for those who require applied topics in mathematics. It is not applicable toward the Mathematics major. Prereq.: Mathematics 520 is required for 570. 570 is required for 670 and 670 is required for 770. 5+4+4 q.h.

571, 572, 673, 674. *Calculus I, II, III, IV.* A sequence of integrated courses in analytic geometry and calculus. A detailed study of limits, derivatives, and integrals of functions of one and several variables with 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 525 is required for Mathematics 571. 571 is required for 572; 572 for 673; and 673 for 674. The 525 prerequisite may be waived by the Mathematics Department Chairman. 5+4+5+4 q.h.

571H, 572H, 673H, 674H. *Calculus I, II, III, IV Honors.* A sequence of honors courses in analytical geometry and calculus with more emphasis on rigor than the Mathematics 571, 572, 673, 674 sequence provides. A detailed study of limits, derivatives, and integrals of functions of one and several variables and their 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 are required for Honors Calculus 571H. 571H is required for 572H. 572H is required for 673H and 673H is required for 674H. 5+4+5+4 q.h.

580H, 581H, 681H. *Biomathematics I, II, III.* An integrated course in mathematics and computer science having as a central theme the role of mathematical models in explaining and predicting phenomena in the life sciences. Specific topics include: computer programming, differential and integral calculus, matrix operations, linear programming, differential and difference equations, probability, Markov chains, and applications to the biological sciences. Prereq.: Admission

to NEOUCOM-YSU program or equivalent qualifications with consent of instructor and department chairman is required for Mathematics 580H. 580H or Computer Science 600 is required for 581H, and 581H is required for 681H. 2+4+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 516 or consent of teacher. 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.

642. *Applied Finite Mathematics.* This course is designed for business majors but is open to others. Specific topics include matrix algebra, an introduction to linear programming, probability, and mathematics of finance. Prereq.: Mathematics 511 and 512 or equivalent. 5 q.h.

650. *Calculus for Social, Managerial and Life Sciences II.* A continuation of Mathematics 550 with emphasis on logarithmic and exponential functions and their applications, calculus of functions of several variables, and differential and difference equations. Prereq.: Mathematics 550. 4 q.h.

685. *Applied Matrix Algebra.* Properties of matrices and their application, eigenvalue problems and Markov chains. Not open for credit to students who have completed Mathematics 725. Prereq.: Mathematics 550 or 570 or 572 or permission of the instructor. 4 q.h.

Upper Division Courses

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 673 for 705, Mathematics 674 and 705 for 706. 4+4 q.h.

714. *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 to the subject. Specific topics include description of sample data, probability, frequency distributions, sampling estimation, testing hypotheses, correlation and regression. Not applicable towards the Mathematics major. Prereq.: Mathematics 512 or equivalent. 5 q.h.

721, 722. *Abstract Algebra I, II.* Algebra of sets, relations and functions; elementary group theory; rings, domains; and supportive material from number theory. (Replaces 727. Students who have credit for 727 cannot receive credit for 721 or 722.) Prereq.: Mathematics 673 for 721, 721 for 722. 3+3 q.h.

725. *Matrix Theory and Linear Algebra.* Matrices; matrix operations; linear transformations; applications. Prereq.: Mathematics 673. 4 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.

743, 841. *Mathematical Statistics I, II.* An introduction to the theory of probability and statistics using the concept and methods of calculus. Topics include discrete and continuous probability models, random variables and their distributions, estimations, tests of hypotheses and regression. Prereq.: Mathematics 673 is required for 743 and Mathematics 674 and 743 are required for 841. 4+4 q.h.

750. *History of Mathematics.* A survey of the historical development of mathematics. Prereq.: Mathematics 673. 4 q.h.

751, 752. *Intermediate Real Analysis I, II.* Elementary logic, properties of the real number system, critical analysis of limits and continuity, fundamental concepts underlying the calculus. (Replaces 871. Students who have credit for 871 cannot receive credit for 751 or 752.) Prereq.: Mathematics 673 for 751 and Mathematics 751 for 752. 3+3 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 673 and Computer Science 600 or permission of the instructor. 4 q.h.

781H. *Biostatistics.* A course in statistics with applications relating to biological sciences. Specific topics include: descriptive statistics, testing hypotheses, analysis of count data, correlation, regression, nonparametric statistics and analysis of variance. Prereq.: Mathematics 681H or permission of instructor. 4 q.h.

785. *Matrix Algebra and Numerical Methods.* Matrices, matrix operations, and the application of numerical methods. This course is not applicable toward the Mathematics major. Prereq.: Mathematics 670 and ET 505, or equivalent. 4 q.h.

801. *Applied Algebra for Elementary Teachers.* Applications of the basic ideas and structures in algebra. Algebraic systems and art, matrices and sociology, algebra and ecology, environmental statistics, and computers are among the possible topics. Not applicable toward a Mathematics major. Prereq.: Mathematics 617 or consent of instructor. 5 q.h.

802. *Applied Geometry and Probability for Elementary Teachers.* A course in geometric and probabilistic

models and applications aimed at providing elementary school teachers with a broad understanding of the subjects. Not applicable toward the Mathematics major. Prereq.: Mathematics 618 or consent of instructor. 4 q.h.

815. *Applied Statistics.* A course in application of correlation, regression, analysis of variance and related topics. Does not count toward the Mathematics major. Prereq.: Mathematics 714 or equivalent, or permission of the instructor. 4 q.h.

827. *Abstract Algebra III.* A continuation of 722 with special emphasis on fields. Additional topics in pure or applied algebra. Prereq.: Mathematics 722 and 725. 4 q.h.

838. *Graph Theory and Algorithms.* Basic concepts in graph theory including application to discrete optimization, emphasis on graph algorithms. Prereq.: Mathematics 725 and either Mathematics 721 or Computer Science 710. 4 q.h.

842. *Statistical Decision Theory.* A study of statistical inference from the decision theory point of view. Topics selected from utility theory, no-data decision problems, using data in decision problems, estimation, testing hypotheses, sequential procedure, and related areas. Prereq.: Mathematics 743. 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 743 or consent of instructor is required for 843 and 843 is required for 844. 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 725 and 743 or consent of instructor. 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 or Mathematics 721 or consent of instructor. 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 instructor. 4 q.h.

872. *Intermediate Real Analysis III.* A continuation of 752 with special emphasis on uniform convergence. Additional topics in the theory of functions of one or several variables. Prereq.: Mathematics 674, 725, 752. 4 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 four quarter hours of mathematics at 700- or 800-course level, or consent of instructor. 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 722 and 752. 4 q.h.

890. *Mathematics Seminar.* Report and discussion of each student's in-depth study on a specific topic. Prereq.: Consent of instructor. 2 q.h.

895. *Selected Topics in Mathematics.* The study of a standard mathematical topic in depth or the development of a special area of mathematics. May be repeated. Prereq.: Consent of instructor and department chairman. 2-5 q.h.

896. *Mathematics Projects.* Individualized study of a topic in mathematics culminating in a written report and an oral presentation. Prereq.: 36 q.h. of mathematics applicable to the minimum requirement for a mathematics major including either Mathematics 722 or 752. 2 q.h.

Computer Science

Professors Buoni, Burden, Dandapani, Klein and Santos; Associate Professors Biles and Demen; Assistant Professor Cleary.

The computer science program leads to the degree of Bachelor of Science. The flexibility of the program allows the student many choices upon graduation. Three major possibilities are, first, graduates will be qualified to pursue graduate work in computer science; second, all graduates will be qualified to work as operating systems analysts or systems programmers; and finally, the student may study another discipline as a minor field to become an application programmer in that discipline. In addition to satisfying the general University requirements (see Requirements for the Degree, at the beginning of the College of Arts and Sciences Section of this Bulletin), all students majoring in Computer Science must complete the following requirements:

1. At least 50 quarter hours of credits in Computer Science, of which 38 quarter hours are specified and 12 quarter hours are elective. Specified courses are: Computer Science 610, 615, 620, 705, 710, 740, 805, 806, 870 and at least two quarter hours of credits in 890*. Electives in Computer Science must be selected from upper division offerings.

2. A minor in mathematics comprising 26 quarter hours, all of which are specified. They are Mathematics 571, 572, 673, 725, 743, and 760.

3. An approved program of technical electives. Courses used to satisfy this requirement must be approved in advance by the Department of Mathematical and Computer Sciences.

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*Computer Science 890 may be replaced by Computer Science 891-892.

Each student is assigned an advisor who provides guidance throughout the entire program.

Computer Science Minor

The following courses are recommended for students who wish to minor in computer science: Computer Science 610, 615, 620, 705 and two of 720, 750, 780, 800 or 820. For Computer Science minors only, Math 550 is an acceptable alternative to calculus prerequisites.

Lower Division Courses

530. *Computer Literacy.* The purpose of this course is to examine the principles upon which the modern stored-program computer operates, what it can and cannot do, and how to control it. This includes a study of algorithms, computer systems and their application, simulation and artificial intelligence, evolution and social impact of computers, and the use of an interactive language, e.g. BASIC, to control the computer in the performance of a procedure. Prereq.: Mathematics 511 and 512 or equivalent. 4 q.h.

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 511 and 512 or equivalent. 4 q.h.

600H. *Honors Introduction to Programming.* An honors course which places special emphasis on the solution of more challenging problems than Computer Science 600. Applications of data representation and flow-charting techniques to the solution of problems using the Fortran language. Prereq.: Four high school units of mathematics with an *A* or a high *B* average and a high score on the ACT examination. 4 q.h.

601. *Advanced Programming.* Advanced problem-solving techniques using problem-oriented and machine-oriented languages. Specialization in scientific or data-processing applications. Prereq.: Computer Science 600 or 600H. 4 q.h.

610. *Computer Programming I.* An introduction to problem solving methods and algorithm development using a high level programming language. Designing, coding, debugging and documenting programs using techniques of good programming style. Prereq.: Four units of high school mathematics (including trigonometry) with an average of "C" or better, or Math 525. 4 q.h.

610L. *Programming Laboratory.* Introduction to the use of a computer terminal in the creation and manipulation of files. Two hours per week. Designed to accompany Computer Science 610 for those who desire instruction in use of terminals. Concurrent CS 610. 1 q.h.

615. *Computer Programming II.* Continuation in program design, style and expression, in debugging and testing, especially for larger programs. Introduction to algorithmic analysis, string processing, recursion, internal search/sort methods and simple data structures. Prereq.: CS 610 or equivalent, and Math 571. 4 q.h.

620. *Computers and Programming.* A general study of basic computer structures, data representation, addressing techniques, instruction execution and machine language. Symbolic coding and assembly systems, macro definition and generation, and program segmentation and linkage. Absolute and relocatable loaders, I/O structures. Prereq.: Computer Science 615 or equivalent, and Mathematics 572. 4 q.h.

650. *Language Topics.* Intensive language courses with emphasis on writing efficient programs. Topic 1: ALGOL; Topic 2: SNOBOL; Topic 3: LISP. May be repeated if topic changes. Each topic is open only to students without previous credit in that particular language topic. Prereq.: Programming experience or permission of instructor. 2 q.h.

651. *Introduction to COBOL.* The study of divisions in COBOL, table handling and file management. Prereq.: Computer Science 600 or 600H or Accounting 610 or equivalent. 2 q.h.

690. *Individual Study in Computer Programming.* Individual study of a computer language. The instructor will be available for consultation and will evaluate the student's progress. The CR/NE grading system will be used. May be repeated twice with consent of the chairman of the department. 2 q.h.

Upper Division Courses

705. *Introduction to File Processing.* An introduction to concepts and techniques of structuring data on bulk-storage devices. Applications of data structures and file processing techniques. Prereq.: CS 620 and Math 673. 4 q.h.

710. *Introduction to Discrete Structures.* Basic set theory including functions and relations. Boolean algebra, propositional logic, graph theory and combinatorics. Prereq.: Computer Science 615 or equivalent, and Mathematics 673. 4 q.h.

720. *Introduction to Software Development.* Aspects of software development that pertain directly to the specification, design and implementation process. Topics include software requirements and specifications, general principles of software design, modular software construction, programming methodology. Prereq.: CS 705 and CS 710. 4 q.h.

740. *Computer Logic and Organization.* Organization and structuring of the major hardware components of computers; mechanics of information transfer and control within a digital computer system; fundamentals of logic design. Prereq.: CS 620 and CS 710. 4 q.h.

750. *Introduction to UNIX.* An introduction to the UNIX operating system. Topics include the study of

the UNIX shell, UNIX utilities, and the C programming language. Prereq.: CS 705. 4 q.h.

770. *Survey of Programming Languages.* A survey of several programming languages. Languages surveyed may include Ada, Modula-2, C, LISP, and SNOBOL. Prereq.: CS 720. 4 q.h.

780. *Microcomputer System Software.* Programming microprocessor based systems using assembly language. Study of addressing techniques, machine language, program segmentation and linking on microcomputers. Prereq.: CS 705. 4 q.h.

800. *File and Communication Systems.* A study of the basic functions, organizations and structures of file and communication systems. Analysis and realizations of these systems. Prereq.: Computer Science 705. 4 q.h.

805 *Systems Programming.* Study of the various aspects of systems programming including assemblers, loaders, linkage editors and macro processors. Prereq.: Computer Science 705. 4 q.h.

806. *Operating Systems.* Study of the various components of operating systems including kernals and monitors, concurrency and parallel processing, processor management, storage management, device management, I/O processing and file management. Prereq.: Computer Science 805 or consent of instructor. 4 q.h.

807. *Compiler Design.* Study of compiler design and construction including context free languages, lexical analysis, parsing, code generation and optimization. Prereq.: Computer Science 805 or consent of instructor. 4 q.h.

810. *Computer Graphics and Terminals.* Study of problems and techniques in data collection and display. Prereq.: Computer Science 705. 4 q.h.

814. *Computer Architecture.* A continuation of the study of the logic basis and design of digital computing systems begun in CS 740. Emphasis on the architecture of processors, memory, I/O devices and Interfaces. Prereq.: Computer Science 740. 4 q.h.

817. *Communication Networks for Computers.* Study of network structures and topologies, international standards organization protocol model, communication channels, protocols including async, bisync, SNA/SDLC. Example networks commercially available will be analyzed. Prereq.: CS 740. 4 q.h.

820. *Simulation.* Methods for modeling discrete-event systems by algorithmic approaches using simulation languages. Prereq.: Computer Science 620 and one of Mathematics 714 or 743, or permission of instructor. 4 q.h.

835. *Artificial Intelligence.* Study of the theory and application of intelligent systems. Topics may include general problem solving techniques, knowledge representation and expert systems, vision and perception, concept formation and learning, natural language processing. AI systems and languages. Prereq.: CS 705, CS 710 and Math 725. 4 q.h.

840. *Theory of Finite Automata.* The structural and behavioral aspects of finite automata. Prereq.: Computer Science 710 and Mathematics 725. 4 q.h.

855. *Database Systems.* Topics include network, hierarchical and relational models, query languages, design theory, database security and concurrency, distributed database systems. Prereq.: Computer Science 710 and 800. 4 q.h.

860. *Programming Language Structures.* Systematic approach to the study of the structures of programming languages. Formal descriptions, syntax, semantics and technical characteristics. Prereq.: Computer Science 705. 4 q.h.

870. *Data Structures and Algorithms.* Study and application of analysis and design techniques to non-numerical algorithms. Topics selected from algorithms acting on sets, trees, graphs; memory management; notions of complexity and related areas. Prereq.: CS 705 and CS 710. 4 q.h.

881. *Microcomputer System Architecture.* A state-of-the-art course on microcomputer architecture. Topics will include introduction to microcomputer systems, 16 and 32 bit microprocessors, direct memory access and other I/O transfer schemes, architecture of I/O processors, introduction to computer communications. Prereq.: Computer Science 740 and 780. 4 q.h.

*890. *Computer Projects.* Individualized study of a topic in computer science culminating in a written report and an oral presentation. May be repeated up to 10 quarter hours. Prereq.: 36 q.h. of computer science applicable to the minimum requirements for a computer science major. 2-5 q.h.

891-892. *Computer Science Internship Program.* An academic/industrial experience centered upon the development of a significant computer project in local industry under the direction of University faculty member(s) and designated member(s) of the participating firm. The student intern will be employed on a 20-hour-a-week basis for each of two successive academic quarters. Periodic review of the project will be conducted by the academic/industrial advisors. A final written report of the project must be submitted by the student at the conclusion of the internship. The sequence 891-892 may be repeated once with the permission of the department chairman. Prereq.: Mathematics or Computer Science major having completed 21 hours of computer science and 110 academic hours and approval of the Department Internship Committee. 2+2 q.h.

895. *Special Topics.* A study of special topics in computer science. May be repeated up to 10 quarter hours. Subject matter, credit hours and special prerequisites will be announced in advance. Prereq.: Permission of instructor. 2-5 q.h.

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*Computer Science 890 may be replaced by Computer Science 891-892.

MILITARY SCIENCE

Professor: Lieutenant Colonel Fellinger, (Chairman); Assistant Professors: Major Coleman, Major Weeks, Captain Reid; Instructors: Master Sergeant Major Brame, Master Sergeant Johnston, Staff Sergeant McClellan.

Army ROTC (Reserve Officers Training Corps) provides college-trained officers for the U.S. Army, the Army National Guard, and the U.S. Army Reserve. ROTC expands a student's educations by providing leadership and management experience. This training helps students develop self-discipline, physical stamina, and poise—qualities basic to success in any worthwhile career. They earn commissions as second lieutenants in the U.S. Army (which includes the Active Army, Army National Guard, and Army Reserve) while earning their college degrees. Through ROTC, the Army gains officers with diverse educational backgrounds and contemporary ideas. At the same time, ROTC graduates have the chance to use their training in positions of leadership, and they enable the Army to relate to the thoughts and feelings of our ever changing society. At present, over 70 percent of all second lieutenants for the U.S. Army come from ROTC programs nationwide.

Lower division (freshman and sophomore level) courses are *open to all students*. Military Science 610 and 615 are cross-listed with accredited Health/Physical Education activity courses (H & PE 526 and H & PE 615). Students taking military Science 520 or 530 may, at the discretion of their academic advisor, receive credit for health and physical education activity courses.

FOUR-YEAR PROGRAM

The four-year Army ROTC program is divided into two parts: the Basic Course and the Advanced Course. The Basic Course is usually taken during the freshman and sophomore years. No military commitment is incurred during this time. After completing the Basic Course, students who have demonstrated officer potential and meet physical and scholastic standards are eligible to enroll in the Advanced Course. The Advanced Course is normally taken during the junior and senior years of college.

A paid six-week Advanced Camp (MS 704) is held during the summer between the junior and senior years. This camp permits students to put into practice the principles they have acquired in the classroom.

All students in the Advanced Course receive uniforms, pay for Advanced Camp, and a living allowance of up to $1,000 each school year.

Before entering the Advanced Course, an individual signs a contract that certifies an understanding of the service obligation. This obligation may be fulfilled in a variety of ways depending on the individuals personal preference and the needs of the Army at the time of commissioning.

Scholarship graduates may be required to serve four years on active duty and the remaining four years in the Army Reserve or National Guard. Nonscholarship graduates may be required to serve three years on active duty and the remaining time in the Reserve or National Guard, or they may volunteer for or be chosen for assignment to a Reserve Component or Army National Guard unit. Under the Reserve/National Guard option, the individual will serve on active duty for three to six months while attending the Officer Basic Course, with the remaining eight year obligation spent in the Army National Guard or Army Reserve, where the officers assume roles equally as important as those on active duty, while pursuing civilian careers.

TWO-YEAR PROGRAM

The two-year program permits students who attended a junior college, transfer students, or those who did not take Military Science Basic Courses during their first two years of school, and students entering a two-year post graduate course of study to enter the ROTC Advance Course. Students can take advantage of this opportunity by successfully completing a paid six-week ROTC Basic Camp (MS 604), usually after their sophomore year, and enrolling in the ROTC Advanced Course, normally in their junior year. Except for this camp, the requirements for and obligations incurred in the two- and four-year programs are the same.

OPPORTUNITIES FOR VETERANS/JUNIOR ROTC GRADUATES

Because military experience may serve as total credit for the ROTC Basic Course, most veterans and students with three years of Junior ROTC (high school) are eligible for the ROTC Advanced Course without further instruction.

ARMY ROTC/ARMY RESERVE/ARMY NATIONAL GUARD

Students can further broaden their college experience and earn extra income by combining ROTC with service in the Army Reserve or Army National Guard through the two-year Simultaneous Membership Program (SMP). If students qualify, and SMP vacancies are available, they may join the Army Reserve or Army National Guard unit as officer trainees and simultaneously enroll in the Army ROTC Advanced Course. In addition to annual subsistance allowance of up to $1,000 received for Advanced ROTC, SMP participants are paid for their Reserve or Guard drills and summer training sessions.

ARMY NURSE CORPS

To qualify for appointment in the Army Nurse Corps, the student must complete the ROTC program and obtain a baccalaureate degree in nursing. Students who meet all professional requirements will serve as Army nurses on Active Duty, in the Army National Guard, or in the Army Reserve.

SCHOLARSHIP PROGRAMS

See Gold Bar Scholarships and Army ROTC Scholarships in the Financial Aids (Scholarships) section of this Bulletin.

Lower Division Courses

501. *Introduction to Army ROTC.* An overview of Army ROTC. Explores options and training available to the student as well as career opportunities as an Army officer. Organization, branches, and role of the Army, Army Reserve, and National Guard are also addressed. Two hours of lecture/discussion per week. 1 q.h.

502. *Basic Leadership and Management.* A study of leadership fundamentals, to include the dimensions, traits, and principles of leadership, professionalism, ethics, and counseling techniques. Situational studies and role playing are included. Two hours of lecture/discussion per week and a one day (weekend) training exercise. 1 q.h.

503. *First Aid and Emergency Care.* Personal safety and emergency care practices. Advanced certification will be offered. Two hours lecture and two hours laboratory. Taught by Health and Physical Education faculty, same as HPE 601. 3 q.h.

520. *Introduction to Living Out-of-Doors.* Introduction to survival techniques, emphasis on survival and land navigation in cold weather and snow-covered areas. Offered winter quarter only. One hour of lecture a week and participation in one weekend practical exercise. 1 q.h.

525. *Military Science I Summer Program.* This course provides instruction in essential military skills normally received in MS 510 and MS 511. Course content includes an overview of Army ROTC, the Department of the Army and the Department of Defense. Fundamentals of leadership, to include leadership traits and principles, are also addressed. Three hours of lecture and one hour of laboratory per week. Offered summer quarter only. 1 q.h.

530. *Survival and Mountaineering Techniques.* The course includes rappelling fixed ropes, hastey bridges, belaying and rescue operations, basic land navigation skills, and finding food and water in unimproved areas. Offered spring quarter only. One hour of lecture a week and one weekend practical exercise. 1 q.h.

600L. *Leadership Lab.* Practical exercise periods that allows development and application of military skills and essential leadership characteristics. One hour laboratory per week. Must be taken concurrently with MS 602, 603. 0 q.h.

601. *American Military History.* A survey of American military history from the origin of the United States Army to the present, with emphasis on how military policies and strategies have been influenced by the domestic and foreign affairs of the United States. Listed also as History 601. 4 q.h.

602. *Individual Military Skills.* An overview of individual skills common to all branches of the Army and needed by all officers, including physical readiness; marksmanship; wear, cleaning, and care of uniforms and equipment; drill and ceremonies; and use of map and compass. Two hours of lecture/discussion and a one day (weekend) training exercise. Must be taken concurrently with MS 600L. 2 q.h.

603. *Comparative Analysis of U.S./Soviet Land Forces.* A selective examination of small unit training, tactics, weapons, and organization of the U.S. and Soviet Armies. Two hours lecture/discussion and a two-day (weekend) training exercise required. Must be taken concurrently with MS 600L. 2 q.h.

604. *Basic R.O.T.C. Summer Camp.* Six Weeks' Training at U.S. Army installation during the summer before the student's junior year. Concentrated instruction in the principles of leadership; map and aerial photograph analysis; military customs, courtesies, and traditions; organization of the U.S. Army communications; combat intelligence; and physical fitness training. This course is equivalent to the on-campus basic course. Prereq.: Two years of college-level work. 4 q.h.

610. *Individual Weapons and Marksmanship.* The safety and practice of handling a rifle and pistol; introduction to the individual military weapons; target shooting in prone, kneeling and standing positions. Two contact hours a week. Same as H&PE 526. 1 q.h.

615. *Freestyle Orienteering.* Introduction to the sport of orienteering, negotiating unfamiliar terrain by combining compass and map skills with physical fitness. Two hours a week. Same as Health and Physical Education 615. 1 q.h.

625. *Military Science II Summer Program.* This course provides instruction in essential military skills normally received in the sophomore year. Course content includes an analysis of U.S./Soviet land forces, outdoor survival, and land navigation techniques. Eight hours of lecture and two hours of laboratory per week and one field training exercise. Offered summer quarter only. 3 q.h.

Upper Division Courses

701. *Organizational Leadership.* The relationship of individual differences to the leadership process; group dynamics, organizational constraints on the leadership process, and the impact of leader behavior on the leadership process. Two hours of lecture and one hour of leadership laboratory a week, and field training exercises. Prereq.: Permission of department chairperson. 3 q.h.

702, 703. *Advanced Leadership and Management I, II.* Case studies in leadership and management. Delegation of authority and responsibility, span of control, planning, coordinating, and decision-making. Development of the student's ability to express himself clearly and accurately, evaluate situations, and prepare and deliver logical solutions. Analysis of the leader's role in directing and coordinating the efforts of individuals and small units in the execution of various types of tactical missions. Discussion of the military environment in garrison and in the field. Two hours of lecture, one hour of leadership laboratory, three

hours of physical readiness training each week, and two weekend field training exercises. The prerequisite for Military Science 702 is permission of department chairperson; the prerequisite for Military Science 703 is Military Science 702 and permission of department chairperson. 3+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's application of academic knowledge to daily leadership situations. Prereq.: Permission of department chairman. 6 q.h.

705. *Airborne Operations.* Three weeks of intensive field training, normally between the junior and senior years, conducted at an Army installation. Combines the study of airborne military operations, strenuous physical conditioning, and the use of military parachute techniques, and culminates with five parachute jumps from military aircraft and the award of the army parachute qualification badge. Prereq.: Successful completion of airborne physical fitness test, medical examination, and selection by department chairman. 1 q.h.

706. *Airmobile Operations.* Two weeks of intensive field training, normally between the junior and senior years, conducted at an Army installation. Study of Heliborne Military Operations, strenuous physical conditioning, and employment of military helicopters in small unit tactics. Prereq.: Successful completion of physical fitness test, medical examination, and selection by the department chairman. 1 q.h.

707. *Winter Warfare Operations.* Three weeks of intensive field training, normally between the junior and senior years, conducted at an Army installation in Alaska. Study of military operations under winter conditions, strenuous physical conditioning, and small-unit leadership in a hostile environment. Prereq.: Selection by department chairman. 1 q.h.

801. *The Military Team.* A study 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 responbsibilities of company and intelligence; its value, and methods of producing it. Two hours of lecture, one hour of laboratory a week and field training exercises. Prereq.: Military Science 703 and permission of department chairperson. 3 q.h.

802, 803. *Seminar in Leadership and Management I, II.* Case studies in leadership and management. Delegation of authority and responsibility, span of control, planning, coordinating, and decision-making. Development of the student's ability to express himself clearly and accurately, evaluate situations, and prepare and deliver logical solutions. Analysis of the leader's role in directing and coordinating the efforts of individuals and small units in the execution of various types of tactical missions. Discussion of the military environment in garrison and in the field. Two hours of lecture, one hour of leadership laboratory, three hours of physical readiness training each week, and two weekend field training exercises. Prerequisite for Military Science 802 is Military Science 703 and permission of department chairperson; the prerequisite for Military Science 803 is Military Science 802 and permission of department chairperson. 3+3 q.h.

LEADERSHIP LABORATORY

A practical exercise period for both basic and advanced courses. Provides experience in practical military skills and the development of essential characteristics of leadership through progressive evaluation and counseling.

PHILOSOPHY AND RELIGIOUS STUDIES

Professors Eminhizer, Lucas, Minogue, Reid, Shipka (Chariman); Associate Professor Bache; Assistant Professor Smith.

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 student's 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. 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 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 19th 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.

704. *Woman: A Philosophical Study.* Examination of the writings of prominent women philosophers; inquiry into philosophical issues related to the concept of "woman", including concerns related to women's rights. Prereq.: Philosophy 600, or junior or senior standing. 4 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.

725. *Biomedical Ethics.* An examination of ethical issues posed by the impact of biomedical research and technology on health care; selected issues in the philosophy of medicine; issues of patients' rights, including the right to health care; experiments on human subjects and problems of informed consent; genetic research and intervention; moral issues in death and dying, organ transplants and the allocation of scarce health resources. Prereq.: Four hours of Philosophy or Sociology 745 or Psychology 780 or admission to NEOUCOM-YSU program. 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 20th century: Whitehead's philosophy of organism, the various schools of existentialism, logical positivism, and the current philosophies of languages. 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.* A study of the background and teachings of existentialism; and an analysis of the methodological principles of existentialism as seen in the writings of Kierkegaard, Husserl, Heidegger, Jaspers, Sartre, Marcel, and Merleau-Ponty. Prereq.: Philosophy 600 or consent of instructor. 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. Prereq.: Philosophy 600 and eight quarter hours of upper division philosophy courses or approval of the department chairman. 1-4 q.h.

821. *Seminar: Areas of Philosophy.* The student will be allowed to consider in depth a particular philosophical interest. The subjects for the seminar may include ethics, logic, aesthetics, value theory, epistemology, metaphysics and language analysis. Prereq.: Philosophy 600 and eight quarter hours of upper division philosophy courses or approval of the department chairman. 1-4 q.h.

822. *Selected Topics in Philosophy.* The study of a philosophical problem or philosopher in depth or the relationship of philosophy to problems in another discipline. May be repeated once for a different topic. Total credit in Philosophy 822 cannot exceed six hours. Prereq.: Eight hours in upper division philosophy. 1-3 q.h.

823. *Philosophy of Justice.* The major classical and contemporary philosophical theories regarding the types of justice and their interrelations, the concepts of legal and moral responsibility, the rationales of reward and punishment, with some attention to the concept of equality. Prereq.: Philosophy 711 or 808 or senior standing in criminal justice. 4 q.h.

860. *Mathematical Logic.* Identical with Mathematics 860. 4 q.h.

Religious Studies

A major in Religious Studies is available for the student who desires to prepare for a career in the ministry, counseling, religious education, social work or any career requiring a liberal arts degree. A major consists of 45 quarter hours, no more than 12 of which can be taken at or below the 600-level. Majors must take 850 and *at least one* upper level course in each of the following areas: (1) History of Religion: 705, 706, 707, 708, 830; (2) Methodologies in the Study of Religion: 714, 756, 816, 818, Phil. 712; (3) Biblical Studies: 731, 732, 733; (4) Non-Western Religions: 741, 742, Soc.-Anthro. 815. It is assumed that the remaining hours will be selected in Religious Studies. In some cases, selected courses outside Religious Studies may be accepted as part of the Religious Studies major if they deepen the student's understanding of religion. All such courses must have the approval of a full-time faculty advisor of Religious Studies.

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.

613. *The Eastern Orthodox Faith.* An examination of Eastern Orthodoxy and its theological development, institutions, and liturgical diversity. 4 q.h.

614. *The Catholic Faith.* A study of the origin and development of Catholic Christianity, its institutions, systems of thought and liturgical expression. 4 q.h.

615. *The Protestant Faith.* The study of the origin and development of Protestant Christianity, and its systems of thought, institutions, and ritual diversity. 4 q.h.

616. *Judaism.* The Jewish religious tradition: the Biblical legacy, Talmudic Judaism, medieval Judaic philosophy, mysticism, the symbolic and mythic structure of classical Judaism, and transformations of the classical tradition in modern times. 4 q.h.

617. *Introduction to Eastern Religions.* An introductory survey of several Eastern religions and their systems of thought, institutions, practices for realization of goals, ritual forms, and symbolism. 4 q.h.

621. *Religion and Moral Issues.* The relation of specific religious and moral issues to questions of personal conduct and social policy. 4 q.h.

630. *Introduction to Biblical Literature.* A nontechnical survey of selected books of the Bible in their historical and cultural context. 4 q.h.

Upper Division Courses

705. *The Ancient Church.* A study of development of the church from the fall of Jerusalem (70 A.D.) to the fall of Rome (410 A.D.). Themes will include the evolution of church government, patristic theology, and church-state relations. Prereq.: Any Religious Studies 600-level, or History 655. 4 q.h.

706. *The Medieval Church.* A study of medieval Christianity from the fall of Rome (410 A.D.) to 1500. Themes will include scholastic theology, church government, monastic orders, crusades, and church-state conflicts. Prereq.: Any Religious Studies 600-level, or History 655. 4 q.h.

707. *The Modern Church.* A study of modern Christianity from 1500 to the present. Themes will include the Reformation and the rise of Protestantism, the counter-Reformation, church-state relations, theology,and the ecumenical movement. Prereq.: Any Religious Studies 600-level,or History 655 or 656. 4 q.h.

708. *Black Church in America.* A study of the development of religion in the Black American community from colonial times to the present. Prereq.: Any Religious Studies 600-level, or Black Studies 600 or 601, or consent of instructor. 4 q.h.

714. *Faith and Philosophy.* The nature of theistic faith and its relation to human reason. Important theories of faith will be distinguished and associated concepts analyzed, e.g., revelation, miracle, and religious experience. Science and religion as belief systems will be compared. Prereq.: Any Religious Studies 600-level, or any Philosophy 600-level, or consent of instructor. 4 q.h.

731. *Old Testament Literature.* A critical analysis of Old Testament literature in terms of historical background, textual development, and religious and ethical themes. Prereq.: Any Religious Studies 600-level or consent of instructor. 4 q.h.

732. *Jesus and the Gospels.* The life and teachings of Jesus in their historical context. An examination of the ways in which Jesus is interpreted within the synoptic gospels. Prereq.: Any Religious Studies 600-level or consent of instructor. 4 q.h.

733. *Paul and the Development of Early Christianity.* A study of the emergence of the early Christian movement from Jesus' death to the destruction of Jerusalem (70 A.D.) as seen through the letters of Paul supplemented by the Acts of the Apostles. Prereq.: Any Religious Studies 600-level or consent of instructor. 4 q.h.

741. *Buddhism.* The origin and development of Buddhism from Theravada Buddhism in India to Zen Buddhism in Japan, and its systems of thought, institutions, and meditational practices. Prereq.: Any Religious Studies 600-level, or 4 hours of philosophy, or consent of instructor. 4 q.h.

742. *Mysticism and Meditation.* A comparative analysis of the mystical traditions of Eastern and Western religions. Attention will be given to the classification, descriptions, and religious interpretation of mystical and meditational states. Prereq.: Any Religious Studies or Philosophy 600-level or consent of instructor. 4 q.h.

750. *Religion and Conternporary Issues.* The examination of a selected issue of contemporary relevance and its relationship to religion. Prereq.: Any 8 hours in Religious Studies or Philosophy or consent of instructor. May be repeated once. 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.: Psych. 560 (replaces Psychology 601). Listed also as Psychology 703. 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.: junior or senior standing. 4 q.h.

816. *The Makers of Modern Religious Thought.* A selective examination of major philosophical-religious thinkers who have shaped the issues of modern religious discussion, such as Hume, Kant, Hegel, Kierkegaard, Feuerbach and James. Prereq.: Any Religious Studies or Philosophy 700-level, or consent of instructor. 4 q.h.

818. *Contemporary Theological Figures.* A study of the thought of major contemporary theologians such as Barth, Tillich, Rahner, Teilhard de Chardin, Buber, Bultman, and Niebuhr. Prereq.: Any Religious Studies or Philosophy 700-level, or consent of instructor. 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.

850. *Seminar in Religious Studies.* An in-depth study of a particular topic not covered in listed courses. Prereq.: Any 2 upper division courses in either Philosophy or Religious Studies, or consent of instructor. 1-4 q.h.

851. *Directed Readings in Religion.* An in-depth study of a religious problem, movement, thinker, or the relation of religion to problems in other disciplines. Intended to be an independent study course with subject matter dependent upon approval of the faculty member and student. May be repeated once with a different topic. Total credit in Religious Studies 851 cannot exceed eight hours. Prereq.: Any upper division course in either Religious Studies or Philosophy, or consent of instructor. 1-4 q.h.

PHYSICAL EDUCATION

See *Health and Physical Education.*

PHYSICS AND ASTRONOMY

Professors Cochran, Dalbec, Hanzely, McLennan, Mooney, Young (Chairman); Associate Professors Bishop and Tabak; Assistant Professor Fisher.

Courses are organized with the following aims: (1) To provide well-rounded training in physics and astronomy for those needing it for graduate study, industry, or for secondary school teaching; (2) To provide basic training for engineering and pre-professional students; (3) To acquaint the non-specializing student with scientific methods and with the place of physics and astronomy in the modern world.

Following the course descriptions below are the curricula and minimum requirements for the degrees of Bachelor of Arts and Bachelor of Science with a major in Physics and a Bachelor of Science degree with a combined major in Physics and Astronomy.

The A.B. degree program in physics is designed for students who are interested in fields that benefit from a strong background in physics or for students planning to terminate their education at the bachelor's degree level. The B.S. degree program in physics is designed for students who plan to pursue graduate studies in physics. The B.S. degree program with a combined Physics-Astronomy major is designed for students who plan to pursue graduate studies in astronomy or space science.

A student desiring to teach physics or astronomy in secondary schools should consult the Dean of the School of Education.

Lower Division Courses

500. *Physics and Man.* A breadth-of-experience approach and largely non-mathematical presentation of selected theories and laws of classical and modern physics. These are presented in a historical context of some of the successes and failures of physicists in their efforts to describe our universe in terms of functional relationships. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 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 512 and 520, or equivalent high school algebra and trigonometry. Physics 501 is a prerequisite for 502 and 503. Physics 502 and 503 need not be taken in sequence. 4+3+3 q.h.

502L, 503L. *Fundamentals of Physics Laboratory II, III.* Experimental work designed to supplement the Fundamentals of Physics sequence. Two hours per week. Prereq. or concurrent: 502 for 502L; 503 for 503L. 1+1 q.h.

505. *Physics in Science Fiction.* A largely non-mathematical survey of the principles of physics which serve as the background for science fiction literature; two hours of lecture-discussion per week, based on reading assignments from selected works of well-known science fiction authors. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 2 q.h.

507. *The Physics of Energy.* A basic non-mathematical explanation of the origin, form, uses, and distribution of energy. Topics include electrical energy, mechanical energy, nuclear fission, nuclear fusion, solar energy. This course is designed for the non-science student who is not particularly interested in a broad survey of physics. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 4 q.h.

509. *Contemporary Physics.* An introductory survey of the current areas of physics research, based primarily on reading, assignments from *Scientific American.* Topics will include gravity waves, anti-matter, nuclear structure, the nature of solids, electro-optics, and coherent radiation. 2 q.h.

510. *General Physics I.* A course in mechanics; the kinematics and dynamics of masses in translation; Newton's Laws; the conservation laws of energy and momentum. Prereq. or concurrent: Mathematics 571, high school physics, or Physics 501. 4 q.h.

550. *Physics and the Parasciences.* A critical examination of the scientific method, with special emphasis on physics and astronomy. These sciences will be compared and contrasted with such pseudosciences as astrology, UFOlogy, ancient astronauts, etc. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. Prereq.: Any course in Physics or Astronomy or consent of instructor. 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. This course is designed for Music majors. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 4 q.h.

610. *General Physics II.* Kinematics and dynamics of masses in rotation; wave phenomena; transmission, reflection, refraction, diffraction, and interference of sound and light. 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 610. Prereq. or concurrent: Mathematics 673. 4 q.h.

610L, 611L.* *General Physics Laboratory II, III.* Experimental work designed to supplement the General Physics sequence. Three hours per week. Prereq. or concurrent: 610 for 610L; 611 for 611L. 1+1 q.h.

621. *Electronics for Computer Science.* Elements of Electricity and Magnetism; D.C. Circuits; Linear and Non-Linear Devices; Digital Circuitry. This course is designed for Computer Science majors. Not applicable to the major in physics or to the combined major in physics and astronomy. Prereq.: Physics 510, Mathematics 673, Computer Science 600, or consent of the instructor. 4 q.h.

650. *Analytical Physics.* The course is designed for students who have completed Physics 501, 502, 503 and who wish to continue with more advanced courses in Physics. It consists of those portions of Physics 510, 610, and 611 which require extensive use of calculus. Prereq.: Completion of the Physics 501, 502, 503 sequence. Prereq. or concurrent: Mathematics 572. 4 q.h.

Upper Division Courses

NOTE: The minimum requirement for all upper division courses in physics and astronomy is either (A) satisfactory completion of Physics 510, 610, 611 (or Physics 650) and Mathematics 674, or (B) consent of the department.

701, 702, 703.* *Intermediate Classical Mechanics I, II, III.* Statistics and dynamics of particles and rigid bodies. Gravitation and the properties of a gravitational field. Principle of virtual work. Motion in accelerated reference frames. Generalized coordinates; Lagrange's and Hamilton's equations of motion. Damped and forced harmonic oscillators. Matrix theory applied to rotary motion of a free body and top and to normal oscillations of a many body system. Prereq.: Physics 611 (or Physics 650) and Mathematics 705. 3+3+3 q.h.

704, 705.* *Introduction to Modern Physics I, II.* Special relativity; quantum effects related to electromagnetic radiation and material particles; selected topics in atomic, nuclear, and solid-state physics. Prereq.: Physics 611 (or Physics 650) and Mathematics 674. 3+3 q.h.

705L. *Modern Physics Laboratory.* Experimental work designed to supplement the Physics 704 and 705 lecture courses. Three hours per week. Prereq. or concurrent: Physics 705. 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 (or Physics 650) and Mathematics 674. 3 q.h.

710L. *Thermodynamics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Prereq. or concurrent: Physics 710. 1 q.h.

722. *Physical Optics and Advanced Light.* Interference, diffraction, dispersion, polarization, coherence, molecular scattering and absorption of radiation. Prereq.: Physics 611 (or Physics 650) and Mathematics 674. 4 q.h.

722L. *Physical Optics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Concurrent: Physics 722. 1 q.h.

730. *Electricity and Magnetism.* Electric and magnetic fields, ohmic and non-ohmic circuit components, direct-and alternating-current circuit theory, transients. Prereq.: Physics 611 (or Physics 650) and Mathematics 705. 3 q.h.

730L, 731L, 732L.* *Electricity and Magnetism Laboratory I, II, III.* Laboratory work in steady state and transient responses of alternating-current circuits, characteristics and uses of non-linear circuit elements including vacuum tubes and solid state devices. Three hours per week. Concurrent: For Physics 730L, Physics 730. 1+1+1 q.h.

741, 742.* *Electromagnetic Field Theory I, II.* Electric field and potential, charge distributions, polarization of material media, magnetic field and the vector

*Must be taken in sequence.

potential, magnetic moments and magnetic polarization of media, introduction to and application of media, introduction to and application of Maxwell's equations. Prereq.: Physics 730. 3+3 q.h.

750. *Mathematical Physics.* The mathematical techniques required in the study of classical, statistical, and quantum mechanics, and field theory. Prereq.: Physics 611 (or Physics 650) and Mathematics 705. 4 q.h.

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 per week. Prereq.: Physics 702, 705, and senior standing. 2+2+2 q.h.

810. *Introduction to Quantum Mechanics.* The postulates of wave mechanics, the Schroedinger Wave Equation, and solutions for elementary problems in quantum theory. Prereq.: Physics 702 and 705; Mathematics 706. 4 q.h.

815. *Kinetic Theory and Statistical Mechanics.* 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. 4 q.h.

820. *Advanced Quantum and Quantum Statistical Mechanics.* Quantum-mechanical scattering, angular-momentum coupling schemes, hydrogen molecular ion, Thomas-Fermi and Hartree-Fock models; quantum statistics and applications to the theory of metals, superfluidity and superconductivity. Prereq.: Physics 810 and Physics 815. 4 q.h.

822. *Electrodynamics.* Development of relativistic kinematics from the potential form of Maxwell's equations and of the connection between electro-dynamics and quantum concepts. Application of tensor methods to electromagnetic theory with emphasis on physical interpretation. 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 705, 705L and Mathematics 705. 3 q.h.

826L. *Nuclear Physics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Prereq. or concurrent: 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.* Treatment of atomic and nuclear structure based on the analysis of atomic, molecular, X-ray, Gamma-ray, and other spectra. Prereq. or concurrent: Physics 810, or permission of instructor. 4 q.h.

835L. *Spectroscopy Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Prereq. or concurrent: Physics 835. 1 q.h.

850. *Special Topics in Physics.* The study of a standard topic at greater depth, of 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 are suggested curricula for complete four-year programs. Students are urged to come to the department office early in their first year to select, and consult with, an advisor from the teaching staff. An individualized curricullum program (ICP) in Engineering Physics may be designed by the intended student, who should consult with Physics faculty members for details.

Suggested Curriculum for Majors With a Minor in Mathematics

FIRST YEAR	Hrs.
Physics 510, 610, 610L, 611, 611L	14
Mathematics 571, 572, 673	14
Chemistry 515, 516, 517**	12
Electives (See Note)	9
	49

SECOND YEAR	Hrs.
Physics 704, 705, 705L	7
Physics 710, 710L	4
Mathematics 674	4
Mathematics 705, 706	8
English 550, 551	8
Health and Physical Education 590	3
Health Activity Courses	3
Foreign Language or Electives(See Note)	12
	49

THIRD YEAR	Hrs.
Physics 701, 702, 703	9
Physics 730, 730L, 731L, 732L	6
Physics 741, 742	6
Physics 750	4
Electives (See Note)	20
	45

*Must be taken in sequence.

**Recommended.

FOURTH YEAR	Hrs.
Physics 805	2
Physics 810	4
Physics 815	4
Physics Elective	3
Electives (See Note)	30
	43

NOTE: The electives must satisfy the general University and/or College requirements, upper division credit requirements, and the foreign language requirement of the college of Arts and Sciences. Students majoring in any of the degree programs offered by the department are strongly urged to satisfy the college language requirement in French, German, or Russian.

Minimum requirements for the A.B. degree in Physics with a minor in mathematics: Physics courses 46 q.h.: 510, 610, 610L, 611, 611L, 701, 702, 703, 704, 705, 705L, 710, 710L, 730, 730L, 731L, 732L, 741, 742. 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, 63 q.h.: Same as the A.B. above plus courses 750, 805, 810, 815 plus one 800-level physics elective other than 806 or 807. Mathematics courses 26 q.h.: Same as A.B. above plus course 706.

Minimum requirements for the B.S. with a combined major in Physics and Astronomy and a minor in mathematics: physics courses, 61 q.h.: Same as the A.B. above, plus 15 q.h. from the following physics courses — 722, 722L, 750, 810, 815, 820, 835, 835L. (Students interested in planetary or radio astronomy may substitute courses in geology or electrical engineering for up to 12 of these 15 hours with departmental permission.), Astronomy courses, 25 q.h.: 608, 700, 701, 702, 800, 801, 802, 805. Mathematics courses, 26 q.h.: Same as for the B.S. degree in Physics.

Astronomy

Professor Young (Supervisor); Associate Professors Bishop and Tabak.

Lower Division Courses

504. *Descriptive Astronomy.* Introduction to modern knowledge about the universe. Astronomical observing methods; the earth and moon and their place in the universe; planets, stars and star systems, galaxies; recent astronomical discoveries. 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 504 or permission of the instructor. 4 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 Milky Way and other galaxies; cosmology. Prereq.: Physics 611 (or Physics 650) and Mathematics 674. 3+3+3 q.h.

800, 801, 802.* *Observational Astronomy I, II, III.* Observational techniques in astronomy. Photography, photoelectric photometry, photographic darkroom techniques, spectroscopy, methods of data reduction. Some nighttime observatory work included. Prereq.: Physics 704. 3+3+3 q.h.

805. *Research in Astronomy.* Individual investigation performed with faculty guidance. Prereq.: Astronomy 800, 801 and senior standing. 3 q.h.

NOTE: 700-and 800-level Astronomy courses are taught in alternate years with Astronomy 700 offered in the fall of odd-numbered years.

NOTE: These courses may be used to complete a Physics minor.

POLITICAL AND SOCIAL SCIENCE

Political Science

Professors Binning (Chairman), Esterly; Instructor Pollock.

A major in Political Science comprises 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 Thought.

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 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

550. *Elements of Politics.* An analytic approach to the study of politics with illustrations drawn from a variety of political systems. 4 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.

*Must be taken in sequence.

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.* 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. Listed also as Criminal Justice 776. 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. Listed also as Criminal Justice 777. 4 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, an examination of the history and characteristics of the American party system, and a quantitatively structured description of the national electorate. Prereq.: Political Science 601. 3 q.h.

706. *Minority Group Politics.* The politics of minority groups within American society in terms of organization, behavior, objectives, and relative influence and power. The politics of Black America are given particular attention. Prereq.: Political Science 601 or Black Studies 600. 3 q.h.

707. *Interest Group Politics.* The politics of special interests within American society in terms of organization, behavior, objectives, and relative influence and power. Interests concerned primarily with governmental economic policy are given special attention. Prereq.: Political Science 601. 3 q.h.

712. *Political Behavior.* Political leadership as related to influence patterns, public opinion, and political role and style. Prereq.: Political Science 550 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 550 or 601, or Social Science 503. 4 q.h.

717. *Health Care Policy.* Seminar on the politics of health-policy formation and alternative proposals for the organization of health care delivery, manpower, and finance systems; interviews with administrative and planning personnel. Prereq.: Political Science 601, or admission to NEOUCOM-YSU, or junior standing in a health field. 4 q.h.

718. *American Public Policy.* 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 as demonstrated in case studies. Prereq.: Political Science 601. 4 q.h.

721. *Urban Government.* 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.* 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. *Soviet Political System.* A study of governmental and party institutions, ideology, and political behavior in the Soviet Union. Prereq.: Political Science 640. 4 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.

744. *European Government and Politics.* A comparative study of governmental institutions and political behavior of selected Western European political systems. Prereq.: Political Science 640. 4 q.h.

745. *Eastern European Government and Politics.* A comparative examination of the political systems of Eastern Europe in the contemporary period. Emphasis on governmental institutions, the Communist Party, and policy development. Prereq.: Political Science 640. 4 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.* The principles underlying politics among nations and a study of their application to present international problems. Prereq.: Political Science 660. 4 q.h.

761. *United States Foreign Policy.* The formulation and execution of contemporary United States Foreign Policy, with attention to its basic principles in the 20th century. Prereq.: Political Science 660. 4 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. 4 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. 4 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. 4 q.h.

765. *Comparative Foreign Policy.* The factors that shape foreign policy, and a comparison of the foreign policies of selected nation states. Prereq.: Political Science 660. 4 q.h.

766. *Latin-American Foreign Affairs.* A systematic study of the inter-American system with special attention to the structure and function of the Organization of American States, recent U.S. policy toward Latin America, and 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.

768. *International Conflict.* An examination of the role of force in international politics. Special emphasis on theories of conflict, deterence theory, technological developments in modern weaponry, and problems of arms control and disarmament. Prereq.: Political Science 660. 4 q.h.

785. *Political Thought I.* The development of western political thought from the time of classical Greece through Medieval Period. Among major figures treated: Plato, Aristotle, Cicero, Augustine, and Aquinas. Prereq.: 12 hours of political science or consent of instructor. 4 q.h.

786. *Political Thought II.* The development of western political thought from the Renaissance to the Modern Period. Among major figures treated: Machiavelli, Bodin, Hobbes, Locke, Rousseau, and Burke. Prereq.: 12 hours of political science or consent of instructor. 4 q.h.

787. *Political Thought III.* The development of western political thought of the nineteenth and twentieth centuries. Among major figures treated: Hegel, John Stuart Mill, Marx, and Lenin. Prereq.: 12 hours of political science or consent of instructor. 4 q.h.

800. *Select Problems, American Government.* This course may be repeated once. Prereq.: consent of instructor. 3-6 q.h.

840. *Select Problems, Comparative Government.* This course may be repeated once. Prereq.: Consent of instructor. 3-6 q.h.

860. *Select Problems, International Relations.* This course may be repeated once. Prereq.: Consent of instructor. 3-6 q.h.

880. *Select Problems, Political Thought.* This course may be repeated once. Prereq.: Consent of instructor. 3-6 q.h.

Social Science

Professor Dale; Associate Professor Eichenberger; Assistant Professors Gonzalez, Haushalter, and McKean.

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 economics 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.) Prereq.: Social Science 501. 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, and control 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.) Prereq.: Social Science 501. 3 q.h.

Combined Major in Social Studies

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 eight 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.

The student seeking teacher certification in combined social studies should check the School of Education catalog section on teaching fields.

Pre-Forestry

See *Biological Sciences.*

Pre-Law

Political Science Faculty, Advisors.

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

There are no prescribed majors for the Pre-Law student. The options of a single discipline major, the American Studies major, or the combined major in social studies exist.

Law school admission standards generally require an undergraduate point average of at least 2.75 and placement above the 60th percentile in the Law School Admissions 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 Department of the Biological Sciences or Chemistry for details of these programs.*

The primary aim of pre-professional students is to satisfy entrance requirements for their respective professional schools. The requirements are listed in bulletins from those schools and should be carefully studied. The American Association of Medical Colleges has published a book entitled *Medical School Admission Requirements,* which summarizes entrance requirements for medical schools in the United States and Canada. Copies of this book are on reserve in the library and in the Department of Biological Sciences.

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 desired, but this is recommended only for students who can maintain extremely high grade averages.

See also *The Northeastern Ohio Universities College of Medicine.*

Psychology

Professors Graf, S.N. Hotchkiss, Krishnan, Letchworth, Morrison (Chairman), Sweeney; Associate Professors Beckett, Gittis, Masaki, Small; Assistant Professors Atkinson, Dobson, Fry, Haynes, Kestner, Quinby and White.

Psychology offers majors for both the Bachelor of Arts and Bachelor of Science degrees. The Bachelor of Arts degree may be appropriate for students seeking: (1) A general liberal arts degree; (2) Paraprofessional employment; (3) Certification with a B.A. degree to teach psychology in the secondary schools; (4) Preparation for graduate study in psychology in non-experimental areas.

The Bachelor of Science degree program is designed for those students who are interested in pursuing graduate work in experimental, biophysiological, psychopharmacological, or related research areas in psychology; and it may be appropriate for other areas.

BACHELOR OF ARTS — PSYCHOLOGY

48 Hours:

A. 560, 613, 614 (Statistical Methods I & II), 615.

B. Additional 33 hours in courses applicable to major.

BACHELOR OF SCIENCE — PSYCHOLOGY

60 Hours:

A. 560, 613, 614 (Statistical Methods I & II), 615, 724. 19 q.h.

B. Six of the following courses: Psychology 734, 740, 760, 761, 762, 763, 765, 800, 802, 828, 833, 860. 24 q.h.

C. Remaining courses from any applicable to major. 17 q.h.

D. Mathematics 550 and Computer Science 600.

E. Minor in one of the Natural Sciences, Mathematics or Engineering.

As a major, Psychology is primarily an upper division program. Prospective majors are advised to concentrate on the completion of the university and college requirements during their freshman and sophomore years.

Students seeking certification to teach Psychology in the secondary schools should consult the School of Education.

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. Courses marked with an asterisk (*) are offered in odd years, and with two asterisks (**) in even years.

502. *Workshop in Applied Psychology.* Study of selected contemporary psychology-related topics requiring no previous exposure to psychological theory. The Department announces the topic and determines the credit, based on frequency and duration of workshop meetings. May be repeated for a total of eight q.h. with change in topics. Not applicable for the Psychology major nor for the Social Studies area requirement. 1-4 q.h.

505. *Personal Adjustment.* Based on a survey of psychological principles as they relate to the individual student, this course seeks to increase self-awareness, self-acceptance, and satisfying interpersonal relationships. *Not applicable to the psychology major.* 4 q.h.

520. *Cross-Cultural Patterns of Individual Development.* A comparative study contrasting the effects of different cultural and psychological influences upon the development 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 subcultures as they influence the development of the individual in each. *Not applicable to the psychology major.* 3 q.h.

560. *General Psychology.* An overview of psychology, its major sub-areas, and the activities of psychologists in each; basic principles governing the emergence, organization, and maintenance of behavior patterns. (Replaced Psychology 501 and 601. Students who have credit for 501 or 601 may not take 560 for credit.) 4 q.h.

613. *Statistical Methods in Psychology I.* Basic methods of handling data, including frequency distributions, percentiles, and measures of central tendency and dispersion; an understanding of correlation and use of graphic methods. Prereq.: C or better in Psychology 560. (F, W) 3 q.h.

614. *Statistical Methods in Psychology II.* 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 analysis of variance.*Required for the Psychology major.* Prereq.: C or better in Psychology 613. 4 q.h.

615. *Introduction to Experimental Psychology.* The application of scientific methodology to problems in psychology. An introduction to the apparati, methods, and techniques with selected experiments to acquaint the student with basic principles. *Required for the* psychology major. Prereq.: C or better in Psychology 560, 613 and 614. 4 q.h.

620. *Woman: A Psychological Study.* A systematic exploration of the psychology of woman including questions of her social and personality development in terms of institutional, interpersonal, and intrapersonal factors. Woman will be surveyed in her many roles such as mother, sexual object, consumer, worker, and creator. Prereq.: 560. (F) 4 q.h.

692. *Human Sexuality.* An interdisciplinary approach to the study of human sexuality. Holistic approach dealing with questions that concern the college student of today. Includes problems in sex education, the nature of sexuality, the relationship of sex to personal identity, and sexual mobility. Factual information will be given in the areas of physiological reproduction, contraception, venereal disease, sexual dysfunctions, techniques, and response. Listed also as Biology 692, Health Education 692, and Sociology 692. Prereq.: H&PE 590. Does not count toward general university requirements. 4 q.h.

Upper Division Courses

700. *Social Psychology.* A 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. Prereq.: Psych. 560 or Sociology 600. 4 q.h.

701. *Introduction to Learning.* Concepts basic to learning; the role of reinforcement, and techniques, such as operant conditioning, that utilize it. *Applicable to the psychology major only with permission of the chairman.* Prereq.: Psych. 560. (SP). 3 q.h.

702. *Abnormal Psychology.* Patterns of deviant behavior, including current systems of classification; classic syndromes; the nature and trend of major maladjustments; possible causative factors, and methods of prevention and treatment. Prereq.: Psych. 560. 4 q.h.

703. *Psychology of Religion.* Identical with Religious Studies 756. *Applicable to the psychology major only with permission of the chairman.* 4 q.h.

707. *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. Prereq.: Psych. 560. 4 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.: Psych. 560. (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 factors in the learning process. Prereq.: Psych. 560. 4 q.h.

712. *Industrial Psychology I.* Principles of psychology applied to the area of business and industry, particularly in selection and placement of personnel, personnel practices, industrial testing, measurement of performance, and training. The psychologist's role in business and industry. Prereq.: Psych. 560 and 613 and junior standing. (F) 3 q.h.

716. *Industrial Psychology II.* Principles of psychology applied to the area of business and industry, including measurement of attitude and moral, motivation, organization, and social aspects of men and work. Prereq.: C or better in Psychology 712. (W) 3 q.h.

720. *Psychological Theory Workshop.* Selected psychosocial problems and the application of psychological principles and theories to their solution. Topic and credit hours to be announced in *Schedule of Classes* when course is offered. May be repeated for a maximum of 12 q.h. with different course content. Only four q.h. can be applied to the University Social Studies area requirement. Four q.h. can be applied to the Psychology major without permission of the department chairman. Prereq.: Psych. 560. 1-4 q.h.

724. *Statistical Methods in Psychology III.* A continuation of inferential statistics: complex analysis of variance and non-parametric statistics; additional study of special correlational techniques and concepts of regression and prediction. Use of calculator and computer. Recommended for the student preparing to seek an advanced degree. Prereq.: C or better in Psych. 723. (SP) 4 q.h.

734. *Applied Behavioral Analysis.* Extension of the results of laboratory findings to human behavior: development, maintenance, and extinction of behaviors, in institutional, industrial, home, and educational settings. Prereq.: Psych. 560 or permission of instructor. (SP) 4 q.h.

735. *Psychology and Group Dynamics.* A 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 individual behavior. Prereq.: 15 hours of Psychology including Psych. 613 and 700. (F) 4 q.h.

740. *Psychological Measurement.* Basic principles in the construction of psychological tests, scales, and questionaires, and their use in vocational and educational guidance. Prereq.: Psych. 560, 613, or consent of instructor. (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. Prereq.: 15 hours of psychology including Psych. 560, 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 factors and experience in shaping behavior. Prereq.: Psych. 560. 4 q.h.

756. *Developmental Psychology II (Adolescent).* A study of human development from puberty to adulthood. Prereq.: Psych. 560. (F, SP, SU) 4 q.h.

757. *Developmental Psychology III (Adult).* A study of human development from adulthood through old age. Prereq.: Psych. 560. (W, SP) 4 q.h.

760. *Perception.* Theories and experimental evidence on how an organism increases its ability to extract information from the environment. Prereq.: Psych. 615. (F) (*) 4 q.h.

761. *Cognition.* The experimental methods, research findings, and current theories which attempt to explain how the living organism identifies and gives meaning and understanding to perception and the ways in which the resulting act of cognition differs from the basic act of perception. Prereq.: Psych. 615. (W) (*) 4 q.h.

762. *Verbal Learning and Memory.* This course provides an overview of the problems, methods, experimental findings, and current classical theories stemming from research on verbal learning and the temporary and long-range retention of that learning. Prereq.: Psych. 615. (F) (*) 4 q.h.

763. *Comparative Psychology.* The variety of behaviors within the animal kingdom. Prereq.: Psych. 615 or consent of instructor. (SP) (**) 4 q.h.

765. *Experimental Social Psychology.* Problems, principles, methods, and techniques underlying theories of social psychology; participation in demonstrations, experimentation plus report-writing. Required field and/or laboratory work. Prereq.: Psych. 615 and 700. (SP) 4 q.h.

770. *Individual Study.* The individual study of a special problem, or a review of the literature relating to a specific psychological problem or issue. A written report is required, one copy of which will remain on file in the department. May be repeated for a maximum of six hours with different problems. Prereq.: Consent of the instructor the student selects. 1-2 q.h.

780. *Psychological Aspects of Disease and Death.* The primary factors affecting an individual's attitudes toward illness, bereavement, and mortality; the psychological adjustments necessitated by physical illness or bereavement, appropriate counseling methods. Prereq.: Psych. 560. 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 in which the student has a special interest,

and to make classwork more meaningful and relevant. The student must write a paper integrating work experience with background reading, and is rated by the supervisors *IN SITU*. A maximum of three q.h. may be applied to the Psychology major. One q.h. credit is given for each three hours/week of field work for 10 weeks of the quarter. May be repeated up to six q.h. credit. Prereq.: 12 hours in psychology and permission of instructor. 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. Prereq.: 20 hours of Psychology including Psych. 615. (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. Prereq.: 20 hours of psychology including Psych. 560. (F, SP) 4 q.h.

805. *Interviewing Techniques.* The basic principles, purposes, and problems of interviewing, including practicum and review. Prereq.: 20 hours of psychology or consent of instructor. (SP, SU) 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. Prereq.: 20 hours of psychology including Psych. 560 and 740 or consent of instructor. (SP) 4 q.h.

807. *Introduction to Counseling.* The role of the preprofessional in helping the clinical and counseling psychologist; theories of adjustment; area resources; referral; professional problems. Prereq.: Senior standing plus Psych. 560, 702, and 802 or consent of instructor. (W) 4 q.h.

808. *Psychology of Training & Supervision.* Application of psychological theory and research to problems of on-the-job training and leadership behavior: motivation and involvement of employees in organization objectives, indivudal differences in learning and vigilance, and the supervisor's role in problems of personal adjustment. *Applicable to the psychology major only with the permission of chairman.* Prereq.: senior standing and Psych. 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. Prereq.: Senior standing, Psych. 560, 613, and 740, and consent of instructor. (F) 4 q.h.

815. *Individual Testing: Intelligence.* Intensive study of individual intelligence tests and underlying theories and concepts, with classroom practice in proper administration, scoring, and interpretation. Students must participate in practice and administration of intelligence testing. Prereq.: senior standing, 20 hours of psychology including Psych. 560, 613, and 740, and consent of instructor. (F) 4 q.h.

820. *Survey Research.* The concepts and techniques used for the sampling and measurement of attitudes and opinions. Prereq.: 20 q.h. of psychology including Psych. 560, 700, and 723, or consent of instructor. (F)(*) 4 q.h.

823. *Practicum in Survey Research.* An application of the methods of survey research to field problems. Students plan an actual survey, design the instrument, select the respondents, conduct the survey, and analyze and interpret the results. Prereq.: Psych. 820 or consent of instructor. (W) (**) 4 q.h.

825. *Group Processes in the School.* An introduction to group activities applicable to the needs of students in the school setting. This would include a study of group processes and group dynamics for social and personal problem solving as well as in the general area of individual and group behavior. Also, a study of programs that provide for counselor-teacher cooperation in the development of groups in the classroom. Prereq.: Upper Division status, and Psych. 709 or Psych. 755. 3 q.h.

828. *Physiological Psychology.* The structure-functional relationships of the various divisons of the neural system; their relationships to the organism as a whole, and their contributions to human behavior. Prereq.: 20 hours of psychology including psych. 560, or consent of instructor. (W) 4 q.h.

833. *Principles of Operant Behavior.* Experimental analysis of behavior from an operant viewpoint, emphasizing simple and complex schedules of reinforcement and stimulus control. Prereq. or concurrent: Psych. 615 and 723. (W) 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. Prereq.: 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, on borderline, mild, and severe levels. Prereq.: Psych. 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. Prereq.: Psych. 755 or 756 and senior standing or consent of instructor. (SP) (**) 3 q.h.

841. *History of Psychology.* A brief look at the background for scientific psychology, with major emphasis on trends since the mid-19th century. Prereq.: 12 q.h. in psychology including Psych. 560. (F) (**) 4 q.h.

845. *Issues in Psychology.* Issues and controversies in psychology both current and long-standing; 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. 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 the extent of three q.h. but may be repeated twice as elective hours.* Prereq.: senior major in psychology, or consent of instructor. 3 q.h.

860. *Motivation.* Classical and contemporary theories of motivation. Elaboration of basic drives into motives; acquisition of new drives and goals; dynamics of the elaborated drive structure; motivation in complex situations. Prereq.: 12 q.h. in psychology, and junior standing. 4 q.h.

870. *Envirionmental Psychology.* The functional relationship between individual behavior and physical environment, and the relevance of this psychological interaction for environmental planning for the regional, city, neighborhood, and individual habitat. Prereq.: 20 hours of psychology including Psychology 560, 613, and 700 or consent of instructor. (W) 4 q.h.

RELIGIOUS STUDIES

See *Philosophy and Religious Studies.*

RUSSIAN

Assistant Professor Smith.

A major in Russian comprises 45 quarter hours above the elementary level. With the consent of the department chairman, some of these hours may be taken in Russian area studies.

No native speaker who has completed high school in a Russian-speaking country may receive credit for Russian 501, 502, 503, 505, 506, 510, 601 or 602.

Courses in Russian Literature (615, 808, 809) and 885 (if the topic deals with literature) satisfy the Humanities requirement.

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign language requirements.

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 is on aural-oral facility. The prerequisite for Russian 502 is Russian 501 or equivalent; the prerequisite for Russian 503 is Russian 502 or equivalent. 4+4+4 q.h.

505,506. *Russian Reading for Translation I, II.* An introduction to Russian grammar stressing techniques of translation into English, including general, technical, and scientific texts, vocabulary, word formation, and dictionary usage to facilitate reading skills. The prerequisite for Russian 506 is Russian 505 or equivalent. 4+4 q.h.

510. *Functional Approach to Russian.* Basic Russian for travel and everyday situations. Development of speaking ability and listening comprehension through practice, with a minimum of grammar. No prerequisite. *Does not count toward the language requirement for the A.B. or B.S. degree. Not applicable toward a Russian major.* 5 q.h.

601. *Intermediate Russian I.* Continuation of inductive grammar; readings in prose and poetry; oral and written practice based on readings. Prereq.: Russian 503 or equivalent. 4 q.h.

602. *Intermediate Russian II.* A continuation of Russian 601. Prereq.: Russian 601 or equivalent. 4 q.h.

604. *Intermediate Russian Conversation.* Intensive practice in common patterns of speech. Emphasis on construction, control, and use of idiomatic expressions. A student who has credit for Russian 763 may not receive credit for Russian 604. Prereq.: Russian 602 or equivalent. 4 q.h.

615. *Intermediate Russian Readings.* Reading and structural analysis of unsimplified selections from literature, journals, and newspapers. A student who has credit for Russian 762 may not receive credit for Russian 615. Prereq.: Russian 602 or equivalent. 4 q.h.

640. *Selected Topics.* Development of language skills through study of a topic that has practical applications to some area such as business, social studies, cultural trends, etc. May be taken three times for credit if the topic is not repeated. Total credit in Russian 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: Russian 602 or equivalent, or permission of instructor. 2-4 q.h.

Upper Division Courses

715, 716. *Russian Culture and Civilization I, II.* 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. I: From the beginnings to the Imperial Period. II: The Imperial Period to the present. Prereq.: Russian 602 or equivalent, or permission of the instructor. 4+4 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 permission of the instructor. 4 q.h.

770. *Advanced Russian Grammar and Composition.* A review in depth of Russian grammar through exercises, translation, original composition, and analysis of stylistic devices of literary works. Prereq.: Russian 602 or permission of the instructor. 4 q.h.

808. *Russian Literature of the 19th Century.* Reading and interpretation of works by Pushkin, Lermontov,

Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov, and Gonchaov. Prereq.: Any 700-level Russian course. 4 q.h.

809. *Russian Literature of the 20th Century*. Reading and interpretation of works by Gorky, Blok, Mayakovsky, Fedin, Sholokhov, Fadeyev, Pasternak, and others. Prereq.: Any 700-level Russian course. 4 q.h.

885. *Special Topics*. Studies in Russian language, literature, or civilization ranging from medieval to modern times. Topic is announced each time course is offered. May be taken three times for credit if content is not repeated. Prereq.: Any 700-level Russian course. 2-4 q.h.

SOCIAL SCIENCE

See *Political Science*.

SOCIOLOGY, ANTHROPOLOGY, AND SOCIAL WORK

Professors Dobbert, Fry, Kiriazis (Chairman), Muntean, White; Associate Professors Cooper, DiGiulio, Moore; Assistant Professors Gartland, Gilmartin-Zena, Shutes, Slivinske.

The Department of Sociology, Anthropology, and Social Work offers majors or minors in all three of its areas including a minor in gerontology, as well as offering a two-year program in Social Services Technology in cooperation with the college of Applied Science and Technology.

Sociology

The concentrations in sociology are useful to the professional study of law, teaching, research, and other fields requiring work beyond the bachelor's level.

Sociology majors are employed in a variety of settings, such as schools, institutions, urban affairs, social security and personnel.

A major in Sociology comprises 45 quarter hours. Majors must take Sociology 701, 751, and 760.

Lower Division Courses

500. *Fundamentals of Sociology*. An introduction to the science of human societies and groups: analysis of the structures, functions, and processes that bring about changes in societies, groups, communities, classes, and institutions. 4 q.h.

590. *Introduction to Women's Studies*. Introduces students to key concepts, theoretical frameworks, and inter-disciplinary research drawn from current scholarship about women. The course includes cross-cultural and historical analyses but concentrates on major issues relevant to the status and roles of contemporary American women including an examination of the effects of sexism, racism, ethnicity, and class distinction. *Does not count toward the Sociology major; does not fulfill the social science requirement.* Prereq.: English 550. 4 q.h.

600. *Principles of Sociology*. A continuation of Sociology 500 with greater emphasis on the major social institutions and their problem areas. Prereq.: Soc. 500. 4 q.h.

601. *Social Problems*. A sociological overview of various contemporary social issues, analyzing significant discrepancies between standards of expectation and actual social behavior, and attempting to ascertain possible causes, and discuss trends and possible changes. 4 q.h.

630. *Criminology*. Study of the social context of crime in America. Review of historical theories offered in explanation of criminal behavior. Listed also as Criminal Justice 630. 4 q.h.

640. *Women in Society*. Attention will be paid to cross-cultural and historical issues, but the major focus will be on the contemporary status of women in the U.S. The effects of the political and economic institutions upon women, particularly the effect of stratification, gender roles, and the socialization process will be studied. Prereq.: Soc. 500. 4 q.h.

Upper Division Courses

700. *Minority Groups*. A survey of the origins 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. Prereq.: Soc. 500. 5 q.h.

701. *Social Statistics I*. Measurement and interpretation of social data by the use of descriptive techniques. Prereq.: Soc. 500 or Anthro 602. Listed also as Criminal Justice 710. 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. 701. Listed also as Criminal Justice 711. 4 q.h.

703. *Sociology of Aging*. Characteristics of aging; problems for the aging individual and his/her family as well as for society at large. Some basic skills needed for providing services to and for the aged. Prereq.: Soc. 500. 4 q.h.

705. *The Family*. Family and kinship systems as a major institution; their development, functions, and relation to other basic institutions found in different cultures and social strata. Prereq.: Soc. 500 or 602. 4 q.h.

706. *Industrial Sociology*. The industrial social organizations and change processes in modern urban societies, particularly in America. The repercussions of technological change on social groups, viewed comparatively. Prereq.: Soc. 500. 4 q.h.

707. *Urban Sociology*. A comparative study of cities of pre-industrial and industrial societies, historical and contemporary. The process of urbanization and changing urban structure and functions. Prereq.: Soc. 500. 5 q.h.

708. *Political Sociology.* The social conditions that affect government and politics and which may help to determine political order and regulate struggles for power; associations and movements leading to stability or change. Prereq.: Soc. 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, government, the media, and movies. The modification of individual and group behavior by various social pressures. Prereq.: Soc. 500. 4 q.h.

735. *Juvenile Delinquency.* Social and psychological factors underlying delinquency; the juvenile court and probation; treatment and preventive measures. Prereq.: Soc. 600. Listed also as Criminal Justice 735. 4 q.h.

740. *Complex Organization.* Structures and processes of large-scale organizations: leadership, control techniques, tensions, bureaucratic pathologies, organizational change. Prereq.: Soc. 600. 5 q.h.

741. *Social Movements.* An analysis of the role of social movements, intellectual criticism, and socio-economic trends; study of the dynamics of change initiated outside of regular and institutionalized channels, including mobs and crowds. Prereq.: Soc. 600. 4 q.h.

742. *Small Group Processes.* A study of small group behavior; influence, attitudes, and values of social microsystems. Prereq.: Soc. 600. 4 q.h.

743. *Social Stratification.* A comparative analysis of social stratification systems with a major emphasis on modern Western societies. Prereq.: Soc. 600. 4 q.h.

744. *Social Deviance.* Problems of drug abuse, sexual deviation, crime, and other forms of deviance. Theoretical approaches to deviant behavior; etiologies and methods of social control. Prereq.: Soc. 600. 4 q.h.

745. *Medical Sociology.* Social attitudes toward illness. Cultural and social factors in disease definition of illness, and organization of the health professions and health facilities. Lectures and field work. Prereq.: Soc. 500, or admission to the NEOUCOM-YSU program. 3 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. 600 or Anthro 602. 5 q.h.

755. *Theories of Gerontology.* A review and critical analysis of current theories of the social aspects of aging, and their use in research. Prereq.: Soc. 600. 4 q.h.

756. *Aging and Ethnicity.* A study of aging in various American subcultures, noting differences in status/role systems, demographic distributions, life styles, methods of dealing with the aged, and related problems. Prereq.: Soc. 600. 4 q.h.

757. *Gerontology: Retirement.* Exploration and critical examination of social attitudes toward the process of aging and retirement, to develop an awareness of the need of and avenues for the provision of later-life, resources. Prereq.: Soc. 600. 4 q.h.

758. *Industrial Gerontology.* Social aspects of the work-occupational system of the aged as it relates to manpower utilization, support programs, and the social distribution of resources. Prereq.: Soc. 600. 3 q.h.

760. *History of Social Theory.* The historical development of social theory out of social philosophy, with emphasis on the scientific schools of thought of the 19th and early 20th centuries. Prereq.: Soc. 600 or Anthro 602. 5 q.h.

761. *Modern Sociological Theory.* Analysis of key schools of present-day sociological theory. Prereq.: Soc. 600 or 602. 4 q.h.

774. *Comparative Community Studies.* A comparative study of peasant society as a social type contrasted with primitve and industrial society; the impact of contact; problems of modernization; stability and conflict in developing cultures. Prereq.: Soc. 600 or Anthro. 602. 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 economic and social environments. Listed also as Economics 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 social, engineering, and life science. The topics (1) History of technology, (2) The World's available resources, (3) Population dynamics as they interact with nature and the human ecosystem. Prereq.: junior standing or consent of instructor. Listed also as Chemical Engineering 789 and Biology 789. 4 q.h.

898. *Select Problems in Sociology and Anthropology.* Readings in sociology and anthropology dealing with current problems in theory and methods. Credit is given according to the nature and extent of the problems and the readings. For students planning to enter graduate school. Prereq.: Departmental major in senior year. 1-5 q.h.

Anthropology

A major in Anthropology comprises 45 quarter hours. Majors must take Sociology 701, and 751, Anthropology 801, courses in Cultural Anthropology, Physical Anthropology, and Archaeology, and two area courses.

The University Science/Mathematics area requirement may be satisfied by the following Anthropology courses: 782, 783, 784.

Lower Division Course

602. *Introduction to Anthropology.* An exposition of the past and present horizons of anthropology, with specific attention to the emergence of man, pre-history, and human social and cultural systems. 4 q.h.

Upper Division Courses

711. *Cultural Anthropology.* A cross-cultural comparison of the cultural norms that regulate society, emphasizing the functional prerequisites for the existence of society and individual demands on society. Prereq.: Anthr. 602. 4 q.h.

712. *Archaeology.* An introduction to the methods and subject matter of archaeology in its reconstruction of paleolithic and prehistoric cultures as inferred from artifacts. Prereq.: Anthr. 602. 4 q.h.

713. *Social Anthropology.* The origin, diffusion, and continuity of primitive social institutions with their relation to contemporary social phenomena. Prereq.: Anthr. 602. 3 q.h.

716. *Maya, Aztec, and Inca Cultures.* The origins, cultures, and achievements of the classic civilizations of the New World. Prereq.: Anthr. 602. 4 q.h.

717. *Cultural Resource Management.* The reconnaissance, identification, evaluation, preservation and recording of prehistoric and historic cultural resources. Students will be familiarized with executive orders on site protection, registration and with federal, state, and local laws. Some field work may be required. Prereq.: Anthro. 712 or permission of instructor. 4 q.h.

750. *Language and Culture. Identical with Linguistics 750.* 4 q.h.

752. *Anthropology: Historical Linguistics.* Identical with Linguistics 752. Prereq.: Anthr. 602 or 705. 4 q.h.

753. *Anthropological Linguistics.* An introduction to elementary linguistic theory from an anthropological viewpoint with practical work in phonetics, phonology, morphology, syntax, and transformational grammar. Prereq.: Anthro 602 or 750. Listed also as Linguistics 753. 4 q.h.

770. *African Cultures.* An anthropological analysis of contemporary cultures in Africa. Prereq.: Anthr. 602. 4 q.h.

771. *Middle Eastern Cultures.* An anthropological analysis of contemporary cultures found in the Middle East. Prereq.: Anthr. 602. 4 q.h.

772. *Asian Culture.* An anthropological analysis of ancient and contemporary cultures in Asia. Prereq.: Anthr. 602. 4 q.h.

773. *Australian and Oceanic Cultures.* An anthropological analysis of ancient and contemporary cultures found in Australia and Oceania. Prereq.: Anthr. 602. 4 q.h.

775. *North American Indians.* The culture and achievements of the North American Indians. Prereq.: Anthr. 602. 4 q.h.

776. *South American Indians.* The culture and achievements of the South American Indians. Prereq.: Anthr. 602. 4 q.h.

777. *Method and Theory in Archaeology.* Past and contemporary theory and methodology in archaeology, with emphasis on recent innovations in the U.S. and Europe. Prereq.: Anthr. 712. 4 q.h.

778. *Archaeological Techniques.* Practice in summer archaeological field methods, including surveying, mapping, excavation, and artifact analysis. Offered in summer, ordinarily: 220 contact hours per quarter. Prereq.: Anthr. 712. 6 q.h.

779. *Primate Ethology.* Survey of the behavioral patterns of contemporary primates, emphasizing the relationships with the behavior patterns of early and modern man. Prereq.: Anthr. 602. 4 q.h.

781. *Archaeological Laboratory Techniques.* Site reconnaissance, artifact anaylsis and preservation, microwear analysis, analysis of faunal remains, coprolite analysis, archaeological report writing, etc. Some field work may be required. Prereq.: Anthr. 712 or permission of instructor. 4 q.h.

782. *Physical Anthropology I: Human Evolution.* The physical origins and development of the human species as a member of the primate order and the biological bases of human behavior disclosed by human paleontology and archaeology. May be used to satisfy the University science area requirement. Prereq.: Anthr. 602, and Biology 507, or 508, or 551. 4 q.h.

783. *Physical Anthropology II: Human Variation.* The distribution of man into variant physical types and the casual adaptations of these varieties in relation to evolutionary human ecology. May be used to satisfy the University science area requirement. Prereq.: Anthr. 602, and Biology 507, or 508, or 551. 4 q.h.

784. *Human Paleontology.* A detailed survey of the fossil evidence for human evolution, including techniques of measurement and description of human skeletal remains. May be used to satisfy the University science area requirement. Prereq.: Anthr. 782. 4 q.h.

801. *History of Anthropological Thought.* An analysis of the theories and methodology of the major contributors to contemporary anthropological thought, such as the evolutionist, diffusionist, functional, and multi-linear schools. Prereq.: Anthr. 600 or 602. 4 q.h.

815. *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. Study of selected religious systems, areally and topically. Prereq.: Anthr. 602. 4 q.h.

822. *North American Prehistory.* The prehistoric development of North American Indian cultures from

the Artic to Northern Mexico. Prereq.: Anthr. 712. 4 q.h.

824. *Old World Prehistory: Special Topics.* An examination of the pre-historic development of Old World A.) Africa, B.) Europe, C.) Far East, D.) Middle East, E.) Oceania cultures. May be taken twice for credit if topic is different. Prereq.: Anthro. 712. 4 q.h.

Social Work

The baccalaureate degree with a major in Social Work prepares students for entry into beginning, professional Social Work practice. Social workers are employed in a variety of settings such as public and private welfare agencies, mental health centers, health care settings, educational systems, correctional institutions, and business and industry. A baccalaureate degree in social work qualifies a person to apply for licensing in the state of Ohio.

A major in Social Work comprises 55 quarter hours. Majors must take Social Work 620, 621, 721, 722, 723, 725 (14 q.h.), 732, 733, 734 (2-4 q.h.), Sociology 701 and 751.

A two year program in Social Services Technology leads to the Associate in Applied Science degree in the College of Applied Science and Technology.

Lower Division Courses

520. *Workshop in Applied Social Work.* Study of selected contemporary social work topics. The department announces the topic and determines the credit, based on frequency of meetings. May be repeated for a maximum of eight q.h. with change in topics. Not applicable to the Social Work major nor to the University social studies area requirement. 1-4 q.h.

620. *Introduction to Social Work.* A general overview of the development, philosophy, and values of the profession of social work from a historical viewpoint, with emphasis on current roles, interventions, trends, and issues. Representative social workers serve as guest lecturers. Prereq.: Soc. 500. 4 q.h.

621. *Human Development and Social Environment.* Relationship between present-day American social structure and cultural patterns in the development of personality throughout the life process. Prereq.: Soc. 500. 4 q.h.

622. *Helping Relationships.* The basic principles of helping people in human services. Preparation of students for roles as volunteers, and observers in social work agencies. Designed to develop knowledge of oneself as an individual and in relation to others. Prereq.: Soc. 500. 3 q.h.

692. *Human Sexuality.* An interdisciplinary approach to the study of human sexuality. This holistic approach includes problems in sex education, the nature of sexuality, the relationship of sex to personal identity, and sexual mobility. Covers physiological reproduction, contraception, venereal disease, sexual dysfunctions, techniques, and response. Listed also as Biology 692, Health Education 692, and Psychology 692. Prereq.: H&PE 590. Does not count toward University general requirements. 4 q.h.

Upper Division Courses

719. *Health Care Systems.* A sociological analysis of the roles of the physician, the nurse, the social worker, and paramedical personnel in a variety of settings with attention to federal programs as related to local systems. Lectures and field work. Prereq.: Social Work 620, or admission to the NEOUCOM-YSU program. 3 q.h.

721. *Social Policy.* The programs, organization, and functions of social services, and the effects of government policies upon the administration of these services. May include visits to local agencies. Prereq.: Social work 620. 4 q.h.

722. *Methods of Social Work Practice.* An overview of social work processes including casework, group work, family and community interventions. Study assessment, data collection, and evaluation procedures will be discussed for each process. Prereq.: Social Work 621, or admission to NEOUCOM-YSU program. 3 q.h.

723. *Intervention with Groups.* Analysis of the major processes used by social workers with groups, including role-playing, evaluation of group records, and case discussion. Prereq.: Social Work 722. 3 q.h.

724. *Community Intervention.* The analysis of major processes in macro social work practice: social action and planning, community development, advocacy, administration, and program evaluation. Prereq.: Social Work 723. 3 q.h.

725. *Field Work in Social Services.* Professionally supervised practice in approved social agencies, to give the student controlled educational experience in social work. The student must spend 225 hours per quarter in an agency for each seven hours credit. May be repeated for a maximum of 14 quarter hours. Concurrent with: Social Work 734. Prereq.: Major in Social Work, 25 q.h. in Social Work including 722, 723, 732 and 733. 7-14 q.h.

726. *The Black Family.* A sociological study of the black family in the Americas: its origins and the factors of class, economics, politics, religion, education, and law that have affected the pattern of its functional and social behavior. Prereq.: Black Studies 600 or Soc. 500. 4 q.h.

727. *The Black Community.* The black community's uniqueness resulting from the black experience in American society. Population, cultural forms, and institutional structures are explored in terms of this uniqueness and in relationship to social and physical survival functions. Analysis of the affects of the dominant social system on the black community. Prereq.: Black Studies 600 or Soc. 500. 4 q.h.

728. *Social Services for Children.* Social welfare agencies and services developed by communities for the care and training of children. Development of a conceptual framework for understanding the issues, problems, and policies in children's services. Prereq.: Soc. 620 4 q.h.

730. *Social Services and the Aged.* An empirical and analytical base for understanding the policies, problems, and trends in services for the aged. Prereq.: Soc. 620. 3 q.h.

731. *Social Services and the Handicapped.* Problems arising from or related to illness and disability; adjustment of handicapped persons. General interventive techniques for working with the handicapped; recent research and treatment innovations. Prereq.: Social Work 620. 3 q.h.

732. *Social Work Theory.* Major conceptual systems and behavioral theories in social work. Analysis of criteria for the selection and application of theory. Prereq.: Social Work 621. 4 q.h.

733. *Micro Interventions.* An analysis of social work processes including crisis, short-term, and long-term therapeutic interventions. Case Management, problem solving techniques, referral processes, and case recording will also be discussed. Prereq.: Social Work 722. 3 q.h.

734. *Field Work Seminar.* Provides integration in learning experiences of social work student involved in field work. Coordination between theory and its application in social service field assignments. May be repeated once for the baccalaureate degree. Concurrent: Social Work 725. 2 q.h.

850. *Interventions With Families.* The analysis of major social work processes applied to family system characteristics, observed in functional and dysfunctional families. Illustrated by family case situations typically seen within various types of social agencies. Will include role-playing and case discussion. Prereq.: Social Work 733. 4 q.h.

851. *Family Theories in Social Work.* A comparison of major conceptual family theories in social work practice. Rationale for the selection and application of a specific theory. Prereq.: Social Work 733. 4 q.h.

SPANISH

Associate Professors Loud, del Pozo; Assistant Professor Becerra.

A major in Spanish comprises 45 quarter hours above the elementary level, including Spanish 705, 706, 718, 719, and at least one 800-level course.

No native speaker who has completed high school in a Spanish-speaking country may receive credit for Spanish 500A, 500B, 500C, 501, 502, 503, 504, 507, 510, 601, 601Y, 602 or 602Y.

Courses in Spanish Literature (615, 705, 706, 718, 719, 805, 816, 825, 830, 838) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for pre-college foreign language requirements.

See Course Requirements at the beginning of the College of Arts and Sciences section for college foreign langauge requirements.

Four quarter hours of 601Y may be taken instead of the 4 q.h. 601; four quarter hours of 602Y may be taken instead of the 4 q.h. 602.

Lower Division Courses

500A, 500B, 500C. *Elementary Spanish I, II, III.* A competency-based course identical in content to Spanish 501, 502, 503. Each segment is divided into four units, each unit equivalent to one credit. Each student signs up for the number of credits he feels he can complete each quarter. A total of four credits can be accumulated in each segment. Prereq. or concurrent: for Spanish 500B: Spanish 500A or 501 or equivalent; for Spanish 500C: Spanish 500B or 502 or equivalent, or Spanish 500A and 500B. 1 - 4+1 - 4+1 - 4 q.h.

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 is on aural-oral facility. The prerequisite for Spanish 502 is Spanish 501 or equivalent; the prerequisite for Spanish 503 is Spanish 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary Spanish.* A review course covering the material of Spanish 501, 502 and 503 in one quarter. Students who have received credit for Spanish 503 cannot receive credit for Spanish 504. Prereq.: 2 years of high school Spanish. 4 q.h.

507. *Spanish for the Spanish-Speaking.* A course conducted entirely in Spanish. Development of writing, reading and speaking ability through oral and written exercises. A student who has received credit for Spanish 501, 502, 503 may not receive credit for this class. No native Spanish speaker who has completed high school in a Spanish-speaking country may receive credit for this course. Does not count for major or minor. No prerequisite. 4 q.h.

510. *Functional Approach to Spanish.* Basic Spanish for travel and everyday situations. Development of speaking ability and listening comprehension through practice, with a minimum of grammar. No prerequisite. *Does not count toward the foreign language requirement for the A.B. or B.S. degree, nor toward a Spanish major.* 5 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.

601Y. *Intermediate Special Topics I.* Material in Spanish at the 601 level in some specialized area. May be taken three times for credit if content is not repeated. Prereq.: Spanish 503 or equivalent. 2 q.h.

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

602Y. *Intermediate Special Topics II.* Material in Spanish at the 602 level in some specialized area. May be taken three times for credit if content is not repeated. Prereq.: Spanish 601 or equivalent. 2 q.h.

615. *Intermediate Spanish Readings.* An introductory course in the reading of literary texts for their linguistic, stylistic, and literary aspects. Prereq.: Spanish 602 or equivalent. 4 q.h.

640. *Selected Topics.* Development of language skills through study of a topic that has practical applications to some area such as business, social studies, cultural trends, etc. May be taken three times for credit if topics are different. Total credit in Spanish 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: Spanish 602 or equivalent, or permission of instructor. 2-4 q.h.

645. *Commercial Spanish.* Principles of effective commercial letter and report writing and oral communication in business in the Spanish-speaking world. Prereq.: Spanish 602 or permission of instructor. 4 q.h.

655. *Conversational Spanish.* A course in oral Spanish, using the conversational approach to help the student speak the language fluently as used in everyday situations. Prereq.: Spanish 602 or permission of instructor. 4 q.h.

Upper Division Courses

705, 706. *Survey of Spanish Literature.* Introduction to the principle works, writers, and literary movements. Spanish 705: to 1700; Spanish 706: since 1700. Prereq.: Spanish 615 or permission of instructor. 4+5 q.h.

718, 719. *Survey of Spanish-American Literature.* Similar to 705, 706 but for Spanish-American literature. Spanish 718: From the beginnings to "Modernismo" (19th Century). Spanish 719: From "Modernismo" to the present. Prereq.: Spanish 615 or permission of the instructor. 4+4 q.h.

725, 726. *Grammar Review and Composition.* A review 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.

750. *Spanish Civilization.* A survey of Spanish Culture: the ideas, attitudes, and values definitive of the Spanish character. Class discussion in Spanish. Prereq.: Spanish 602. 4 q.h.

751. *Latin-American Civilization.* A survey of Latin-American Culture: the ideas, attitudes, and values definitive of the Latin-American character. Class discussion in Spanish. Prereq.: Spanish 602. 4 q.h.

805. *Topics in Spanish Literature of the Golden Age.* The study of major works of prose, poetry and/or drama between 1492-1680, focusing on one of the following: literary movements, themes, specific authors, or other comparable areas of interest. May be taken three times if topic is different. Prereq.: Spanish 615 and one 700-level Spanish course. 4 q.h.

816. *Topics in Nineteenth Century Spanish Literature.* The study of major works of nineteenth century prose, poetry and/or drama focusing on one of the following: literary movements, themes, specific authors, or other comparable areas of interest. May be taken three times if topic is different. Prereq.: Spanish 615 and one 700-level Spanish course. 4 q.h.

825. *Topics in Twentieth Century Spanish Literature.* The study of major works of twentieth century prose, poetry and/or drama focusing on one of the following: literary movements, themes, specific authors, or other comparable areas of interest. May be taken three times if topic is different. Prereq.: Spanish 615 and one 700-level Spanish Course. 4 q.h.

830. *Selected Topics in Hispanic Literature in the United States.* The study of major 20th century literary works in Spanish by authors from one or more of these groups; Mexican-Americans, Puerto Ricans, Cubans, and other Hispanic groups. May be taken twice if topics are different. Prereq.: Spanish 615 and one 700-level Spanish course, or consent of instructor. 4 q.h.

838. *Topics in Modern Spanish-American Literature.* The study of major works from Spanish-American prose, poetry, and drama since modernism, focusing on one of the following: literary movements, themes, specific authors and countries, or other comparable areas of interest. May be taken three times if topic is different. Prereq.: Spanish 615 and one 700-level Spanish course, or permission of instructor. 4 q.h.

850. *Problems in Spanish Syntax and Usage.* A course designed mainly for prospective teachers of Spanish, dealing with the more advanced problems of Spanish grammar and usage. Prereq.: Spanish 725 and 726. 4 q.h.

885. *Special Topics.* Studies in Spanish language, literature, or civilization ranging from medieval to modern times. Topic is announced each time course is offered. May be taken three times for credit, if content is not repeated. Prereq.: Spanish 615 plus one 700-level Spanish course. 2-4 q.h.

WOMEN'S STUDIES

Professor Brothers (Advisor). Advisory Committee: Professor Budge, English; Professor Leck, Foundations of Education; Professor Gilmartin-Zena, Sociology; Professor Jenkins, History.

The University does not offer a major in women's studies, but a student may minor in women's studies with the advice and approval of the chair of the department in which the student is majoring and by fulfillment of the requirements below:

Lower Division Courses

English 590. *Introduction to Women's Studies.* Introduces students to key concepts, theoretical

frameworks, and inter-disciplinary research drawn from current scholarship about women. The course includes cross-cultural and historical analyses but concentrates on major issues relevant to the status and roles of contemporary American women including an examination of the effects of sexism, racism, ethnicity, and class distinction. **Does not count toward the English, History, Sociology major; does not fulfill the humanities requirement**. Prereq.: English 550. Also listed as History 590, Sociology 590. 4 q.h.

English 617. *Women in Literature.*Prereq.: English 550. 4 q.h.

History 590.Identical with English 590. 4 q.h.

Psychology 620. *Women: A Psychological Study.* Prereq.: Psychology 560. 4 q.h.

Sociology 590. Identical with English 590. 4 q.h.

Sociology 640. *Women in Society. Prereq.: Soc. 500.* *4 q.h.*

Upper Division Courses

Philosophy 704. *Woman: A Philosophical Study.* Prereq.: Phil. 600 or junior or senior standing. 4 q.h.

History 726. *History of Women in the United States.* Prereq.: History 590, 605 or 606. 4 q.h.

The student will select one of the following special topics courses **when offered with the appropriate focus** to complete the 21 hours for a minor.

English 899. *Selected Topics in Literary Study.* Prereq.: English major with junior or senior standing or consent of department chair. 3-5 q.h.

Foundations of Education 875. *Seminar in Foundations of Education.* 1-4 q.h.

Health & Physical Education 888. *Selected Topics in Physical Education.* Prereq.: senior standing or consent of instructor. 1-4 q.h.

Health & Physical Education 894. *Workshop in Physical Education/Athletics.* Prereq.: HPE 750, 768 or consent of instructor. 1-4 q.h.

History 801. *Selected Problems in American History.* Prereq.: Consent of instructor. 4 q.h.

Management 880. *Special Topics in Management.* Prereq.: senior standing or consent of instructor. 1-4 q.h.

Marketing 831. *Special Topics in Advertising and Public Relations.* Prereq.: consent of instructor.3 q.h.

Philosophy 820. *Seminar: Contempory Philosophical Problems.* Prereq.: Phil. 600 and 8 q.h. of upper division philosophy or approval of department chair. 1-4 q.h.

Religious Studies 850. *Seminar in Religious Studies.* Prereq.: any two upper division courses in either philosophy or religious studies, or consent of instructor. 1-4 q.h.

Religious Studies 851. *Directed Readings in Religion.* Prereq.: any upper division course in either Philosophy or Religious Studies or consent of instructor. 1-4 q.h.

Psychology 850. *Seminar.*Prereq.: senior major in psychology or consent of instructor. 3 q.h.

Speech 740. *Special Topics in Speech Communication.* Prereq.: Speech 530 or 540 or junior standing with permission of the instructor. 4 q.h.

Sociology 898. *Select Problems in Sociology and Anthropology.* Prereq.: departmental major in senior year. 1-5 q.h.

ZOOLOGY

See *Biological Sciences*

The Warren P. Williamson, Jr. School of Business Administration

H. Robert Dodge, Dean

ORGANIZATION AND DEGREES

The School of Business Administration has three departments: Accounting and Finance, Management, and Marketing.

Majors are offered in Accounting, Advertising and Public Relations, Finance, General Administration, Industrial Management, Management, Industrial or Retail Marketing, Marketing Management, Public Administration, Transportation Management and Advertising Art in conjunction with the Art department. Minors are offered in Accounting, Advertising and Public Relations, Finance, Management, Marketing and Business Foundations.

The degrees in business are the Bachelor of Science in Business Administration and in conjunction with the School of Education, the Bachelor of Science in Education with a major in Business Education. See the College of Applied Science and Technology section regarding the Associate in Applied Business degree. The Business Foundations Minor is for non-business students only.

REQUIREMENTS FOR ADMISSION

New Freshman Applicants—Pre-Business

(A) ACT composite not less than 17 or SAT composite not less than 850.

(B) Completion of the mathematic pre-college requirements, (2) units of algebra and (1) unit of geometry with a minimum grade of C.

Transfer Students (Intra- and Inter-University) Pre-Business

(A) Twenty-four quarter hours with a cumulative grade point average of at least 2.25 (waived if ACT composite is 17 or more, SAT composite is 850 or more).

(B) Completion of the mathematics pre-college requirements, (2) units of algebra and (1) unit of geometry with a minimum grade of C.

Admission to Upper Division Status with a Business Major

(A) Ninety-six quarter hours with a cumulative grade point average of at least 2.25.

(B) English 550, English 551, and all SBA lower division tool courses (Accounting 605, Accounting 606, Accounting 610, Economics 520, Economics 621, Economics 622, Economics 624, Economics 705, Mathematics 642, Mathematics 550, and Management 604) with a minimum grade of C.

REQUIREMENTS FOR THE DEGREE

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

The student has the responsibility for seeing that all graduation requirements for the degree are satisfied. For the Bachelor of Science in Business Administration degree, these are:

1. Pre-college or preparatory courses, taken in high school. See the General Requirements and Regulations section.

2. Courses and other requirements of the University. These are explained in the General Requirements and Regulations section, and are listed below.

The curricula leading to a degree in Business require a minimum of 186 quarter hours.

Admission to Pre-Business does not guarantee admission to upper division status with a major in Business.

The student whose needs are not completely met by existing conventional programs may wish to investigate and apply for the individualized curriculum program. See the General Requirements and Regulations section.

R.O.T.C. students are permitted specific modifications of the requirement as explained in the General Requirements and Regulations section.

University General Degree Requirements for Business Administration Majors

		Quarter Hours of Credit
English	550, 551	8
Speech	652	3
Health	590	3
Economics*	520, 621, 622	10
Psychology	560	4
Electives		
English Lit	600 Level	4
Social Studies***		8
Humanities		4
Science		8
P.E. Activities		3
Liberal Arts		4
SBA Lower Division Tool Courses*		
Accounting	605, 606, 610	14
Economics	520, 621, 622, 624, 705	18
Mathematics	550, 642	10
Management	604	4
SBA Upper Division Core Courses**		
Finance	720	4
Management	725, 750, 789, 850, 855	19
Marketing	703	5

Courses for the major or for the minor must exclude all courses used to satisfy general university, WSBA tool, and WSBA core requirements.

Other Degree Requirements

Completion of the appropriate number of quarter hours.

Upper division status (completion of 96 quarter hours of credit; completion of all tool courses with a grade of "C" or better; a cumulative point average of 2.25 or better; application must be made in the Advisors' office).

Major requirements (a grade of "C" or better must be made in all courses taken in the major).

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*WSBA lower division tool courses: each must be completed with a grade of "C" or better before applying for upper division status. Tool and core courses may not be used to satisfy any other degree requirements. CR/NC option may not be used in tool and core courses.

**WSBA upper division core courses: each must be completed with a grade of "C" or better. Finance 720, Management 725, and Marketing 703 should be taken in the first quarter of the junior year.

***Social Science 501, 502 and 503 are not acceptable; History 605 or 606, and History 744 are recommended.

Course level requirements (completion of (90) quarter hours of courses must be completed at the 600 level or higher, of which sixty (60) hours must be at the 700 level or higher).

At least 40 percent (75 hours) of the total degree requirements must be taken in non-business courses. Up to 13 hours of Economics courses can be counted as non-business.

Point Index Requirement.

Residence Requirement.

Application for Graduation.

Note: Courses taken to satisfy high school deficiencies may not be used to satisfy other university, school or department requirements for a degree.

REQUIREMENTS FOR THE MAJOR

The courses required for the various majors are listed by each department. The combined major in Advertising Art is described in the Advertising and Public Relations Department listings. The combined majors in General Administration and in Public Administration are described in the Management Department listings.

REQUIREMENTS FOR THE MINOR

A suggested business minor (Business Foundations) for non-business students would include Accounting 605 and 606, Finance 720, Management 604 and 725, Marketing 703 and at least eight additional hours of credit from the Williamson School of Business Administration for which proper prerequisites have been met. Completion of the business foundation minor fulfills most of the foundation requirements for entrance into the Master of Business Administration (MBA) program.

OBJECTIVES

The objectives of the Williamson School of Business Administration include the provision of an educational environment which helps to prepare individuals for a career of their choice among the general areas of business as well as nonprofit and public enterprises. Priority is given to preparing a student to be professionally competent in a career-related field, and with over one-half of the academic work coming from areas other than the Williamson School of Business Administration, the student will receive a broad-based liberal education.

The emphasis in the business programs is on developing analytical, problem solving, and communication skills necessary for informed decision making within the context of an organization, as well as a function of that organization. The moral and ethical components of business as a profession are stressed throughout each program.

COURSES OF INSTRUCTION AND CURRICULA

The student should become familar 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 of checking the catalog for preprequisites for each course he or she wishes to take. This will ensure minimum changes of registration on the student's behalf and will alleviate many problems associated with scheduling.

The programs and courses in the Williamson School of Business Administration will vary in nature depending upon content, level of instruction, and the pedagogical approach of the professor. At all times, discussion and the exchange of ideas between student and faculty is encouraged.

ACCOUNTING AND FINANCE

Professors Bensinger, Hankins, Magner, Miller, Petrych, Ross (Chairperson), Smolen, Volpe and Zetts; Associate Professors Bond, Chuey, Grim, Heal, Parsegian, Pullman and Tackett; Assistant Professor Lacich; Instructors Cenker and Pressly.

For students interested in the accounting professions, courses offered include financial accounting, cost analysis, information systems, auditing, and taxes. The accounting program is designed to prepare individuals for careers as certified public accountants, industrial accountants, and as accountants for public, and nonprofit organizations. For those not majoring in Accounting, the courses offered provide a knowledgeable background in accounting as a management tool and functional area of a business, public, or non-profit organization. The curriculum for a major in Accounting consists of 54 quarter hours.

Courses in the finance concentration are designed to provide the student with the knowledge to enter any number of financial areas as a career or to provide sufficient background to use finance as a management tool in business, public, and nonprofit organizations. The finance concentration includes courses in corporate finance, investments and securities, and real estate and insurance. The curriculum for a major in Finance consists of 52 quarter hours.

CURRICULA

For university requirements, lower division tool requirements, and upper division core requirements, see Table of Courses in the General Requirements and Regulations section.

ACCOUNTING MAJOR (186 Hours for the Degree)

Accounting 703, 704, 705, 709, 711, 801, 808, 813, and Accounting Electives

Finance Upper Division Elective.

Management 714 and 735

Business Upper Division Elective

FINANCE MAJOR (186 Hours for the Degree)

Accounting 703 or Economics 702, Accounting 704 or Economics 712, Accounting 705 or Economics 809

Economics 701, 805, 812 or Economics 824 or Finance 717

Finance 722 or Economics 850, Finance 723 or Management 804, Finance 724 or Economics 825, Finance 730, 835, 841

Management 714 or Accounting 709, Management 735

ACCOUNTING MINOR (Suggested Courses Include)

Accounting 605, 606, 703, 704, 705, and 711 or 813

FINANCE MINOR (Suggested Courses Include)

Finance 717, 720, 722, 730, 835 and 841

Accounting Sequence

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. Prereq.: Sophomore standing. 5 q.h.

606. *Elementary Accounting II.* Develop an understanding of how 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.

610. *Management Information Systems I.* A study of interrelated methods, procedures and equipment utilized in developing, processing, storing and reporting business data. Theory and problems of systems design and implementation will be considered. Emphasis will be placed on electronic systems. The basic elements of machine oriented programming are presented utilizing BASIC. Prereq.: "C" or better in Accounting 606 or equivalent. 4 q.h.

Upper Division Courses

703, 704, 705. *Intermediate Accounting I, II, III.* A comprehensive study of the theories and concepts underlying financial accounting. Emphasis on income determination, asset valuation, measurement of liabilities, corporate equity accounting, and changes in financial position. Current issues in financial reporting and pronouncements of authoritative bodies are studied. Prereq. for Accounting 703 is a "C" or better in Accounting 606. Prereq. for Accounting 704 and 705 is a "C". or better in Accounting 703. 4+4+4 q.h.

707. *Individual Income Taxes.* Taxes for the individual and those who operate, or plan to operate, a small business, farm or hobby. Major emphasis will be placed on federal income tax laws for the individuals. However, state and local income taxes, will be included. The students will be working with current year tax forms. (Not available for credit to Accounting majors.) Prereq.: Management 511 or Accounting 605. 3 q.h.

709. *Management Information Systems II.* Additional study in systems, design, implementation, internal control and use of data processing systems for gathering, analyzing and reporting business data. COBOL is utilized to emphasize the use of a high level language suitable for numerous business application. Prereq.: "C" or better in Accounting 610 or equivalent. 4 q.h.

711. *Basic Cost Accounting.* Study of cost accumulation for products manufactured under job order or continuous manufacturing techniques. Cost behavior and profit-volume relationships; cost structures for control and motivation; and, relevant costs for non-routine decision making are studied. Prereq.: "C" or better in Accounting 606. 4 q.h.

712. *Advanced Cost Accounting.* Standard and differential costing will be studied in depth. Compilation and preparation of budget data for managerial and administrative purposes is included. Prereq.: "C" or better in Accounting 711. 4 q.h.

721. *State and Local Taxes.* The theory applicable to state and local taxation concepts is reviewed in detail. Primary emphasis is concentrated on general and specific taxation principles in current use by state and local government units located throughout the United States. Prereq.: A "C" or better in Accounting 606. 3 q.h.

801. *Advanced Accounting.* Partnerships: formation, operation, and liquidation; installment sales; consignments; branch accounting, receivership; joint ventures; consolidations and merger. Prereq.: A "C" or better in Accounting 703, 704 and 705. 5 q.h.

808. *Auditing.* Auditing theory, practice and procedures are introduced and related to actual problems encountered in practice. Prereq.: "C" or better in Accounting 704, 705 and 711. 4 q.h.

813. *Federal Tax Theory.* The principles underlying our income tax laws pertaining to individuals. Emphasis is placed on items included or excluded in determination of income subject to tax, sales or exchanges, basis of property, bad debts, depreciation, depletion, tax credits, operating losses, etc. The students will prepare

federal tax returns on official forms. Prereq.: "C" or better in Accounting 704. 4 q.h.

814. *Federal Tax Practice.* Study of current federal tax law applying to business including payroll taxes, and income tax pertaining to partnerships and corporations. The student is trained in researching tax law; the student prepares business tax returns on official tax forms. Prereq.: "C" or better in Accounting 813. 4 q.h.

820. *Governmental and Funds Accounting.* Generally accepted accounting principles for not-for-profit and governmental organizations as established by the appropriately recognized, standard-setting bodies are discussed. Organizations include state and local governments, school districts, colleges and universities, hospitals, voluntary health and welfare organizations, and others. Prereq.: "C" or better in Accounting 606. 4 q.h.

840. *Accounting Internship Program.* Participatory accounting and professional business experience under the direction of University faculty members and employees of firms participating in the program. The candidates will be employed full-time for the entire quarter in the offices of the participating firms. 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.

Finance Sequence

Lower Division Course

600. *Personal Finance.* The course will emphasize the many diverse financial decisions which an individual will face. Areas such as taxes, insurance, home buying, and borrowing will be examined. 3 q.h.

Upper Division Courses

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 604. 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.: Finance 717. 3 q.h.

720. *Business Finance.* A study of the financial problems associated with the life cycle of 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 decision 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 604. 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 604. 3 q.h.

724. *Credit Management.* The nature, uses, and general functions of credit plus the credit instruments and legal aides 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, Management 604. 3 q.h.

730. *Investment Analysis and Management.* Studies the nature and investment merits of corporate bonds, preferred stocks, common stocks and options 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.: Finance 720. 4 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.: Finance 720. 4 q.h.

841. *Seminar in Investments & Security Markets.* An examination of the literature on efficient capital markets, corporate financial policy, and options with implications for security selection and portfolio management. Prereq.: Finance 730. 4 q.h.

870. *Small Business Entrepreneurship.* A study of the small business environment and the problems in starting a business. Students study how small businesses apply the managerial functions in using their resources. Prereq.: Senior standing or consent of the instructor. Crosslisted with Management 870 and Marketing 870. 4 q.h.

871. *Small Business Enterprise.* Students work with actual problems faced by small businesses under faculty supervision. Problems are defined, analyzed and researched. Recommendations are developed and presented to clients for evaluation. Prereq.: Management 870 or permission of the instructor. Crosslisted with Management 871 and Marketing 871. 4 q.h.

MANAGEMENT

Professors Hovey, Kasuganti, Kohn, Krishnan, Long, McMahon; Associate Professors Arlow, Daly, Guzell, Katz, Psenicka (Chairperson), Wolanin; Assistant Professors Dastoli, Granito, Karpak, Rakestraw, Sellaro.

The Department of Management offers courses in various business subjects which (A) complement those of other departments in the School of Business Administration; (B) Provide for the major/combined majors in (I) Industrial Management, (II) Management, (III) Transportation Management, (IV) Public Administration, and (V) General Administration; and (C) provide for the minor in Management.

The programs in the department are designed to prepare individuals for careers as managers/supervisors in business/industrial/transporation/public organizations. For those not majoring in one of these fields, the courses offered provide a knowledgeable background in management/supervision/administration of organizations.

The curriculum for a major in Management is 45 hours; Industrial Management major consists of 51 hours; Transportation Management major consists of 55 hours; combined major (Accounting and Finance, Management and Marketing) in General Administration is 45 hours; and the combined major (Accounting, Management, Political Science and Sociology and Anthropology) in Public Administration is 56 hours.

CURRICULA

All students in Management must take the department core requirements and the courses listed in their respective major. For University requirements, lower division tool requirements, and upper division core requirements, see Table of Courses in the General Requirements and Regulations section.

Department Core Requirements

Management 735, 737, 804

MANAGEMENT MAJOR — BEHAVIORAL TRACK (186 Quarter Hours for the Degree)

Accounting 711

Management 726, 890 and Upper Division Electives

Business Upper Division Electives

MANAGEMENT MAJOR — INFORMATION SYSTEMS TRACK (186 Quarter Hours for the Degree)

Accounting 709

Management 728, 761, 795, 825, 830, and Upper Division Electives.

INDUSTRIAL MANAGEMENT MAJOR (186 Quarter Hours for the Degree)

Accounting 711

Management 705, 795, 820, 851, Upper Division Electives

Business Upper Division Electives

TRANSPORTATION MANAGEMENT MAJOR (186 Quarter Hours for the Degree)

Accounting 711

Management 705, 746, 808, 816, Upper Division Electives

Finance 835

Marketing 847

Business Upper Division Electives

GENERAL ADMINISTRATION (COMBINED) MAJOR (186 Quarter Hours for the Degree)

Accounting Upper Division Electives

Finance 730, 835

Marketing 720, 815, 825 and Upper Division Electives

Management Upper Division Electives

Business Upper Division Electives

PUBLIC ADMINISTRATION (COMBINED) MAJOR (186 Quarter Hours for the Degree)

Accounting 721 or Upper Division Accounting Elective, 820

Economics 702, 822

Political Science 601, 718, 720, 721, 722

Management 880 or 895

Sociology 708, 711

MANAGEMENT MINOR (21-23) (Suggested Courses Include)

Management 725, 735, 737, 750, 789, 804, and 855

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.

604. *Legal Environment of Business I.* Various Sources of laws, basic legal reasoning and application. Emphasis to be placed upon basic legal concepts of contracts, labor, tax, anti-trust and business organizations, and their relationship to business and society. 4 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 622. 4 q.h.

714. *Legal Environment of Business II.* An in depth analysis of commercial law areas covered on the C.P.A. exam, with emphasis on sales, secured transactions, real and personal property, insurance, bankruptcy, and commercial paper. Prereq.: Mgt. 604 and Junior standing. 4 q.h.

719. *Personnel selection.* Review of current research in career planning. Emphasis on relationship of job interviewing to the staffing process. Teaches persons to conduct selection interviews. Prereq.: Mgmt. 725 or consent of the Instructor. 3 q.h.

725. *Fundamentals of Management.* This course emphasizes the basic principles of management rather than those involved in 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.

726. *Planning and Controlling.* An in-depth analysis of the relationship between planning and controlling as components of the managing process. Prereq.: Management 725. 4 q.h.

728. *Simulation Techniques in Business.* Introduces the students to the use of simulation techniques and their application in business. Several simple models representing situations in business and other areas which contain elements of risk or uncertainty will be adapted for computer simulations and the resulting outputs will be used for class discussion and evaluation. Prereq.: Accounting 610. 3 q.h.

735. *Communication for Management and Business.* The course analyzes communication and information processes as means for coordinating and controlling organizational activities. Analytical writing activities are required including a long, formal report. Prereq.: English 551 and Mgt. 725 or consent of Instructor. 4 q.h.

737. *Management Science.* An understanding of methods of management science from an executive or managerial viewpoint, emphasizing formulation of business problems in quantitative terms. Topics such as linear programming, dynamic programming, game theory, Monte Carlo method, probability theory, queueing theory, inventory theory, transportation method, and simulation will be discussed and evaluated. Prereq.: Math. 642, Accounting 610 and Economics 624. 4 q.h.

746. *Industrial Traffic Management.* The nature and function of the traffic manager in industrial organizations; classification, tariffs, and rate formulation, routines, transit privileges, carriers, terminal services, claims procedure, regulations 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.

750H. *Honors Human Behavior in Organization.* An honors course emphasizing wide reading and independent research, which studies human factors in administration. Emphasis is based 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, motivation group dynamics, and communication and group processes. Prereq.: Junior standing, completion of an introductory statistics course, Management 725, a cumulative grade point average of 3.00 or higher. 4 q.h.

761. *Information Systems for Management.* A study, from the manager-user point of view, of the application of the systems approach to design and understanding of dynamic organizations. Includes application of information theory and decision science. Prereq.: Management 725. 4 q.h.

770. *Small Business Management.* The problems of small business relative to personnel, control, finance, marketing, management, and administration in manufacturing, distributive, and service firms. Prereq.: Junior standing. 4 q.h.

789. *Operations Management I.* A study of current operations management theories and practices with emphasis on direction, planning, and control of production systems. Includes detailed analysis in such areas as materials management, work measurement, quality control, scheduling, maintenance, and forcasting. Prereq.: Management 725 and Economics 624. 4 q.h.

795. *Modeling Operations Management Systems.* The application of programming techniques to production problems. Emphasis is on the development of complete decision support systems useful in the production environment. Prereq.: Management 789. 4 q.h.

804. *Human Resource Management I.* Management and the human resource field; organization and jobs; employment and development of people. A review of applications of job design and analysis, human resource planning, recruitment and selection, equal employment opportunity legislation, training and development, career management. Human resource management theories and concepts are integrated into experiential exercises which simulate practical applications. Prereq.: Management 725 and 750. 4 q.h.

805. *Human Resource Management II.* Industrial relations; understanding and managing people; financial compensation; health and safety; the future of human resource management. A review of applications of the collective bargaining environment and process; motivation, participation, effective leadership, and quality of work life; developing and administering basic wage structure, incentive systems, and benefits programs; occupational safety and health, and compliance with related legislation. Case work and simulations. Prereq.: Management 804. 4 q.h.

808. *Transportation Modes.* Topics involving air, water, and commercial motor transportation are covered. Specifically questions of regulation, tariffs, insurance, documentation, terminal methods and procedures are covered. Prereq.: Mgt. 604 and 705. 5 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.

820. *Operations Management II.* Study of areas pertaining to the production control function such as inventory control, forecasting, aggregate planning, and scheduling. Prereq.: Management 789. 4 q.h.

825. *Micro-computers in Business.* The analyses of business micro-computer applications with emphasis on the design of personal decision support systems. Prereq.: Acctg. 610 and Mgt. 761. 4 q.h.

830. *Management Science II.* The use of Management Science techniques to solve complex business problems. Emphasis is placed on modeling and implementation of decision support systems and in particular the design of computer interfaces. Prereq.: Mgt. 737 and Mgt. 825. 4 q.h.

850. *Policy Formulation and Administration.* Analysis of typical problems faced by complex organizations. The course will integrate the concepts and techniques learned in the functional areas and apply them from the general manager's point of view. Prereq.: Management 725, 750, Marketing 703, Finance 720. 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 administration level or an industrial enterprise. Prereq.: Management 789. 3 q.h.

852. *Applied Time Series Analysis of Economic and Business Data.* An in-depth analysis of time series models and their applications to problems in economics and business. Emphasis on forecasting. Extensive use of standard computer programs. Prereq.: Econ 621 and 705. (Cross-listed with Economics 824) 4 q.h.

853. *Economic and Business Data Analysis.* An introduction to the applications of various data analysis techniques for confirming as well as exploring structural relationships among social and economic variables. Topics include interpretation of multiple regression and canonical correlation, principle component analysis, factor analysis and others. The course emphasizes the correct uses of these techniques and the analysis of computer printouts using computer-program packages. Prereq.: Econ. 621 and 705. (Cross-listed with Econ. 825.) 4 q.h.

855. *Business Ethics.* Analysis of ethical considerations involved in the management of a business in relation to society, stockholders, customers, employees, competitors, and government. Prereq.: Management 725 and 750. 3 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.

870. *Small Business Entrepreneurship.* A study of the small business environment and the problems in starting a business. Students study how small businesses apply the managerial functions in using their resources. Prereq.: Senior standing or consent of the instructor. Crosslisted with Finance 870 and Marketing 870. 4 q.h.

871. *Small Business Enterprise.* Students work with actual problems faced by small businesses under faculty supervision. Problems are defined, analyzed and researched. Recommendations are developed and presented to clients for evaluation. Prereq.: Management 870 or permission of the instructor. Crosslisted with Finance 871 and Marketing 871. 4 q.h.

880. *Special Topics in Management.* Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Senior standing in Management or consent of Instructor. May be repeated to a maximum of 8 q.h. 1-4 q.h.

890. *International Business.* Management problems of firms engaged in international business, including the strategy of foreign involvement and control of foreign activities. Emphasis on management issues unique to firms in international operations. Prereq.: Management 725 and 750. 4 q.h.

895. *Management Internship.* This course offers the student the opportunity to relate management theory to practice through on-the-job work experience with participating organization. Mandatory bi-weekly meetings with his/her faculty advisor will insure maximum learning from the experience. This program will be offered all four quarters of each academic year based on the availability of internships. A written evaluation of the job experience is required of the student. Prereq.:

A total of 20 hours of Management courses including 725 & 750 and departmental screenings and approvals. 4 q.h.

899.*Independent Study.*The development of a special topic of interest to the student under the direct supervision of a management faculty member. Credit hours vary according to the nature of the project. Prereq.: Management Core and permission of department chairperson. 1-4 q.h.

MARKETING

Professors Deiderick, Mamula, Mathews (Chairperson), Roussos, Seibold, Stoll, Wilson; Associate Professors Davis, Lang, Sekeres, Simmons; Assistant Professors Hashmi, Warren.

Marketing courses are designed to prepare a student for a career in areas related to the development, distribution, pricing, and promotion of goods and services whether it is in a business, nonprofit, or public organization. For those not majoring in marketing, the course offerings provide a knowledge of marketing as a management tool and functional area of the organization.

Marketing majors are offered in Industrial Marketing, Retail Marketing and Marketing Management.

A minor in Marketing consists of 21-24 quarter hours.

CURRICULA

All students in Marketing must take the department core requirements and the courses listed in their respective major. For university requirements, lower division tool requirements, and upper division core requirements, see Table of Courses in the General Requirements and Regulations section.

DEPARTMENT CORE REQUIREMENTS (FOR ALL MARKETING MAJORS)

Marketing 625, 709, 715, 720, 726, 815, 818 or 845, 825

INDUSTRIAL MARKETING MAJOR (186 Hours for the Degree)

Advertising 704

Marketing 843 and Upper Division Electives

RETAIL MARKETING MAJOR (186 Hours for the Degree)

Advertising 704, 705

Marketing 713, 731 or 733

MARKETING MANAGEMENT MAJOR (186 Hours for the Degree)

Advertising 704

Marketing 847 and Upper Division Electives

MARKETING MINOR (21-24) (Suggested Courses Include)

Marketing 625, 703, 709, 720, 815, 818 or 845

Lower Division Courses

525.*The World of Fashion.*Social, cultural and business aspects of fashion in apparel, home furnishings and food; careers in retailing of products which make up the near environment. Identical with H.E. 525. 2 q.h.

625.*Personal Selling.*Knowledge of goods; study of customers and their wants, buying motives and attitudes; planning a sale, meeting objections, closing the sale; problems in sales management, organization, planning, and research. 3 q.h.

635.*Fashion Experience.*A practical view of the fashion industry through lecture, library research, interviews with fashion industry professionals, and field trips. Prereq.: H.E. 525 Mktg 625. Identical with H.E. 635. 2 q.h.

Upper Division Courses

703.*Fundamentals of Marketing.*The nature of marketing activity, focusing on the individual firm managing its marketing efforts and its relation to the society and the world. Topics include the development of the marketing mix, marketing situations, physical distribution, pricing, and demand analysis. Prereq.: Junior Standing. 5 q.h.

709.*Retail Marketing.*Treats the field of retailing as a subset of the larger field of marketing, by stressing the application of marketing concepts, approaches, and methods to all types of retailing organizations. The entire marketing system is considered from the consumers' and retailers' viewpoint, in theories and practices. Prereq.: Marketing 703. 4 q.h.

713.*Retail Buying.*Study of principles and philosophy that determines excellence in merchandise selection. Management of buying functions, breadth of assortments, depth of stock and development of buying cycles. Gives ethical and legal consideration in buying. Suggests what to buy through consumer behavior, consumer wants, and sales experiences. Designed to provide mastery of the tools that will be used in buying, pricing, stock control, and the analysis of statistical data. Prereq.: Marketing 703. 4 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 625 and 703. 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 703. 4 q.h.

726. *Consumer Behavior.* Acquaints students with individual and group behavior as it relates to marketing consumer behavior, considered both from the standpoint of the marketing manager and from that of the individual as a consumer. The behavioral sciences serve as a background to provide standards for the social and human evaluation of current marketing activities. Topics covered include: the buyer as a problem solver; buying decision processes and models; measurement of promotional effectiveness and lifestyle analysis. Prereq.: Marketing 703. 4 q.h.

731. *Non-Textiles.* Designed to meet the needs of buyers, copywriters, training departments, comparison shoppers, and instructors in consumer and distributive education fields. The principle of planning, selecting, and preparing merchandise for promotion through display. The sources of raw materials, manufacturing processes, care, use, and selling points of the following types of merchandise are studied: paper products, leather products, furs, jewelry, metals, stones, and cosmetics. 4 q.h.

733. *Furnishings.* The study of principles and functions which encompass furnishings for the home and industry. Stress on the primary functions of buying and selling with emphasis on forecasting, planning, selecting, negotiating, pricing and recording of merchandise. Consideration is given to the entire furnishing's activity including raw materials, the finished product, quality, selling points, and government rulings. Prereq.: Mktg.703. 4 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.

757. *Shopping Center Development.* An examination of shopping centers from a marketing and development standpoint. Topics covered will include marketing strategies, site selection, promotions, tenant mix, and public relations. Prereq.: Marketing 703. 4 q.h.

775. *Fundamentals of Shopping Centers.* A general survey of the elements in the development of planned shopping centers. The history and social significance of planned shopping centers are considered, along with their present position and future directions. Prereq.: Marketing 703. 4 q.h.

809. *Techniques of Retail Merchandising.* Emphasis on merchandise planning, forecasting, sales, planning markdowns, planning stocks, calculating reorder quantities, planning and controlling expenses, and setting up goal figures as a guide to operations. A collection of up-to-date mathematical problems and cases faced by the retailer are analyzed in making managerial decisions. Prereq.: Marketing 709. 4 q.h.

815. *Marketing Research.* Introduction to the major areas of research marketing. Attention is given to problem definition, research design, gathering information and analysis to assist marketing management with the decision making process. Both empirical 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 703 and Economics 624. 4 q.h.

818. *Marketing Channels.* Behavioral and functional relationships with and between channel members are investigated. Coverage includes wholesaling, franchise systems, distribution policies, communications, power conflicts, pricing and legal constraints. Prereq.: Marketing 703. 4 q.h.

820. *Promotion Strategy.* 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.: Marketing 703. 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. 4 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.

842. *Special Topics in Marketing.* Topics will vary from quarter to quarter. Subject matter, number of credit hours, and prerequisites will be announced in advance of each topic. Not more than one *Special Topic* per quarter is permitted. Course may be taken twice with change of topic. 1-6 q.h.

843. *Industrial Buying.* A consideration of industrial buying from a purchasing management point of view. Problem areas of bids, control of quality, inventory control, maintaining sources, order points, and integration of the materials management functions with other activities of the firm, are examined. Purchasing, management developments in budgeting, capital equipment determinations, contract cancellations, ethics, make-or-buy decisions, legal aspects, negotiations, and

performance evaluation are discussed. Prereq.: Marketing 720. 4 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 703. 4 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 624. 4 q.h.

848. *Marketing and Social Responsibility.* Present marketing practices and their impact on the values of society and the impact of social and ethical trends upon marketing. Search for the consumers' interest, the social audits, marketing responsibilities, product safety, ecological considerations, legal restraints and pricing and sales practices. Prereq.: Marketing 703. 3 q.h.

850. *Marketing Internship.* Through employment with participating business organizations the student will receive professional marketing experience. Candidates will work for the entire quarter at a local business organization under the direct guidance of a faculty advisor. A student receives 4 quarter hours of credit for the internship. A paper will be due at the end of the course on the relationship of marketing theory and practices. 4 q.h.

865. *Shopping Center Operations.* A comprehensive review of the practices and procedures involved in the operation of shopping mall properties, including merchandising, maintenance, security, mall-tenant relations, and community relations. Prereq.: Marketing 755 or 757, or consent of instructor. 4 q.h.

870. *Small Business Entrepreneurship.* A study of the small business environment and the problems in starting a business. Students study how small businesses apply the managerial functions in using their resources. Prereq.: Senior standing or consent of the instructor. Crosslisted with Finance 870 and Management 870. 4 q.h.

871. *Small Business Enterprise.* Students work with actual problems faced by small businesses under faculty supervision. Problems are defined, analyzed and researched. Recommendations are developed and presented to clients for evaluation. Prereq.: Management 870 or permission of the instructor. Crosslisted with Finance 871 and Management 871. 4 q.h.

875. *Problems in Shopping Center Administration.* Current problems in shopping mall administration. Each student will be responsible for producing a project that includes problem definition, exploratory research, solution proposal, and presentation to a panel. Prereq.: Marketing 865 or consent of instructor. 4 q.h.

ADVERTISING AND PUBLIC RELATIONS

Advertising and public relations courses are designed for those students who plan careers in advertising and public relations and for those who desire to have a knowledge of advertising that would benefit them as they pursue a career in business, public, or nonprofit organizations.

A major in Advertising and Public Relations consists of 49 quarter hours.

In conjunction with the Art Department a combined major of 61 quarter hours is offered in Advertising Art.

A minor in advertising consists of 22 quarter hours.

CURRICULA

For university requirements, lower division tool requirements, and upper division core requirements, see Table of Courses in the General Requirements and Regulations section.

ADVERTISING AND PUBLIC RELATIONS MAJOR (186 hours for the Degree)

Advertising 704, 705, 706, 707, 708, 812, 813, 823

Public Relations 710, 750, 835

Business Upper Division Elective

ADVERTISING ART (COMBINED) MAJOR (186 hours for the Degree)

Advertising 704, 705, 707, 708, 823

Public Relations 710

Art 510, 602, 606, 623, 624, 625, 705, 727, 728

Marketing 815, 820

ADVERTISING MINOR (22 hours — Suggested Courses Include)

Advertising 704, 705 and Departmental Electives.

Advertising Sequence

Upper Division Courses

704. *Principles of Advertising.* A survey of advertising in the framework of modern business activities, the course explores advertising's role in business, advertising media, advertising messages, and planning and managing advertising campaigns. Prereq.: English 551. 5 q.h.

705. *Advertising Creative Strategy.* A study and application of the creative process to copywriting and graphic design in various media. Prereq.: Advertising 704. 4 q.h.

706. *Advertising Media Planning and Buying.* Planning, executing, and controlling of media buys are examined. Techniques of allocation of budget among print and electronic media are explored on national, regional, and local levels familiarizing the student with syndicated media resources. Prereq.: Advertising 704. 4 q.h.

707. *Advertising Management.* Principles and problem-solving techniques relative to the management of advertising are examined. Emphasis is on skill development in appraising factors which affect advertising decisions on messages, media, and budgets by analyzing markets, consumer behavior, and competitive conditions. Lecture, discussions, and case analysis are used to convey the above information. Prereq.: Advertising 704. 4 q.h.

708. *Advertising Research.* Introduction to the major areas of research in advertising including measurement of campaign effectiveness, message effectivness, and media effectiveness. The course acquaints the student with the basic principles, methods and techniques of advertising research including the principal sources of data used in the advertising industry. Prereq.: Advertising 704. 4 q.h.

811. *Direct Marketing.* An in depth investigation of direct marketing including mail order and direct response advertising. Measurability, accountability, lists, and the integration of direct marketing into the total marketing efforts are explored. Prereq.: Advertising 704. 4 q.h.

813. *Electronic Media Advertising.* The practices of the electronic media from an advertising standpoint are explored. Radio, television, cable, one-way interactive systems, and two-way interactive systems are investigated as advertising media. Media sales, writing, and production of commercials are discussed. Prereq.: Advertising 704. 4 q.h.

814. *Print Media Advertising.* The practices of the print media from an advertising standpoint are explored. Magazines and newspapers from both national and retail advertisers' perspectives are examined. Media sales, writing, and production of advertisements are discussed. Prereq.: Advertising 704. 4 q.h.

823. *Advertising Campaigns.* The application of fundamental theories and practices garnered in all the previous advertising courses to a specific advertising problem including the development and creation of a complete advertising campaign. Prereq.: Advertising 704, 705, 707, and 708. 4 q.h.

831. *Special Topics in Advertising and Public Relations.* Topics will vary from quarter to quarter. Subject matter, number of credit hours, and prerequisites will be announced in advance of each topic. Not more than one *Special Topic* per quarter is permitted. Course may be taken twice with change of topic. 1-6 q.h.

850. *Advertising Internship.* Practical business experience available to students in advertising under the direction of University faculty members and advertising department personnel in organizations, and public relations practitioners. The candidates will be employed a minimum of 20 hours per week during the quarter. Weekly campus conferences are required, and attendance at these conferences is mandatory. A written evaluation of the job experience is required by the student and the participating organization. Prereq.: Advertising 704, 705, 706, 707 and 708. 2.75 advertising and public relations average, 2.50 overall average, and approval of internship committee. 4 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.: English 551. 4 q.h.

750. *Public Relations Communication.* The course examines the writing and production of news releases, brochures, annual reports, speeches, visuals, business publications, and letters from a public relations standpoint. Prereq.: Public Relations 710 and English 622. 4 q.h.

835. *Public Relations Campaigns.* The application of fundamental theories and practices garnered in previous public relations courses to a specific public relations problem including the development of a complete public relations campaign. Prereq.: Public Relations 710 and 750. 4 q.h.

850. *Public Relations Internship.* Practical business experience available to students in advertising under the direction of University faculty members and Advertising Department personnel in organization, and public relations practitioners. The candidates will be employed a minimum of 20 hours per week during the quarter. Weekly campus conferences are required, and attendance at these conferences is mandatory. A written evaluation of the job experience is required by the student and the participating organization. Prereq.: Public Relations 710, 750 and 835. 2.75 Advertising and Public Relations average, 2.50 overall average, and approval of internship committee. 4 q.h.

The School of Education

David P. Ruggles, Dean

ORGANIZATION AND DEGREES

The School of Education offers programs and activities for preparing individuals for a variety of educational positions in schools, colleges, industry, business, welfare, and governmental agencies. It is organized to offer curriculums and/or services for the preparation of: (1) teachers in early childhood, elementary, middle, and secondary school classrooms; (2) personnel to serve in various levels of school and administrative positions; (3) supervisory personnel for curricular development and instructional improvement; (4) teachers and other personnel in special education; (5) individuals for a wide variety of guidance and student personnel positions; (6) professional educators in colleges; community, technical, and vocational schools; and governmental agencies.

The School of Education is essentially an upper division school comprising five departments: Foundations of Education; Elementary Education and Reading; Counseling; Administration and Secondary Education; and Special Education. It cooperates with the College of Arts and Sciences, the School of Business Administration, the College of Applied Science and Technology, and the College of Fine and Performing Arts in preparing teachers for both public and private schools.

Youngstown State University teacher education programs are accredited by the Ohio Department of Education, the North Central Association of Colleges and Secondary Schools, and the National Council for Accreditation of Teacher Education. These programs are subject to the sections of the Ohio law and regulations governing teacher education and certification. The School of Education is responsible to serve as the recommending agent for all Youngstown State University graduates who wish to qualify for state of Ohio certification as well as for certification in other states.

Professional courses are offered leading to teacher certification and to the Bachelor of Science in Education degree.

A student may select a major in Elementary Education, Secondary Education, or Special Education.

Elementary Education majors may pursue specific courses in early childhood and reading.

Secondary Education majors may select from many teaching fields or may specialize in areas such as art, health, physical education, music, and reading.

Special Education majors may select from three program options: Educable Mentally Retarded (EMR), Learning Disabilities/Behavior Disorder (LD/BD), and Mildly, Severely, Profoundly Mentally Retarded (MSPR). Candidates for the LD/BD certificate must hold, or be eligible to hold, another standard teaching certificate.

Prospective teachers may also be certified on receiving degrees earned in the College of Arts and Sciences, College of Fine and Performing Arts, School of Business Administration, and the College of Applied Science and Technology, providing they meet requirements for admission to upper division status in the School of Education and complete the proper teacher education programs.

Students who wish to qualify for a Bachelor of Science in Education degree must enroll in the School of Education. Admission to Upper Division Status in the School of Education is obtained upon satisfactory completion of the following requirements:

1. 90 quarter hours of credit
2. Grade of C or better in Ed. 501 and Speech 554
3. A 2.50 cumulative grade point average
4. Completion of English 550 and 551 with at least a B average
5. Completion of Education 710 with a grade of C or better
6. Completion of pre-professional skill tests in mathematics, reading and writing
7. Completion of hearing and speech screening examinations
8. Completion of career goal statement
9. Approval from advisor and/or department chairperson

Admission must be granted before upper division professional education courses for certification may be taken. Admission is by permit only.

Objectives of Teacher Education at Youngstown State University

The School of Education endeavors to provide for its students:

1. An understanding of the theoretical knowledge about human development, behavior, and learning.
2. The competencies to translate the knowledge about the learner and the learning processes into the appropriate teaching behaviors associated with the fostering of student learning and genuine human relationships.
3. A command of subject matter to be taught and the related fields of inquiry with the ability to use this knowledge in explaining various societal phenomena.
4. A knowledge of instructional materials and media essential for implementing a variety of teaching strategies.
5. Skill in the acquisition of inquiry techniques basic to generalizing knowledge and applying problem-solving approaches to the relevant social issues existing in a pluralistic society.
6. An appreciation of the values and feelings essential for working with individuals and the ability to develop empathetic relationships in a wide variety of professional and social roles in diverse educational agencies.
7. An understanding of and commitment to the highest level of professional and ethical treatment of individuals in the exercise of their influence.

Requirements for the Degrees

Bachelor of Science in Education

It is the student's responsibility to fulfill graduation requirements for the appropriate degree. These consist of:

1. The pre-college or preparatory courses for each degree. Typically, these are completed at the high school level. Prior to admission to Upper Division, the student must remove any deficiencies by a process described in the General Requirements and Regulations section of this catalog.
2. The General Education requirements to be completed in the University are explained in the General Requirements and Regulations section of this catalog.
3. Completion of a minimum of 186 quarter hours of credit with a grade point average of at least 2.50 overall and a 2.67 grade point average in student's certification areas and professional education courses (each computed separately including

transfer hours) with no less than a C grade in all major certification and professional education courses.

4. The Bachelor of Science in Education degree is earned by all students enrolled in the School of Education. It is awarded only to students who qualify for a teaching certificate. Exceptions to this policy can be made only by the Dean of the School of Education.
5. Completion of the National Teachers Examination or other State prescribed licensing examination.

The curricula leading to the degrees are designed to be completed in four academic years. A student who is willing and able to carry heavier loads successfully or to attend four quarters annually, may finish in less than four years.

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

Majors in Teacher Education

The following designations and abbreviations indicate student majors.

Please be careful and consistent when designating the major

1. Elementary Education
   (If studying for El. Cert. Only)
2. Elementary — KP
   (If Studying for Both El. and Kindergarten-Primary Certificates)
3. Secondary
   (Use the Word "Secondary" Followed by the Teaching Field Major. Thus: Secondary — English or Secondary — Math., Etc.)
4. Special Subject (Secondary Education Subject Field — Special Certificate)
5. Special Education — Elementary Education (For those seeking certificates in both an area of Special Education* and in Elementary Education)
6. Special Education — Secondary Education
   (For those seeking certificates in both an area of Special Education* and in Secondary Education. Follow the word "Secondary" by a teaching field major)
7. Special Education
   (For those seeking a certificate in Special Education* only)

Requirements for Admission to Upper Division Status and Certification Candidates

The student must complete at least 90 quarter hours of college work with a grade point average of at least 2.50. Competence in written and spoken English is required for each candidate in order to qualify for upper division status in the School of Education. English competence may be shown by completion of English 550 and 551 with at least a "B" average or satisfactory completion of English 601.

Education 501, Introduction to Education, includes a thorough discussion of requirements for admission to the School of Education and of issues relating to certification. It should therefore be taken during the freshman year. A grade of "C" or better is required for this course. It is a prerequisite to any other course in education.

Education 710, Educational Measurement and Guidance, concentrates on measurement and evaluation procedures and is a foundation course for future professional education studies. It should be taken during the sophomore year and a grade of "C" or better is required in this course for admission to the School of Education upper division.

Admission to the University does not guarantee admission to upper division status in the School of Education or to candidacy for a teaching certificate. The student must apply for admission to upper division status in the School of Education upon the accumulation of 90 quarter hours of lower division credit. This application is submitted through the Office of the Assistant Dean, School of Education. Admission to the school grants permission to enroll in the upper division education courses.** Before approval to take upper division courses is given, the student is enrolled in the appropriate school, in accordance with the degree or special area involved as follows:

All B.S. in Ed. 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 school awarding the particular degree, but they 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 usually be met by the end of the sophomore year. Later qualification does not justify waiving any course prerequisites or planned sequences, and usually results in prolonging the period beyond the usual four years.

The candidate for the provisional high school certificate must complete the requirements for a major in at least one teaching field; the student may prepare for additional teaching fields either as minors or majors. The student should observe carefully the requirements in the various fields as stated in pamphlets available from the School of Education.

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*Special Education certification areas currently include EMR, MSPR and LD/BD. However, these designations are not included in the legal majors list.

**Students in other schools may elect Education 708, 710, 873, 874 or 879 with the permission of the School of Education.

An undergraduate transfer student may be admitted to the School of Education if in good standing in the teacher education program at the previous school, provided that the former school is NCATE-approved.

Requirements for Student Teaching

Application for a student teaching assignment must be filed with the Student Field Experiences Office by March 1 of the year preceding the academic year in which student teaching is to be completed. The student must register for the proper number of hours for the respective student teaching course(s) during the open registration period preceding the student teaching term. Students anticipating more than one teaching certificate will need to register for more than one student teaching course. To qualify for a student teaching assignment the student must have: A) senior status; B) a G.P.A. of at least 2.50; C) completed prescribed prerequisites for student teaching and D) an average of 2.67 in the major/certification area and professional education courses (each computed separately with no grade less than a C) with the course sequence substantially completed. No other course work may be taken concurrently with student teaching unless approved in advance by the Director of Student Teaching. Student teaching is a full time ll week course which may deviate somewhat from the University calendar depending on the calendar of the assigned school.

Requirements for Certification

Initial Certification. The Dean of the School of Education has the authority to recommend to the Ohio State Board of Education, and other certification agencies, those Youngstown State University graduates who qualify for certification in any teacher education program offered by the University. The degrees earned in the School of Education will fulfill certification requirements for kindergarten, primary, elementary, and secondary teaching certification. Students earning degrees in schools other than the School of Education must complete all requirements of the teacher education program in order to be certified. Students may qualify for a four-year provisional certificate in: elementary, secondary, and special fields. All candidates for any 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 or colleges in accordance with the specific requirements for the degree desired. However an overall undergraduate grade point average of 2.50 and 2.67 in the major field(s) and professional education courses must have been earned if the student is to be recommended for certification by Youngstown State University irrespective of the type of degree received.

Certification for Post Baccalaureate Students Seeking Initial Certification

Post-Baccalaureate students seeking initial certification:

1. will need to be admitted and advised in the manner as undergraduate students;
2. must meet the requirements for admission and upper division status in the School of Education;
3. will need to complete the same general education, teaching field, and professional education requirements as the undergraduate program. In those cases where it can be clearly documented, a program equivalency can become a part of the certification program.

Certification in a Second Teaching Field

Post-baccalaureate and undergraduate students seeking certification in a second teaching field will need to satisfy the approved academic program as stated in the catalog under the section "Teaching Fields." The same quality point requirements apply to second teaching fields as those for initial certification.

Some detailed information pertaining to certification is as follows:

1. The candidate for the elementary certificate may also be certified in kindergarten, EMR, LD/BD, or reading on completion of the appropriate course sequence.
2. The candidate for the secondary education certificate must major in a subject matter teaching field. Additional fields may be added if the required number of hours for certification have been completed.
3. Special subject field candidates are certified to teach the subject appearing on the certificate in grades kindergarten through 12, unless otherwise noted on the certificate or stated in the laws and regulations governing certification. The special subject fields are visual art, health education, languages, music and physical education.
4. Teaching certificates are processed by the certification secretary in the School of Education and the application form is available in the Office of the Assistant Dean of the School of Education. The student must file an application by the beginning of the quarter in which the requirements are to be completed.

Advisement

All prospective teachers are advised by the academic advisors in the School of Education and by the faculty of the school and department in which their major is located. Students seeking advice in the School of Education should make appointments in advance with the academic advisors in the Office of Student Personnel Services.

Secondary education candidates, and candidates in the special certification fields of art, music, health education, and physical education, are advised by the faculty members in their major departments; in addition they are assigned advisors in the School of Education who are responsible for questions dealing with certification and professional education courses.

The student whose needs are not completely met by existing conventional programs may wish to investigate and apply for the individualized curriculum program (see General Requirements and Regulations). However, those students on I.C.P. must fulfill all requirements for upper division status.

Courses of Instruction and Curriculums

Each curriculum leads to an Ohio 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.

ELEMENTARY EDUCATION AND READING

Professors Ameduri, Braden, Chrisp, Roderick, Throop; Associate Professors Scott, Tribble (Chairperson); Assistant Professors Beary (Chairman), Feist, Leake.

The curriculum in Elementary Education at Youngstown State University is a four-year program.

The student who wishes to qualify for a Bachelor of Science in Education degree in Elementary Education enrolls in the School of Education. All Elementary Education students are advised by an advisor in the Office of the Assistant Dean of the School of Education. The advisor is available for advising and counseling students concerning the courses essential for admission to professional education course status. 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 professional course status in the School of Education. Such status must be granted before qualifying courses for certification may be taken.

Teacher Education Centers. A junior level student must apply for participation in one full-time or part-time teacher education center (TEC) held in a local school, taking a block of required methods courses. In a full-time TEC the student is required to spend the entire day in the school for ten weeks. In the part-time TEC the student will spend two full days per week in the school for ten weeks. Students must complete a TEC experience prior to student teaching. Admission to a TEC is limited to students who need all courses taught at the school site. Prerequisite: Ed. 705. Students seeking validation in reading should enroll in the Reading TEC, Spring Quarter. Prerequisite: Ed. 812. Enrollment in the teacher education centers is limited. University faculty presents theory and supervises the teaching lessons in the teacher education centers. Applications are due two quarters prior to participation. They may be obtained from the Elementary Education Department.

Lower Division Courses

510. *Reading and Study Skills.* Development of college reading, vocabulary comprehension, and study skills which aid in academic achievement. Includes laboratory experience. 3 q.h.

612. *Reading Laboratory.* Designed for adult readers who wish to improve their reading rates, skills, comprehension, vocabulary, and study skills. Emphasis will be on the reading of technical materials and the utilization of contemporary reading machines to increase speed in reading. 3 q.h.

630. *Creative Experiences in the Pre-School.* Organization and administration of the educational program of the nursery school. Particular attention given to curriculum and program planning. 4 q.h.

Upper Division Courses

(Open only to students who have been admitted to upper division status in the School of Education.)

702. *Instructional Media.* (See Foundations of Education.)

705. *Professional Laboratory Experiences: Elementary.* Observational and participatory experiences in actual elementary school situations under the direction of regular school teachers and administrative personnel. Students work as "teachers' aides" in assigned schools for one full school day (or two half-days) each week. Minimum time must be at least six hours weekly, but the full school time involved in two half-day or one full-day schedules must be met even if it exceeds six hours. In addition, one hour of campus conference is required weekly. Course should be scheduled during the quarter following admission to upper division status in the School of Education and should precede the basic methods courses. Required of all regular elementary candidates. Grading will be CR/NC. Prereq.: Admission to upper division in the School of Education or consent of the Dean of the School of Education. 3 q.h.

713. *Teaching of Mathematics.* Principles and content in learning elementary school mathematics and their application to effective teaching; group and individual assessment techniques. Required for elementary school certification. Prereq.: Admission to upper division status in the School of Education. 4 q.h.

714. *The Teaching of Social Sciences in the Elementary School.* An Introduction to the "new social studies." Investigating its rationale, methods, materials and the acquisition of the supportive instructional strategies and knowledge required of the classroom teacher; implications for multicultural education. Required of all elementary candidates. Prereq.: Admission to upper division status in the School of Education. 4 q.h.

715. *The Teaching of Science in the Elementary School.* Principles in the learning of science and their application to effective teaching. Group assessment techniques. Required of all elementary candidates. Prereq.: Admission to upper division status in the School of Education. 4 q.h.

723. *Career Education — Elementary School.* A study of philosophy and objectives of elementary career education curriculum with emphasis on a review of the State Department Vocational Education's World of Work Model Programs, Kindergarten Through Grade Six. Students will be required to spend a portion of class time observing the World of Work Program in a school setting. An examination of how World of Work is integrated in social studies education will be conducted. The development of simulation games and individualized learning materials relevant to the World of Work curriculum may be required. May be applied to the social studies elementary concentration area. 3 q.h.

762. *Human Relations in the Elementary School (K-8).* Application of human relations principles to skills and abilities which are effective in improving human relations among students, between teachers and students, and between teacher and parent. Prereq.: Counseling 761. 2 q.h.

801. *Purposes and Practices of the Elementary School.* An analysis of contemporary purposes and practices with emphasis on origins, purposes, strengths and weaknesses. Identification of developmental and special needs, pupil progress and management techniques. Required of all elementary education candidates. Prereq.: Ed. 705. 4 q.h.

812. *Language Arts I.* The principles and methods of teaching reading in the elementary school with emphasis on diagnostic/prescriptive teaching. Required of all elementary candidates. 4 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.

814. *Language Arts III.* An advanced course in unconventional teaching strategies with emphasis on non-book approaches. May include field experiences. Prereq.: Ed. 812. 3 q.h.

815. *Seminar in Elementary School Science.* A critical study of current developments in objectives, methods, materials and evaluation in science education as they affect the elementary science program. The course will include discussions, field trips, demonstrations and laboratory work. This course may be used as an elective. Prereq.: Ed. 715. 3 q.h.

816. *Diagnosis and Remediation of Elementary School Mathematics.* An indepth study of diagnosis and remediation as it affects the elementary school mathematics program. It will include discussions, field trips, demonstrations, and laboratory work. Applicable to undergraduate and graduate programs. Required of all elementary education candidates. Prereq.: Ed. 713. 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, pre-school and K-3. A study of historical, philosophical, sociological and psychological implications of early childhood education. 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, pre-school and K-3. Required for a kindergarten-primary certificate. Preparation of a workable environment for the young child 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, pre-school and K-3. 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.

841. *Supervised Student Teaching.* Prereq.: Ed. 705, 708, 710, 713, 714, 715, 801, 812, 813, completion of the TEC requirement, senior status and approval of the Chairperson of the Elementary Education Department. 1-15 q.h.

874. *Gifted and Talented Programs.* Survey of theoretical foundations of contemporary programs and models; historical development; issues, evaluation, and research; differentiated programming procedures and problems. Identical with Administration and Secondary Education 874. Prereq.: Educ. 705. 4 q.h.

878. *Teaching Gifted and Talented Students.* Theory and organization of curriculum with design and integration of content subjects including strategies and identification of resources and materials. Identical with Administration and Secondary Education 878. Prereq.: Ed. 874. 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. Required for all elementary education candidates. Prereq.: Ed. 812. 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.: Ed. 812. 3 q.h.

883. *Secondary School Reading.* The teaching of reading in the secondary school. Survey of methods, materials, and programs. The course may include teaching experience in a school setting. This course meets the requirement in reading for certification in teaching English and may be applied toward validation of a high school certificate for teaching reading. Prereq.: Ed. 704. 4 q.h.

884. *Reading Internship.* Supervised experience in reading diagnosis and instruction, including developmental reading and related language arts. Students are expected to spend six hours per week in

a designated school and to attend a two hour seminar. Prereq.: Ed. 812, 881, 882. 4 q.h.

890. *Elementary Education Workshop.* A workshop provides intensive study and related activity in one of the following elementary curricular areas: mathematics, science, reading, social studies or language arts. 890 Elementary Education Workshop may be repeated. Prereq.: Educ. 705. 1-4 q.h.

894. *Audio-Visual Media.* A synthesis of the theory, practice and values of communicating with audio-visual media. Demonstrations utilizing film-strips, 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. Required of all elementary candidates. Cross-listed with Secondary Education. 4 q.h.

ELEMENTARY EDUCATION CURRICULUM

Changes in requirements for Elementary Education are being developed. The student is obligated to keep in touch with the advisor in order to know of these changes.

Curriculum for the Bachelor of Science in Education Degree With Major in Elementary Education

FIRST YEAR	Cr. Hrs.
English 550, 551	8
Speech 554	4
Geography 640	4
History 605 or 606	4
History 655 or 656	4
Biology 505	4
Math. 515, 516	9
HPE 590	3
Music 521	3
Education 501	4
HPE Activity	1
	48

SECOND YEAR	Cr. Hrs.
English 650, 708	9
History 661, 662, 663, or 611	4
Physical Science	4
Science Elective	4
Psychology 560	4
Social Studies Electives	9
Music 621	4
Humanities	4
HPE 622	1
Elective Hours May Vary	

THIRD AND FOURTH YEARS

Professional Education Courses:

	Cr. Hrs.
Education 705 — Prerequisite to All Professional Education Courses	3
Education 708, 710, 713, 714, 715, (COUNS. 761), 762, 801, 812, 813, 816, 881, 702	46
Education 841 (Prerequisite 705, 708, 710, 713, 714, 715, 801, 812, 813, TEC)	15
Education 830, 831, 832 (If K-P Certification Desired)	9

General Education Courses:

	Cr. Hrs.
Speech 705	3
HPE 721, 722	6
HPE Activity	1
Music 721	3
Art 760, 767	7
Psychology 755	4
Elective Hours May Vary	

Electives to complete 186-189 quarter hours.

Electives may be taken at any time throughout the four years.

Possible Specialization Areas for Elementary Education

All students majoring in Elementary Education are required to complete one of the following specialization areas: (1) English; (2) Fine Arts; (3) Foreign Language; (4) Health and Physical Education; (5) Language Arts; (6) Mathematics; (7) Science; (8) Social Studies; (9) Reading Validation. A "C" average is required in the specialization area.

1. *English.* Required courses are Comp. 550, 551, Speech 554, English 650, 708, and Speech 705. Twenty-one (21) additional q.h. of English are needed which must include at least one (1) upper division course (700 level).

2. *Fine Arts.* Required courses are Music 521, 621, 721, Art 760, 767 and Art/Music 709, 710, 711. An additional eight (8) quarter hours are required; If Music 521 was waived, eleven (11) additional quarter hours are needed.

3. *Foreign Language.* Must total 36 q.h. all in the same language. Twenty-four (24) q.h. in one foreign language if the student has two high school credits in the same language. In all other cases the student must first take 12 q.h. of elementary language and then take 24 additional q.h. all in the same language.

4. *Health and Physical Education.* Required courses are HPE 590, 622, Two (2) Activities, 721 and 722. An additional twenty-one (21) quarter hours are required. The following are suggested for electives: HPE 501, 502, 503, 504, 506, 516, 530, 531, 540, 545, 601, 680, 690, 762, 780, 790, 791, 792, 797.

5. *Language Arts.* Required courses are Comp. 550, 551; Speech 554, 705; English 650, 708; Education 812, 813, 814, 881, 882. Twelve additional quarter hours are required and must be selected from the following: Education 702, 825, 896; Art 822; Speech 760; English 709, 710.

6. *Mathematics.* Required courses are Math 515, 516, 617, 618. An additional nine (9) quarter hours are required and must be selected from courses above 511.

7. *Science.* Must total thirty-six (36) quarter hours. Additional Mathematics courses beyond Math 515 and 516 may be substituted for not more than five (5) quarter hours. Students selecting this concentration area may take courses in Astronomy, Biology, Chemistry, Physical Geography, Geology, and Physics. Biology 505 is required.

8. *Social Studies.* Required courses are Geography 640, History 605 or 606, 655 or 656, and 661, 662, 663, or 611 (total of 16 quarter hours). An additional twenty-one (21) quarter hours are required. These hours may be taken in History, Geography, Sociology, Economics, Political Science or Social Science, and Psychology. Education 723 may also be used for this area.

9. *Reading Validation.* (K-12). Education 812, 881, 882, 883, 884.

FOUNDATIONS OF EDUCATION

Professors Kirschner, Leck, Pascale and Swan; Associate Professors Baldino (Chairman) and Haims; Assistant Professors Pitman and Tokar.

Lower Division Courses

501. *Introduction to Education.* Designed to offer students a common core of experiences facilitating learning about schools, their functioning and their various programs. Examination of requirements for admission to the School of Education, issues relating to certification, and some basic principles and issues in the economic, historical, sociological, and philosophical foundations of American schooling. 30 hours of field experiences are required. Prerequisite for any other course in education unless waived by the Dean of the School of Education. 4 q.h.

702. *Instructional Media.* Instructional modules for the devlopment of educational media materials used in the classroom and procedures for operating equipment such as filmstrip, slide, overhead, motion picture and opaque projectors. One hour of lecture and two hours of laboratory a week. Prereq.: Admission to upper division status in the School of Education. Required for all candidates for teaching certificates. 2 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.

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, 872, 873, 875, 876, 877, 879, 889 or 899.

708. *Education and Society.* The school as an interactive institution. Examination of interactions of home, religion, state, economic and cultural norms with schooling plans, problems and procedures. A field experience of 24 hours is required to aid students in further development of an understanding of the effects and functions of formalizing education in American society. 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. Maximum 15 q.h. 1-4 q.h. Each.

879. *Educational Sociology Seminar.* Students will be required to participate in an extensive field project designed to give them 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.

889. *Small Computer Applications in the Classroom.* Focus on computer awareness, literacy, and the implications of learning theory on computer application. Students will develop the knowledge and skills

necessary to utilize and integrate micro-computing into the learning environment. 3 q.h.

899. *The Community School.* The basic principles in the organization and administration of community school activities. Observations of community schools and their varied programs together with textual and research materials. The Flint Community Schools will receive particular attention. Open to non-majors. 3 q.h.

COUNSELING

Professors Cliness (Chairman), DiRusso and Richards; Assistant Professors Convery, Faiver, Gill-Wigal, and Levitsky.

The department offers work toward the M.S. in Education degree with specialization in various pupil personnel services, visiting teacher, and guidance and counseling. Students may qualify for state certification in school counseling and visiting teacher. A complete listing of program options and course descriptions is presented in the YSU Graduate School Catalog.

The Guidance Department offers a limited number of undergraduate elective courses for students planning to become teachers or counselors.

Upper Division Courses

761. *Human Relations and Guidance Skills for Teachers.* Approaches to improving the interpersonal aspects of the learning climate within the classroom. Primary focus is upon facilitating mutual acceptance and understanding among students and teachers, but consideration is given also to amelioration and prevention of behavior problems. Prereq.: Ed. 705. 2 q.h.

821, 822. *Seminar in Guidance and Counseling.* Study of selected topics chosen by staff, e.g.: career guidance, counseling process, and other contemporary issues in school personnel work. May be repeated for different topics. 1-4 q.h.

823. *Career Education and Career Guidance.* Study of public school career education and career guidance programs; the career education continuum, legislation relating to vocational programs, structures of vocational school programs, historical development, and principles of vocational education and vocational guidance. Also a survey of concomitant services: distributive education, manpower, programs, and placement. 3 q.h.

825. *Group Processes in the School.* An introduction to group activities applicable to the needs of students in the school setting. This would include a study of group processes and group dynamics for social and personal problem solving a well as in the general area of individual and group behavior. Also, a study of programs that provide for counselor-teacher cooperation in the development of groups in the classroom. 3 q.h.

879. *Counseling With Gifted/Talented Students and Their Families.* A study of guidance and counseling practices related to the developmental, social and personal difficulties often experienced by gifted/talented children and their families. A field study component is also included. Prereq.: Ed 874, Ed 878, or permission of instructor. 4 q.h.

ADMINISTRATION AND SECONDARY EDUCATION

Professors Boggess, Douglass, Glasser, Hill, Longmuir, McCracken, Philipp and Sample; Associate Professors Funk, Phillips and Salvner; Assistant Professors Hoover (Chairman), Kittleson, Leake and McNierney; Instructor Elias.

Youngstown State University offers courses leading to high school certification in many fields. Courses and advisors for the major are provided by the 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.

Similarly, the School of Education assumes full responsibility for advisement and approval of matters dealing with certification requirements (regardless of the degree involved) and for graduation requirements for the Bachelor of Science in Education degree.

Secondary education graduates must major in a teaching field. The required professional education courses are designed to meet 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 major upon approval of the Chairman of the Department of Administration and Secondary Education and the Dean of the School of Education.

Several professional education courses have field components which require the student to spend various amounts of time in local elementary and secondary schools, as well as meetings on campus. Education 501, 704, 706L, 708, and 842 have such requirements. Listed below are the professional education courses leading to secondary certification along with information concerning when they should be taken:

Ed. 700	Foundations of Reading — must be taken concurrent with Ed. 704; not required of English or Comp. Comm. majors.
Ed. 704	Professional Lab — must be taken concurrent with Ed. 700. Prerequisite for Ed. 706.
Ed. 702	Instructional Media — must be taken prior to or concurrent with Ed. 706; not required of Home Ec. majors.
Ed. 706	Principles of High School Teaching — must be taken concurrent with Ed. 706L.
Ed. 706L	Principles of High School Teaching Lab — must be taken concurrent with Ed. 706; not required of P.E. majors.
Ed. 708	Education and Society — may be taken at any point in the sequence.

Ed. 710 Educational Measurement and Guidance — required for admittance to the upper division sequence.

Ed. 730 Exceptional Children in the Regular Classroom — may be taken at any point in the sequence; not required of special education majors.

Ed. 800 Special Methods — may be taken any time after Ed. 704 and before 842.

Ed. 842 Student Teaching — normally taken at end of sequence. Ed. 700, 702, 704, 706, 706L, 708, 710 and 800 are prerequisites.

The Department of Administration and Secondary Education offers teacher education center programs in conjunction with cooperating school districts whereby interested students may complete the professional course sequence, including student teaching, in three consecutive full-time quarters. These programs operate off-campus, usually require the full-time attendance of participating students at the cooperating school, and usually allow for only a minimum of nonprofessional education courses to be taken during this period. The number of students who can be accepted in such programs is limited and interested individuals should seek information in advance from the department chairman.

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.

TEACHING FIELDS

All prospective Secondary Education students are advised to read carefully the section relative to certification requirements which begins on the first page of the School of Education entry in this catalog.

Art (Major for Special Certificate, Grades K-12). For requirements see Department of Art, College of Fine and Performing Arts.

Art Major for High School Teaching or Additional Teaching Field). For requirements see Department of Art, College of Fine and Performing Arts.

Biological Science (Major) Chem. 515, 516, 517 (12 q.h.) required hours but not included in major. Biol. 506, 507, 508, 661, 700, 701, 721, 762, 765, 770, 771, 775, 780, 790, 790L plus electives to total 53 q.h. 800G Special Methods required for B.S. in Ed. The following are required of Biology majors working for a B.S. degree and are recommended for those working for an A.B. or B.S. in Ed. degree. They are not included in the 53 q.h. Chem. 719, 720, 721, Phys. 501, 502, 502L, 503, 503L, Math. 550, 714.

Biological Science (Additional Teaching Field) Chem. 515, 516, 517 (12 q.h.), Biol 506, 507, 508 (12 q.h.), Biol. 661 or 790; Biol 770 or 780.

Bookkeeping Basic Business (Available only as single teaching field for Accounting or General Business majors in the School of Business, or as an additional teaching field for those having a major teaching field in another secondary school area) Bus. Tech. 580, 581, 582, 684, BET 513, 706 and 710, Econ. 520, Home Ec. 780 and Educ. 800B and 800D (35 q.h.).

Business Education Comprehensive (major only) Business Education and Technology 510, 513, 522, 615, 620, 640, 641, 704, 706, 710, 810, 820, Bus. Tech. 500 or 560, 540, 580, 581, 582, Economics 520, 621, Home Economics 780, Ed. 889, 800B, 800P, 800D (90 q.h.). Any substitutions require permission of Business Education and Technology Chairman, and/or the Chairman of the Department of Secondary Education. Students should choose a major option. Major options available are Shorthand (BET 630, 830, 831), Accounting (B.T. 680, 683, 684), and Data Processing (CPT 607, 608 and 613). Students should also select 12 q.h. in major electives. Major electives include BET 720, BT 530, 541, 641, Econ. 624, Geog. 650.

All Business Education students must pass proficiency exams in teaching field(s) before being approved for student teaching. For vocational certification requirements, see advisor in Business Education and Technology.

Chemistry (Major) Chem. 515, 516, 517, 603, 604, 719, 720, 721, 739, 740, 741, 729 (49 q.h.). Check catalog for Mathematics and Physics prerequisites. Special Methods, Ed. 800G.

Chemistry (Additional Teaching Field) Chem. 515, 516, 517, 603, 604, 719, 720, 721 (34 q.h.).

Comprehensive Communication (Major only, English or Speech) 90 q.h. minimum are required in the content fields. The candidate may major in English or Speech and complete the additional content requirements as indicated below. Alternative courses in the same department may be substituted in the concentration areas and journalism upon approval of the chairman of the department in which the course is offered. Minimum course distribution: major in English or Speech (45 q.h. English; 48 q.h. Speech), Concentration in English for Speech Major (28-29 q.h.), Concentration in Speech for English Major (31-32 q.h.), Journalism (15 q.h.), Reading (7 q.h.). Total 100 q.h. (English) 102 q.h. (Speech). If major is English, the Speech concentration should be: Speech 530 or 640 560, 654, 658, 661, 670, 762, 801 (beyond the School of Education's requirement for Speech 554). If major is Speech, the English concentration should be: Engl. 600 (4 q.h.), Engl. 610 or 631 (4 q.h.), Engl. 650 (5 q.h.), Engl. 740 (4 q.h. — to be taken concurrently with Ed. 704 and Ed. 883 Fall Quarter only), one upper division course in American literature, two upper division courses in British literature (7-8 q.h.), total 28-29 q.h.

In Journalism: Engl. 622, 820 or 623 or 716, 721L and 815, total 15 q.h. Reading: Ed. 882, 883 (7 q.h.). Methods should be Ed. 800E for English majors and Ed. 800C for Speech majors.

Data Processing (Additional Teaching Field Only). (Option I. Math: Comp. Sci. 600, 601 (8 q.h.) and Comp. Sci. 620 (4 q.h.) or 650 (2 q.h.) or 651 (2 q.h.) or 700 (4 q.h.) Total 10-12 q.h.) (Option II. Business Education: BE&T 513 and 710, Comp Tech. 607, 601 and Ed. 800D Total 13 q.h.). (Option III. Industrial Engineering: Ind. Eng. 642, 715 and 727. Total 12 q.h.). (Option IV: College of Applied Science and Technology: Comp. Tech. 500, 601 and 607. Total 12 q.h.)

Driver Education. (Additional Teaching Field only, Department of Administration and Secondary Education) Ed. 750, 751 (9 q.h.).

Earth Science (Major*) Astron. 504, 608; Chem. 515; Geog. 630; Geol. 505, 506, 602, 604, 607, 701, 705, plus 20 q.h. from Geology and other Science electives (see advisor). (70 q.h.). Special Methods, Ed. 800G.

Earth Science (Additional Teaching Field*) Astron. 504; Geog. 630; Geol. 505, 506, 602, 607, and one of the following: Geol. 604, 701, 705. (30 q.h.).

Economics (Major) Econ. 520, 621, 622, 624, 701, 705, 709, 710, 712, 802, 811 and either 824, 825, 850 or 853, Hist. 714 (48 q.h.). Special Methods, Ed. 800S.

Economics (Additional Teaching Field) Econ. 520, 621, 622, 701, 712, 802, 811 (26 q.h.), upper division elective in Economics. Hist. 714 (34 q.h.)

English (Major Only). All English majors must show evidence of having written two (2) critical papers of approximately 3000 words each in any upper division literature course offered by the English Department; must be concerned with a literary subject, deal principally with primary sources, be documented according to the MLA Handbook, and have received grades of at least C. The student may choose any papers that meet these requirements, or may request that one be assigned in any upper division literature course in which the student enrolls, even if such a paper is not a regular part of the course work. The student must be sure that the papers are recorded in the student's file in the English Office. Beyond the freshman sequence the English major must complete 45 q.h., including the following: Engl. 600; Linguistics: Engl. 755 and 757 or 758 or 859; American literature: Engl. 771, 772, 776, 815, or 871; Genre: Engl. 777, 778, 866, 868, or 895; Historical period in British literature: Engl. 885, 887, 888, or 891; Major figures: Engl. 760, 761, 783, or 860; Writing: Engl. 622, 740, 746, or 747 — which total 31-32 q.h. remaining 13-14 q.h. may be made up of any 600, 700 or 800-level English, Journalism, Linguistics or Humanities courses (except 625, 650, 820) but must include 2 world literature courses plus Ed. 883, Ed. 704 and Engl. 740 in special block offered once a year, and Ed. 800E (3 q.h.).

French (Major Only) 45-48 q.h. in college above the elementary level (i.e., two years of French in high school or 501, 502, 503 in college), including 710, 750 and at least one 800-level literature course. Required: 601, 602, 615, 655, 675, 705, 706, 710, 750, 771, 772, plus electives in 800-level courses. Ed. 800G.

General Science (Additional Teaching Field only must have a major in a science area) Biol. 506, 507; Chem. 515, 516; Geol. 505, 506, 607; Phys. 501, 502, Ed. 800G (35 q.h.).

**Geography* (Major) consists of a minimum of 48 quarter hours, of which at least 30 q.h. must be earned in upper division courses. Required courses are 503, 640, 650, 660, 750U, 813, and either 820, 821 or 822 Special Problems. Special Methods, Ed.800G. See Geography Department for required distribution of courses.

Geography (Additional Teaching Field) requires a minimum of 30 q.h., at least 12 q.h. must be earned in upper division courses. See Geography Department for required distribution of courses.

German (Major Only) 45 q.h. in college above the elementary level (i.e., two years of German in high school or 501, 502, 503 in college). 601, 602, 610, 615, 618, 620, 730, 750 or 751, 755, 874, plus electives in 800-level courses, Ed. 800G.

Health Education (Major for Special Certificate, Grades K-12) for requirements see Department of Health and Physical Education, College of Arts and Sciences.

Health Education (Additional Teaching Field, High School Only) Area A: Biology 551, 552 (8 q.h.). Area B: HPE 680, 701, 794, 892 (12 q.h.). Area C: HPE 601, 690, 730, 791 (15 q.h.). Area D: At least one of the following: Biology 560, HPE 896, Home Ec. 551, Psychology 707. HPE 590 and three activity credits are required but are not applicable to the minor.

History (Major Only) 52 q.h. taken from the following groups: (Group A) Hist. 605, 606, 655, 656; (Group B) Three courses from Hist. 601, 630, 701, 702, 704, 706, 708, 710, 712, 713, 714, 717, 718, 720, 721, 725, 726, 732, 733, 736, 738, 739, 741, 742, 743, 744, 747, 748, 762, 801; (Group C) Three courses from Hist. 699, 752, 753, 754, 755, 758, 759, 761, 762, 765, 766, 767, 768, 769, 777, 778, 779, 780, 781, 782, 790, 791, 792, 793, 850, 851; (Group D) Three Courses from Hist. 611, 661, 662, 663, 727, 728, 729, 770, 771, 772, 776, 789, 796, 797, 799, 820, 821, 822, 860.

Home Economics (Major Only) Home Econ. 506, 508, 531 or 532, 550, 551, 601, 604, 605, 652, 706,

*Astronomy and Geology courses satisfy the sicence requirement for either A.B. or B.S. degree.

**Although YSU offers this major as an area for certification, it is recommended that an additional teaching field also be completed. See an academic advisor in the School of Education.

731, 762, 763, 770, 771, 780, 800, 850, 852, 853, 864. (73 q.h.).

Italian (Major Only) 45 q.h. in college above the elementary level (i.e., two years of Italian in high school or 501, 502, 503 in college). 601, 602, 708, 709, 720, 721, 730, 731, plus electives in 800-level courses. (Italian 640 may count as an elective if the topic is approved), Ed. 800G.

Journalism (Additional Teaching Field Only), English Journ. 622, 623, 624, 716, 721L, 815 and 820 (27 q.h.). At least one elective from the following: 717 or 625 or 721L (repeat). Total 30-31 q.h.

Latin (Major) 45 q.h. in college above the elementary level (i.e., two years of Latin in high school or 501, 502, 503 in college). 601, 602, 707, 708, 709, 804, 809, plus electives in 800-level Latin courses and/or other courses subject to the approval of the department chairman. Ed. 800G. The inclusion of Ancient Greek is recommended.

Latin (Additional Teaching Field) 30 q.h. in college above the elementary level (i.e., two years of Latin in high school or 501, 502, 503 in college). 601, 602, 707, 708, 709, 804, 809, plus electives in 800-level Latin courses and/or other courses subject to the approval of the department chairman, Ed. 800G.

Mathematics (Major) Math. 571, 572, 673, 674, 721, 722, 725, 730 or 732, 743, 751, 752 (42 q.h.), Com. Sci 600 or 610 (4 q.h.), electives from 700- and 800-level courses (8 q.h.). Special methods should be Ed. 800M or 800G.

Mathematics (Additional Teaching Field) Math. 571, 572, 673, 725 or both 721 and 722, 730, or 732 (22-24 q.h.), Electives (enough to bring total to 32 q.h.) Selected from 721, 722, 725, 743, 841, 751, 752 or other 700- and 800-level courses applicable to the Math major with approval of advisor.

Music (Major for Special Certificate for Grades K-12, Bachelor of Music in the School of Music). For requirements see School of Music, College of Fine and Performing Arts.

Physical Education (Major for Special Certificate, Grades K-12). For requirements see Department of Health and Physical Education, College of Arts and Sciences.

Physical Education (Additional Teaching Field, High School Only) Biol. 551, 552, H&PE 501, 502, 506, 516, 545, 595, 601, 767, 768, 780, 795, 850. Electives, two additional activity courses (2 q.h.), at least four additional credit hours of non-activity course work. (39 q.h.)

Physics (Major) Phys. 510, 610, 610L, 611, 611L (14 q.h.), Electives in Physics (31 q.h.). This major does not apply to the B.S. degree but only to the A.B. or B.S. in Ed. degree. B.S. in Ed. candidates must take Chem. 515, 516 (8 q.h.). The following Mathematics courses are prerequisite or concurrent for Physics majors. Math. 571, 572, 673, 674, 705. Special Methods, Ed. 800G.

Physics (Additional Teaching Field) Phys. 510, 610, 610L, 611, 611L, 704, 705, 705L. Chem. 515, 516, (30 q.h.) Math. 571, 572 are prerequisites.

**Political Science* (Major) Pol. Sci. 601, 604, 660, 702, 704, 721, 722. In addition 6 q.h. must be taken in each of the following areas: American Government, Comparative Government, International Relations, Political Theory. Students interested in this area should consider the Comprehensive Social Studies field which includes Political Science as a teaching area.

Political Science (Additional Teaching Field) Pol. Sci. 601, 640, 660, 702, 704, 721, 722 (24 q.h.), Upper division electives in Political Science (6 q.h.).

Reading (Additional Teaching Field Only, Department of Elementary Education and Reading) Ed. 812, 881, 882, 883, 884, (18 q.h.). Offered at the Teacher Education Center.

Russian (Major Only) 45 q.h. in college above the elementary level (i.e., two years of Russian in high school or 501, 502, 503 in college). 601, 602, 615 (or 604), 715, 716, 765, 770, 808, 809, plus electives in 800-level Russian courses and/or courses in Russian area studies subject to the approval of the department chairman.

Science Comprehensive (Major Only, Advisement in School of Education) Astron. 504, 608 (8 q.h.), Biol. 506, 507, 508, 780, 790, 790L (21 q.h.), Chem. 515, 516, 517, 603, 719, 720, 721 (29 q.h.), Geol. 505, 506, 602, 607, 701, or 705 (22 q.h.). Physics sequence 501, 502, 502L, 503, 503L (12 q.h.) or Physics sequence 510, 610, 610L, 611, 611L (14 q.h.). Ed. 800G.

Social Psychology* (Major) Psych. 560, 613, 614, 615, 700, 702, 755, 756, 800, 802, 845, (42 q.h.), Elective (3 q.h.).

Social Psychology (Additional Teaching Field**) Psych. 560, 615, 700, 701 or 800, 708, 709, 756, 802, 845, (33-34 q.h.).

Social Studies Comprehensive (Major Only, Department of Political and Social Science). The Comprehensive Certificate is valid for History (30 q.h.) and other social science fields below in which 18 q.h. have been completed. A minimum of 90 q.h. is required and at least 8 q.h. in each field below are required. The student should consult the University catalog under Social Studies to determine the difference between the certification program and the requirements for the major

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*Although YSU offers this major as an area for certification, it is recommended that an additional teaching field also be completed. See an academic advisor in the School of Education.

**Ed. 710, Psych. 614 or any other basic course in basic descriptive statistics is a prerequisite for Psych. 615. Psych. 800 should be taken after all Psychology courses except Psych. 845 with which it may be taken concurrently. Psych. 845 should be taken after completion of all other Psychology courses or in the last quarter. The elective must be an upper division course applicable to the Psychology major.

(Economics 19 q.h.), Soc. Sci. 502 (3 q.h.), Econ. 520, 621, 622 (10 q.h.). upper division electives (6 q.h.) (Geography, 18 q.h.) Geog. 640, 650 (8 q.h.), Electives (10 q.h.). (History 32 q.h.) Hist. 605, 606, 655 or 656, any one of the following: Hist. 611, 661, 662, 663 (16 q.h.). Upper division electives (16 q.h.). (Political Science, 18 q.h.) Soc. Sci. 503 (3 q.h.), Pol. Sci. 601, 640 or 660 (8 q.h.) 704, 722 (6 q.h.), Electives to complete (18 q.h.). (Sociology, 18 q.h.). Social Science 501 (3 q.h.) Soc. 600, 700, 707 (15 q.h.). (Anthropology, 18 q.h.) Soc. 602, 711, 712, 782, 783, Ed. 800S.

**Sociology* (Major) Soc. 500, 600, 701, 751, 760 (22 q.h.) plus 23 additional q.h. selected from the Departments of Sociology, Anthropology, and Social Services. These must include at least one course in each of these areas: Social Problems, Social Organization, Urban and Community Problems, and Family and Marriage. Students interested in this area should consider the Social Studies Comprehensive field which includes sociology as a teaching area.

Sociology (Additional Teaching Field) Soc. 500, 600, 700, 705, 707, 751, 760 (32 q.h.).

Spanish (Major Only) 45 q.h. in college above the elementary level (i.e., two years of Spanish in high school or 501, 502, 503, or 500 ABC in college), including Spanish 705, 706, 718, 719, plus at least one 800-level course. 601, 602, 615, 655, 705, 706, 718, 719, 725, 726, plus electives including at least one 800-level course, Ed. 800G.

Speech (Major for High School Teaching or Additional Teaching Field) Fundamental processes: Speech 603, 606. Theory and history of Speech: Speech 530, 540, 560, 581, 640. Forms of Speech: Speech 580, 654, 658, 661, 670, 762, 801. Special Methods Ed. 800C required. Total 50 q.h. beyond the School of Education's requirement for Speech 554.

Stenography-Typing (Additional Teaching Field Only) BET 506, 521, 522, 620, 641, 810, 630, 830, 831, 704, 510, Ed. 800P (33 q.h.).

Typewriting (Additional Teaching Field Only) BET 521, 522, 620, 641, 810 (11 q.h.).

Vocational Business and Office Education All requirements for Business Education comprehensive plus the following courses, BET 850, 851, and one year of related work experience.

General University and Professional Education Requirements

Required courses for a high school provisional certificate are listed below. In addition to the major teaching field, additional teaching field (if chosen), and electives, the following courses are required: Ed. 501, 700, 702, 704, 706, 706L, 708, 710[1], 730, 800, 842 or equivalent[2] (45 q.h. including 710), Psych. 560, 709 (8 q.h.), Engl. 550, 551 (8 q.h.), Speech 554 (4 q.h.), Humanities[3] (8-18 q.h.), Science and Mathematics[4] (12-22 q.h.), Social Studies[5]* (16-22 q.h.), H&PE 590 and three one-quarter-hour activity courses (6 q.h.).

Upper Division Courses

(Open only to students who have been admitted to upper division status in the School of Education.)

700. *Foundations of Reading in the Secondary School.* A study of the rationale, principles, and techniques of improving the reading skills of secondary school students, including a survey of specialized reading materials in various subject fields. The course is required for all secondary education students, except English and Comprehensive Communication majors, who take Ed. 883 instead. Prereq.: Must be taken concurrent with Education 704. 2 q.h.

704. *Professional Laboratory Experiences: High School.* Observational and participatory experiences under the direction of regular high school teachers and administrative personnel. Students work as "teachers' aides" in assigned schools for one full school day (or two half-days) each week. Minimum time must be at least six hours weekly, but the full school time involved in two half-days or one full-day must be met even if it exceeds six hours. In addition, one hour of campus conference is required weekly. Course should be scheduled during the first quarter following admission to the School of Education and should precede Education 706. Required of all regular high school and special teaching certificate candidates. The grading option for this course will be CR/NC. Prereq.: Admission

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*Although YSU offers this major as an area for certification, it is recommended that an additional teaching field also be completed. See an academic advisor in the School of Education.

[1]This course is not required if a comparable course is included in teaching field.

[2]Equivalents in student teaching course and variability of quarter hours to satisfy certification areas are: Ed. 843. Supervised Student Teaching: Visual Art, Gr. K-12; Ed. 845. Supervised Teaching: Health, Gr. K-12: Ed. 846. Supervised Student Teaching: Physical Ed., Gr. K-12. A student will register for 15 q.h. of student teaching in the secondary certificate area unless the certificate area is in combination with a special education certificate area. If a combination is sought, the required number of quarter hours is determined by the respective departments.

[3]Humanities. The candidate must have completed 8 q.h. 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, Speech Communication and Theatre or the School of Music. For purposes of certification, at least one course in two of the following program areas is required: (1) Fine Arts, (2) Philosophy, (3) Theological Studies.

[4]Astronomy, Biology, Chemistry, Geology, Physics, and Mathematics to be taken in a minimum of two departments. One course must be in Mathematics. A minimum of 8 q.h. must be in Science, a maximum of 10 q.h. in Mathematics.

[5]Social Studies (Department of Economics, Geography, History, Political Science, Psychology, Sociology/Anthropology) are to be taken in a minimum of two departments. 8 q.h. of the 16 will have been taken in Psych. 560 and 709. The remainder must be in a field other than Psychology.

*A combined total of 46 q.h. must be taken in Humanities, Science and Mathematics, and Social Studies.

to upper division status in the School of Education, consent of the Dean of the School of Education. 3 q.h.

706. *Principles of High School Teaching.* Motivating, instructing and managing classes with students of varying cultural and ability backgrounds. Working with disruptive students. Rights and responsibilities of teachers and students. Videotaped micro-teaching, analysis of classroom behavior. Secondary school curriculum. Taken concurrently with Ed. 706L. Prereq.: Education 704. 4 q.h.

706L. *Principles of High School Teaching Lab.* A ninety clock hour teaching experience involving simulation, gaming, role playing, tutoring, small group instruction, and classroom teaching. Students are assigned to area schools 6 to 9 hours per week. Taken concurrently with Ed. 706. Prereq.: Education 704. (Not requiired of P.E. majors). 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.

800B. *Techniques of Teaching Basic Business Subjects.* Includes demonstration and practice of up-to-date techniques. Prereq.: Junior standing, Home Ec. 780, BET 706, Econ. 621. 2 q.h.

800D. *Techniques of Teaching Accounting and Data Processing.* Includes demonstration and practice of up-to-date techniques. Prereq.: Junior standing, BET 710, Acct. 606. 2 q.h.

800G. *Special Methods.* A study of the problems involved in the teaching of different high school subjects. Each student specializes in the subject of his main interest. Observation of teaching in secondary schools, reports, and term paper may be required. This course is prerequisite to Education 842, Student Teaching. Prereq.: Education 704 and senior standing. 3 q.h.

800P. *Techniques of Teaching Office Practice and Office Machines.* Includes demonstration and practice of up-to-date techniques. Prereq.: Junior standing, BET 510, 513, 615, 620, 820. 2 q.h.

826. *Teaching Intensive and Cooperative Office Education.* Organization, administration, implementation, and evaluation of Intensive and Cooperative Office Education programs at the secondary and adult education levels. Selection, instruction, curriculum, and placement of vocational students. Also listed as BE & T 826. Prereq.: ED 706 and 706L. 4 q.h.

842. *Supervised Student Teaching: High School.* Prereq.: Senior status and completion of Education 700, 702, 704, 706, 706L, 708, 710 and 800 or the equivalent methods course in the subject field; 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 requirements below C; and the approval of the Chairman of the Department of the student's major. 1-15 q.h.

843. *Supervised Student Teaching: Visual Art, Grades K-12.* Prereq.: Education 700, 702, 704, 706, 706L, 708, 710, Art 724 and 760, 767, 768, senior status and approval of the Chairman of the Art Department. 1-15 q.h.

844. *Supervised Student Teaching: Music, Grades K-12.* Prereq.: Education 700, 702, 704, 706, 706L, 708, 710. Music 511, 715, 716/717, 815, 823; senior status and approval of the Director, Dana School of Music. 1-15 q.h.

845. *Supervised Student Teaching: Health, Grades K-12.* Prereq.: Education 700, 702, 704, 706, 706L, 708, 710 (or HPE 860); HPE 680, 701, 721, 794, and 892; senior status and approval of the Chairman of the HPE Department. 1-15 q.h.

846. *Supervised Student Teaching: Physical Education, Grades K-12.* Prereq.: Education 700, 702, 704, 706, 708; HPE 680, 750, 766, 767, 768, 780, 795, 860; senior status and approval of the Chairman of the HPE Department. 1-15 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.: consent of instructor and Education 822 or 833. 4 q.h.

857. *Diagnosis and Treatment of Reading Disabilities: 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.: Education 856 or consent of instructor. 4 q.h.

874. *Gifted and Talented Programs.* Survey of contemporary gifted and talented programs and models; historical development; issues, evaluation, and research; differentiated programming for the gifted and talented—procedures and problems. Identical with Elementary Education 874. Prereq.: Educ 705. 4 q.h.

878. *Teaching Gifted and Talented Students.* Theory and organization of curriculum with emphasis on the integration of content subjects in a design appropriate for education of the gifted and talented; includes strategies and identifications of resources and materials. Identical with Elementary Education 878. Prereq.: 874 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.

884. *Internship in Reading.* Supervised experience in reading diagnosis and instruction, including both developmental and remedial pupils, in area schools. Students will teach two half-days a week in the school reading centers. A two-hour seminar will meet on campus once a week. Prereq.: Education 882, 883, 856, 857 and consent of instructor. 4 q.h.

885. *Teaching Strategies I.* Improving teaching skills of elementary and secondary in-service and pre-service teachers. Emphasis is on clarifying and extending concepts. Prereq.: Consent of instructor or junior standing. 3 q.h.

886. *Teaching Strategies II.* Improving teaching skills of elementary and secondary in-service and pre-service teachers. Emphasis is on interpreting data, developing valid conclusions based on inference, and extending such conclusions to generalizations. Prereq.: Educ. 885. 3 q.h.

887. *Teaching Strategies III.* Improving teaching skills of elementary and secondary in-service and pre-service teachers. Emphasis is on helping students transfer or apply generalizations and learned knowledge to comparable situations. Prereq.: Educ. 886. 3 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.
1-6 q.h. (15 Maximum)

894. *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. Prereq.: Upper division or Graduate status. 4 q.h.

SPECIAL EDUCATION

Professors Dunsing (Chairman) and Smith; Associate Professors Hoops and Nickelsburg.

The Department of Special Education offers three teacher certification programs, approved by the Ohio State Department of Education.

The programs are Learning Disabilities and Behavior Disorders (LD/BD), Educable Mentally Retarded (EMR), and Moderately, Severely, and Profoundly Retarded (MSPR).

One or more of the approved certification areas may be elected within a four-year program of studies leading toward the Bachelor of Science in Education degree. All undergraduate special education students are served by academic advisors in the Office of the Assistant Dean of Education. These advisors are prepared to advise and counsel students concerning the requirements for their admission to "upper division status" at which time they become eligible to enroll in professional education courses.

Those students already possessing a bachelor's degree who wish to become certified in one of the special education programs should seek advisement from the chairman of the department.

Special Education Programs

Learning Disabilities and Behavior Disorders (LD/BD). Many children with low average or higher intelligence cannot function within a normal educational setting because of severe learning or adjustment problems. They need unique, specialized programming designed to help them towards normal achievement. Professional educators in this field are widely sought, and may function as teachers, diagnosticians, consultants, supervisors, or LD tutors. Candidates for the LD/BD certificate must either hold a standard teaching certificate, or earn one concurrently.

Educable Mentally Retarded (EMR). Mildly retarded (developmentally handicapped) individuals need programs stressing basic academic, independent living, and vocational skills. Professional educators in this field are also widely sought, and may function as teachers, consultants, or supervisors.

Moderately, Severely, and Profoundly Retarded (MSPR). MSPR (multiply handicapped) individuals need programs stressing training in self-care, perceptual-motor, communication, socialization, and work skills. In Ohio, such individuals are to be found mostly in separate schools operated by county boards of mental retardation.

Upper Division Courses

(Open only to students who have been admitted to upper division status in the School of Education.)

730. *Exceptional Learners in the Regular Classroom.* Characteristics, adjustment problems, and special needs with emphasis upon educational solutions. The law and its implementation: placement, programming, due process, and resources available to the regular classroom teacher. 2 q.h.

731. *Education of Young Handicapped Children.* Developmental and behavioral characteristics, laws, standards, and programs. Screening and observation procedures. Learning styles and play activities. Remediation strategies for specific learning and behavioral problems. Encouraging parent involvement. Prereq.: Education 630, Home Economics 531 and 532, Psychology 755. 3 q.h.

802. *Education of Exceptional Children.* A survey of the problems and issues in the education of exceptional children and their characteristics and needs. Field observation required. Prereq.: Junior standing (formerly 732). 4 q.h.

833. *Education of Mentally Retarded.* Description, classification, development, and personal social adjustment of mentally retarded individuals. Survey of community resources, service delivery systems, and the impact of current legislation. Field observation required. 4 q.h.

834. *Education and Training of Moderately, Severely and Profoundly Retarded.* Curriculum planning, teaching methods, and instructional materials for moderately, severely, and profoundly retarded, or developmentally disabled. A minimum of ten hours of classroom observation and participation are required. 4 q.h.

835. *Classroom Management for Exceptional Individuals.* Management of the exceptional person's behavior; adaptations of the classroom environment to facilitate learning and personal social adjustment. Communicating effective management programs to parents. 4 q.h.

836. *Education of Multiply-Handicapped Individuals.* Identification and intervention in critical areas of development for individuals with physical handicaps, sensory deficits, or communication disorders. Developing objectives, planning and implementing adapted curricula in consultation with interdisciplinary specialists. 4 q.h.

839. *Supervised Student Teaching: Moderately, Severely and Profoundly Retarded, or Developmentally Disabled.* Prereq.: Educ. 802, 833, 834, 835, 836; senior status and approval of the Chairman of the Special Education Department; not to be taken for less than eight-week period; see requirements for student teaching under School of Education. 12-15 q.h.

848. *Supervised Student Teaching: Educable Mentally Retarded (EMR), Grades K-12.* Prereq.: Educ. 705, 708, 710, 812, 833, 835, 851, 852, 853; senior status and approval of the Chairman of the Special Education Department. Not to be taken for less than seven-week period. See requirements for student teaching under School of Education. 10-15 q.h.

849. *Supervised Student Teaching: Learning Disabilities/Behavioral Disorders (LD/BD), Grades K-12.* Prereq.: Educ. 705, 708, 710, 812, 835, 852, 853, 863, 866, 867; senior status, hold or be eligible to hold an Ohio Standard Teaching Certificate in some other teaching area, and approval of the Chairman of the Special Education Department. Not to be taken for less than seven-week period. See requirements for student teaching under School of Education. 10-15 q.h.

851. *Social Studies and Social Skills for Mentally Retarded.* Study of individual problems, curriculum units, guidance and planning, preparation of instructional materials, and participation in local schools. Prereq.: Education 833, 852, 853, and 835. 4 q.h.

852. *Language Arts Methods in Special Education.* Principles, practices, materials, and aids for teaching language arts in Special Education. Diagnostic and evaluative procedures; individual problems; techniques, curriculum units, guidance, planning; tutoring and participation. Prereq.: Education 812 and 833 or 863 recommended. 4 q.h.

853. *Arithmetic Methods in Special Education.* Principles, practices, materials, and aids for teaching arithmetic in Special Education. Diagnostic and evaluative procedures; individualized instructional techniques; observation, tutoring, and participation. Prereq.: Education 833 or 863 recommended. 4 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; observation of local employers and programs in local schools. Prereq.: Education 833 and six hours of special education methods or equivalent. 3 q.h.

863. *Learning Disabilities and Behavior Disorders.* A developmental orientation to learning and behavioral problems. Designed to enable the teacher to recognize and understand the complex factors related to etiology and to current functioning. The contributions of various non-educational disciplines are related to the learner's social adjustment and to academic programming. Should follow Ed. 861. 4 q.h.

864. *Teacher-Parent Consultation.* Special problems faced by parents of exceptional children; techniques of reporting to parents and gaining their cooperation. 3 q.h.

865. *Workshop in Special Education.* Intensive study and related activities in one or more of the following special education curriculum areas: trainable mentally retarded, educable mentally retarded, learning disability/behavior disorder, multi-handicapped. May be repeated if content is different. 1-6 q.h.

866. *Clinical Teaching of Children With Learning Disabilities and Behavioral Disorders.* Educational diagnostic procedures are used to develop a comprehensive assessment of a child's current functioning, and to develop an individualized educational plan (IEP) which includes strategies for managing behaviors. Prereq. or Co-Req.: Ed. 863. Formerly 862. 4 q.h.

867. *Practicum in Learning Disabilities/Behavioral Disorders.* Intensive experiences with pupils identified as benefiting from a learning disability/behavior disorder program; diagnosis and evaluative teaching strategies and materials; individualized and group instructional techniques. Prereq.: Ed 852, 853, 863, and 866. 4-6 q.h.

868. *Independent Study in Special Education.* Individual work under special education staff guidance; curriculum development or special education areas; individual problems in community agencies or schools. Prereq.: Education 802, 833 or 863, or equivalent. May be repeated to maximum of accumulative total of 6 q.h. 1-6 q.h.

CERTIFICATION PROGRAMS IN SPECIAL EDUCATION

An undergraduate student seeking certification in special education (EMR, MSPR or LD/BD) must

complete a specified series of general education courses in addition to the upper division (professional education) courses designed to meet state certification standards. Most students prefer to earn two (or more) certificates, i.e., either in special and elementary education or in special and secondary education. In the case of the certification program in learning disabilities and behavior disorders, a combined program is mandatory, since the certificate cannot be granted independently of another standard certificate.

I. Curriculum in Special Education and Elementary Education

A. General Education Requirements

Courses	Cr. Hrs.
Ed. 501 Introd. to Educ.	4
Engl. 550 Basic Comp. I	4
Engl. 551 Basic Comp. II	4
Engl. 650 Amer. Lang.	5
Engl. 708 Child. Lit.	4
Speech 554 Classrm. Spch.	4
Speech 705 Spch. Prob. Chn.	3
Humanities Elective	4
Music 521 Introd. Music	3
Music 621 Music Apprec.	4
Music 721 Mus. Ed.	3
Art 760 Sch. Arts Prim.	4
Art 767 Sch. Arts Intmed.	3
Biol. 505 Biol./Mod. World.	4
Physical Sci. Required	4
Elective Sci. Required	4
Math. 515 Math. El. Sch. I	5
Math. 516 Math. El. Sch. II	4
Psych. 560 Gen. Psych.	4
Psych. 755 Child Psych.	4
Geog. 640 Introd. Geog.	4
Hist. 605 or 606 U.S. Hist.	4
Hist. 655 or 656 West. Civ.	4
Hist. 611, 661, 662, or 663 Non-Western Civ.	4
Electives in Soc. Studies	9
HPE 590 Health Educ.	3
HPE 622 Motor Anal.	1
HPE Activities (Elective)	2
HPE 721 Elem. Hlth. Ed.	3
HPE 722 Elem. Phys. Ed.	3

B. Elementary Education Requirements

Courses	Cr. Hrs.
Ed. 702 Instructional Media	2
Ed. 705 Prof. Lab Exper.	3
Ed. 708 Social Found. Educ.	4
Ed. 710 Ed. Meas./Guid.	4
Ed. 713 El. Arith.	4
Ed. 714 El. Soc. Studies.	4
Guid. 761 Hum. Rlns./Guid.	2
Ed. 762 Hum. Rlns. El. Sch.	2
Ed. 801 Purp./Pract. El. Sch.	4
Ed. 812 El. Lang. Arts I	4
Ed. 813 El. Lang. Arts II	3
Ed. 816 Diag./Rem. El. Math.	3
Ed. 881 Corrective Reading	4
Ed. 841 St. Tchg. El. Ed.	9

C. Special Education Requirements:

Students must complete a block of core courses in Special Education, plus specialization courses in LD/BD, EMR or MSPR.

1. **Core Courses in Special Education:** Ed. 715, 835, 852, and 853 constitute the field-based STEP experience offered in fall and winter quarters.

Courses	Cr. Hrs.
Ed. 802 Educ. Excep. Chn.	4
Ed. 863 Lrng. Disab./Beh. Dis	4
Ed. 864 Tchr.-Parent Consult.	3
Ed. 715 El. Sci. (Special)	4
Ed. 835 Clasrm. Mgt. Excep. Indiv.	4
Ed. 852 Lang. Arts Spec. Ed.	4
Ed. 853 Arith. Meth. Spec. Ed.	4

2. **Learning Disabilities & Behavior Disorders Courses**

Ed. 866 Clin. Tchg. LD/BD	4
Ed. 867 Pract. LD/BD	6
Ed. 849 St. Tchg. LD/BD	12

3. **Educable Mentally Retarded Courses**

Ed. 833 Tchg. Ment. Ret.	4
Ed. 851 Soc. Stud./Skills	4
Ed. 855 Occup./Job Trng.	3
Ed. 848 St. Tchg. EMR	12

4. **Moderately, Severely and Profoundly Retarded Courses**

Ed. 833 Tchg. Ment. Ret.	4
Ed. 834 Educ./Trng. MSPR	4
Ed. 836 Educ. Mult. Hand.	4
Ed. 851 Soc. Studies/Skills.	4
Ed. 839 St. Tchg. MSPR	12

II. Curriculum in Special Education and Secondary Education

A. General Education Requirements

Courses	Cr. Hrs.
Ed. 501 Introd. to Educ.	4
Engl. 550 Basic Comp. I	4
Engl. 551 Basic Comp. II	4
Speech 554 Classrm. Speech	4
HPE 590 Health Educ.	3
HPE Activities (Elective)	3
Humanities*: 8-18 q.h. in Two Catagories (Fine Arts, Theology/Philosophy)	
Science and Mathematics*: 12-22 q.h., including Biol. 505 (or Equiv.)	4
Science (Phys. Sci. Recom.)	4
Math. 515 (Recom.)	5
Social Studies*: 16-22 q.h., including Psych. 560 Gen. Psych.	4
Psych. 709 Psych. of Ed.	4
Electives (Other than Psych.)	

*A combined total of 46 q.h. must be taken in Humanities, Science, Math, and Social Studies.

B. **Secondary Education Requirements**

Courses	Cr.Hrs.
Ed. 704 Prof. Lab Exp. H.S.	3
Ed. 700 Found. Rdg. Sec. Sch.	2
Ed. 702 Instructional Media	2
Ed. 706 Princ. H.S. Tchg.	4
Ed. 706L Princ. H.S. Tchg. Lab	3
Ed. 708 Social Found. Educ.	4
Ed. 710 Ed. Meas./Guid.	4
Ed. 800 Special Methods	3
Ed. 842 St. Tchg. Sec. Educ.	9
Secondary Teaching Field (See Major teaching field advisor)	

C. **Special Education Requirements:**
Students must complete a block of core courses in Special Education, plus specialization courses in LD/BD, EMR or MSPR.

1. **Core Courses in Special Education:**
Ed. 715, 835, 852, and 853 constitute the field-based STEP experience offered in fall and winter quarters.

Courses	Cr. Hrs.
Ed. 802 Educ. Excep. Chn.	4
Ed. 863 Lrng. Disab./Beh. Dis.	4
Ed. 864 Tchr.-Parent Consult.	3
Ed. 812 El. Lang. Arts I	4
Ed. 813 El. Lang. Arts II	3
Ed. 715 El. Science (Optional)	4
Ed. 835 Clsrm. Mgt. Excep. Indiv.	4
Ed. 852 Lang. Arts Spec. Ed.	4
Ed. 853 Arith. Meth. Spec. Ed.	4

2. **Learning Disabilities and Behavior Disorders Courses:**
Same as I.C.2. above.

3. **Educable Mentally Retarded Courses:**
Same as I.C.3. above.

4. **Moderately, Severely and Profoundly Retarded Courses:**
Same as I.C.4. above.

III. **Curriculum in Education of the Mentally Retarded (Developmentally or Multiply Handicapped)**

A. **General Education Requirements**

Courses	Cr. Hrs.
Ed. 501 Introd. to Educ.	4
Engl. 550 Basic Comp. I	4
Engl. 551 Basic Comp. II	4
Engl. 708 Child. Lit.	4
Speech 554 Classrm. Speech	4
Speech 705 Speech Prob. Chn.	3
Art 760 Sch. Arts-Prim.	4
Art 767 Sch. Arts-Intermed.	3
HPE 590 Health Educ.	3
HPE 622 Motor Anal.	1
HPE Activities (Elective)	2
HPE 722 Elem. Phys. Ed.	3
HPE 721 Elem. Hlth. Ed.	3
Music 521 Introd. Music (Recommended)	3
Music 621 Music Apprec. (Recommended)	4
Music 721 Music Educ. (Recommended)	3
Humanities*: 8-18 q.h. in Two Categories (Fine Arts, Theology/Philosophy)	
Science and Mathematics*: 12-22 q.h. including	
Biol. 505 (or Equiv.)	4
Math. 515 Math. El. Tch. I	5
Physical Science (Recom)	4
Elective Science & Math	Up to 9
Social Studies*: 16-22 q.h. including	
Psych. 560 Gen. Psych.	4
Psych. 755 Child Psych.	4
Hist. 605 or 606 U.S. Hist.	4
Electives in Social Studies	4

B. **Required Courses in Education**

Courses	Cr. Hrs.
Ed. 704 or 705 Prof. Lab	3
Ed. 708 Social Found. of Educ.	4
Ed. 710 Ed. Meas./Guid.	4
Ed. 812 El. Lang. Arts I	4
Ed. 813 El. Lang. Arts II	3
Ed. 702 Instructional Media	2

C. **Major in Mental Retardation:**
Ed. 715, 835, 852, and 853 constitute the field-based STEP experience offered in fall and winter quarters.

Courses	Cr. Hrs.
Ed. 802 Educ. Excep. Chn.	4
Ed. 833 Teaching Ment. Retarded	4
Ed. 834 Educ./Trng. MSPR	4
Ed. 836 Educ. Mult. Hand.	4
Ed. 851 Soc. Stu./Soc. Skills	4
Ed. 855 Occup./Job Trng.	3
Ed. 863 Lrng. Dis./Beh. Dis.	4
Ed. 864 Tchr.-Parent Consult.	3
Ed. 715 El. Science (Special)	4
Ed. 835 Clasrm. Mgt. Excep. Indiv.	4
Ed. 852 Lang. Arts Spec. Ed.	4
Ed. 853 Arith. Meth. Spec. Ed.	4
Ed. 848 St. Tchg. EMR	12-15
and/or	
Ed. 839 St. Tchg. MSPR	12-15

D. **Electives:**
As needed to meet University requirements.

IV. **Other Curriculum Options:**
There are four additional classes of students who may be admitted to certification programs in Special Education:

A. Students possessing a certificate in an area of Special Education, in many cases, may become certified in one of the following additional areas by completing the courses as listed. More complete information is available from the Special Education Office.

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*A combined total of 46 q.h. must be taken in Humanities, Science, Math and Social Studies.

1. **Learning Disabilities and Behavior Disorders Courses**

Courses	Cr.
Ed. 863 Ed. Ch. With LD/BD	4
Ed. 866 Clin. Tchg. LD/BD	4
Ed. 867 Pract. LD/BD	6
Ed. 849 St. Tchg. LD/BD	12

2. **Educable Mentally Retarded Courses**

Courses	Cr. Hrs.
Ed. 833 Tchg. Ment. Ret.	4
Ed. 851 Soc. Stu./Skills	4
Ed. 863 Lrng. Dis./Beh. Dis.	4
Ed. 855 Occup./Job Trng.	3
Ed. 848 St. Tchg. EMR	12

3. **Moderately, Severely, Profoundly Retarded Courses:**

Courses	Cr. Hrs
Ed 802 Educ. of Exceptional Children	4
Ed 833 Educ. of Mentally Retarded	4
Ed 834 Educ. and Training MSPR	4
Ed 851 Soc St/Soc. Skills for MR	4
Ed. 835 Classroom Mgmt Excp. Indv	4
Ed 836 Educ Mult Hand	4
Ed 864 Tchr-Parent Consult	3
Ed 839 St Tchg MSPR	12

B. Students possessing a certificate in Elementary Education must complete one of the areas listed above, in addition to the following core courses. Those who have not completed at least a three-month equivalent of full-time teaching will be required to participate in the field-based STEP experience (See I.C.1. above).

Courses	Cr. Hrs.
Ed. 802 Educ. Excep. Chn.	4
Ed. 835 Clsrm. Mgt. Excep. Indiv.	4
Ed. 852 Lang. Arts Spec. Ed.	4
Ed. 853 Arith. Methods Spec. Ed	4
Ed. 864 Parent-Tchr. Consult.	3

C. Students possessing a secondary or special area certificate must complete the course requirements in A and B above, in addition to those listed below. Students who have not completed at least a three-month equivalent of full-time teaching will be required to participate in the field-based STEP experience (See II.C.1. above).

Courses	Cr. Hrs.
Ed. 812 El. Lang. Arts I	4
Ed. 813 El. Lang. Arts II	3

D. Students possessing a bachelor's degree but who are not certified to teach should seek advisement from an academic advisor in the School of Education.

The William Rayen School of Engineering

George E. Sutton, Dean

ORGANIZATION AND DEGREES OBJECTIVES

The goal of the William Rayen School of Engineering is, in concert with the goals of Youngstown State University, to provide education and training to prepare the individual for the technical and personal challenges associated with the functions of an engineer in society.

Technology and society change with time, but fundamental principles are timeless. Therefore, the major emphasis is upon insuring preparation in the physical sciences, engineering sciences, social sciences, and humanities for every student. Individual departmental curricula provide application of the fundamentals appropriate to that particular field of engineering. Because of the temporal nature of our technological society the curricula are under continual study to ensure changes necessary to adapt to professional and societal needs.

Academic standards are sufficiently rigorous to maximize the probability that the individual will find satisfaction through success in the chosen profession.

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 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 eight 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.

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

Students who apply for admission to the William Rayen School of Engineering must meet the following conditions:

New Freshmen: appropriate ACT or SAT score.

Internal Transfer: C average overall (unrecalculated) in all work, and qualified to take Math. 571.

External Transfer: TOEFL of 525 or greater, if international; 2.50 GPA from a junior or community college; 2.30 GPA if from a university, but not from ABET accredited engineering program; 2.00 if from an ABET accredited program. The student must be prepared to take Calculus I (Math. 571) or a higher math course.

If the above conditions are met, the student may be admitted to engineering, but not to one of the professional curricula. To qualify for such admission, the student must have completed a minimum of 24 Q.H. with a GPA of 2.0 (unrecalculated) and must have made a grade of C or better in Math. 571, English 550 and either Chem. 515 or Physics 510. Additional requirements may be imposed by the department.

PROVISIONAL ADMISSION

Provisional admission may be obtained (except for external transfer) with the permission of the major Department Chairman and the Dean. A student who is provisionally admitted must maintain a 2.00 GPA (unrecalculated) through 12 quarter hours of science, mathematics and/or engineering courses, or be suspended from the program.

COURSE ENROLLMENT

All 600-, 700-, or 800- level courses in engineering, except CE 610, 610L, 711 and 711L are available only to students who have been admitted to a professional curriculum by permit only.

REQUIREMENTS FOR THE BACHELOR OF ENGINEERING DEGREE

It is the student's responsibility to see that all the graduation requirements for the degree sought are satisfied, but it is recommended that the student seek the help of the advisor frequently.

The curricula leading to the degree require a minimum of 197 quarter hours of credit, not including any make-up of high school deficiencies. High school deficiencies must be completed during the first two years of course work.

A limited offering is available during summer terms, and should be used with the consultation of the advisor.

The table below shows the minimum requirements:

PRE-COLLEGE

Subject	High School Units
English	3
Algebra	2
Geometry	1
Trigonometry	½
Chemistry	1
Mechanical Drawing	1
Physics	1
Other	6½

IN THE UNIVERSITY MINIMUM COLLEGE REQUIREMENTS GENERAL UNIVERSITY	QUARTER HOURS
English 550, 551	8
Health Education 590	3
Health and Physical Education Activities	3
Basic Sciences (as specified by the department)	24
Mathematics (as specified by the department)	22
Social Science (as specified by the department)	16
Humanities (as specified by the department)	8
Total	**84**
ENGINEERING	113*
Total	**197**

*This component shall bring the total minimum degree requirements to 197 quarter hours, and shall satisfy the ABET requirements of one year of engineering science and one-half year of design.

The Engineering program can be completed in four academic years by those who are capable of successfully completing the study loads outlined.

COURSES OF INSTRUCTION AND CURRICULUMS

The student should be familiar 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.

Engineering 581. *Introduction to Engineering.* Lectures on activities, practices and career opportunities in the various fields of the Engineering profession. Discussion of various engineering curricula as related to the preparation of the engineering student in his/her particular field. 2 q.h.

CHEMICAL AND METALLURGICAL ENGINEERING (Nuclear Minor)

Professors Ahmed, Jones, Slawecki, Szirmay (Chairman), and Zager; Associate Professors Lim, McCoy and Singh.

The Chemical Engineering program, supplemented with courses in chemistry, physics, mathematics, and engineering, provides a broad preparation for design, operation and management in the chemical, biological, pharmaceutical, and energy conversion industries as well as graduate study leading to research positions in industry and government and to academic careers.

The curriculum may be easily modified for students whose career objectives lie in environmental, nuclear, or biochemical engineering, medicine, or business administration.

Transfer to Chemical Engineering from other engineering programs, or from Chemistry, Physics, Biology, and Mathematics may be accomplished without loss of time or credit during the first two years.

The Chemical Engineering Laboratories are equipped for undergraduate instruction and student and faculty research. The equipment includes fluid flow apparatus, concentric tube and plate and frame heat exchangers, thermal conductivity apparatus, boiling heat transfer apparatus, vertical and horizontal dryers, computer-controlled distillation tower, gas absorption and liquid-liquid extraction columns, chemical reactors, crushers, grinders, and other solids processing equipment, electrostatic particle separator, centrifuges, evaporators, filter presses, and other miscellaneous equipment. The nuclear laboratory contains radiation detectors, area monitoring and gamma scintillation equipment, and proportional counters. The University's subcritical nuclear reactor is also available to the department. The analytical equipment includes mass sensitive gas chromatograph, absorption and emission spectroscopes, and infrared gas analysis apparatus.

For student computations the department has several desk computers, printers, and plotters, as well as computer terminals connected directly to the University Computer Center.

The laboratory equipment is being continuously upgraded and modernized through the State of Ohio equipment replacement program.

Chemical Engineering

581. *Introduction to Chemical Engineering.* A survey of chemical engineering. Fundamental concepts and methods of chemical engineering. Laboratory demonstrations of chemical engineering operations. 1 q.h.

680. *Design Techniques in Chemical Engineering.* A systematic survey of well-established and readily available methods for implementing the usual types of operational or process procedures. Where several design techniques may be applicable, the advantages

and limitations of each are considered. Prereq.: Math. 572, Chem. 516. 3 q.h.

681. *Industrial Stoichiometry.* To aid the non-chemical engineer to organize, analyze, and effectively utilize the information inherent in chemically stoichiometric relationships, as they apply to actual plant situations. Prereq.: Math. 572, Chem. 516. 4 q.h.

682, 683. *Chemical Engineering Principles.* Engineering units and dimensions. Methods of analysis and measurement. Perfect gas and real gas relationships. Material and energy balances for both non-flow and flow systems. Prereq.: Math. 571, Chem. 516. 3+3 q.h.

684. *Stagewise Separations.* Cascade theory and design of staged separation processes. Concepts of reflux, algebraic solutions for linear systems and graphical methods of analysis. Design of distillation columns. Prereq.: ChE 683. 3 q.h.

685 *Corrosion Control Engineering.* Introduction to electrochemical mechanism and theory of corrosion, engineering practice, and criteria for both anodic and cathodic control. Theory and engineering practice in the use of inhibitors. Prereq.: Math. 572, Chem. 517 or ChE 681 4 q.h.

688. *Energy Assessment.* Concept of energy assessment. Technology of energy production that includes coal gasification, liquefaction, magnetohydrodynamics, utilization of shale oil, solar, geothermal, and chemical energy. Nuclear energy utilization. Fuel from wastes. Energy resource distribution and future supply and demand. Simple calculations relating to fuel saving, production, and consumption. Primarily for non-engineering students. Prereq.: Chem. 500 or Physics 500. 3 q.h.

720. *Industrial Pollution Control.* Introduction to the thermodynamic and kinetic properties of the atmosphere and to the geophysical aspects of the natural water systems. Chemistry and physics of air and water pollution as related to modern methods for waste control in chemical operations including filtration, ejector aeration, deep well disposal, activated sludge treatment and disposal, and current approach to waste control education and program formulation. Prereq.: Math. 674, Chem. 517, or ChE 681. 3 q.h.

721. *Engineering Plastics.* Preparation, characterization, properties and applications of polymers of commercial interest. Prereq.: ChE 683, Chem. 721, or concurrent. 3 q.h.

726. *Elementary Nuclear Reactor Engineering.* Basic engineering science to serve as 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.: Math. 674, Physics 610. 3 q.h.

771, 772. *Chemical Engineering Thermodynamics I, II.* Development of the concepts and formalisms of thermodynamics and their applications to chemical engineering systems. Real and ideal behavior of single and multicomponent systems. Introduction to the thermodynamics of phase equilibria. Analysis and design of thermal systems. Prereq.: ChE 683 or ChE 681, Math. 673. 4+4 q.h.

785, 786. *Transport Phenomena I and II.* Mathematical formulation of conservation laws. Dimensional analysis. Mechanism and fundamentals of momentum and energy transfer from macroscopic point of view with selected applications to analysis and design of chemical engineering equipment. Prereq.: ChE 683, Math. 705. 4+4 q.h.

785L, 786L. *Transport Phenomena Laboratory.* Experimental studies of transport properties and momentum, energy and mass transfer using industrial type equipment. Correlation of data and comparison with theory. Preparation of technical reports. 3 hrs. laboratory. Prereq.: ChE 785 and ChE 786, respectively. 1+1 q.h.

787. *Unit Operations I.* Mass transfer processes. Diffusional operations and separation processes with emphasis on evaporation, humidification and drying. Derivation of the design equations from mass and energy balances. Applications of the equations to equipment design. Prereq.: ChE 786. 4 q.h.

788. *Unit Operations II.* Gas absorption and desorption, interphase mass transfer processes, liquid extraction and leaching. Physical separation processes including filtration, settling, and size reduction. Derivation of the design equations for the above processes, and applications of the design equations to equipment design. Prereq.: ChE 786. 4 q.h.

787L, 788L. *Unit Operations Laboratory.* Experiments in absorption, cascade operations, reaction kinetics, mixing and other chemical engineering operations employing industrial and pilot plant size equipment and instrumentation. Treatment of experimental data, correlations and comparison with theory. Preparation of technical reports. 3 hrs. laboratory. Prereq.: ChE 787 and ChE 788, respectively. 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 are (1) history of technology, (2) the world's available 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.

800. *Special Topics.* Special topics and new developments in chemical engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Senior

standing in chemical engineering or consent of instructor. 1-4 q.h.

801-802-803. *Chemical Engineering Projects.* Chemical engineering projects under the guidance of a faculty member. Literature search, design and construction of apparatus, experimentation and preparation of a comprehensive report. Prereq.: Advanced junior standing in chemical engineering and permission of the Department Chairman. 2+2+2 q.h.

805. *Principles of Biomedical Engineering.* Application of engineering principles and methods of analysis to processes in the human body. Rheological, physical and chemical properties of body fluids. Dynamics of the circulatory system. The human thermal system. Transport through cell membranes. Analysis and design of artificial organs. Prereq.: Biol 552 or concurrent, advanced standing in chemical engineering or consent of instructor. 4 q.h.

811. *Advanced Transport Phenomena.* Development of basic differential balance equations for mass, momentum and energy. Analytical and approximate solutions to the equation of change with application to the analysis of common engineering problems. Prereq.: ChE 786 or consent of instructor. 4 q.h.

850. *Industrial Processes.* A fundamental approach to the design of industrial chemical processes. Emphasis upon flow charting, chemical reactions involved, thermodynamics and economic considerations. Prereq.: ChE 787 and senior standing in Chemical Engineering or equivalent background. 4 q.h.

880, 881. *Chemical Reactor Design I and II.* Chemical reaction equilibria. 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.: ChE 772. 3+3 q.h.

882. *Process Dynamics.* Introduction to automatic control and control loop concepts. Laplace transform techniques. Linear open-loop and closed-loop systems. Root-locus and frequency response methods. Design of control systems. Prereq.: ChE 786. 4 q.h.

882L. *Process Dynamics Laboratory.* Experimental studies in process dynamics and control. Simulation of control systems with the aid of an analog computer. Treatment of experimental data with correlation and comparison with theory. Preparation of technical reports. One hour lecture/demonstration plus three hours laboratory. Prereq.: ChE 882. 1+1 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.: ChE 786. 3 q.h.

884. *Process and Plant Design I.* Engineering economic analysis. Cost estimation. Profitability. Optimum design. Materials and site selections. General and specialized design techniques. Prereq.: Senior standing in Chemical or Metallurgical Engineering. 4 q.h.

885. *Process and Plant Design II.* The application of chemical engineering and cost principles to the design of chemical plants and processes. Societal, aesthetic and environmental considerations. Prereq.: ChE 884. 4 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.: ChE 726. 4 q.h.

Nuclear Science and Engineering Minor

The minor is open to all Engineering and Physical Science majors and comprises a minimum of 21 quarter hours including 10 quarter hours of core courses and the rest selected from the list of electives.

Engineering students may substitute a number of their departmental electives or other technical electives with the Nuclear Engineering courses to obtain the Nuclear Engineering minor with few or no additional credit hours.

CORE COURSES	Cr. Hrs.
ChE 726 Elementary Nuclear Reactor Engineering	3
MetE 830 Introduction to Nuclear Reactors	3
ChE 886 Nuclear Reactor Design	4
	10

ELECTIVES	Cr. Hrs.
ChE 811 Transport Phenomena III	4
ChE 883 Mathematical Methods in Chemical Engineering	3
EE 819R Plasma Dynamics	4
MetE 817 Management of Nuclear By-products	1
MetE 831 Introduction to Nuclear Materials	3
MetE 835 Introduction to Nuclear Fusion	3
ME 825 Heat Transfer II	4
Biology 825 Radioisotopes in Biology	4
Chem. 730 Clinical Radiochemistry	3
Chem. 730L Clinical Radiochemistry Lab	1
Chem. 835 Nuclear Chemistry and Applications	3
Math. 706 Differential Equations II	4
Math. 760 Numerical Analysis	4
Physics 704 Introduction to Modern Physics I	3

Physics 705 Introduction to Modern Physics II . . 3
Physics 705L Modern Physics Lab 1
Physics 826 Elements of Nuclear Physics 3
Physics 826L Nuclear Physics Lab 1

Note C: Transfer Students

Transfer students from any two- or four-year academic program at other institutions or at this University who wish to pursue studies in Chemical Engineering or Metallurgical Engineering, should consult the department chairman for individual counseling in order to arrive at a program of studies fully utilizing their educational background and requiring a minimum of time to satisfy the requirements for the degree of Bachelor of Engineering.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN CHEMICAL ENGINEERING

FIRST YEAR	Cr. Hrs.
Engineering 581	2
Chemistry 515, 515L, 516, 516L, 517, 517L, General Chemistry	12
Mathematics 571, 572, 673 Calculus	14
Health and Physical Education, Health	3
English 550, 551 Basic Composition	8
Health and Physical Education, Activity	1
Liberal Arts Electives	10
	50

Note: Students without background in mechanical drawing must enroll in M.E. 500 Drawing Fundamentals.

SECOND YEAR	Cr. Hrs.
Chemistry 719, 719L, 720, 720L, 721, 721L Organic Chemistry	12
ChE 682, 683, Principles of Chemical Engineering	6
ChE 684 Stagewise Separations	3
Mathematics 674 Calculus	4
Mathematics 705 Differential Equations	4
Physics 510, 610, 611 General Physics	12
IE 642 Engineering Computations	4
Health and Physical Education, Activity	1
Liberal Arts Electives	6
	52

THIRD YEAR	Cr. Hrs.
Chemistry 739, 739L, 740, 740L, 741, 741L Physical Chemistry	12
ChE 771, 772 Chemical Engineering Thermodynamics	8
ChE 785, 785L, 786, 786L Transport Phenomena	10
ChE 787 Unit Operations I	4
MetE 606 Engineering Materials	4
CE 601, Mechanics	4
Liberal Arts Electives	8
Health and Physical Education, Activity	1
	51

FOURTH YEAR	Cr. Hrs.
ChE 787L Unit Operations Laboratory I	1
ChE 788, 788L Unit Operations II	5
ChE 880, 881, Chemical Reactor Design	6
ChE 882, 882L Process Dynamics	6
Mathematics Elective	3
ChE 850 Industrial Processes	4
ChE 884, 885 Plant and Process Design	8
EE 714R Circuits and Electronics	4
ChE Electives	11
Chemistry Elective	3
	51

Chemical Engineering Electives	Cr. Hrs.
ChE 680 Design Techniques in Chemical Engineering	3
ChE 685 Corrosion Control Engineering	4
ChE 688 Energy Assessment	3
ChE 720 Industrial Pollution Control	3
ChE 726 Elementary Nuclear Reactor Engineering	3
ChE 721 Engineering Plastics	3
ChE 789 Man and the Technological Society	4
ChE 800 Special Topics	1-4
ChE 801-802-803 Chemical Engineering Projects	6
ChE 805 Principles of Bio-medical Engineering	4
ChE 811 Transport Phenomena III	4
ChE 883 Mathematical Methods in Chemical Engineering	3
ChE 886 Nuclear Reactor Design	4

Note: To meet design requirements, each student must take at least one of the following elective courses: ChE 680, ChE 800, (with at least 1.5 q.h. of design), ChE 801-802-803 (1.5 q.h. of design) or ChE 886 (prerequisite ChE 726).

Metallurgical Engineering

The program in Metallurgical Engineering is designed to provide the student with a strong foundation of basic concepts fundamental to understanding the behavior of a wide range of engineering materials including steels and alloy steels, nonferrous alloys, polymers, ceramics, semi-conducting solids, and composite materials. Like other engineering disciplines, Metallurgical Engineering is based on sound knowledge of physical sciences, mathematics, and engineering. The program gives the student the background required for employment as a metallurgical engineer in design, development, research, and technical management or for entrance to graduate school for further studies.

Students from physical and biological sciences, mathematics, and other engineering disciplines may

transfer to Metallurgical Engineering at the beginning of the second year without loss of time or academic credit.

The department offers a graduate program leading to the Degree of Master of Science in Materials Science. The program is described in the catalog of the Graduate School.

The Metallurgical Engineering Laboratories, located in the basement and first floor of the Engineering Science Building, include a field ion microscope laboratory, transmission and scanning electron microscope laboratories, multi-purpose radioisotope analysis and diffusion laboratory, radiograph laboratory, x-ray laboratory, phase transformation laboratory, calorimetric laboratory, metallographic laboratory, high pressure and high temperature laboratories, properties laboratory, special process metallurgy laboratory, zone melting laboratory, single crystal laboratory, and a general mineral benefication laboratory.

The various metallurgical engineering laboratories are equipped for all phases of metallurgical studies with the latest modern equipment which includes several minicomputers, printers, and plotters; 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; transmission electron microscope; scanning electron microscope with an energy dispersive x-ray analyzer; 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 metallographic specimens; hardness testers; and high speed cut-off machines.

581. *Introduction to Materials Science and Engineering.* Introductory course for freshmen to familiarize them with the field of materials science. The historical background and scientific developments of materials and their applications in modern society, technology and science, nature and state of metals, ceramics, glasses, polymer materials and composite materials; general description of production and fabrication and properties of certain materials; uses of materials and topics on modern materials. Lectures and laboratory demonstrations. 1 q.h.

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.: Chem. 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 crystallization, and grain growth tutorial and computations. Prereq.: MetE 601R or consent of instructor. 4 q.h.

603R. *Introduction to Materials Science III.* Discussion of phase equilibria and phase diagrams. Kinetics of phase changes, diffusionless and diffusion controlled phase transformation. Industrial metallurgy. Principles of heat treatment. Structural materials. Tutorial and computations. Prereq.: MetE 602R or consent of instructor. 4 q.h.

606. *Engineering Materials.* Manufacturing processes, properties and uses of engineering materials such as ferrous and non-ferrous alloys, ceramics, concrete, polymers, and composites. Manufacturing processes to be covered are refining processes, heat treatments, and forming operations. Properties to be discussed are strength and strength-related properties such as hardness, ductility, creep, fatigue; corrosion resistance; and electrical properties. These properties will be related to the engineering applications and uses of various materials. An introduction to testing methods used to measure various properties of materials. Prereq.: For engineering students whose major is other than Metallurgical Engineering. 4 q.h.

614, 615. *Microstructure Analysis of Metals and Alloys I, II.* An introduction to the optical examination and analysis of metallic microstructures. Study of the effects of composition, and of thermal and mechanical processes on microstructure in ferrous and non-ferrous alloys. (One hour lecture + 3 hours laboratory.) Prereq.: MetE 601R or consent of instructor. 2+2 q.h.

620, 621. *Chemical Principles of Materials Science I, II.* Discussion of the application of physiochemical principles to metallurgical or materials problems. Prereq.: Chem. 515 or consent of instructor. 3+3 q.h.

620L, 621L. *Chemical Principles Materials Science Lab.* Laboratory experiments to illustrate the theoretical concepts discussed in MetE 620 and 621. Three hrs. laboratory. Prereq.: MetE 620 and 621, respectively or concurrent. 1+1 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.: Chem. 515, Math. 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 structure, physical, and mechanical properties of ferrous and non-ferrous alloys. (1 hour lecture + 3 hours laboratory.) Prereq.: MetE 615. 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.: MetE 602R. May be taken concurrent. 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.: MetE 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.: MetE 615. 3 q.h.

781. *Powder Metallurgy.* Scope of powder metallurgy, production of powders, sintering powders, diffusion bonding, basic theories, application. Prereq.: MetE 615. 3 q.h.

782. *Phase Diagrams.* Discussion and interpretation of phase diagrams of multi-component systems. Prereq.: MetE 603R. 3 q.h.

783M. *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.: MetE 615. 3 q.h.

784. *Crystallography.* Study of the relationships between the external macroscopic symmetry and the internal atomic symmetry of crystalline materials. Application of stereographic projection techniques to the study of symmetry. Prereq.: MetE 603R. 3 q.h.

791, 792, 793. *Physical Metallurgy I, II, III.* The fundamental concepts of physical metallurgy with emphasis on basic laws and theories. Topics include electrical, magnetic and thermal properties, mechanical properties and deformation mechanisms, dislocation theories, phase equilibria and phase transformation mechanisms, nucleation and growth diffusion, and precipitation hardening. Prereq.: MetE 603R and ChE 771 or consent of instructor. 3+3+3 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.: MetE 650R, 791. 3+3 q.h.

817. *Management of Nuclear By-products.* Sources and characteristics of radioactive material, principles and determination of tolerance; standards and regulations; protection from side effects. Prereq.: MetE 815 or ChE 726, or concurrent. 1 q.h.

820, 821. *Principles of Extractive Metallurgy I, II.* Unit operations approach to pyrometallurgical, hydrometallurgical, and electrometallurgical processes used to produce ferrous and non-ferrous metallic materials. Mass and thermal balances are used to analyze the various stages of the above processes. Included in these analyses will be primary and secondary treatments of ores, primary reduction methods, and refining techniques. Computer methods are used in the analyses. Prereq.: ChE 681, 771; IE 642. 4+4 q.h.

830. *Introduction to Nuclear Reactors.* Neutron interactions and scattering; moderation ratio, the steady state reactor core and four factor equation, the diffusion equation for various reactor geometries and the reflected reactor core. Prereq.: ChE 726 or equivalent. 3 q.h.

831. *Introduction to Nuclear Materials.* Discussion of various chemical and metallurgical separation methods for the manufacturing and reprocessing of nuclear reactor fuel for the thermal and breeder reactors. Aspects of production of nuclear materials. Prereq.: ChE 726 or equivalent. 3 q.h.

835. *Introduction to Nuclear Fusion.* Fusion reactors; the kinetics of fusion reactions. Plasma confinement technology. Prereq.: ChE 726 or equivalent. 3 q.h.

840. *Modern Research Techniques.* The aim of this course is to familiarize the students with the "tools" of experimental metallurgy. Prereq.: MetE 793. 1 q.h.

851. *Introduction to Polymer Science.* Discussions of polymer materials with particular emphasis on their characteristics. Bonding mechanisms and composition. Prereq. Chem. 517 or ChE 681. 3 q.h.

852, 853, 854. *Advanced Engineering Materials (Non-metallic) I, II, III.* Discussions on ceramic materials, composites and cermets with special emphasis on atomic bonding; structure of crystalline and non-crystalline solids; diffusion; grain growth; sintering and microstructure. Different types of glasses. Physical and mechanical properties; structure; volume and shear flow; glass-metal interface. Prereq.: MetE 793. 3+3+3 q.h.

860. *Mechanical Behavior of Materials.* Advanced theoretical discussion of elastic and plastic behavior of metals with particular emphasis on the design considerations for mechanical processing of materials; theory of plasticity; application of these theories to various deformation processes with particular emphasis on design of rolling mills, extrusion dies and other mechanical processes. Prereq.: MetE 741R and 793 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 parameters. Two hrs. lecture + 3 hrs. laboratory. Prereq.: MetE 793. 3 q.h.

862. *Applied X-rays II.* Application of X-rays in physical metallurgy to determine solubility, lattice structure, atom location, grain size, preferred

orientation, phase diagrams. Two hrs. lecture + 3 hrs. laboratory. Prereq.: MetE 861. 3 q.h.

863. *Thermodynamics of Materials I.* Principles of thermodynamics and their applications to materials, metallurgical systems, processes, and alloys. Prereq.: Math. 705 and ChE 771 or consent of instructor. 3 q.h.

864. *Thermodynamics of Materials II.* Applications of thermodynamics principles to materials systems theory of alloys. Prereq.: MetE 863 or ChE 772. 3 q.h.

865. *Advanced Science of Materials.* Structure and properties of materials; theories of binding in solid-free electron theory, based theory, and zone theories, density of states; electrical and magnetic behaviors, theory of alloys phases; structure by alloys. Prereq.: MetE 793. 3 q.h.

866. *Special Topics.* Special topics in materials engineering which are of current research interest. Course may be repeated with different topics for a maximum of 9 q.h. Prereq.: Junior standing in engineering or consent of instructor. 3 q.h.

867. *Fractography and Failure Analysis.* Most common modes of failure of engineering materials including overloading, impact loading, fatigue, wear, and corrosion. The causes of failure are diagnosed from the study of the macroscopic and microscopic features on the fracture surfaces. Prereq.: Junior standing in engineering and MetE 741 or MetE 606. 3 q.h.

868. *Scanning Electron Microscopy of Engineering Materials.* Theory and operation of the scanning electron microscope (SEM) and the energy dispersive x-ray analyzer. Individual term projects involve sample preparation, taking photomicrographs, and performing energy dispersive x-ray analysis. Two hours lecture and three hours laboratory per week. Prereq.: Junior standing in engineering and MetE 615 or MetE 606. 3 q.h.

871. *Physical Metallurgy IV.* Discussion on theories of corrosion, age-hardening; gases in metals. Prereq.: MetE 793. 3 q.h.

872. *Refractory Metals and Alloys.* Production and processing of refractory metals; physical and mechanical properties of the metals and their alloys; design of refractory alloys. Prereq.: MetE 793 3 q.h.

887. *Metallurgical Design.* Application of design principles to metallurgical process, equipment and product design. Optimum utilization of materials within the constraints of use, manufacture, safety, law and economics with due consideration of the sociological and environmental aspects. Prereq.: ChE 884 or a course in engineering economics. One hour lecture and two three-hour design sessions. 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 project must be formally approved by the department head. Prereq.: Senior standing or 150 q.h. 2-4 q.h. each

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN METALLURGICAL ENGINEERING

FIRST YEAR	Cr.Hrs.
Engineering 581	2
Chemistry 515, 515L, 516, 516L, 517, 517L General Chemistry	12
ChE 681 Industrial Stoichiometry	4
Mathematics 571, 572, 673 Calculus	14
Physics 510, 610 General Physics	8
English 550, 551 Basic Composition	8
Health and Physical Education, Activity	1
	49

Note A: Students without background in Mechanical Drawing must enroll in M.E. 500 Drawing Fundamentals.

SECOND YEAR	Cr. Hrs.
Mathematics 674 Calculus	4
Mathematics 705 Differential Equations	4
Physics 611 General Physics	4
MetE 601R, 602R, 603R Introduction to Materials Science	12
MetE 614, 615 Microstructure Analysis of Metals and Alloys I, II	4
CE 601 Mechanics I	4
ChE 771 Thermodynamics	4
IE 642 Engineering Computations	4
Liberal Arts Elective	8
Health and Physical Education, Health	3
	51

THIRD YEAR	Cr. Hrs.
MetE 740 Mechanical Working and its Effect on Materials	2
MetE 741 Evaluation of Materials	4
MetE 784 Crystallography	3
MetE 791, 792, 793 Physical Metallurgy	9
MetE 863 Thermodynamics of Materials	3
CE 602 Mechanics II	4
ChE 785, 786 Transport Phenomena	8
MetE Elective	3
Mathematics Elective	4
Liberal Arts Electives	8
	48

FOURTH YEAR	Cr. Hrs.
MetE 730, 731, 732 Metallography, Heat Treatment and Pyrometry	6
MetE 820, 821 Extractive Metallurgy	8
MetE 860 Mech. Behavior of Materials	3
MetE 861 Applied X-rays	3

MetE 887 Metallurgical Design 3
MetE 891, 892, 893 Thesis 6
EE 714R Circuits and Electronics 4
ChE 884 Process and Plant Design 3
MetE Electives 6
Health and Physical Education, Activities 2
Liberal Arts Electives 6

50

METALLURGICAL ENGINEERING ELECTIVES **Cr. Hrs.**

MetE 780 Casting, Welding Solidification 3
MetE 781 Powder Metallurgy 3
MetE 782 Phase Diagrams 3
MetE 783M Ferrous and Non-ferrous Alloys 3
MetE 851 Intro. to Poly. Sci. 3
MetE 852 Adv. Engr. Matl. I 3
MetE 853 Adv. Engr. Matl. II 3
MetE 854 Adv. Engr. Matl. III 3
MetE 862 Applied X-rays II 3
MetE 864 Thermodynamics of Solids II 3
MetE 865 Advanced Science of Materials 3
MetE 866 Special Topics 3
MetE 871 Physical Metallurgy IV 3
MetE 872 Refractory Metals and Alloys 3

CIVIL ENGINEERING

Professors Bakos (Chairman), Cernica, Ritter; Associate Professor Khan; Assistant Professors Alam, Martin.

Students majoring in Civil Engineering earn the Bachelor of Engineering (B.E.) degree. In addition to furthering the objectives of Youngstown State University, the Civil Engineering Department provides a quality program of engineering education which includes sound basic instruction in the engineering fundamentals, the ability of its students to apply civil engineering principles to the economic and technological progress of society, the development of a high sense of ethics and professional responsibility, and an appreciation of the need to further the role of the civil engineering profession in society.

The program of study at the undergraduate level is principally a four-year plan.

Along with the emphasis on preparation for professional practice, University policy assures that each student obtains a substantial exposure to the humanities and social sciences.

Graduates are prepared for study on the master's and doctoral level in engineering or for employment in the engineering profession directly upon receipt of the baccalaureate degree.

The Department of Civil Engineering retains its tradition acquired as a small school in maintaining close contact between its students and faculty. Senior professors are used in all phases of instruction from freshman to graduate courses.

All Civil Engineering facilities are located within the modern Engineering Science Building, and include laboratories, a computer room, engineering drawing rooms, classrooms, offices, and a conference room.

The Civil Engineering Department maintains laboratories for environmental engineering, incompressible fluid mechanics, soil mechanics, strength of materials, surveying, and concrete testing and research. A wide array of equipment and instrumentation, including a large number of micro-computers and programmable calculators, supports academic and research activities.

601. *Mechanics I.* Principles of engineering 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, Phys. 510 or concurrent. (F, W) 4 q.h.

602. *Mechanics II.* Physical properties of area and masses, and methods of virtual work and energy with engineering applications. Elementary theory and relationships between load, stress, and strain in tension, compression, torsion, and bending. Combined stresses in members. Prereq.: CE 601. (W, SP) 4 q.h.

603. *Mechanics III.* Deflection of beams, indeterminate beam analysis, column theory, and connections. Experimental verification of theories of strength of materials. Three hours lecture and three hours laboratory per week. Prereq.: CE 602. (F, SP) 4 q.h.

610. *Surveying I.* The theory of surveying and the use of instruments. Problems in leveling, traversing, and topography. Introduction to circular and vertical curves. Prereq.: Math. 520 or equivalent. (F) 4 q.h.

610L. *Surveying I Laboratory.* Field surveying principles and techniques. Uses of transit and level are stressed. Three laboratory hours per week. Prereq.: Concurrently with CE 610. (F) 1 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. Prereq.: CE 610. (SP) 3 q.h.

711L. *Surveying II Laboratory.* Field and office techniques used in layout of circular, compound, and spiraled horizontal curves, and vertical curves. Three laboratory hours per week. Prereq.: Concurrently with CE 711. (SP) 1 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. Prereq.: CE 602, concurrently with ME 641. (F, W) 3 q.h.

716L. *Fluid Mechanics Laboratory.* Experimental verification of the principles of fluid mechanics as

applied to incompressible fluids. Three hours laboratory per week. Prereq.: Concurrently with CE 716, IE 642. (F, W) 1 q.h.

717. *Hydraulic Engineering.* Civil engineering application of fundamental fluid mechanics principles to open and closed channel flow and distribution systems, hydraulic machinery, and basic concepts of hydraulic structures. Prereq.: CE 716. (SP) 4 q.h.

720. *Highway Engineering I.* Principles of highway and traffic engineering to include administration, economic studies, finance, highway design standards, traffic characteristics, accidents, traffic studies, signalization, traffic marking and markers, highway capacity, long range and route planning, construction planning and supervision, highway geometry, rehabilitation, repair, and renovation of highways. Prereq.: CE 610. (F) 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.: CE 603. (W) 4 q.h.

775. *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. Hydrologic design of hydraulic structures. Prereq.: CE 716. (W) 4 q.h.

800. *Special Topics.* Special topics and new developments in Civil Engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Senior standing or consent of instructor. May be repeated to a maximum of 8 q.h. 1-4 q.h.

820. *Pavement Design.* Design methods for flexible, rigid and other wheel-supporting pavements to include investigation, testing and preparation of subgrade, base course and pavement materials, design of various pavement mixtures, stresses in pavements, pavement design, and strengthening existing pavements. Prereq.: CE 720, CE 881. (SP) 4 q.h.

829. *Civil Engineering Materials-Concrete.* A course designed to broaden the student's understanding of Portland Cement Concrete as a construction material. Topics include the study of cement, hydration of cement, aggregates, admixtures for concrete, mix design handling and placing, curing and properties of Portland Cement Concrete. Testing of concrete, quality control and special concretes are also included. A library research paper on a concrete related topic of the student's choice is required. Prereq.: CE 749 or permission of instructor. 4 q.h.

836. *Environmental Engineering I.* Causes and control of air, water and land pollution; their effect on health, economy and aesthetics. Selected topics in public health. Prereq.: CE 716, Chem. 516. (Sp) 4 q.h.

837. *Environmental Engineering II.* A study of the elements of water purification systems and sewage treatment plants. The course includes an actual design of a treatment plant. Three hours lecture and three hours laboratory per week. Prereq.: CE 836, ChE 681R. (W) 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.: CE 749. (SP) 4 q.h.

855. *Structural Design I.* An introduction to the behavior, analysis, and design of reinforced concrete members. Included are singly and doubly reinforced beams, tee-beams, slabs, short and long columns. Both ultimate and working stress design approaches are included. Prereq.: CE 749. (F) 4 q.h.

856. *Structural Design II.* An introduction to the behavior and design of steel structures. Included are the design of rolled and built-up tension members, beams, columns, beam-columns, welded and bolted connections. Prereq.: CE 749. (W) 4 q.h.

857. *Structural Design III.* Selected topics in both reinforced concrete and steel design including moment resistant connections, plate girders, unsymmetrical bending, plastic design, composite design, prestressed concrete design, and precast concrete sections. Prereq.: CE 855, CE 856. (SP) 4 q.h.

858. *Wood and Timber Design.* An introduction to the design of wood structural members. Included are the application of the national design specification for wood construction to lumber stresses, design, and fastenings; wooden truss design; concrete form design; and structural applications of plywood. Prereq.: CE 749. 4 q.h.

859. *Reinforced Masonry Design.* A course intended to introduce the student to reinforced masonry as an engineering construction material, and to study the application of current design techniques to reinforced masonry structures. Subject matter will include modern masonry materials; typical dead, live and lateral loads, including seismic loadings; and fundamental design concepts. Design of reinforced walls, columns, pilasters, beams and lateral load resisting elements will be included. A building design project will serve to integrate the topics studied. Prereq.: CE 855. 4 q.h.

860-861-862. *Civil 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 thesis advisor and the department chairman. Two bound copies are required. The completed thesis must be accepted by both the thesis advisor and department chairman. Prereq.: Senior standing in Civil Engineering. (F, W, SP) 2+2+2 q.h.

873. *Transportation Planning.* A study of the various aspects of transportation planning. Topics include operation and control of transportation vehicles, the transportation planning method, transportation study needs, modeling development, evaluation of options and transportation systems management. Concepts studied will be applied to a problem to design a specific transportation facility. Prereq.: CE 720. 4 q.h.

877. *Systems Engineering.* System approach to engineering design and operation 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. 705. 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.: CE 749. 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.: CE 849. 4 q.h.

881. *Soil Mechanics.* Properties of soil, classification, capillarity, permeability, stress and strain, consolidation and compressibility, seepage. Prereq.: Math. 674, CE 749. (F) 3 q.h.

881L. *Soil Mechanics Laboratory.* Typical soil testing procedures and physical testing of soil samples. Prereq.: Concurrently with CE 881. (F) 1 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.: CE 881, CE 855. (W) 4 q.h.

883. *Design of Water and Wastewater Systems.* An introduction to the theoretical and practical design of water distribution systems, wastewater collection and conveyance systems, storm water systems, and pumping systems for water and sewage applications. An actual design and cost analysis project for the water/wastewater systems of a model city will be included for each student to perform. Prereq.: CE 610, CE 717. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN CIVIL ENGINEERING

FIRST YEAR	Cr. Hrs.
Engineering 581	2
Math	14
ME 501 Engr. Drawing*	3
Basic Science	8
H&PE Activities Courses	3
CE 610 Surveying I	4
CE 610L Surveying I Lab	1
English Composition	8
Social Studies	6
	49

SECOND YEAR	Cr. Hrs.
Math	8
Basic Science	8
CE Mechanics	12
H&PE 590 Health Education	3
Social Studies	6
ME 641 Dynamics	4
IE 642 Engineering Computations or Comp. Sci. 600	4
Geology 611 Geology for Engrs	4
Spch. 652 Bus & Prof Spch	3
	52

THIRD YEAR	Cr. Hrs.
CE 720 Transportation I	4
CE 716 Fluid Mechanics	3
CE 716L Fluid Mechanics Lab	1
EE 714R Circuits & Electronics	4
Basic Science	4
ME 603 Thermodynamics	4
IE 724 Engineering Economy	4
CE 749 Structural Analysis I	4
CE 717 Hydraulics Engineering	4
CE 836 Environmental Engr. I	4
CE Selective Courses I & II	8
CE 681 Ind. Stoich.	4
	48

FOURTH YEAR	Cr. Hrs.
CE 855 Structural Design I	4
CE 881 Soil Mechanics	3
CE 881L Soil Mechanics Lab	1
CE 856 Structural Design II	4
CE 882 Soil & Foundation Engr.	4
CE Selective Courses III & IV**	8
Mathematics Electives	4
CE Design Elective***	4
Humanities Elective	8
Social Studies	4
CE Engr. Science Elective***	4
	48

Selective Courses I

Environmental	CE 775
Structural	Technical Elective
Transportation	Technical Elective

*Students deficient in high school Mechanical Drawing must take ME 500 before ME 501.

**Civil Engineering Selective Courses: The student must choose at least one area of concentration (environmental, structures, or transportation) and take all of the selective courses for that area with the written consent of his/her advisor.

***CE electives are selected from 700 and 800 level civil engineering courses with the written approval of the student's advisor. One CE elective must be designated as an ABET design oriented course while the other must be designated in the engineering science area. Six q.h. of CE 860, 861, 862 may be taken in lieu of 8 q.h. of CE electives with the permision of a thesis advisor.

Selective Course II

Environmental	Technical Elective*
Structural	CE 849
Transportation	CE 711 & CE 711L

Selective Course III

Environmental	CE 837
Structural	Engr. Sci. Elective
Transportation	Engr. Sci. Elective

Selective Course IV

Environmental	Engr. Sci. Elective
Structural	CE 857
Transportation	CE 820

NOTE: Only courses in the elective areas of the CE curriculum may be taken on a credit/no credit basis with the exception of those technical elective courses taken within the CE department.

Normal Day Offerings

FALL	WINTER	SPRING
601	601	602
603	602	603
610	716	711
610L	716L	711L
716	749	717
716L	775	820
720	837	836
855	856	849
881	882	857
881L		

Normal Night Offerings

	FALL	WINTER	SPRING
86-87	601	602	603
		716	717
		716L	
	FALL	**WINTER**	**SPRING**
87-88	601	602	603
	610	716	711
	610L	716L	711L
			749
88-89	601	602	603
	881	716	
	881L	716L	
	855	856	
		882	
89-90	601	602	603
	720	716	711
	610	716L	711L
	610L		836

*Technical Elective: A student may choose any technical course from upper division engineering, mathematics, science or business administration, for which the student has the prerequisites and the advisor's written approval. These courses are to be selected with the consent of the department advisor.

ELECTRICAL ENGINEERING

Professors Foulkes ,Kramer, Rost, Siman, Skarote; Associate Professors Munro and Pansino (Chairman); Assistant Professor Jalali.

Laboratory Facilities

The Electrical Engineering Department maintains modern, well-equipped laboratory facilities for circuits, electronics, communications, electromagnetics, energy conversion, control systems, and digital systems. The department also maintains an Intel Microprocessor Development System with sufficient capability for complete design of both software and hardware for microprocessor-based systems. Computing facilities include a TRS-80 Model 16 microcomputer and a Sanyo 555 microcomputer, both of which are 16 bit machines, in addition to video terminals interfaced to the University mainframe.

Course Descriptions

601. *Basic Circuit Theory I.* Basic principles of linear circuits, circuit concepts and laws, methods of analysis, network theorems. Power in DC circuits. Transients in RC and RL circuits. Magnetic circuits. Prereq. or concurrent: Math. 572. 3 q.h.

602. *Basic Circuit Theory II.* Sinusoids, phasors, complex numbers. Analysis of AC circuits, phasor diagrams, impedance and admittance, resonance. Power in AC circuits. Magnetic circuits with AC signals. Prereq. or concurrent: Math. 673, Prereq.: EE 601. 3 q.h.

603. *Basic Circuit Theory III.* Mutual inductance and transformers. Frequency response and transfer functions. Three phase circuits. Fourier series applications to non-sinusoidal periodic signals. Fourier transforms and laplace transforms in circuit analysis. Prereq.: EE 602. 3 q.h.

611. *Instrumentation and Computation Laboratory I.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using ECAP or equivalent. Prereq. or concurrent: EE 601 or equivalent. 1 q.h.

612. *Instrumentation and Computation Laboratory II.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using ECAP or equivalent. Prereq.: EE 611, Engl. 551. 1 q.h.

613. *Instrumentation and Computation Laboratory III.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using ECAP or equivalent. Prereq.: EE 612. 1 q.h.

701. *Linear Network Synthesis and Design.* RC and LC driving-point impedances. Lossless two-ports and active two-ports with applications to filter design. Sensitivity analysis. Computer-aided design. Prereq.: EE 603, EE 613, and IE 642. 3 q.h.

702. *Fundamentals of Logic Circuit Design.* Introductory Digital Design Concepts: number systems,

Boolean Algebra, basic gates, and truth tables. Minimization and design of combinational circuits: maps, VEM theory, and reduction techniques. MSI and LSI circuits and their applications: digital circuits, coders and decoders, bus systems, and practical aspects of combinational logic design. Prereq.: EE 707. 3 q.h.

703. *Linear Control Systems.* Introduction to analysis and design of linear, continuous-time and discrete-time systems using transfer functions and state-variable methods. Must be taken concurrently with EE 703L. Prereq.: EE 603. 3 q.h.

703L. *Control Systems Laboratory.* Laboratory experiments and exercises designed to accompany EE 703. Must be taken concurrently with EE 703. Prereq.: EE 613. 1 q.h.

704, 705, 706. *Field Theory: Analysis, Applications and Design I, II, III.* Vector relations, static electric fields, dielectric materials, boundary conditions, field mapping, steady electric currents and their magnetic fields, and motion of charged particles. Ferromagnetics, time changing electric and magnetic fields, Maxwell's equations, field and circuit theory relationships, plane waves, and poynting-vector energy relations. Transmission line theory, terminated lines, impedance matching and transformation, waveguides, simple antenna systems, and group and phase velocity. Must be taken concurrently with EE 704L, 705L, and 706L, respectively. Prereq.: EE 603, Physics 611, 611L, CE 601, ME 501. Prereq. or concurrent: Math 706 for EE 704. 3+3+3 q.h.

704L, 705L, 706L. *Field Theory Laboratory I, II, III.* Laboratory experiments and exercises, and boundary-value computer problems to accompany EE 704, 705, and 706. Must be taken with EE 704, 705, and 706, respectively. Prereq.: EE 603, Physics 611, 611L, CE 601, ME 501, IE 642. Prereq. or concurrent: Math 706 for EE 704. 1+1+1 q.h.

707, 708. *Electronic Circuit Analysis and Design I, II.* Terminal characteristics of electronic devices such as diodes, bipolar junction transistors, and field-effect transistors. Bias and small-signal models. Single- and multi-stage amplifiers. Power amplifiers. Frequency response. Feedback. Oscillators. Prereq.: EE 603. 3+3 q.h.

707L, 708L. *Electronic Circuit Laboratory I, II.* Laboratory experiments and exercises designed to accompany EE 707 and 708. Should be taken concurrently with EE 707 and 708, respectively. Prereq.: EE 613. Prereq. or concurrent: EE 707 for 707L, EE 708 for 708L. 1+1 q.h.

709. *Communication Systems.* Signal Analysis. Power spectral density. Design and analysis of modulation, detection, selection, and transmission circuits and systems. Must be taken concurrently with 709L. Prereq.: EE 708. 3 q.h.

709L. *Communication Systems Laboratory.* Laboratory experiments and exercises designed to accompany EE 709. Must be taken concurrently with EE 709. Prereq.: EE 708L. 1 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: Math. 572 or equivalent. 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.: EE 714R or permission of Electrical Engineering chairman. 4 q.h.

800. *Special Topics.* Special topics, new developments in Electrical Engineering. Subject matter, special prerequisites, and credit hours to be announced in advance of each offering. May be repeated under different subject matter to a maximum of eight credit hours. Prereq.: Senior standing in Electrical Engineering. 1-4 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. Three hrs. lecture and 3 hrs. laboratory. Prereq.: EE 706, EE 708. 4 q.h.

807R. *Pulse, Digital and Switching Circuits.* The generation and processing of nonsinusoidal waveforms in active and passive devices and circuits. Pulse, digital, and switching waveforms. Prereq.: EE 702, EE 709. 4 q.h.

808R. *Electronic Circuits Signals and Systems.* A continuation of Electrical Engineering 709 with emphasis on problems arising from communications and electronics areas. Correlation of classical differential equations approach to time and frequency domain interrelationships with Fourier and Laplace methods, and applications of these concepts to problems in communications and control arts. Numerical methods, including impulse-train techniques. Prereq.: EE 709. 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 super-conductors; electric and magnetic polarization; ferro-electricity and ferromagnetism; electromechanical and magnetic mechanical effects; influence of material properties on energy storage, conversion, and control. Three hrs. lecture and 3 hrs. laboratory. Prereq.: EE 706, ME 641. 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 impendance traveling wave antennas. Prereq.: EE 706. 4 q.h.

816. *Theory and Fabrication of Solid-state Devices.* An introductory study of physical theory, design, and fabrication of discrete devices and integrated circuits. Electronic properties of semiconductors such as carrier concentration, energy gap, mobility, lifetime. Techniques of fabrication such as oxidation, diffusion, alloying, ion implantation, metalization, masking. Prereq.: EE 708, Physics 510, EE 705. 4 q.h.

819R. *Plasma Dynamics.* The application of plasmakinetic theory; charged particle interaction; waves in plasma; plasma oscillation; magnetic fluid dynamics; plasma gyrations to electrical problems. Prereq.: EE 706, ME 641. 4 q.h.

823. *Microprocessor Design and Applications.* Analysis of modern storage devices, microprocessor architecture, potential applications and limitations, implementation, peripheral devices, interfacing, and typical microcomputer applications. Prereq.: EE 826, EE 826L. 4 q.h.

825. *Sequential Logic Circuits Analysis and Design.* Sequential machine fundamentals: basic cell, flip-flops, timing and triggering considerations, and types of sequential machines. Traditional approaches to sequential analysis and design: state diagrams, basic design fundamentals, and registers and counters. Introduction to multi-input system controller design: controllers, design requirements, and clocks and power supply requirements. Must be taken concurrently with EE 825L. Prereq.: EE 702. 3 q.h.

825L. *Combinational and Sequential Circuits Laboratory.* Laboratory exercises to accompany EE 825. Must be taken concurrently with EE 825. Three hours laboratory. 1 q.h.

826. *Advanced Logic Circuits Analysis and Design.* System controllers utilizing combinational MSI/LSI circuits: decoders, multiplexers, memories, and logic arrays. Introduction to programmable system controllers: types and general requirements. Asynchronous finite state machines: asynchronous circuits design, cycles and races, and hazards. Must be taken concurrently with EE 826L. Prereq.: EE 825 and 825L. 3 q.h.

826L. *Advanced Logic Circuits Laboratory.* Laboratory exercises to accompany EE 826. Must be taken concurrently with EE 826. Three hours laboratory. 1 q.h.

840. *Electric Power Systems.* Basic networks and transmission lines, balanced and unbalanced faults; fault studies and load flow studies employing computers; control of system generation components, stability and protection of power systems. Prereq. or concurrent: EE 845, or permission of Electrical Engineering chairman. 4 q.h.

844, 845. *Electromagnetic Energy Conversion I, II.* An examination of lumped parameter electromechanics as related to electromagnetic field theory with development of theoretical and design parameters for electrical energy conversion devices such as transformers, dc motors and generators, synchronous motors and generators and induction motors including typical and special applications of each. Must be taken concurrently with EE 844L, EE 845L, respectively. Prereq. or concurrent ME 641. Prereq.: EE 603, EE 613, EE 705. 3+3 q.h.

844L, 845L. *Electromagnetic Energy Conversion Laboratory I and II.* Required experimental work designed to accompany the corresponding lecture courses. Must be taken concurrently with EE 844, EE 845, respectively. 1+1 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.: EE 808R. 4 q.h.

879. *Computer-Aided Design of Electrical Networks and Systems.* The design, analysis, and modeling of linear and nonlinear networks and systems using a modern computer program. Development and use of library models of devices, subcircuits, and subsystems. The student will do at least one design project. Prereq.: EE 701, 703, 709 and IE 642. 4 q.h.

880. *Linear Control System Design.* Linear control system compensation techniques in both the time and frequency domains. Design of analog and digital compensators. Compensation to eliminate the effects of parameter variations. Prereq.: EE 703. 4 q.h.

881. *Modern Control System Design.* Design of analog and digital compensators using state-variable techniques. Design of compensators for minimum fuel constraints and minimum mean square error. Prereq.: EE 703. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN ELECTRICAL ENGINEERING

The Electrical Engineering Bachelor of Engineering degree major requires 78 hours of Electrical Engineering coursework. In addition, 31 quarter hours of out-of-department Engineering; 26 quarter hours of Basic Science; 26 quarter hours of Mathematics (beyond Trigonometry); 24 quarter hours of Social Studies and Humanities (8 of which must be Humanities); 6 quarter hours of Health and Physical Education; 8 quarter hours of English (Basic Composition I and II) are required.

A quarter-by-quarter arrangement of courses for each individual student is compiled and approved in consultation with the student's Electrical Engineering advisor.

The student must carefully plan the program as it is currently impossible to offer each course every quarter and many courses must follow specific sequences.

ELECTRICAL ENGINEERING CURRICULUMS

FIRST YEAR	Cr. Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Chemistry 515, 516 General Chemistry I, II	8
ME 501 Engineering Drawing	3
Physics 510 General Physics I	4
Physics 610 General Physics II	4
Physics 610L General Physics II Laboratory	1
IE 642 Engineering Computations	4
Engineering 581	2
English 550, 551 Basic Composition I, II	8
Humanities Elective	4
H&PE Activities	1
	53

SECOND YEAR	Cr. Hrs.
Math. 674 Calculus IV	4
Math. 705, 706 Differential Equations I, II	8
CE 601 Mechanics I	4
ME 603 Thermodynamics	4
ME 641 Dynamics	4
MetE 606 Engineering Materials	4
Physics 611 General Physics III	4
Physics 611L General Physics Laboratory	1
EE 601, 602, 603 Basic Circuit Theory I, II, III	9
EE 611, 612, 613 Instrumentation and Computation Laboratories I, II, III	3
Econ 520 Principles of Economics 1	4
	49

THIRD YEAR	Cr. Hrs.
EE 701 Linear Network Synthesis and Design	3
EE 702 Fundamentals of Logic Circuit Design	3
EE 703 Linear Control Systems	3
EE 703L Control Systems Laboratory	1
EE 704, 705, 706 Field Theory I, II, III	9
EE 704L, 705L, 706L, Field Theory Laboratory I, II, III	3
EE 707, 708 Electronic Circuit Analysis	6
EE 707L, 708L Electronic Circuit Laboratory I, II	2
EE 709 Communication Systems	3
EE 709L Communication Systems Laboratory	1
Science Elective	4
Engineering Science Elective	3
Humanities Elective	4
Social Studies Elective	4
	49

FOURTH YEAR	Cr. Hrs.
EE 844, 845 Electromagnetic Energy Conversion I, II	6
EE 844L, 845L, Electromagnetic Energy Conversion Laboratory I, II	2
EE Electives	24
Engineering Science Elective	3
Social Studies Electives	8
H&PE 590 Health	3
H&PE Activities	2
	48

Department Technical Electives	Hrs.
EE 800 Special Topics	1-4
EE 805R Quantum Electronics	4
EE 807R Pulse, Digital and Switching Circuits	4
EE 808R Electronic Circuits Signals and Systems	4
EE 812R Molecular Engineering	4
EE 815R Energy Radiation and Propagation	4
EE 816 Theory and Fabrication of Solid-State Devices	4
EE 819R Plasma Dynamics	4
EE 823 Microprocessor Design and Applications	4
EE 825 Sequential Logic Circuits Analysis and Design	3
EE 825L Combinational and Sequential Logic Circuits Laboratory	1
EE 826 Advanced Logic Circuits Analysis and Design	3
EE 826L Advanced Logic Circuits Laboratory	1
EE 840 Electric Power Systems	4
EE 850 Communication Systems II	4
EE 880 Linear Control System Design	4
EE 881 Modern Control System Design	4

INDUSTRIAL ENGINEERING

Professors Driscoll (Chairman), and Sorokach; Associate Professor Mehri; Assistant Professor Sohn.

Industrial engineering is a broad professional discipline concerned with the effective use of the basic resources of production - people, equipment and materials. The industrial engineer functions as a problem-solver, innovator, coordinator and agent of change in a wide variety of positions in the manufacturing industries, the service industries, and the government. The industrial engineer's unique background combines a study of science, mathematics and management principles with the principles of engineering analysis and design to provide access to a wide variety of flexible technical and managerial careers.

The aim of the Industrial Engineering Department is to produce graduates who secure entry level professional engineering positions, who practice the profession ethically and effectively, who maintain their professional competency through lifelong learning, and who advance in one of the many technical and managerial career paths available to industrial engineers. The industrial engineering program prepares its students for these accomoplishments by providing them with a broad scientific and engineering base via courses in mathematics, physics, chemistry and the engineering sciences. In addition, courses in the social sciences and the humanities develop a sensitivity to the social context within which the profession must be ethically practiced. These courses are accompanied by industrial engineering courses in the areas of

manufacturing systems, man-machine systems, management systems, and management science. The program also fosters the development of communications and computer skills by integrating their practice into industrial engineering courses. Industrial engineering students graduate with a sound basis for lifelong career development in engineering practice, research, and management.

The Industrial Engineering Laboratories in the Engineering Science Building include a computations laboratory, a facilities design laboratory, a manufacturing laboratory, and a methods laboratory.

The computations laboratory is equipped with microcomputers and auxiliary hardware and software. The available software includes assembly language, BASIC, FORTRAN, Pascal, a spread sheet program and two word processing languages.

The facilities design laboratory is equipped with drafting equipment, layout tables and miscellaneous scale models for facilities layouts.

The manufacturing laboratory contains injection molding machines, a compact CNC lathe with computer simulation capability, a compact CNC milling machine, and various assorted measurement devices.

The methods laboratory contains time study equipment, including a video tape recorder with time lapse capability, a conveyor system, a CNC milling machine, and several robots which can be controlled by computer.

In addition, Industrial Engineering facilities include Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) laboratories in Harry Meshel Hall.

The CAD laboratory in Harry Meshel Hall includes over thirty IBM PC/XT CAD workstations, each with AutoCAD software for computer-aided drawing and XL/NC software for tool path generation. The workstations are linked to the university's microcomputer network and to plotters and printers. In addition, the CAD laboratory contains two IBM 5080 CAD/CAM worksatations which can be used in running finite element analysis, modal analysis, and pre- and post-processing CAD/CAM software.

The CAM laboratory in Harry Meshel Hall includes two other IBM 5080 CAD/CAM workstations, a CNC lathe, a CNC milling machine, a conveyor system and two industrial robots, and accessories.

620. *Engineering Statistics.* Fundamentals of modelling data from nondeterministic systems, including the interpretation of data as output from a random process, the determination of model structure, the identification of model parameters, the validation of the model, and the prediction of system performance. Prereq.: Math 673, IE 642. 4 q.h.

625. *Industrial Organization and Management.* The general principles of industrial organization and management. 4 q.h.

626. *Job Analysis and Evaluation.* The fundamentals and techniques of job analysis, job description, job specification, and wage determination. Management wage and salary systems, merit increases, objective performance appraisal. Establishing and using charts and graphs in system administration. Mechanics of establishing complete systems. Prereq.: IE 625. 4 q.h.

636. *Methods Engineering.* Techniques for analysis of task performance, the use of process charts and various methods of work simplification, man-machine relation analysis. Theory and practice of time study and other methods of measuring and establishing performance level and productivity. Prereq. or concurrent: IE 625. 4 q.h.

636L. *Methods Engineering Laboratory.* Practice in analyzing and recording tasks. Determination of time standards and productivity requirements. Analysis and evaluation of actual plant operations. Taken concurrently with IE 636. Three hours of laboratory. Prereq.: IE 625. 1 q.h.

642. *Engineering Computations.* Flow diagramming, problem layout and problem structuring for the numerical solution of elementary engineering problems on a digital computer. Engineering problems will be solved by using FORTRAN on the mainframe computer and BASIC on microcomputers. Prereq. or concurrent: Math. 572 and Physics 510. 4 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 designs. Prereq.: Junior standing. 4 q.h.

710. *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, dispatching, and plant capacity. Prereq.: IE 625. 4 q.h.

715. *Industrial Engineering Analysis I.* An introduction to the engineering design process and the survey and application of quantitative methods and decision making techniques engineers apply to the design and evaluation of industrial processes and systems for assuring reliability of performance. Emphasis on the philosophy of engineering design; problem definition, search for alternative solutions and specification of the final solution. Prereq.: IE 642, Math. 705. 4 q.h.

724. *Engineering Economy.* An introduction to the analysis and evaluation of factors that effect the economic success of engineering projects. Topics include basic accounting, interest, depreciation, cost classification, comparison of alternatives, make-buy decisions, and replacement models. Prereq.: Math. 673. 4 q.h.

725. *Manufacturing Engineering.* Techniques of metal cutting and a description of metal removing equipment along with an investigation of economical

optimization of machining parameters. Associated topics include numerically controlled machine tool languages, computer aided manufacturing, metal forming and plastic molding. Prereq.: Math, 705, IE 642. Prereq. or concurrent with Mat. Sci. 606.
4 q.h.

725L. *Manufacturing Engineering Laboratory.* Experimental work in measurement and gaging, practice in the operation and analysis of several machining, joining and molding processes. Operation of numerically controlled machines and simple NC programming. Taken concurrently with IE 725. Three hours of laboratory. Prereq.: Math 705, IE 642. Prereq. or concurrent: MetE 606. 1 q.h.

727. *Industrial Engineering Analysis II.* Background and techniques for the use of descriptive mathematical models in solving complex engineering problems. Emphasis on the numerical solution of problems which cannot be solved analytically. Inventory, queueing, and material handling systems will be simulated. Prereq.: IE 642, IE 715, Math. 743. 4 q.h.

730. *Quality Control.* Tools for distinguishing between chance and assignable causes of quality variation in production processes. Introduction to the mean, standard deviation and range charts for variables and the P and C charts for attributes. A statistical approach to acceptance procedures. Applications of statistical process control to manufacturing operations, reliability and life testing. Prereq.: IE 620. 4 q.h.

750. *Introduction to Engineering Relations.* The interaction of engineering practices and society. Regulatory considerations in the preparation and criticism of contracts and specifications. Emphasis on the interrelationship of engineering systems with law, society, and ethics. Prereq.: Junior standing
4 q.h.

810. *Special Topics.* Special topics and new developments in Industrial Engineering. Subject matter, credit hours, and special prerequisites to be announced in advance of each offering. Prereq.: Senior standing in Industrial Engineering or consent of instructor. 1-4 q.h.

821-822. *Facilities Design.* The application of engineering techniques to the analysis, design, and justification of a production facility which may be product or service oriented. Equipment selection, process flow, material flow and material handling will be considered in the design of a system which is economically feasible and compatible with the processing requirements. The system design will involve field investigation, acquisition and analysis of data, and preparation of drawings and final report. Prereq.: 150 hours of engineering degree credit completed.
4+4 q.h.

823. *Automation and Computer Aided Manufacturing.* Fundamental concepts in manufacturing, automation and automation strategies. Analysis of high volume discrete parts production lines . Automated flow lines and line balancing. Introduction to numerical control, Computer-Aided Manufacturing/Design and Robotics. Fundamentals of manufacturing support systems, group technology and flexible manufacturing systems. Prereq.: IE 725. 4 q.h.

825. *Advanced Engineering Economy.* An extension of the topics of IE 724. Analysis of economic factors raised by productivity improvement and wage and salary structure. Study of impact on economy of production and cost structure of the manufacturing organization. Prereq.: IE 724. 4 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. Conferences scheduled as required. Prereq.: 150 hours of degree credit completed.
2+2+2 q.h.

850. *Introduction to Operations Research.* Formulation and solution of industrial engineering problems using operations research models. Topics covered include inventory models, queueing models, and the specialization of linear models to equipment replacement, project planning, assignment, and transshipment problems. Prereq.: IE 851 4 q.h.

851. *Linear Programming.* Formulation and solution of engineering problems using linear programming. Model formulation, the primal, dual and transportation simplex methods, duality theory, and sensitivity analysis. Prereq.: Math 743. 4 q.h.

860. *Operations Engineering.* Application of analytical tools of operations research and linear programming to operational problems of industry. Emphasis on the practical aspects of applying the tools, including data collection, modeling, model verification, and the interpretation, documentation, and presentation of the results. Prereq.: IE 727, IE 850, IE 851. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN INDUSTRIAL ENGINEERING

FIRST YEAR	Cr. Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Physics General I	4
English Basic Composition I, II	8
Social Studies Electives	4
ME 501 Engineering Drawing	3
Engineering 581	2
Health and Physical Education Activity	1
Chem. General I, II	8
Health and Physical Education 590	3
IE 642 Engineering Computations	4
	51

SECOND YEAR	Cr. Hrs.
Math. 674 Calculus IV	4
Math. 705 Differential Equations I	4
Math. 743 Statistics	4

Physics General II, III	8
CE 601, 602 Mechanics I, II	8
Met. E. 606 Materials	4
IE 625 Indust. Org. and Mgmt.	4
IE 636 Methods Engineering	4
IE 636L Methods Engineering Lab	1
IE 620 Engineering Statistics	4
Speech 652 Business and Professional	3
Health and Physical Activities	2
	50

THIRD YEAR	Cr. Hrs.
IE Elective*	4
IE 714, 715 Design I II	8
IE 727 Analysis	4
IE 724 Engineering Economy	4
IE 730 Quality Control	4
IE 725 Manufacturing Engineering	4
IE 725L Manufacturing Engineering Lab	1
Engineering Elective*	4
ME 641 Dynamics	4
Social Studies Elective	8
Science Elective	4
	49

FOURTH YEAR	Cr. Hrs.
Engineering Elective*	4
IE Elective*	4
IE 821, 822 Facilities Design I, II	8
IE 823 Automation and Computer Aided Mfg	4
IE 850 Intro to Operations Research	4
IE 851 Linear Programming	4
IE 860 Operations Engineering	4
EE 714R Circuits and Electronics	4
Social Studies Electives	4
Humanities Electives	8
	48

MECHANICAL ENGINEERING

Professors D'Isa (Chairman), Tarantine; Associate Professors Arnett, Smith, Suchora; Assistant Professors Elias, Kim; Instructor D'Angelo.

Mechanical engineering is the branch of the engineering profession that deals with the conversion and utilization of energy; the design of machines and engines of all types; and the instrumentation and control of physical processes, systems and environments. The challenge of mechanical engineering is to use the principles of mathematics and the physical and thermal sciences to design and construct what people need and want. Mechanical engineers are concerned with the practical purpose and function of a machine or system, as well as its design for strength, reliability, safety, economy and appearance.

*Engineering and Industrial Engineering electives must be selected with the consent of the student's departmental advisor.

The ongoing mission of the Department of Mechanical Engineering is to inspire students to attain their academic potential, to master the art of applying their knowledge, and to develop into mature professional individuals. In support of this mission, the faculty strive to maintain programs which are attuned to new knowledge and to the ever-changing needs of industry and society, thereby preparing graduates to be productive in a challenging career wherever the opportunities may arise.

500. *Drawing Fundamentals.* Instruction in the use of drafting instruments. Introduction 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. Not applicable for credit toward the Bachelor of Engineering Degree. 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.: ME 500 or equivalent. 3 q.h.

504. *Graphic Science and Design.* Principles of conceptual design. Fundamentals of descriptive geometry including intersections and developments. Charts, graphs, monographs, graphical computations. Six hours of lecture laboratory a week. Prereq. or concurrent: ME 501. 4 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. or concurrent: Math. 673. 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.: ME 603. Prereq. or concurrent: Chem. 516. 4 q.h.

641. *Dynamics.* Basic relationships of the kinematics of particles and rigid bodies. Kinematics 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.: CE 601. 4 q.h.

680. *Engineering Computer Graphics.* Computer graphics as a tool for computer aided design. Programming of drawings and graphs having variable position, dimensions and scale. Use of interactive software with 2-D and 3-D capabilities. Two hours lecture and three hours laboratory per week. Intended to compliment IE 642. Prereq.: ME 500. Prereq. or concurrent IE 642. 3 q.h.

704L. *Applied Thermodynamics Laboratory.* Experiences involving basic measurement techniques,

power and refrigeration cycles, and fossil fuels. Three hours of laboratory a week. Prereq. or concurrent: ME 604. 1 q.h.

725. *Heat Transfer I.* The fundamentals of heat transfer by conduction, convection, and radiation; investigations of combinations of these modes of heat transfer. Prereq.: Math. 705, ME 603, CE 716; Prereq. or concurrent: IE 642. 4 q.h.

742. *Kinematics of Machines.* Graphical, analytical and computer position, velocity and acceleration analysis of mechanisms. Design of link and cam mechanisms to perform specific machine functions. Prereq.: ME 641, IE 642. 4 q.h.

751. *Stress and Strain Analysis I.* Analysis (including Mohr Circle Representation) of two- and three-dimensional stresses and strains at a point. Application of theory to techniques of experimental stress analysis. Stress concentration factors. Energy methods; Castigliano's Theorem. Dynamic loading. Introduction to theories of failure. Prereq.: Math. 673 and CE 603. 4 q.h.

762. *Design of Machine Elements.* Parameters and design criteria of various elements found in machines. Elements considered include shafts, springs, curved beams and thickwalled cylinders, flywheels, belts and chains, clutches and brakes, bearings, lubrication and gears. Must be taken concurrently with ME 762L. Prereq.: ME 751. 4 q.h.

762L. *Design of Machine Elements Laboratory.* Practical design problems incorporating force analysis, material selection and sizing of machine elements. Three hours laboratory per week. Must be taken concurrently with ME 762. 1 q.h.

781. *Dynamic Systems Analysis.* Theoretical study of the dynamics of linear lumped parameter models of mechanical, electrical, fluid, thermal, and mixed systems. Laplace transforms and input response concepts. Prereq.: ME 641; Math 705; EE 714R; ME 725 (or concurrent). 4 q.h.

800. *Special Topics.* Special topics and new developments in mechanical engineering. Subject matter, credit hours, and special prerequisites are announced in advance of each offering. May be repeated to a maximum of eight credit hours with different content. Prereq.: Junior standing in Mechanical Engineering, or consent of instructor. 1-4 q.h.

805. *Engineering Design.* Design process. Creativity and inventiveness. Tools of decision making, engineering economics, reliability, optimization. Two or three written design projects required. Prereq.: ME 604, ME 725, ME 742, ME 751, ME 781, CE 716, IE 724; or consent of advisor. 4 q.h.

806. *Design of Thermal Systems.* Continuation of ME 805 with emphasis on systems for energy exchange. System components include heat exchangers, pumps, compressors, turbines, and expansion engines. One or two written design projects required. Prereq.: ME 805, ME 825, ME 830, or consent of advisor. 4 q.h.

807. *Design of Mechanical Systems.* Continuation of ME 805 with emphasis on rotating, reciprocating, and oscillating mechanisms and machines. One or two written design projects required. Prereq.: ME 762, ME 762L, ME 805; Prereq. or concurrent: ME 870; or consent of advisor. 4 q.h.

810. *Introduction to Biomedical Engineering.* Applications of engineering principles to the human body and to body systems. Topics introduced include the respiratory, cardiovascular, and digestive systems, along with temperature regulation mechanisms and prosthetics. Prereq.: Senior standing or consent of instructor. 4 q.h.

811. *Solar Engineering.* Radiational characteristics of solar energy, glass materials and selective coatings. Analysis of flat plate collectors, concentrators and thermal storage. System simulation and economic analysis for optimization of basic solar systems. Prereq.: Phys. 610, ME 725, IE 724. 4 q.h.

815. *Energy Conversion Systems.* Conventional and nonconventional systems that convert primary forms of energy into mechanical and/or electrical energy. Analysis and design of equipment used in conventional systems with emphasis on reciprocating and rotating machinery. Prereq.: ME 604, ME 725, Prereq. or concurrent ME 830. 4 q.h.

823. *Refrigeration and Air Conditioning.* The application of thermodynamic, fluid flow, and heat transfer principles to the design of domestic and industrial systems for material processes and human comfort. Design of equipment to meet required heating and cooling loads. Prereq.: CE 716 and ME 725. 4 q.h.

825. *Heat Transfer II.* A continuation of Heat Transfer I involving more advanced topics in conduction, convection, and radiation. Design problems solved analytically, numerically, and by computer methods. Prereq.: Math. 706, IE 642, and ME 725. 4 q.h.

825L. *Heat Transfer II Laboratory.* Experiments involving conduction, convection, and radiation modes of heat transfer. Heat exchangers. Three hours of laboratory a week. Prereq.: ME 725. 1 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. Differential analysis and nonviscous flow theory. Prereq.: CE 716 or Math. 706. 4 q.h.

830L. *Fluid Mechanics Laboratory.* Experiments on compressible fluid flow in the subsonic and supersonic regions. Three hours of laboratory a week.Prereq.: ME 830 & CE 716L. 1 q.h.

842. *Dynamics of Machinery.* Continuation of ME 742. Dynamic analysis and balancing of link and cam mechanisms. Particular emphasis is on rotating and

reciprocating machinery. Prereq.: ME 742 and ME 762. 4 q.h.

850L. *Stress and Strain Analysis Laboratory.* Static and dynamic electrical strain gage applications. Introduction to photoelasticity. Theory and application of brittle lacquers. Three hours laboratory per week. Prereq.: ME 751. 1 q.h.

852. *Stress and Strain Analysis II.* Continuation of ME 751. Introduction to classical elasticity, inelastic behavior and high temperature creep. Emphasis is on design applications. Prereq.: ME 751 and Math 706. 4 q.h.

862. *Human Factors in Mechanical Design.* A mechanical design course emphasizing aesthetics, safety, and the comfort of the human body as criteria, and human sensory processes as design factors; topics such as vehicular safety devices, prosthetic devices, and household appliances are discussed. Prereq.: ME 751. 4 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.: CE 603, ME 641, ME 781, Math 705, or consent of instructor. 4 q.h.

870L. *Mechanical Vibrations Laboratory.* Experiments involving mechanical systems and some electrical analogies. Analog computer simulation of vibration systems. Taken concurrently with ME 870. Three hours of laboratory a week. 1 q.h.

872. *Engineering Acoustics.* The nature of sound and its propagation; analysis and control of sound and noise production in mechanical equipment; transmission and absorption of sound in engineering materials, ultrasonics, structural acoustics, basic measurements, and equipment. Prereq.: ME 781. 4 q.h.

872L. *Engineering Acoustics Laboratory.* Applications of acoustics instrumentations to problems involving room acoustics, sounds in pipes, noise barriers, and machinery noise. Taken concurrently with ME 872. Three hours of laboratory a week. 1 q.h.

883. *Mechanical Engineering Measurements.* Fundamentals of measuring phenomena such as temperature, pressure, displacement, etc., including principles of operation and performance characteristics of instrumentation commonly used in mechanical engineering. Emphasis on generation, conditioning, and recording of time-varying signals. Prereq.: ME 641, CE 602, EE 714R. 4 q.h.

884. *Finite Element Analysis Applied to Mechanical Engineering Design.* Fundamental principles of finite element analysis with emphasis on applications to design in areas pertinent to mechanical engineering, including elasticity, vibrations, fluid mechanics and heat transfer. Use of interactive computer software. Prereq.: ME 725, 751, 781. Prereq. or concurrent: ME 830. 4 q.h.

892. *Control Theory.* Introduction to the principles of automatic control of electro-mechanical and hydraulic systems using Laplace transform methods. Discussion of system stability. Prereq.: Math. 706, ME 781. 4 q.h.

The Department of Mechanical Engineering maintains three drafting rooms, eight laboratories and a computer room in the Engineering Science Building . A wide array of modern equipment, including instrumentation and personal type computers, support academic and research activities in thermodynamics, heat power, internal combustion engines, heat transfer, fluid mechanics, photoelasticity, experimental stress analysis, mechanical vibrations and acoustics. The students and faculty also utilize the computer facilities in the newly completed Harry Meshel Hall.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN MECHANICAL ENGINEERING

FIRST YEAR	Cr. Hrs.
Math. 571, 572, 673 Calculus I, II, III	14
Chem. 515, 516 General Chemistry I, II	8
Phys. 510 General Physics I	4
Eng. 550, 551 Basic Composition I, II	8
Engr. 581 Introduction to Engineering	2
ME 501 Engineering Drawing	3
ME 504 Graphic Science and Design	4
IE 642 Engineering Computations	4
H&PE 590 Health Education	3
H&PE Activity	2
	52

SECOND YEAR	Cr. Hrs.
Math. 674 Calculus IV	4
Math. 705, 706 Differential Equations I, II	8
Phys. 610, 611 General Physics II, III	8
CE 601, 602, 603 Mechanics I, II, III	12
ME 603, 604 Thermodynamics I, II	8
ME 641 Dynamics	4
ME 680 Engineering Computer Graphics	3
H&PE Activity	1
	48

THIRD YEAR	Cr. Hrs.
MetE 606 Engineering Materials	4
ME 751 Stress and Strain Analysis I	4
ME 725 Heat Transfer I	4
ME 762, 762L Machine Design I, Lab	5
CE 716, 716L Fluid Mechanics, Lab	4
ME 742 Kinematics of Machines	4
ME 781 Dynamic Systems Analysis	4
EE 714R, 715R Circuits and Electronics, Electrical Devices	8
IE 724 Engineering Economy	4
Elective (Science)	4
Elective (Social Studies)	4
	49

FOURTH YEAR	Cr. Hrs.
ME 805 Engineering Design	4
ME 830 Fluid Mechanics	4
Electives (Social Studies)	12
Electives (Humanities)	8
Electives (Mechanical Engineering)	23
	51
TOTAL	**200**

ELECTIVES

DEPARTMENTAL ELECTIVES	Cr. Hrs.
704L Applied Thermodynamics Laboratory	1
800 Special Topics	1-4
806 Design of Thermal Systems	4
807 Design of Mechanical Systems	4
810 Introduction to Biomedical Engineering	4
811 Solar Engineering	4
822 Internal Combustion Engines	4
823 Refrigeration and Air Conditioning	4
825 Heat Transfer II	4
825L Heat Transfer II Laboratory	1
830 Fluid Mechanics	4
830L Fluid Mechanics Laboratory	1
842 Dynamics of Machinery	4
850L Stress and Strain Analysis Laboratory	1
852 Stress and Strain Analysis II	4
862 Human Factors in Mechanical Design	4
870 Mechanical Vibrations	4
870L Mechanical Vibrations Laboratory	1
872 Engineering Acoustics	4
872L Engineering Acoustics Laboratory	1
883 Mechanical Engineering Measurements	4
884 Finite Element Analysis	4
892 Control Theory	4

At least three ME laboratory courses are required as electives.

Areas of Specialization

Each student must concentrate at least eighteen (18) of the Mechanical Engineering elective hours in either of two areas of specialization, as follows:

Heat and Fluid Flow

(ME 806 and ME 825; two from ME 811, ME 822, and ME 823; and two from ME 704L, ME 825L, and 830L.)

Rigid and Deformable Solids (ME 807 and ME 870; two from ME 842, ME 852, and ME 872; and two from ME 850L, ME 870L, and ME 872L.)

MECHANICAL ENGINEERING MINOR

The following courses are recommended for students seeking a minor in mechanical engineering:

ME 501 - Engineering Drawing	3 q.h.
ME 603 - Thermodynamics I	4 q.h.
ME 641 - Dynamics	4 q.h.
ME 725 - Heat Transfer	4 q.h.
ME 751 - Stress and Strain Analysis I	4 q.h.
ME 604 - Thermodynamics II or	
ME 742 - Kinematics of Machines	4 q.h.
Total	**23 q.h.**

In cases where required courses in the student's major indicate significant duplication of subject matter with the above courses, appropriate courses substitutions will be recommended by the department in consultation with the advisor in the student's major discipline.

The College of Fine and Performing Arts

Timothy J. Lyons, Dean

ORGANIZATION AND DEGREES

The College of Fine and Performing Arts consists of the Department of Art, the Department of Speech Communication and Theatre, and the Dana School of Music. The degrees granted are the Bachelor of Arts (A.B.), Bachelor of Fine Arts (B.F.A.), Bachelor of Music (B.M.), and, in conjunction with the School of Education, the Bachelor of Science in Education (B.S. in Ed.).

The activities of the college are conducted primarily in the Fine and Performing Arts Center, Bliss Hall. This structure houses the Administrative Offices of the college as well as classrooms, studios, laboratories and performance areas serving most of the curricular and co-curricular programs in art, speech communication/theatre, and music. Additional activities are held in the Stambaugh Auditorium, Cushwa Hall, and Kilcawley Center.

The college holds as its major objective the highest quality of instruction, including pre-professional training in areas such as studio art, applied music, telecommunications, and theatre; the training of teachers; and the offering of a wide variety of courses to non-majors from all areas of the University.

The major programs in the College constitute an excellent basis for a liberal education. For those individuals who do not necessarily wish to pursue a career in one of the fields but who desire to spend their four undergraduate years developing a more general but solid academic foundation, one of the arts or speech communication can provide an excellent pivotal point for their studies.

Another important objective of the College is to provide the university community maximum opportunity for exposure to the fine arts.

REQUIREMENTS FOR DEGREES

PRE-COLLEGE SUBJECTS

	HIGH SCHOOL UNITS			
	B.F.A.	B.M.	B.A.	B.S. in ED.
English	4	4	4	4
U.S. History	1	1	1	1
U.S. Government	½	½	½	½
Other Social Science	½	½	½	½
Laboratory Science	1	1	1	1
Other Science	1	1	1	1
Other Science or Social Science	1	1	1	1
Foreign Language*	2	2	2	2
Algebra	2	2	2	2
Geometry	1	1	1	1
Fine or Performing Arts	1	1	1	1
Others*	1	1	1	1

Musical performance ability adequate for undertaking college-level music courses.

In the University Course Requirements for the B.F.A., B.M., and A.B. Degrees

(Those Fine and Performing Arts students pursuing the B.S. in Ed. Degree should consult the General Requirements and Regulations and the School of Education sections of this catalog.)

BASIC COURSES	QUARTER HOURS OF CREDIT		
	B.F.A.	B.M.	A.B.
English 550, 551, Basic Composition I, II	8	8	8
Health and Physical Education 590, Health Education	3	3	3
Health and Physical Education Activity Courses	3	3	3
AREA COURSES			
HUMANITIES Courses in two or more of the following areas: literature courses in English or foreign language, philosophy and religious studies; or history and/or appreciation courses in the College of Fine and Performing Arts.	8-18	8-18	16
SOCIAL STUDIES Courses in two or more of the following subjects: economics, geography (excluding Geog. 503, 603, 630, and 730, which are applicable to the science requirement), history, political science, psychology, sociology, black studies 600, and social science.	16-22	16-22	20
SCIENCE/MATHEMATICS This requirement includes a minimum of 8 hours of science.	12-22	12-22	16
FOR THE DEGREE			
FOREIGN LANGUAGE	0	0-24**	8-20***

PROFESSIONAL COURSES

These are listed under the appropriate department or school curriculums.

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*French, German or Italian is recommended for the student intending to major in voice.

**This requirement is for voice majors only. Part of it may be met by two units of high school study in French, Italian, or German, in which 16 hours are required (eight hours in each of the two languages not previously studied).

***The eight-hour requirement assumes the continued study of the same language in which two units of high school credit were earned. If a different language is studied, or if more than two units of high school credit were earned, the requirement is different. See proficiency in a foreign language for details.

REQUIREMENTS IN ADDITION TO COURSES

Upper division status (including completion of any specified preparatory units lacking at entrance)

Major and minor requirements

Course-level requirements

Point index requirement

Resident requirement

Completion of quarter hours required for the degree

Application for graduation

The student should be familiar with the course numbering system and its significance, as well as the abbreviations used to indicate the amount of credit. (See General Requirements and Regulations section of this catalog.)

COURSES OF INSTRUCTION AND CURRICULUMS

ART

Professors Babisch, Bright, Glasser, Lepore, Lucas, Mitchell, Naberezny, Zona; Associate Professors Maddick, Walusis (Chairman); Assistant Professors Moseley, Russo, Ryska, Ulrich.

The Department of Art offers courses which satisfy major requirements in art for the degrees of Bachelor of Fine Arts, Bachelor of Arts, Bachelor of Science in Education, and Associate in Arts (through the College of Applied Science and Technology).

For the Bachelor of Fine Arts degree, the programs in studio art are designed to familiarize the student with the basic concepts in art and the language of visual form. Concentration is on the development and involvement of the student with the processes and practices of art. A minimum of 186 quarter hours is required for the B.F.A. degree. The curriculums for studio art are listed below.

For the Bachelor of Arts degree, the curriculum in art history is listed below. The Art History major is required to complete a minimum of 49 quarter hours in art history beyond the 500 level, plus 8 hours of studio art electives.

Students majoring in Art who wish to qualify for the provisional special certificate in art are required a minimum of 78 quarter hours, at least 18 of them in art history. These students, after completing two years of study with a point average of at least 2.40, may apply for admission to the School of Education. (Other requirements for admission are listed under the School of Education section.) No minor is required for the special certificate.

Students wishing to acquire credentials for a teaching field in art which will qualify them 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.

BACHELOR OF FINE ARTS CURRICULUM

The areas of studio art concentration for the B.F.A. degree are: ceramics, crafts, general art, graphic design, painting, photography, printmaking and sculpture.

The general requirements for this degree are listed at the beginning of the College of Fine and Performing Arts section.

STUDIO ART

All Studio Art majors complete the following courses and those listed in each specific concentration area:

		Cr. Hrs.
500	Introduction to the Visual Arts	1
501	Drawing 1	3
510	Color and Design I	4
511	Color and Design II	4
610	Color and Design III*	3
513	Survey of Western Art I* **	3
514	Survey of Western Art II**	3
600	Theory of Art**	3
601	Drawing II*	3
602	Drawing Techniques*	3
606	Painting I	4
611	Woodblock/Mono Print *or*	
612	Silk Screen*	4
705	Advanced Drawing	3
725	Ceramics I or 730 Sculpture I*	3/4
	Upper Division Art History Electives*	9

In addition, specific courses for each concentration area are:

Painting		**Cr. Hrs.**
604	Watercolor Painting	3
703	Painting II	5
803	Painting III	10
790	Special Topics *or*	
800	Studio Problems (5 hrs. minimum in painting)	10
	Studio Art or Art History Electives	9/10

Sculpture		**Cr. Hrs.**
611	Woodblock and Mono Printing or	
721	Lithography*	4
725	Ceramics I*	3
730	Sculpture I*	4
731	Sculpture II	5
812	Sculpture III	10
790	Special Topics *or*	
800	Studio Problems (5 hrs. minimum in sculpture)	10
	Studio Electives	8

*Note: Requirement varies; see specific area notation.

**Note: 513,514,600 must be completed before the end of the sophomore year, or additional art history credit will be required.

Printmaking — Cr. Hrs.

611 Woodblock and Mono Printing* 4
612 Silk Screen* 4
720 Etching/Engraving 4
721 Lithography 4
722 Photo Silk Screen 5
780 Photography I 4
790 Special Topics *or*
800 Studio Problems (5 hrs. minimum in printmaking) 10
820 Advanced Printmaking 4
Studio Electives 2/3

Graphic Design — Cr. Hrs.

NOTE: 610, 725, 730 not required.

612 Silk Screen* 4
604 Watercolor Painting 3
623 Graphic Design I 3
624 Graphic Design 2 3
625 Graphic Design 3 3
626 Airbrush 3
716 Interior Design I 3
727 Graphic Design 4 3
728 Graphic Design 5 3
729 Graphic Design 6 3
780 Photography I 4
782 Photography III 4
790 Special Topics: Calligraphy 3
800 Studio Problems 3
Studio Electives 2

Crafts — Cr. Hrs.

NOTE: 610 not required.

611 Woodblock and Mono Printing* 3
623 Graphic Design I 3
723 Weaving I 3
725 Ceramics I* 3
726 Ceramics II 3
767 School Arts and Crafts — Intermediate ... 3
769 Fiber Exploration 4
770 Jewelry I 4
771 Jewelry II 4
810 Ceramics III 3
811 Ceramics IV 3
822 Puppetry and Stage Construction 3
823 Weaving II 3
790 Special Topics *or*
800 Studio Problems 3
Studio Electives 7

Ceramics — Cr. Hrs.

611 Woodblock and Mono Printing or
721 Lithography* 4
725 Ceramics I 3
726 Ceramics II 3
730 Sculpture I* 4
810 Ceramics III 3
811 Ceramics IV 10
790 Special Topics *or*
800 Studio Problems 4
Studio Electives 13

Photography — Cr. Hrs.

NOTE: 601, 602, 610, 705 not required.

513 Survey of Western Art I or
515 Survey of Non-Western Art* 3
581 Survey of American Mass Comm. (Dept. of Speech Communication and Theatre) 4
612 Silk Screen* 4
722 Photo Silk Screen 5
747 History of Still Photography* 3
780 Photography 1 4
781 Photography 2 4
782 Photography 3 4
783 Photography 4 4
784 Photography 5 4
790 Special Topics *or*
800 Studio Problems (in photography only) 6/7
880 Photography 6 10

General Art — Cr. Hrs.

NOTE: 610 not required.

725 Ceramics I* 3
730 Sculpture I* 4
790 Special Topics or
800 Studio Problems 10
Studio Art or Art History Electives 27

BACHELOR OF ARTS CURRICULUMS

SEE GENERAL REQUIREMENTS AT THE BEGINNING OF THE ARTS AND SCIENCES SECTION.

Art History

Cr. Hrs.

513 Survey of Western Art I 3
514 Survey of Western Art II 3
515 Survey of Non-Western Art 3
600 Theory of Art 3
710 Aesthetics (Philosophy) 4
890 Problems in Art History 3
Studio Art Electives 8

Art History Electives (706, 707, 708, 712, 713, 714, 715, 719, 740, 742, 744, 745, 747, 806, 807, 814, 815, 816) (To Total 39 Q.H.) 39

BACHELOR OF SCIENCE IN EDUCATION CURRICULUMS

SEE GENERAL REQUIREMENTS AT THE BEGINNING OF THE SCHOOL OF EDUCATION SECTION.

Provisional Special Certificate in Art Education

REQUIRED COURSES: 501, 510, 511, 513, 514, 600, 601, 602, 604, 606, 611 or 612, 623, 725, 730, 760, 767, 768, 770, 780, 801, 822 or 723, 814 or 815;

*Requirement varies; see specific area

6 hrs. of Art History Electives. (Art 801 must be taken concurrently with Education 843).

Provisional High School Certificate in Art Education

REQUIRED COURSES: 501, 510, 511, 513, 514, 601, or 602, 611 or 721 or 821, 606 or 623, 770, 767, 716 or 750, 724, 725, 730; 3 hrs. of Studio Electives. Art 768 (School Arts — Secondary) substitutes for Ed. 800 as the Special Methods Course; counted as a professional course.

Lower Division Courses

500. *Introduction to the Visual Arts.* An introduction and orientation course for the disciplines of studio art, art education, and art history. The course concentrates on departmental programs, policies, practices, and facilities. Emphasis is placed on various aspects of artistic education leading to a successful career in the visual arts. 1 q.h.

501. *Drawing I.* Traditional study of the human figure and objects. Attention to the significance of line, the relation of shapes and their organization in established space. Perspective as it pertains to two-dimensional studies in the visual arts. Six hours lab. 3 q.h.

510. *Color and Design I.* Two-dimensional experiments with various materials and media; the formal elements and their present-day relationships. Six hours lab. 4 q.h.

511. *Color and Design II.* Three-dimensional experiments with various materials. Utilization of the formal elements in three-dimensional design. Eight hours lab. Prereq.: Art 510. (W, SP) 4 q.h.

513. *Survey of Western Art I.* Introduction to the principles of art; the media, techniques, terminology, and value judgment in fine arts outlined. Survey of art in western culture from prehistoric and ancient periods to 1150. Satisfies the University's area requirement in the humanities. 3 q.h.

514. *Survey of Western Art II.* From the middle ages through renaissance and Baroque-Rococo periods to the end of the 19th century. Satisfies the University's area requirement in the humanities. (W, SP) 3 q.h.

515. *Survey of Non-Western Art.* Art in the Pre-Columbian Americas, India, China, Africa, Japan, and Oceania from their beginnings to approximately about the 15th century, and its attention to the philosophical and religious backgrounds. Satisfies the University's area requirement in the humanities. (SP) 3 q.h.

600. *Theory of Art.* The theories and philosophical implications of form in the visual arts, with emphasis on contemporary thought. Prereq.: Art 513 and 514. (W, SP) 3 q.h.

601. *Drawing II.* Continuation of Drawing 501, with greater emphasis on the expressive use of the basic elements of drawing and the role they play in composition. Six hours lab. Prereq.: Art 501 and 510. 3 q.h.

602. *Drawing Techniques.* An exploration of the expressive and organizational functions of the elements of drawing through varied media and techniques. Six hours lab. Prereq.: Art 510. 3 q.h.

603. *Appreciation of Contemporary Art: A Humanities Approach.* A slide/lecture approach to the visual arts of this century, with the ideas that influenced them and the impact made on related humanities fields. Satisfies the University's area requirement in the humanities. 4 q.h.

604. *Watercolor Painting.* An introduction to opaque, transparent, and inventive procedures with watercolor. Emphasis is on expressive use of the medium and development of personal style. Six hours lab. Prereq.: Art 601 or 602. 3 q.h.

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

610. *Color & Design III.* A review and continuing study of design concepts. Studio problems in advanced composition, and the utilization of color as a primary structural element. Six hours lab. Prereq.: Art 510. 3 q.h.

611. *Woodblock & Mono Printing.* Experimenting with woodblock and mono printing techniques. One hour of lecture; seven hours of lab. Prereq.: Art 601 or Art 602. 4 q.h.

612. *Silk Screen.* Print-making experiments using various silk screen techniques. Eight hours lab. Prereq.: Art 601 or 602. 4 q.h.

623. *Graphic Design 1.* Introduction to art in advertising, such as trademarks, symbols, letterheads, logotypes, posters, billboards, magazine ads, packaging, illustrations, and television commercials. Creative thinking emphasized along with techniques and media necessary for producing ideas visually. One hour of lecture; five hours of lab. The student is advised to take Art 611. Prereq.: Art 510. 3 q.h.

624. *Graphic Design 2.* Techniques and tools used in the production of layouts in design and illustration. Emphasis on type, perspective use of grid for reductions, enlargements, distortions, and exact renderings. Limitations are placed on color, expenses, and deadlines. One hour of lecture; five hours of lab. Students are advised to take Art 611. Prereq.: Art 623. 3 q.h.

625. *Graphic Design 3.* Problem-solving experiences and practice and its use. Designing types and using established type styles to create purely typographic layouts. One hour of lecture; five hours lab. Students are advised to take Art 780. Prereq.: Art 624. 3 q.h.

626. *Airbrush.* Lecture and lab in airbrush operation and techniques. Technical and visual knowledge relating airbrush and its applications to the expressive art forms, painting and illustration. One hour lecture; five hours lab. Prereq.: Art 624 or 606. 3 q.h.

Upper Division Courses

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

705. *Advanced Drawing.* Study in composition, space division, the plastic means. Six hours lab. Prereq.: Art 601 or 602. (S, SP) 3 q.h.

706. *Renaissance Art.* Review of formalism, mysticism, and classicism; the new humanism from 1400 to 1575. The great artists and their connection with the history and philosophy of the times. Satisfies the University's area requirement in the humanities. 3 q.h.

707. *U.S. Art 17th & 18th Century.* Covering all aspects and media of painting, sculpture, architecture, and the decorative arts of the 17th and 18th centuries. Prereq.: Art 514. Satisfies the University's area requirement in the humanities. 3 q.h.

708. *Baroque and Rococo Art.* European art from 1575 to 1800; styles and trends developed from the renaissance: The academic, eclectic, natural, and classicist movements. Satisfies the University's area requirement in the humanities. 3 q.h.

709, 710, 711. *History and Appreciation of Art and Music I, II, III (General).* Illustrated lectures on art and music to develop the cultural growth of the non-art and non-music student. Art and music 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. (Not intended for art majors.) Listed also as Music 709, 710, 711. Satisfies the University's area requirement in the humanities. 4+4+4 q.h.

712. *Medieval Art.* Survey of early Christian, Byzantine, Romanesque, and Gothic painting, sculpture, and architecture. Satisfies the University's area requirement in the humanities. 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. Satisfies the University's area requirement in the humanities. 3 q.h.

714. *Ancient Art I.* 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. Satisfies the University's area requirement in the humanities.(W, SP) 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. Satisfies the University's area requirement in the humanities. (W, SP) 3 q.h.

716, 717. *Interior Design I, II.* Study of furnishings, new designs, and textiles. Application of these and experiences from Art 510 to rooms and other interiors. Six hours lab. Prereq.: Art 510. Art 716 is Prerequisite to Art 717. (F, SP) 3+3 q.h.

718. *Advanced Interior Design.* A studio approach to the exploration of commercial and residential design from the vantage point of the professional designer, including problem solving in the commercial marketplace and methods and materials utilized in the field. Includes field trips to designer showrooms. Prereq.: Art 717. 3 q.h.

719. *U.S. Art 19th Century.* Covering all aspects and media of painting, sculpture, architecture and the decorative arts of the 19th century. Prereq.: Art 514. Satisfies the University's area requirement in the humanities. 3 q.h.

720. *Etching/Engraving.* Concentrated experiments with metal printmaking techniques. Eight hours of lab. Prereq.: Art 501. 4 q.h.

721. *Lithography.* Concentrated printmaking techniques from a flat stone or metal plate. Eight hours lab. Prereq.: Art 601 or 602. 4 q.h.

722. *Photo Silk Screen.* Experiments in various photo silk screen methods of printmaking. Ten hours of lab. Prereq.: Art 612. 5 q.h.

723. *Weaving 1.* Exploration of simple beginning weaving techniques on a four-harness loom. Emphasis on the actual making of yarns on the spinning wheel and dyeing with natural dyes. Off-loom techniques such as basketry, macrame, simple and inkle loom weaving, finger weaving, and shaped loom weaving (such as circles and triangles). Prereq.: Art 510 or permission. 3 q.h.

725. *Ceramics I.* Introduction to handbuilding methods, low-fire glaze application, pit-firing, and firing procedures. Six hours of lab. Prereq.: Art 511, 601. 3 q.h.

726. *Ceramics II.* Continuation of handbuilding methods; introduction to wheel-thrown ceramics. Six hours of lab. Prereq.: Art 725. 3 q.h.

727. *Graphic Design 4.* Creative approach to two-dimensional design, visually expressing advertisements for promotional brochures, self-mailers, logotypes, symbology, and trademarks. Special problems using die cuts, folding, and binding will be covered. Proper labeling in the use of crop marks, register marks and color overlays will be emphasized. One hour of lecture; five hours of lab. Students are advised to take Art 721 and 781. Prereq.: Art 625. 3 q.h.

728. *Graphic Design 5.* Creative and technical applications to book, mechanical and advertising illustrations. Projects utilize both approaches as applied to descriptive illustrations for educational purposes. One-hour of lecture; five hours of lab. Students are advised to take Art 721 and Art 781. Prereq.: Art 727. 3 q.h.

729. *Graphic Design 6.* Three-dimensional sculptural qualities in graphic design such as in packaging. Display exhibition areas executed through workups and finished models. One-hour of lecture; five hours of lab. Prereq.: Art 727. 3 q.h.

730. *Sculpture I.* Problems dealing with form in space. Experiments with wood, plaster, or stone techniques. Eight hours of lab. Prereq.: Art 511. (W) 4 q.h.

731. *Sculpture II.* Problems dealing with form in space. Experiments with metal techniques. Ten hours of lab. Prereq.: Art 511. (W) 5 q.h.

740. *Northern Renaissance.* Origin of northern renaissance styles of painting, architecture, and the minor arts in Flanders and Northern Europe, 1300 to 1500. Prereq.: Sophomore standing. Satisfies the University's area requirements in the humanities. 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. Satisfies the University's area requirement in the humanities. Also listed under Black Studies 742. 3 q.h.

744. *African-American Art.* A survey of Black American art history from the 17th century through the 20th century. Also listed under Black Studies 744. Prereq.: Black Studies 601 or Art 515. Satisfies the University's area requirement in the humanities. 3 q.h.

745. *Pre-Columbian Art.* An examination of the various cultural and tribal arts in the Americas. The course concentrates on the high cultures of middle-America, such as Olmec, Maya and Aztec, and surveys artistic expression in north and south America. Prereq.: Sophomore standing. Satisfies the University's area requirement in the humanities. 3 q.h.

747. *The History of Still Photography.* A lecture course in the history of still photography from its beginning to the present, with emphasis on the evolution of photography as a fine art. Prereq.: Art 514. Satisfies the University's area requirement in the humanities. 3 q.h.

750, 751. *Architectural Design I, 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. Six hours of lab. Prereq.: Art 511. Art 750 is prerequisite to 751. (W) 3+3 q.h.

759. *Arts and Crafts, Pre-School.* Designed for the Child Care major with emphasis in establishing the philosophies, attitudes and creative art activities in the nursery school. Three hours lecture and three hours lab. 4 q.h.

760. *School Arts and Crafts Primary.* A study of the artistic needs of children from nursery school through grade three. Implementation of these needs include lecture, two- and three-dimensional laboratory experiences, and community teaching encounters. The inclusion of theories germinal to art education will prepare the student for other sequential courses in art education. Two hours of lecture and four hours of lab per week. Prereq.: Junior standing or consent of the instructor. 4 q.h.

767. *School Arts and Crafts Intermediate.* A study of the artistic needs of students from grades four through six, and the exploration of the creative process and attitudes involved in providing meaningful experiences. Implementation of these needs, include lecture, two- and three-dimensional laboratory experiences and community teaching encounters. Required of all Elementary Education and Art Education majors. One hour of lecture; five hours of lab. Prereq.: Art 760. 3 q.h.

768. *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.

769. *Fiber Exploration.* Individual manipulation of the processes of dyeing, printing of fibers, and creative stitchery, wrapping, macrame, soft sculpture, creative knitting, and crocheting. Eight hours of lab. Prereq.: Art 511. 4 q.h.

770. *Jewelry I.* The basic methods of fabrication used in the creation of jewelry. Design as applied to the hand processes in the shaping of various metals. Eight hours of lab. Prereq.: Art 511. 4 q.h.

771. *Jewelry II.* The casting process used in the creation of jewelry. Eight hours of lab. Prereq.: Art 511 4 q.h.

780. *Photography 1.* Photographic fundamentals; developing, copy enlarging. Technical and visual knowledge relating to the photograph as an expressive art form. Students provide their own cameras and supplies. Two hours of lecture; six hours of lab. Prereq.: Art 510 or permission of instructor. 4 q.h.

781. *Photography 2. Color.* Color printing, color films; exposure, developing. Students provide their own cameras and supplies. Eight hours of lab. Prereq.: Art 780. 4 q.h.

782. *Photography 3.* Continued development of photographic craft and vision, in black and white and/or color photography. Introduction to large-format films; sheet film development and printing; multi-media

visual communication. Students provide their own cameras and supplies. Eight hours of lab. Prereq.: Art 780. 4 q.h.

783. *Photography 4.* A continuation of photography 780 with emphasis on refinement of the student's creative and technical abilities. One hour of lecture; seven hours of lab. Students provide cameras and supplies. Prereq.: Art 780. 4 q.h.

784. *Photography 5.* A continuation of photography 781 with emphasis on competence in color theory, technique, and creative manipulation of recent color processes. One hour of lecture; seven hours of lab. Students provide their own cameras and supplies. Prereq.: Art 781. 4 q.h.

790. *Special Topics in Studio Art.* Study in one of the many areas of the visual arts. May be taken three times for credit if topic is not repeated. Prereq.: Art 510 and/or Art 511, or consent. 2-4 q.h.

800. *Studio Problems.* Continued independent experiments in any two- or three-dimensional studio discipline. A portfolio or slides of the students' previous work in the elected area of study must be presented to the department chairman no later than the fifth week of the previous quarter. A committee of art faculty appointed by the chairman will review the students' work and make its recommendation to the chairman. May be repeated for maximum of 10 hours of credit. Students completing ten hours of studio problems are required to exhibit their work in the department gallery. Prereq.: Permission of department chairman and completion of all previous courses in the chosen area. 1-10 q.h.

801. *Seminar.* Discussions of problems of the prospective teacher which involve plant facilities, tools, and supplies. Planning individual exhibits. Assembly of comprehensive portfolio. For art education students only. (Taken with student teaching.) Two hours of lab. 1 q.h.

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

806. *Indian Art.* Survey of the art of India from the Indus Valley to the Mogul Invasion; and its relation to the country's philosophies and religions. Comparison of the characteristics of the great periods. Satisfies the University's area requirement in the humanities. 3 q.h.

807. *Chinese and Japanese Art.* Survey of the art of China and Japan from the earliest periods to the present, and their relation to the philosophies and religions of those countries. Satisfies the University's area requirement in the humanities. 3 q.h.

810. *Ceramics III.* Emphasis on clay as a means of personal expression through handbuilt and wheel-thrown ceramics. Six hours of lab. Prereq.: Art 726. 3 q.h.

811. *Ceramics IV.* Continuation of Ceramics 810. May be repeated for maximum of 10 q.h. credit. Lab hours to be adequately adjusted. Prereq.: Art 810. 3 q.h.

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

814. *Twentieth Century Art to 1925.* Important movements in painting, sculpture, and architecture from 1885 to 1925, and the artists involved in these movements. Satisfies the University's area requirement in the humanities. 3 q.h.

815. *Twentieth Century Art from 1925.* Important movements in painting, sculpture, and architecture from 1925 to date, and the artists involved in these movements. Satisfies the University's area requirement in the humanities. 3 q.h.

816. *Introduction to Museum Practices.* An exploration of museum history, administration, acquisitions, preservation, conservation, connoisseurship, exhibition procedures, physical plant, and security. Weekly seminars and practical experience at the Butler Institute of American Art and the Arms Museum. Two hours of seminar and six hours of museum practicum weekly. Prereq.: 12 hours of art history and junior standing. 5 q.h.

817. *Museum Internship.* The student experiences the day to day operations of the museum through observation and hands-on applications. Experiences will include registration and computer cataloguing, art preparation and preservation, basic conservation techniques, elementary curatorial research and the general work of museologists in the small museum. Student is required to spend six clock hours per week. May be repeated for a maximum of 4 q.h. Prereq.: Art 816. 2 q.h.

820. *Advanced Printmaking.* Advanced methods in a selected printmaking discipline. Eight hours of lab. Prereq.: Art 611 or 612 or 720 or 721. 4 q.h.

822. *Puppetry and Stage Construction.* Concentrated exploration of puppetry, stage design, and construction, and a survey of the historic development of puppetry. Six hours of lab. Prereq.: Art 767. 3 q.h.

823. *Weaving 2.* The more advanced loom techniques of pattern-weaving, tapestry, ripsmatta, rugmaking, double weave, open weave, simple garment making, and Ikat dyeing. Continuation of more complicated off-loom techniques. Prereq.: Art 723. 3 q.h.

880. *Photography 6.* Selected technical and aesthetic photographic problems to enrich the student's abilities and knowledge of photography. May be repeated for a maximum of 10 q.h. credit. Student must provide camera and supplies. Eight hours of lab. Prereq.: Eight hours of photography and acceptance of written problem proposal by instructor. 5-10 q.h.

890. *Problems in Art History.* Studies in bibliography, descriptive and interpretative terminology, iconography, research methods and objectives, forms and structures of critical performances. May

be repeated for a maximum of nine quarter hours. Prereq.: Senior standing and permission of instructor and department chairman. 1-9 q.h.

SPEECH COMMUNICATION AND THEATRE

Professors Hulsopple, O'Neill; Associate Professors Castronovo, Henneman, Hugenberg, Kougl, Owens (Chairman), Robinson; Assistant Professors James, LaLumia; Instructors Golden, Hanson, Shanabarger.

The Department of Speech Communication and Theatre offers coursework which satifies major requirements for the degrees of Bachelor of Arts, Bachelor of Fine Arts, and, in conjunction with the School of Education, Bachelor of Science in Education.

Bachelor of Arts

The Bachelor of Arts degree in speech communication requires 60 credit hours within the department. Speech Communication majors may emphasize speech communication, telecommunications, or theatre. For further information about departmental requirements, including a meeting with a faculty member who will discuss the requirements with you, check in the departmental office, located in Bliss Hall, Room 2000.

SPEECH COMMUNICATION EMPHASIS

The curriculum in the speech communication emphasis gives the student an opportunity to examine and practice the art and science of human communication. Coursework investigates the nature of communication, focusing on the interaction of language with the environment in which it occurs to produce its effects on listeners. Developing knowledge of and skills in communication provides a good foundation for career opportunities in business, industry, public or social service, and education. In fact, any job requiring interaction with others necessitates skillful use of communication.

A second, but not subordinate, goal in speech communication is to achieve a liberal arts education. Studying the art of communication includes an understanding of and appreciation for communication as a process of critical thought.

TELECOMMUNICATIONS EMPHASIS

An emphasis in the Telecommunications curriculum provides in-depth knowledge and intellectual challenge in electronic communication. Students receive practical orientation to the skills and techniques of broadcasting. Further, they explore contemporary theories and problems which are central to telecommunications media.

From a liberal arts perspective, the telecommunication curriculum is designed to aid the student in pursuit of careers not only in broadcasting but also in recently expanding avenues of communication such as non-commercial broadcasting, corporate communications, industrial communications, cablecasting, and independent production. Internships are available in local broadcasting stations to students of superior academic achievement.

THEATRE EMPHASIS

The B.A. in Speech-Theatre emphasis includes a sound academic approach to theatre. It also provides extensive practical training in the techniques and problems of the theatre. Students of the theatre work with their instructors not only in the classroom but in a practical and/or laboratory setting on a much more personal basis. This basic liberal arts program provides students with a broad general education and gives them opportunities to develop special skills in theatre. A detailed curriculum guide is available in the speech department office.

TEACHING CERTIFICATION

Those desiring certification in high school teaching may elect to complete either the *Bachelor of Arts* requirements, plus the education requirements, or the *Bachelor of Science in Education* with emphasis on speech communication. The requirements for the latter degree are listed in the School of Education section of this catalog.

Bachelor of Fine Arts

THEATRE

The Bachelor of Fine Arts program is designed to provide more intensive theatre work preparing students for careers in professional, community, or academic theatre, and is available by audition and/or interview only. Youngstown State University offers two tracks in the B.F.A. program — one ephasizing non-musical theatre, the other musical theatre. Students electing this program will receive general and extensive academic and co-curricular background and training in theatre. This will comprise both performance and design areas, such as acting, music, directing, lighting, costuming and scene design.

Curriculum guides detailing the theatre and musical theatre tracks of the B.F.A. program are available in the speech department office.

To facilitate admission, retention and guidance in the B.F.A. Theatre (and Musical Theatre) program, the following three-level check system is administered by the theatre faculty.

THEATRE TRACK

Level I: Matriculation Diagnostic Audition.
This audition would evaluate the skill level of the entering freshman.

Level II: Advanced Standing Audition.
This audition would evaluate the progress of the individual student in the program. The audition would be given when a minimum of 90 hours have been earned including:

560 Introduction to Theatre

561 Stagecraft

661 Play Production

662 Practicum in Theatre

668 Fundamentals of Acting

670 Oral Interpretation

664 Musical Theatre Dance

Level III: Senior Project.
The evaluation of this project will help advise the student concerning subsequent career goals. The project will consist of a creative performance enterprise designed to demonstrate the student's accumulated skills.

MUSICAL THEATRE TRACK

Level I: Matriculation Diagnostic Audition.
(See Level I for B.F.A.-Theatre)

Level II: Advanced Standing Audition.
This audition would evaluate the progress of the individual student in the program. The audition would be given when a minimum of 90 hours has been earned including:

Survey of Musical Theatre
Music History and Literature (4 hours)
Musical Theatre Dance
Voice (10 hours)
Keyboard (3 hours)
Music Theory 572
Opera Workshop (3 hours)
Play Production
Acting Fundamentals
Stagecraft

Level III: Senior Project.
(See Level III-Senior Project, B.F.A.-Theatre)

Professional Societies

Alpha Beta Chi

The Zeta Chapter of Alpha Beta Chi was founded at Youngstown State University in 1983 and is associated with the Association for Business Communication. It is the only honorary chapter of Alpha Beta Chi in the nation. The main objective of Alpha Beta Chi is to provide an environment for students interested in business and organizational communication which permits exploration of educational and career opportunities. Members of Alpha Beta Chi strive to promote fellowship with university faculty and staff, and professional communicators in business, industry, and government.

Zeta Chapter sponsors a quarterly campus-wide speech tournament, travels to national and regional conventions, and coordinates communication-oriented workshops for members and other interested students at YSU. The group also participates regularly in civic oriented and community-minded projects.

Alpha Epsilon Rho

The YSU Chapter of Alpha Epsilon Rho, the National Honorary Broadcasting Society, conducts field trips, seminars, and workshops in cooperation with local and national broadcasters. Members of this society have established an on-campus broadcast facility that services the listening needs of students in Kilcawley Center. Members also produce and host WKBN-TV's "Talk-Back" program.

Alpha Psi Omega

The University Theatre is a member of Alpha Psi Omega, the National Honorary Dramatics Fraternity. Students may become members of the local chapter by (1) achieving the prescribed cumulative grade average, and (2) earning a prescribed number of points through participation in dramatic activities. Membership requires sophomore standing.

Pi Kappa Delta

Students who are active participants in the Forensics program may apply for membership in Pi Kappa Delta, the National Honor Society for students involved in extracurricular speech activities.

Speech Communication

Lower Division Courses

500. *Introduction to Speech Communication and Theatre.* Survey of departmental programs, policies, practices and facilities. Emphasis on various aspects of speech communication, telecommunications, and theatre leading to success in the field. 1 q.h.

525. *Speech Communication Skills.* Intensive work on fundamental speech communication problems. In consultation with the instructor, students set individual goals and perform practical exercises designed to help them overcome these problems. Prereq.: Permission of the instructor. *Does not count toward a major in speech communication.* 2 q.h.

530. *Introduction to Communication.* Survey of significant communication models, systems, and theories. The communication process will be discussed and applied as it occurs on the interpersonal, small-group, organizational and public levels. 4 q.h.

550. *Public Speaking.* Designed to improve speech skills through the application of communication principles to varying audience situations. 4 q.h.

554. *Speech Communication Skills in the Classroom.* A speech fundamentals course adapted to the special needs of teachers. Emphasis on improving interpersonal communication skills, group discussion techniques, and skill in the extemporaneous style of classroom presentation. Required of all students seeking certification in education. 4 q.h.

600. *Speech Improvement Lab.* Designed to help students develop clearer, more distinct and expressive speech, so they can meet their personal and professional communication requirements more effectively.

Individualized goals set with instructor. Repeatable once with instructor's recommendation. Students will be screened to determine if they could benefit from course. 4 hours per week. 2 q.h.

603. *Physical Aspects of Speech.* A fundamental study of the voice mechanism, vocal sound, and elementary phonetics. Includes a functional familiarization with the International Phonetic Alphabet. 2 q.h.

606. *Introduction to Speech Pathology.* An examination and observation of the nature and severity of speech communication problems; their identification, characteristics, and possible remediation. 4 q.h.

615. *Competitive Public Speaking I.* An introduction to forensics competition. Practice with the coach(es) for a minimum of one hour per week and participation in at least two forensics tournaments each quarter is required. Speech 615 may be taken up to 8 hours. Prereq.: Permission of instructor. 2 q.h.

640. *Introduction to Rhetoric.* An introduction to the ideas and writings of thinkers concerned with communication as a practical art. Concepts from lecture and discussion sections will be applied in practical experience. 4 q.h.

650L. *Communication and the Job Search.* A laboratory examination and application of communication skills as important in the successful employment search: audience analysis, audience adaptation, argumentation, interviewing, and nonverbal communication. Lab sessions provide opportunities to role play, examine video tapes, and practice specific communication skills. 20 hours of lab with instructor. 1 q.h.

652. *Business and Professional Speaking.* The principles and practices of speech communication in business, industrial, and professional situations. Emphasis on presentational speaking. 3 q.h.

653. *Communication in the Task-Oriented Group.* Small-group interaction and participation skills. Includes an examination of decision-making and leadership in group interaction. 4 q.h.

655. *Parliamentary Procedure.* A study of the proper procedure for conducting parliamentary meetings. 1 q.h.

656. *Interpersonal Communication.* An examination of the skills necessary to develop, maintain, and evaluate one-to-one relationships. Through practical experiences from everyday life, the class examines what occurs when one person communicates with another. 4 q.h.

670. *Oral Interpretation.* The development of skills necessary for the oral interpretation of various types of literature — prose, poetry, and drama. The thorough analysis of each literary work and communication of the work to an audience. 4 q.h.

698. *Understanding Communication Research.* An introductory course in speech communication to prepare students to understand and utilize the results of research from qualitative and quantitative methodologies. Prereq.: Speech 530, 640, and English 551. 4 q.h.

Upper Division Courses

705. *Speech Problems of Children.* A consideration of speech improvement for all pupils and of speech correction for pupils with speech and/or hearing problems in kindergarten, primary, and intermediate grades. Types of difficulties, techniques, and materials for development and continued use of good voice and acceptable speech. Prereq.: Speech 554 or permission of instructor. 3 q.h.

740. *Special Topics in Speech Communication.* An in-depth analysis of topics of relevance and interest in classical through contemporary speech communication. Prereq.: Speech 530 or 640 or junior standing with permission of instructor. 4 q.h.

745. *Individual Studies.* The student selects a special problem or issue in speech communication to pursue in detail. Repeatable to a maximum of six hours. Prereq.: Speech 530 or 550 or 640 or 652; acceptance of Individual Study Proposal Form by coordinating faculty member and department chairperson. 1-3 q.h.

750. *Advanced Public Speaking.* Advanced theoretical principles in the practice of public speaking and persuasive discourse. Prereq.: Speech 550 or 554 or 652. 4 q.h.

754. *Argumentation.* Theories, principles, and practices of formal argumentation including the written and spoken analysis of issues, evidence, reasoning, refutation, and debate. Prereq.: Speech 550 or 554 or English 551. 4 q.h.

755. *Free Speech and Censorship.* Problems, issues and rationales for prior restraint of discourse focusing primarily on the United States. Prereq.: English 551. 4 q.h.

756. *Interviewing.* Theories of communication applied to interview situations with a special concern for developing student understanding of and skills needed to participate in one-to-one and panel interviews. Prereq.: Speech 530 or 550 or 640 or 652. 4 q.h.

758. *Advanced Communication Theory.* Advanced studies of the processes of human communication. Rotating topics include: theories of interpersonal communication, recent developments in small group communication, or the philosophy of communication. May be repeated for credit as long as any one specific topic is not repeated. Prereq.: Speech 530. 1-4 q.h.

759. *Organizational Communication.* A study of how various structural characteristics of organizations may affect communication at the interpersonal, group, and systems levels. Students explore several organizational processes from a communication perspective.

Prereq.: Speech 530 or 550 or 640 or 652. 4 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 are given to members of the class to present programs outside the classroom. Prereq.: Speech 670. 4 q.h.

775. *Speaking in the Organization.* The application of organizational communication theory to preparing effective messages in the interpersonal, group, and public communication situations likely to be encountered in organizations and the professions. Prereq.: Speech 759. 4 q.h.

798. *Applied Communication Research.* The applications of various methods of research related to speech communication. These approaches will include qualitative and quantitative research methodologies. Prereq.: Speech 698. 4 q.h.

800C. *Special Methods: Speech Communication.* Exploration of the content and methodology involved in the handling of traditional speech subjects. Emphasis on the identification of core concepts, planning, instructional strategies, and evaluation. Prereq.: Senior standing; Education 706. Same as Secondary Education 800C. 3 q.h.

801. *Co-curricular Programs in Speech and Theatre.* Practical aspects of setting up and directing high school forensics and theatrical events. Significant elements of co-curricular programming: underlying philosophy, budget, recruiting students, developing student skills and scheduling. Prereq.: Senior standing. 4 q.h.

815. *Competitive Public Speaking II.* Advanced forensic competition. Practice with the coach(es) must be scheduled for a minimum of one hour per week and participation in at least two forensics tournaments each quarter is required. Open to Juniors and Seniors. Speech 815 may be taken up to 8 hours. Prereq.: Speech 615 and permission of instructor. 2 q.h.

852. *Decision Making.* Analysis of communication variables influencing decision making in small groups. Includes a survey of relevant literature, observation of decision making groups, and participation in decision making processes. Prereq.: Speech 653 or 759. 4 q.h.

858. *Practicum in Speech Communication Research.* Experiences in designing, validating, and/or using methods and instruments of qualitative or quantitative research appropriate to the study of human communication. Prereq.: Speech 698 and acceptance of Practicum Proposal Form by coordinating faculty member and department chairperson. 1-4 q.h.

859. *Advanced Studies in Organizational Communication.* An in-depth analysis of communication topics in modern organizations. Students will examine communication processes as they influence organizational development outcomes. Rotating topics may include: the analysis of communication in organizations, communication consulting, the communication audit, and others. May be repeated for credit as long as any one specific topic is not repeated. Prereq.: Speech 759. 3-4 q.h.

896. *Internship in Speech Communication.* An application of communication theories and practices within the organizational setting. Students are selected on the basis of special qualifications, including GPA, courses taken, and a competitive interview. Students submit a written report on the internship experience and meet periodically with the faculty supervisor. For two (2) hours credit, ten (10) hours of field experience are required per week. For four (4) hours credit, twenty (20) contact hours in the field experience are required per week. May be repeated for two consecutive quarters for a maximum of eight (8) credit hours. Prereq.: Speech 759 and approval of speech communication faculty. 2 or 4 q.h.

898. *Seminar in Speech Communication.* A cooperative exploration of topics in speech communication not covered in course offerings. May be repeated for credit if the seminar topic changes. Prereq.: Speech 698; English 551 and permission of instructor. 4 q.h.

Television and Radio

Lower Division Courses

580. *Principles and Practices of Broadcasting.* A survey course designed to familiarize students with the principles and practices involved in radio and television broadcasting. Includes three hours of lecture plus two hours group lab per week. 4 q.h.

581. *Survey of American Mass Communication.* A rhetorical examination of the development, operation and functions of radio, television, film and print media in America. Television documentaries and films will illustrate the implications of mass communication. The student will be expected to examine how a person may be individually affected by mass communication. Satisfies the University's area requirement in the humanities. 4 q.h.

583. *An Audio History of Broadcast Programming.* An historical examination of the development of radio as an entertainment and art form from its earliest stages as a curiosity to the present day. Selections from 250 hours of recorded broadcasts highlight programming trends. Satisfies the University's area requirement in the humanities. 4 q.h.

681. *Communication Strategies for Using Broadcast Media.* Designed for those who might need to appear on radio or TV or need broadcast air time, this course explores ways of gaining access to newscasts and other forms of programming. Students will analyze how station policies and practices can help or hinder efforts to gain access. Discussion of ways of influencing broadcast stations' use of information provided to them. Practice in being interviewed for radio and television and related skills. 4 q.h.

682. *Broadcast Scriptwriting.* Fundamentals of broadcast writing with emphasis on the theory, analysis, and practices in the preparation of station and program continuity, news, and documentaries. Prereq.: English 550 and Speech 580 with a C or better in both. 4 q.h.

683. *Principles of Broadcast Operations and Performance.* An introduction to practices and procedures basic to radio and TV production facilities. Examination of control room operations, studio procedures, control room-studio communication, legal constraints on broadcast production operation, and the announcer's functions in broadcast speech communication. The equivalent of three hours lecture plus two hours lab per week. Prereq.:English 550 and Speech 580 with a grade of C or better in both. 4 q.h.

684. *Broadcast News Practices.* Organization, preparation, and presentation of radio and television news programs. Includes study of journalistic requirements of broadcast media and broadcast newsroom operation. Includes the equivalent of three hours lecture plus two hours lab per week. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

685, 686. *Studio Problems I, II.* A supervised application of operations and performance skills to an on-air broadcast program (WYSU-SCA). Available only during morning hours. To be taken in consecutive terms only. Prereq.: The prerequisite for Speech 685 is Speech 682 and 683 with a grade of C or better in both; the prerequisite for Speech 686 is Speech 685 with a grade of C or better. 1+1 q.h.

Upper Division Courses

761. *Make-Up for Stage and Television.* The history, purpose, and techniques of application of make-up. Laboratory participation working on productions for both stage and television. Prereq.: Speech 661 or permission of the instructor. 3 q.h.

780. *Principles and practices of radio and television announcing.* A study of the announcer's role in radio and television stations. Students will examine theories, techniques, and major styles of broadcast announcing. Three hours lecture, two or more hours of individualized lab per week. Prereq.: Speech 682 and 683 with a grade of C or better in both. 4 q.h.

781. *Radio Production.* Study of the concepts of radio production, including student production of various types of radio programs. The equivalent of three hours lecture plus two hours lab per week. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

782. *Television Production.* Study of the elements of television production — equipment, lighting, scene design, graphics, special effects, videotape, film, and creative camera work. Includes the equivalent of three hours lecture plus two hours lab per week. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

783. *Broadcast 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.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

784. *Broadcast Programming.* A study of contemporary broadcast programming, including program development, scheduling, and competitive programming strategies. Primary emphasis is on problems of local radio and television stations. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

786. *Television Production II.* A study and application of the television production elements. Production values of composition, transition, and sequence are explored from a communication perspective. Students produce, videotape, and critique several field-based productions. Equivalent of three hours of lecture plus two hours of lab per week. Prereq.: Speech 782. 4 q.h.

787. *Practicum in Telecommunication.* Individual study and practical application of radio and television performance and production skills in a broadcast environment. Repeatable for a maximum of eight hours. Prereq.: Speech 682 and 683, with a grade of C or better in both. 2-4 q.h.

788. *Broadcast Sales and Promotion.* An examination of the principles and practices of selling local radio and television air time. Analysis of rating-based sales and promotion strategies, as well as relations with agencies and station representatives. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

789. *Broadcast Interviewing.* A study and application of interviewing techniques for radio and television. Emphasis is placed on the local news interview and public affairs interviewing. Includes the equivalent of three hours lecture plus two hours of lab per week. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

881. *Telecommunication Management.* A study of the roles of station management relationships with government, networks, employee groups, ownership and audiences. Organization and procedures of typical departments, with emphasis on the supervision of local broadcast news operations. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

884. *Television Production Direction.* A study and application of the communication roles and skills associated with local television directing. Emphasis on analysis of audiences: producer, crew, talent, and viewers. Students will produce, direct, and critique productions. Includes the equivalent of three hours lecture and two hours lab per week. Prereq.: Speech 782. 4 q.h.

885. *Alternative Uses of Telecommunication Media.* Study and application of uses of telecommunication

media apart from commercial broadcasting. Includes the study of business and industrial television, instructional television, cable and public broadcasting. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

886. *Audience and Market Measurement.* Study of ways of collecting, analyzing and utilizing information related to broadcast audiences. Includes quantitative and non-quantitative methods. Specific attention is given to contemporary rating services and community ascertainment procedures. Prereq.: Speech 682 and 683, with a grade of C or better in both. 4 q.h.

887. *Theories and Criticism of Telecommunication.* Study of contemporary theories and research in telecommunication. Students will examine telecommunication from behavioral and rhetorical perspectives. Prereq.: Speech 682 and 683, with grade of C or better in both. 4 q.h.

888. *Internship in Telecommunication.* An application of telecommunication theory and practices within organizations professionally concerned with telecommunication. Students are selected on the basis of special qualifications, including GPA, courses taken, and competitive interview. Enrollment is contingent on the availability of internship positions. Twenty hours a week of student time is expected. May be repeated for a total of six hours. Prereq.: Junior standing in telecommunications and permission of internship committee. 3 q.h.

897. *Seminar in Telecommunication.* This course is designed to investigate contemporary aspects of telecommunications. May be repeated for credit as long as specific seminar subjects are not repeated. Prereq.: Speech 682 and 683, with a grade of C or better in both. 3-4 q.h.

Theatre

Lower Division Courses

512. *A Survey of Musical Theatre.* A study of the development of musical theatre from its 17th century beginning to the present day. As an inter-disciplinary course, it will place emphasis on the evolution of the American Musical with special attention paid to the problems of integrating drama, music, dance, and design. Also listed as Music 512. Satisfies the University's area requirement in the humanities. 4 q.h.

560. *Introduction to Theatre Arts.* The theory, history, cultural role, and physical characteristics of the theatre as an institution in human society. Satisfies the University's area requirement in the humanities. 4 q.h.

561. *Stagecraft.* The technical elements of play production, with emphasis on stage mechanics, set construction, and scene painting. The course includes the equivalent of two hours of lecture and four hours of laboratory a week. 4 q.h.

562. *Theories and Practices of Dance for the Theatre.* Principles and practices of expressive movement for the stage through basic ballet and other dance approaches. Designed to expand the student's range of movement possibilities, and to develop grace, flexibility, and control. 1 q.h.

563. *Stage Costuming.* An introduction to stage costume construction and maintenance. Use of equipment, fabrics, and patterning, culminating in actual construction of costumes. The course will include the equivalent of two hours of lecture and four hours of laboratory a week. 4 q.h.

566. *Summer Theatre Workshop.* Participation in the summer theatre program involving all aspects of theatrical production including acting, scenery construction, lighting, costume, promotion, etc. Active involvement in the program is mandatory. 1-4 q.h.

568. *Ballet I.* Theory and practice of classical ballet with emphasis on body placement and muscular awareness. Stressing fundamentals of vocabulary, structure, and placement. This course may be applied as 2 q.h. credit toward the University HPE activity requirement. Identical with HPE 572. 2 q.h.

569. *Ballet II.* Continuation of Speech 568, expanding upon vocabulary and establishing patterns of balletic movement. Prereq.: Ballet I or consent of instructor. This course may be applied as 2 q.h. credit toward the University HPE activity requirement. Identical with HPE 573. 2 q.h.

590. *History of the Motion Picture.* The history of the motion picture from its beginning to the present, with emphasis on the milestones of the film as a performing art. Viewing of significant films from various periods and countries. Satisfies the University's area requirement in the humanities. 4 q.h.

661. *Play Production.* An introduction to the process of analyzing, directing, staging, and producing plays; demonstration and practice. Includes the equivalent of two hours of lecture and four hours of technical theatre laboratory a week. 4 q.h.

662. *Practicum in Theatre.* Practical application of theatre skills through participation in University Theatre productions and supervised theatre laboratories. Students should expect the equivalent of three hours of lab per week. Repeatable for a maximum of six (6) quarter hours. Prereq.: Theatre 561 or 661. 1 q.h.

663. *Musical Theatre Dance I.* Principles and practices of the basic techniques of tap dance, soft shoe, jazz, and combinations of the fundamentals forms of movement. Designed to introduce the student to various forms of dance and movement combinations performed in musical theatre. Prereq.: H & PE 540 or consent of instructor. This course may be applied as 2 q.h. credit toward the University HPE activity requirement. Identical with HPE 570. 2 q.h.

664. *Musical Theatre Dance II.* Emphasizes basic tap combinations and routines. Continuation of Speech 663. Prereq.: Speech 663 or consent of instructor. This course may be applied as 2 q.h. credit toward the

University HPE activity requirement. Identical with HPE 571. 2 q.h.

668. *Fundamentals of Acting.* 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 agreement. 4 q.h.

690. *Artistic Aspects of Motion Picture Production.* Analysis of the structure of the motion picture, the development of the script, the function of editing, the approach to acting in film production, and the problems faced by a director in film production. Criteria of artistic film making are studied. Examples from motion pictures are screened and discussed. Satisfies the University's area requirement in the humanities. 4 q.h.

Upper Division Courses

760. *Dramatics for Elementary Grades.* The theory and techniques of creative dramatics, including the production of children's plays. Practical experience provided when possible through cooperation with local schools. Prereq.: Sophomore standing. 4 q.h.

761. *Make-Up for Stage and Television.* The history, purpose, and techniques of application of make-up. Laboratory work on stage and television productions. Prereq.: Speech 661 or permission of instructor. 3 q.h.

762. *Play Direction.* An intensive study of the process of directing plays. Whenever possible, students direct the equivalent of a one-act play for public presentation. Laboratory hours by arrangement. Prereq.: Speech 661 or permission of instructor. 4 q.h.

763. *Scene Design.* The history of design in terms of stage scenery; an investigation of current trends, techniques, and media; practical execution of models and sketches by the student. Prereq.: Speech 561 and 661, or consent of instructor. 3 q.h.

764. *History of Stage Costuming.* A survey of stage costumes based on western styles from 4000 B.C. to the present. Emphasis is placed upon specific periods and differences in design. Satisfies the University's area requirements in the humanities. Prereq.: Speech 560. 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.: Speech 561 and 661, or consent of the instructor. 3 q.h.

768. *Dance for the Musical Theatre.* Principles and practices of the basic techniques of tap dance, soft shoe, jazz and combinations of the fundamental forms of movement. Designed to introduce the student to various forms of dance and movement combinations performed in musical theatre. Prereq.: H&PE 540 (Modern Dance) or consent of instructor. 2 q.h.

769. *Costume Design for Stage.* A study of costume design for the stage which will include design concepts, stage costume practices, and execution of costume plates by the student. 4 q.h.

790. *Creative Motion Picture Artists.* In-depth analysis of significant motion picture creative artists and their contributions to motion picture art. Screenings and discussions of selected motion pictures. Prereq.: Speech 590 or English 616. 4 q.h.

791. *Rehearsal and Performance I.* Faculty supervised study and practical application of the performance aspects of a play. Credit given for significant acting roles, assistant directing, or stage managing assignments in University theatre productions. For students with appropriate experience. Prereq.: Sophomore standing and theatre faculty committee approval. 1-3 q.h.

792. *Projects in Production Design I.* Faculty supervised study resulting in the design and/or execution of scenery, lighting, or costumes for public performance. For students with appropriate experience. Prereq.: Sophomore standing and theatre faculty committee approval of proposed project. 1-3 q.h.

860. *Drama I.* A study of dramatic texts in performance from antiquity through the 19th century. Study of performance histories with emphasis on how the scripts could be produced as period pieces and/or adaptations for the modern stage. Prereq.: Speech 762 or consent of the instructor. 4 q.h.

861. *Drama II.* A study of 20th century dramatic texts in performance. Includes a study of production histories with an emphasis on the production company's role as interpreter in terms of style, text, etc. Prereq.: Speech 762 or consent of instructor. 4 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.: Speech 661 or English 746 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.: Speech 661 and 668. 4 q.h.

864. *Advanced Directing.* A study of specific theories, techniques, and various important styles in play directing. Prereq.: Speech 661 and 762. 4 q.h.

865. *Rehearsal and Performance II.* Independent study at an advanced level involving practical application of the performance aspects of a play. Credit given for major acting or directing assignments in University theatre productions. Prereq.: Speech 766 and theatre faculty committee approval. 1-3 q.h.

866. *Advanced Summer Theatre Workshop.* Participation in the summer theatre program involving all aspects of theatrical production. Positions of significant responsibility will be required. Prereq.: Speech 566. 1-4 q.h.

867. *Projects in Production Design II.* Independent study at the advanced level involving design and/or execution of scenery, lighting, or costumes for public performance. Prereq.: Speech 767 and theatre faculty committee approval of proposed project. 1-3 q.h.

891. *History of the Theatre I.* A history of the physical theatre and written drama from antiquity through the renaissance. Emphasis on theatre architecture and stagecraft, including scenery, costumes, and lighting. Prereq.: Upperclass standing with a minimum of 12 hours of theatre courses, or consent of instructor. Satisfies the University's area requirement in the humanities. 4 q.h.

892. *History of the Theatre II.* A history of the physical theatre and the written drama from the post-renaissance period to the present. Emphasis on theatre architecture and stagecraft, including scenery, costumes and lighting. Prereq.: Upperclass standing with a minimum of 12 hours of theatre courses completed or consent of the instructor. Satisfies the University's area requirement in the humanities. 4 q.h.

899. *Seminar in Theatre.* Exploration of areas in theatre not covered in the regular course offerings. Subjects studied may include: advanced scene design, advanced stage lighting, theatre styles, theatre organization and management, and modern techniques and procedures in the contemporary American theatre. Prereq.: Senior standing in theatre or permission of instructor. May be repeated for credit as long as specific seminar subjects are not repeated. May satisfy the University's area requirement in the humanities depending on topic. 3 q.h.

The Dana School of Music

Donald W. Byo, Director

OBJECTIVES

The Dana School of Music began in 1869 as Dana's Musical Institute in Warren, Ohio. It was merged with Youngstown College in 1941.

The purpose of the school 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 theory upon which all music rests, and to provide an opportunity for the non-music major to develop a background of musical knowledge.

The requirements for entrance and for graduation are in accordance with the published regulations of the National Association of Schools of Music, of which the Dana School of Music is a member.

The curriculums may be divided into four components: music education, theory, performance, and liberal arts. Courses are available leading to the degree of Bachelor of Music with the major in piano, organ, voice, standard string or wind instrument, percussion, theory, composition or music education. In addition, it is possible to obtain the degree of Bachelor of Arts with majors in music history, theory and applied music.

In cooperation with the School of Education, the Music Education department prepares students for certification as music teachers in the public schools and other courses necessary for general elementary teaching certificates. Music education students have a variety of opportunities for observation and practice teaching through excellent cooperation between the University and all area schools.

Credit in music is allowed in varying amounts toward other degrees granted by the University.

FACILITIES

The school is one of three departmental units in the College of Fine and Performing Arts, which is housed in Bliss Hall, where there are 80 acoustically controlled practice rooms, faculty studios, classrooms, rehearsal rooms and a recital hall with a seating capacity of 237. In addition, frequent use is made of Stambaugh and Powers auditoriums.

EQUIPMENT

Equipment includes 32 Steinway pianos, 68 other pianos, harpsichords by Dowd and Sperrhake, two Schlicker organs, three Flentrop organs, consorts of

recorders and krumhorns, a cornetto, and a comprehensive collection of standard band and orchestral instruments. An electronic studio includes a major synthesizer as well as appropriate recording and audio equipment.

Many University-owned instruments are available for use by students enrolled in related courses. There is no charge for use of these instruments, although failure to comply with check-in deadlines will result in a $5.00-a-day fine for each instrument.

LIBRARIES

The library of band, orchestral, and choral music is extensive and representative of musical periods from the Renaissance to the present. The Materials Center and the Maag Library contain books and music for study by students in music literature, music education and theory classes. There is an extensive collection of records and scores in the Materials Center of Bliss Hall, where listening equipment is available for general use.

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, academic achievement and need. Applications should be submitted to the director of the Dana School of Music. For other scholarships, see *Loans and Scholarships* in the General Information section.

MUSICAL ACTIVITIES

The Dana School of Music supplements the concerts of the Monday Musical Club and the Youngstown Symphony Orchestra with the *Dana Concert Series*. This series brings to the University and to the public artistic solo and ensemble programs featuring faculty members and guest artists, composers, and musicologists.

Graduation recitals and informal student recitals afford additional training through experience in public performance. Music majors are required to attend 24 recitals in their first year. Additional course work in the major field will be required if attendance is impossible.

The school has several major performing ensembles: Dana Chorale, the University Chorus, the Wind Ensemble, the Concert Band, the Marching Band, and the Dana Symphony Orchestra.

In addition, Chamber Ensemble experience is possible through the Opera Workshop; the Madrigal Singers; the Women's and Men's Chorus; the Jazz Ensemble; Woodwind, Brass, and Percussion Ensembles; the Chamber Orchestra; and the String Ensemble.

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

Music students may participate in all Youngstown State University student activities. In addition, the school sponsors student chapters of the Music Educators National Conference, the Youngstown Chapter of Composers, Authors, and Artists of America, and the Jazz Society. The school and the Youngstown Chapter of the American Guild of Organists jointly sponsor a guild student group.

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).

Applicants are required to pass entrance auditions in their performance area and to take a placement examination in music theory. These auditions and examinations are on announced dates preceding the fall entrance date.

ADMISSION TO COURSES FOR THE DEGREE OF BACHELOR OF MUSIC

The applicant's high school courses should include the preparatory courses specified 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 certain standards in technique and repertory must be met. Qualifications are determined by the placement tests mentioned above; the student not qualifying for the first regular course in his major branch of applied music takes preparatory work until ready to undertake the regular courses.

The Dana School of Music theory placement examination is used to determine theory proficiency. Those scoring less than the 50th percentile will be assigned to Music 520, while those scoring above the 50th percentile will be assigned to Music 530.

The student wishing to major in composition should present evidence of ability to handle the materials of music by placing at or above the 70th percentile on both parts of the Dana School of Music theory entrance examination; the student should also demonstrate, by a jury examination of the appropriate applied music faculty, proficiency on a musical instrument sufficient for admission to the freshman level of applied music.

ADMISSION FROM OTHER INSTITUTIONS

The general policy is stated in the General Requirements and Regulations section. Advanced standing in musical performance and in music theory is granted tentatively and must be validated by examinations.

REQUIREMENTS FOR THE DEGREE BACHELOR OF MUSIC

It is the student's responsibility to see that all the graduation requirements for the degree sought are satisfied. For the Bachelor of Music degree, these consist of:

1. Pre-college or preparatory study, of two kinds:
   A. Academic. The specific courses are listed in the General Requirements and Regulations section under the College of Fine and Performing Arts. These courses are normally taken in high school. Those lacking must be made up before the junior year in the University.
   B. Musical. An entrant lacking suitable proficiency must develop it after entrance before undertaking the required college-level music courses.
2. The non-music courses and other requirements to be completed in the University are listed in the General Requirements and Regulations section.
   A. Curriculums. Curriculums leading to this degree require from 189 to 210 quarter hours of credit and are designed to be completed in four academic years.
   B. R.O.T.C. students are allowed certain modifications of the requirements as explained in the General Requirements and Regulations Section.

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 director of the Dana School of Music.

COURSES OF INSTRUCTION AND CURRICULUMS

FACULTY

Professors Byo (Director), Edwards, Gould, L.M. Hopkins, R.E. Hopkins, Pellegrini, Raridon, Sample, Slocum, Spiro, Vogel; Associate Professors Funk, Gelfand, Harris, Largent, Leonardi, Mayhall, Orr, Parlink, Rollin, Starkey, Turk; Assistant Professors Lanier, Rudnytsky; Instructors Wilcox, Crist.

PERFORMANCE

Acceptance into a performance area is contingent upon an audition. The student not qualifying for Music 504 may take the relevant course 500 until the deficiency is corrected.

Advanced standing in performance may be granted tentatively after an examination given by members of the faculty. The final classification is made at the end of the first quarter of resident study.

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. Non-music majors in ensembles
3. Other students in the University
4. Continuing Education students

TEACHER ASSIGNMENT. Assignments of students to teachers are made by the area coordinator. Requests for change of teacher should be addressed to the coordinator in writing. A student's choice of teacher will be respected as far as possible, but final assignment rests with the director of the School of Music.

LESSONS. Students registered for 6 q.h. courses receive individual instruction and one 50 minute seminar weekly. They are required to practice three hours daily. Students registered for 2 and 4 q.h. courses receive individual instruction and one 50-minute seminar weekly; they are required to practice two hours daily. Students registered for A, B and C applied courses receive individual instruction and are required to practice one hour daily.

No credit will be given in a performance course if the student misses more than three lessons in any one quarter. Lessons missed due to legal holidays or school closings will not be made up. In case of prolonged illness the lessons may be made up at the discretion of the teacher.

RECITALS. Students registered for applied except A, B and C courses are required to attend performance classes arranged by the area coordinator and to perform in them once each quarter after the freshman year. The performance requirement may be waived during the quarters in which the student is presenting the junior or senior recital. Instructors may require students to attend and perform in studio recitals (participants drawn from the instructor's private class).

General Student Recital. The director of the Dana Concert Series arranges programs which include participants from the entire student body.

Concerto/Aria Concert. An annual concert features students chosen by competition to appear as soloists with the Dana Symphony Orchestra.

Junior Recital. Students majoring in performance must present a half-hour recital in the junior year.

Senior Recital. Students graduating with a major in performance must present a one-hour recital in the

senior year. Students graduating with a concentration in performance (Music Education) must present a half-hour recital in the senior year.

EXAMINATION. Students are examined at the end of each quarter of study during the freshman year. Sophomores, juniors, and seniors may elect to be examined at the end of either the fall or winter quarter, but must be examined at the end of the spring quarter. Transfer students are examined at the end of their first quarter of study. Students presenting recitals must perform their entire program for faculty approval 15-30 days prior to the date on which the recital is scheduled. Students presenting a recital are granted a waiver of examination for the quarter of the recital. Students may be retained in the same proficiency level with a grade of C or lower. Students who fail to meet the standards of the examining faculty may be required to reduce the number of credit hours for which they register in subsequent quarters; or they may be required to withdraw completely from the course sequence.

Change in Credit Hours. Students may transfer from minor to concentration or major courses in accordance with the performance course equivalency table, subject to approval by the appropriate performance faculty. Each applied area (keyboard, brass, etc.) may vary the above to meet certain needs. Consult with area coordinator for details.

Major/Jazz or BA

The following courses differ only in degree from those listed under Major/Performance according to the credit hours earned. A high standard of proficiency is expected. For the jazz major, junior and senior recitals are required.

504, 505, 506. See Major/Performance 4+4+4 q.h.

604, 605, 606. See Major/Performance 4+4+4 q.h.

704, 705, 706. See Major/Performance 4+4+4 q.h.

804, 805, 806. See Major/Performance 4+4+4 q.h.

Major/Music Education

The following courses differ only in degree from those listed under Major/Performance according to the credit hours earned. Concentration in the development of basic technics relative to teaching in the elementary and secondary school systems. A high standard of proficiency is expected. Senior recital required.

501, 502, 503. See Major/Performance 2+2+2 q.h.

601, 602, 603. See Major/Performance 2+2+2 q.h.

701, 702, 703. See Major/Performance 2+2+2 q.h.

801, 802, 803. See Major/Performance 2+2+2 q.h.

Minor (In Voice—Minor/Music Theatre)

The following courses are for the student who has a requirement of study on a secondary instrument or voice or who does not meet the standards required in the major courses. Each course is adapted to the ability and potential of the student. No seminar is required.

500 A,B,C. 2+2+2 q.h.

600 A,B,C. 2+2+2 q.h.

700 A,B,C. 2+2+2 q.h.

800 A,B,C. 2+2+2 q.h.

KEYBOARD INSTRUMENTS

Piano

Major/Performance

504, 505, 506. Development of hand position and finger-stroke, with emphasis on finger independence. All major and minor scales and tonic, dominant-seventh, and leading-tone seventh arpeggios, hands together, four-octave compass. Repertoire of the variety and difficulty of the following: Bach, *Sinfonias;* Beethoven, *Sonata,;* Bartok, *Three Rondos.* Prereq.: entrance audition. 4+4+4 q.h.

607, 608, 609. Continuation of previous technical study; emphasis on development of hand-stroke. Scales in octaves, thirds, sixths, and tenths; arpeggios as above, faster tempo. (609 Technical Examination) Repertoire of the variety and difficulty of the following: Bach, *English Suites;* Scarlatti, *Sonatas;* Beethoven, *Sonata,* Op. 26; Chopin, less difficult *Etudes* and *Polonaises;* Debussy, *Preludes;* Hindemith, *Sonata II.* Prereq.: Piano 506. 6+6+6 q.h.

707, 708, 709. Technical studies to develop forearm-stroke and refine handstroke. Scales in double-thirds and double-octaves. Repertoire of the variety and difficulty of the following: Bach, *Well-Tempered Clavier;* Beethoven, *Sonata,* Op. 28; Chopin, *Scherzos;* Ravel, *Valses Nobles et Sentimentales;* Prokofiev, *Visions Fugitives;* Mozart, Haydn, or early Beethoven concertos. Junior recital. Prereq.: Piano 609. 6+6+6 q.h.

807, 808, 809. Continuation of technical studies as needed. Repertoire of the variety and difficulty of the following: Bach, *Toccatas;* Beethoven, *Sonata,* Op. 31, No. 3; Chopin, *Ballades;* Copland, *Piano Variations;* Concertos by Mendelssohn, Chopin, Schumann. Senior recital. Prereq.: Piano 709. 6+6+6 q.h.

Harpsichord

Major/Performance

504, 505, 506. Instruction in basic technique, with discussion of construction and maintenance. Survey of literature, ornamentation, and performance practices. Repertoire of the variety and difficulty of the

following: Purcell, *Suites;* Bach, *Inventions;* Daquin, *Pieces de Clavecin.* Prereq.: entrance audition.
4+4+4 q.h.

607, 608, 609. Continuation of technical studies emphasizing fingering and ornamentation. Introduction to improvisation and accompaniment from figured bass. Repertoire of the variety and difficulty of the following: Byrd, *Sellinger's Round;* Frescobaldi, *Partite Sopra L'Aria Di Follia;* Bach, *French Suites* and *Sinfonias;* Scarlatti, less difficult *Sonatas.* Prereq.: Harpsichord 506.
6+6+6 q.h.

707, 708, 709. Technical studies as needed. Continuation of improvisation and figured-bass studies. Repertoire of the variety and difficulty of the following: Gibbons, *Pavan* and *Galliard Lord of Salisbury;* Couperin, *Les Folies Francaises;* Bach, *Well-Tempered Clavier, English Suites,* and concertos; Scarlatti, *Sonatas;* Pinkham, *Partita.* Junior recital. Prereq.: Harpsichord 609.
6+6+6 q.h.

807, 808, 809. Figured-bass accompaniment of works such as Handel, *Violin Sonatas.* Repertoire of the variety and difficulty of the following: Bull, *Walsingham;* D'Anglebert, *Variations Sur Les Folies D'Espagne;* Rameau, *Les Niais De Sologne;* Bach, *Toccatas;* Soler, *Sonatas;* Rochberg, *Nach Bach;* Poulenc, *Concert Champetre.* Senior recital. Prereq.: Harpsichord 709.
6+6+6 q.h.

Organ

Major/Performance

504, 505, 506. Manual exercises; pedal exercises; easy trios. Repertoire of the variety and difficulty of the following: Pachelbel, *Fugues on the Magnificat;* Bach, *Prelude and Fugue in E Minor* (S. 533). *Es Ist Das Heil* (S. 638); Schumann, *Canon in B Major,* Op. 56, No. 6; Walcha, *Herzliebster Jesu.* Prereq.: entrance audition.
4+4+4 q.h.

607, 608, 609. Pedal exercises, pedal scales. Repertoire of the variety and difficulty of the following: Couperin, *Messe a L'Usage Ordinaire Des Paroisses;* Bach, *Sonata in E-Flat Major* (S. 525). *In Dir Ist Freude* (S. 615); Brahms, *Mein Jesu Der Du Mich;* Hindemith, *Sonata II.* Prereq.: Organ 506.
6+6+6 q.h.

707, 708, 709. Pedal scales and arpeggios; advanced studies. Repertoire of the variety and difficulty of the following: Buxtehude, *Prelude, Fugue, and Chaconne;* Bach, *Prelude and Fugue in B Minor* (S. 544), *Schmucke Dich, O Liebe Seele* (S. 654); Mendelssohn, *Sonata* No. 6; Alain, *Litanies;* Handel, concertos. Junior recital. Prereq.: Organ 609.
6+6+6 q.h.

807, 808, 809. Technical studies as needed. Repertoire of the variety and difficulty of the following: Bach, *Fantasy and Fugue in G Minor* (S. 542). *Christ, Unser Herr* (S. 684); Mozart, *Fantasy* (K. 594); Franck, *Chorale in A Minor;* Messiaen, *Transports De Joie,* Poulenc, *Concerto.* Senior recital. Prereq.: Organ 709.
6+6+6 q.h.

Voice

Major/Performance

501, 502, 503. 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 applies the technique acquired in selected works of the vocal repertoire. Foreign-language songs may be introduced. Amount of repertoire decided is on an individual basis.
2+2+2 q.h.

607, 608, 609. Primary emphasis continues to be placed upon the development of the voice and the mastery of technique. The student is expected by the end of this year to be able to sing properly a number of songs in English and in foreign languages and one or two arias from opera and oratorio. Minimum requirements are established by the voice faculty; requirements beyond these are established by the teacher on an individual basis. Prereq.: Voice 503.
6+6+6 q.h.

707, 708, 709. Technical study continued to maintain steady growth in technical mastery. Repertoire enlarged to include a wide range of styles and periods. Songs appropriate to the individual voice are chosen in English, French, Italian, and German. Operatic arias required. Junior recital. Prereq.: Voice 609.
6+6+6 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 operatic and oratorio arias, classic and modern songs for immediate use, and a knowledge of the general song literature. Senior recital. Prereq.: Voice 709.
6+6+6 q.h.

STRING INSTRUMENTS

Violin

Major/Performance

504, 505, 506. 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 within one position, two octaves using a low position (I, II), a middle position (III, IV) and a high position (VI, VII).
4+4+4 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 504, 505, 506 continued. Prereq.: Violin 506.
6+6+6 q.h.

707, 708, 709. Rode, *Studies*. Concertos by Mozart, Bruch, Vieuxtemps. Sonatas by Beethoven, Bach. No fewer than six compositions added to repertoire. Scales on one string, 1 octave, 2 octaves; arpeggios on one string, 1 octave, 2 octaves. Scales in sixths, octaves, thirds, and tenths. Junior recital. Prereq. Violin 609. 6+6+6 q.h.

807, 808, 809. Advanced studies from Wieniawski; Dont, Op. 35; Gavinies and Paganini concertos. Wieniawski, Saint-Saens, Mendelssohn, Beethoven, etc. Senior recital. Prereq.: Violin 709. 6+6+6 q.h.

Viola

Major/Performance

504, 505, 506. Studies by Mazas, Kreutzer, Sitt, Schradick Technic. Sonatas by Handel; repertoire material: Not fewer than six pieces. Scales and arpeggios in three octaves. 4+4+4 q.h.

607, 608, 609. Studies by Kreutzer and Fiorillo. Sonatas by Vivaldi and Marcello. Scales and arpeggios continued. Six recital pieces. Prereq.: Viola 506. 6+6+6 q.h.

707, 708, 709. Studies by Rode, Campagnoli, and Bruni. Concertos by Stamitz and Mozart. Scales in double stops. Six recital pieces. Junior recital. Prereq.: Viola 609. 6+6+6 q.h.

807, 808, 809. Studies by Gavinies and Dolesji; Sonatas by Bowen, Bach, and others. Scales and arpeggios continued. Senior recital. Prereq.: Viola 709. 6+6+6 q.h.

Cello

Major/Performance

504, 505, 506. 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*. 4+4+4 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*. Prereq.: Cello 506. 6+6+6 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. Junior recital. Prereq.: Cello 609. 6+6+6 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. Prereq.: Cello 709. 6+6+6 q.h.

String Bass

Major/Performance

504, 505, 506. Studies to include Simandl, *Book I*, Simandl, *30 Etudes*, Bille, Method, Books 1 and 3. Major and minor scales and arpeggios. Solos such as the Marcello and Vivaldi sonatas, Beethoven, *Sonatina*, Russell Chacone. 4+4+4 q.h.

607, 608, 609. Studies to include Simandl, *Book II*, Bille, *Method*, Books 3 and 4, Hrabe. Scales and arpeggios in two ocataves. Solos such as Capuzzi, *Concerto*; Eccles, *Sonata*; Correlli, *Sonata in D minor*; Rachmaninoff, *Vocalise*. Prereq.: String Bass 506. 6+6+6 q.h.

707, 708, 709. Studies to include continuation of Simandl, *Book II*; Bille, *Method*, Book 4 and 5. Scales and arpeggios in three octaves. Solos to include Bottesini, *Reverie*, Koussevitsky, *Chanson Triste*, Lars-Erik Larsson, *Concertino*; Faure, *Apres Un Reve*. Junior recital. Prereq.: String Bass 609. 6+6+6 q.h.

807, 808, 809. Kreutzer, *Studies*. Zimmermann, *Orchestral Books*. Solos such as Concertos by Koussevitsky, Dragonetti, Dittersdorf, Bottesini, Vanhal; Hindemith, *Sonata*; Bottesini, *Elegy*; Koussevitsky, *Valse Miniature*. Senior recital. Prereq.: String Bass 709. 6+6+6 q.h.

Guitar

Major/Performance

504, 505, 506. 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; 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. 4+4+4 q.h.

607, 608, 609. Bach Preludes; F. Sor, Studies 11-15; 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. Prereq.: Guitar 506. 6+6+6 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. Junior recital. Prereq.: Guitar 609. 6+6+6 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 Villa-Lobos; Ensembles from the works of Ibert, Paganini, Boccherini, Haydn, and Schubert. Senior recital. Prereq.: Guitar 709. 6+6+6 q.h.

WOODWIND INSTRUMENTS

Flute

Major/Performance

504, 505, 506. Studies compatible with the student's training and the development of technic, articulation, phrasing, and tone quality. Repertoire to include all Handel *Sonatas,* at least 6 additional sonatas from the Baroque, and the 24 Andersen Studies, Op. 33. 4+4+4 q.h.

607, 608, 609. Continued development of technic, articulation, phrasing, and tone quality. Repertoire to include Bach, *Sonatas in E Minor,* and *B Minor;* Mozart, *Concerto in G Major;* Louis Ganne, *Andante and Scherzo;* Faure, *Fantasy;* and Telemann, *Suite in A Minor;* also the 24 Andersen *Etudes,* Op. 15. Prereq.: Flute 506. 6+6+6 q.h.

707, 708, 709. The study of solo works such as Bach, *Suite in B Minor;* Schubert, *Variations,* Op. 160; and *Sonatas* by Poulenc and Piston. Also at least 12 studies from Andersen, Op. 63, and 12 additional studies of comparable difficulty. Orchestral excerpts and classical concertos. Junior recital. Prereq.: Flute 609. 6+6+6 q.h.

807, 808, 809. Survey of Etudes from the teaching standpoint, including Hugues, Op. 101, 32, and 75; 3 *Caprices* by Karg-Elart; Etudes by Boehm, Casterede, Briccialdi, Soussmann, Furstenau, and others. Solo repertoire to include the Prokofieff, *Sonata,* Op. 94, and the Dutilleux *Sonatine.*Orchestral excerpts and 20th Century Concertos. Prereq.: Flute 709. 6+6+6 q.h.

Clarinet

Major/Performance

504, 505, 506. Studies compatible with student's training and the development of technic, articulation, phrasing and tone quality. Repertoire to include Mozart, *Concerto K. 622;* Von Weber, *Concertino,* and *Concerti No. 1 and No. 2;* and Saint-Saens, *Sonata.* 4+4+4 q.h.

607, 608, 609. Continued development of technic, articulation, phrasing, and tone quality. Repertoire expanded to include Hindemith, *Sonata;* Von Weber, *Variations and Grand Duo;* and Paris Conservatory Solos. Prereq.: Clarinet 506. 6+6+6 q.h.

707, 708, 709. Emphasis on the instrument in a chamber role, and the study of solo works such as Brahms, *Sonatas, Op. 120 Nos. 1 and 2;* Bernstein, *Sonata;* Debussy, *Premier Rhapsody.* Junior recital. Prereq.: Clarinet 609. 6+6+6 q.h.

807, 808, 809. Emphasis on the instrument in an orchestral role. Additional solo works to include Stravinsky, *Three Pieces;* Hindemith, *Concerto;* Nielsen, *Concerto;* Berg, *Four Pieces.* Senior recital. Prereq.: Clarinet 709. 6+6+6 q.h.

Oboe

Major/Performance

504, 505, 506. Studies compatible with the student's training and the development of technic, articulation, phrasing, and tone quality. Repertoire to include representative selections such as Handel, *Sonatas 1, 2, and 3;* Sammartini, *Sonata in G;* Eichner, *Concerto in C;* and Fischer, *Concerto in C.* 4+4+4 q.h.

607, 608, 609. Continued development of technic, articulation, phrasing, and tone quality. Repertoire expanded to include Nielson, *Romance and Humoresque;* Handel, *Concerto in G Minor;* Vivaldi, *Concerto in D Minor;* and Saint-Saens, *Sonata.* Prereq.: Oboe 506. 6+6+6 q.h.

707, 708, 709. Emphasis on the instrument in a chamber role, and the study of solo works such as Palidilhe, *Concertante;* Hindemith, *Sonata;* Haydn, *Concerto in C;* Mozart, *Concerto K. 314;* Horovitz, *Sonatina, Op. 3;* F. Reizenstein, *Sonatina* and *Three Concert Pieces.* Junior recital. Prereq.: Oboe 609. 6+6+6 q.h.

807, 808, 809. Emphasis on the instrument in an orchestral role, including the memorization of major orchestral passages. Additional solo works include Piston, *Suite;* Jacob, *Rhapsody for English Horn;* Vaughan Williams, *Concerto;* Gordon Jacob, *Concerti No. 1 and 2.* Senior recital. Prereq.: Oboe 709. 6+6+6 q.h.

Bassoon

Major/Performance

504, 505, 506. Studies compatible with the student's training and the development of technic, articulation, phrasing, and tone quality. Repertoire to include representative selections such as Hindemith, *Sonata;* Bordeau, *Premiere Solo;* David, *Concertino;* Galliard, *Six Sonatas.* 4+4+4 q.h.

607, 608, 609. Continued development of technic, articulation, phrasing, and tone quality. Repertoire expanded to include Mozart, *Concerto K. 191;* Bach, *Concerto in E-Flat;* Cascarino, *Sonata;* Graun, *Concerto in G-Flat;* selected Vivaldi *Concerti.* Prereq.: Bassoon 506. 6+6+6 q.h.

707, 708, 709. Emphasis on the instrument in a chamber role. Mozart, *Divermenti;* Beethoven *Duos;* Villa-Lobos, *Duo;* Piston, *Trio;* standard quintet literature. Junior recital. Prereq.: Bassoon 609. 6+6+6 q.h.

807, 808, 809. Emphasis on the instrument in an orchestral role. Memorization of major orchestral passages. Additional solo literature to include Etler, *Sonata;* Jacob, *Concerto;* Saint-Saens, *Sonata;* Bozza, *Concertino.* Senior recital. Prereq.: Bassoon 709. 6+6+6 q.h.

Saxophone

Major/Performance

504, 505, 506. Basics of embouchure, articulation, phrasing, technique, and tone reviewed with Londeix, *Les Gammes;* Viola, *The Technique of the Saxophone;* and literature which includes Telemann/Londeix, *Sonate;* Glazounov,*Concerto;* Creston, *Sonata;* and Bonneau, *Suite.* 4+4+4 q.h.

607, 608, 609. Refinement of technique, interpretation, and tone quality. Studies include Koechlin, *15 Etudes,;* Vol. I of Mule, *54 Etudes;* and literature and performance of Hartley, *Duo;* Bozza, *Piece Breve;* Noda, *Improvisation I;* Heiden, *Sonata* ; and Chamber works. Prereq.: Saxophone 506. 6+6+6 q.h.

707, 708, 709. Emphasis on literature and performance, including Absil, *Sonata;* Bozza, *Improvisation et Caprice;* Nerssibm *Fantasia;* Villa-Lobos, *Fantasia;* Milhaud, *Scaramouche;* Maurice, *Tableaux de Provence;* Noda, *Mai;* and literature from the 804, 5, 6 levels. Junior Recital. Prereq.: Saxophone 609. 6+6+6 q.h.

807, 808, 809. Emphasis on literature and performance, to include Ibert, *Concertino Da Camera;*Husa, *Elegie et Rondeau;* Persichetti, *Parable;* Berio, *Sequenza IXb;* and Bassett, *Music for Saxophone and Piano.* Senior Recital. Prereq.: Saxophone 709. 6+6+6 q.h.

BRASS INSTRUMENTS

Trumpet

Major/Performance

504, 505, 506. Development of basic fundamentals of breath and tonal control, and of full physical potential. Sight-reading. Introduction to transposition techniques. Study material: H. Clarke, *Technical Studies;* W. Smith, *Lip Flexibilities;* Arban, *Complete Method;* Hering, *Etudes.* Solo literature: Balay, *Prelude and Ballade;* Handel-Fitzgerald, *Aria Con Variazione;* Barat, *Fantasy in E-Flat; Andante and Scherzo.* 4+4+4 q.h.

607, 608, 609. Continued study of fundamentals and literature from the 500 levels. Orchestral excerpts and chamber literature. Extensive work on transposition and sight-reading. Introduction of the C Trumpet. Study materials: Schlossberg, *Technical Studies;* Clarke, *Characteristic Studies;* Pietsch, *Virtuosity Studies;* W. Smith, *Top Tones for the Trumpet;* Charlier, *36 Etudes.* Solo literature such as: Hummel, *Concerto in E-Flat;* Kennan, *Sonata;* Bohrnsdedt, *Concerto;* J. Stanley, *Trumpet Tune;* Flor Peeters, *Sonata.* Prereq.: Trumpet 506. 6+6+6 q.h.

707, 708, 709. Continued refinement of the technical and tonal aspects of trumpet playing. Improvement of transposition ability. Introduction of the D trumpet. Continued experience on the C trumpet; further study of orchestral excerpts. Study materials such as: Nelson, *Top Tone Duets;* Petit, *Petite Studies,* Broiles, *Technical Studies,* Vol. 1; Toldman, *Triple and Double Tonguing;* Tomasi, *Etudes.* Solo literature to include: Vidal, *Sonata;* Hindemith, *Sonata;* Gianinni, *Concerto;* Artumiam, *Concerto;* Stevens, *Sonata.* Junior Recital. Prereq.: Trumpet 609. 6+6+6 q.h.

807, 808, 809. Continued refinement and study of materials from the previous courses. Extensive work on orchestral excerpt collections of Bartholody and Voisin. Preparation of senior recital. Solo literature such as: Jolivet, *Sonatina;* Tomasi, *Concerto;* D. White, *Sonata;* Telemann, *Concerto in D Major;* Haydn, *Concerto in E-Flat.* Senior Recital. Prereq.: Trumpet 709. 6+6+6 q.h.

French Horn

Major/Performance

504, 505, 506. Establishment of a practice routine to promote fundamental skills; tone production, air control, embouchure, flexibility, legato-staccato articulation. Transposition, sight-reading. Orchestral excerpts taken from music of Brahms, Tschaikovsky, Beethoven, Mendelssohn, A. Thomas. Study materials such as Kopprasch, *6 Selected Studies,* Book I; Maxime-Alphonse, *70 Etudes,* Book I; Pottag and Andraud, *335 Studies,* Book I; Pares, *Daily Exercises and Scales.* Solo literature to include Mozart, *Concerto No.1;* Adler, *Sonata;* Baroff, *Sonata;* Jones, *Solos for the Horn Player,* 4+4+4 q.h.

607, 608, 609. Continued emphasis on fundamentals. Transposition, sight-reading. Orchestral excerpts: continuation of composers listed for 504, 505, 506, plus Rossini, Wagner, Dvorak, Franck, Weber. Study materials such as Kopprasch, *60 Selected Studies,* Books I and II; Maxime-Alphonse, *40 Etudes,* Book II; Pottag and Andraud,*335 Studies,* Book I; Bach-Hoss, *Suites for Cello.* Solo literature to include Op. 17; Chabrier, *Larghetto;* Rosetti, *Concerto in E-Flat* Saint-Saens, *Concert Piece, Op. 44;* Mozart, *Concerto No. 3.* Prereq.: French Horn 506. 6+6+6 q.h.

707, 708, 709. Further study of technical problems. Transposition, sight-reading. Orchestral excerpts: continuation of composers listed for previous courses, plus Bizet, Massenet, Borodin, Rimsky-Korsakov. Begin Strauss, Stravinsky. Study materials such as Kopprasch, *6 Selected Studies,* Book II; Maxime-Alphonse, *40 Etudes,* Book III; Gallay, *Studies and Preludes;* Bach-Hoss, *Suites for Cello;* Kling, *40 Characteristic Studies.* Solo literature to include Haydn, *Concerto No. 1;* Mozart, *Concerto No. 2;* R. Strauss, *Concerto No. 1;* Dukas, *Villanelle;* Wilder, *Sonata No. 3;* Beethoven, *Sonata, Op. 17.* Junior Recital. Prereq.: French Horn 609. 6+6+6 q.h.

807, 808, 809. Continuing emphasis on fundamental technical problems. Transposition, sight-reading. Orchestral excerpts: continuation of composers listed for previous courses, plus Bach, Mozart, Haydn, Mahler, Schoenberg, and other 20th century composers. Study materials such as Pottag and Andraud, *Selected Studies 305,* Book II; Bach-Hoss, *Suites for Cello;* Gallay, *Etudes and Preludes;* Maxime-Alphonse, *20 Etudes,*

Book IV; Mueller, *22 Etudes*. Solo literature to include Haydn, *Concerto No. 2;* Hindemith, *Concerto;* Mozart, *Concerto No. 4;* Tomasi, *Concerto;* Donato, *Concerto;* Hindemith, *Sonata*. Senior Recital. Prereq.: French Horn 709. 6+6+6 q.h.

Trombone

Major/Performance

504, 505, 506. Emphasis on all playing fundamentals. Establishment of a warm-up procedure. Establishment of good practice habits. Introduction to the F attachment. Introduction to tenor clef. Study materials such as: tenor trombone — Bordogni-Rochut, *Melodious Etudes*. Book I; Fink, *Introduction to Tenor Clef;* Blume-Fink, *36 Studies for Trombone with F Attachment*. Bass trombone — Ostrander, *Method for Bass Trombone;* Ostrander, *Melodious Etudes for Bass Trombone;* Fink, *Introduction to Tenor Clef*. Solo materials to include: Tenor Trombone — Marcello, *Sonatas #1, #4, #6;* Jacob, *Concerto (1st Movement);* Barat, *Andante Et Allegro*. Bass trombone — McCarty, *Sonata;* Mozart-Sansone, *Concert Rondo;* Galliard, *Sonata No. 5*. 4+4+4 q.h.

607, 608, 609. Continued emphasis on all playing fundamentals, warm-up and practice habits, and sight-reading. Concentration on developing range, endurance, and dynamics. Continued work in tenor clef. Introduction of alto clef. Continued work with F attachment. Study materials such as: Tenor Trombone — Bordogni-Rochut, *Melodious Etudes*, Books I and II; Fink, *Introduction to Alto Clef;* Kopprasch, *60 Studies*, Book II. Bass Trombone — Bordogni-Rochut, *Melodious Etudes;* Tyrrell, *40 Progressive Etudes for Tuba;* Menken, *Orchestral Excerpts*, Books 1 and 2. Solo materials to include: Tenor Trombone — David, *Concertino;* Grafe, *Grand Concerto;* White, *Sonata*. Prereq.: Trombone 506. 6+6+6 q.h.

707, 708, 709. Continued emphasis on all playing fundamentals, warm-up and practice habits, and sight-reading. Continued study of orchestral excerpts. Study on baritone horn is recommended. Emphasis on ensemble playing and playing "lead." Study materials such as: Tenor Trombone — Blazevich, *Clef Studies;* Bordogni-Rochut, *Melodious Etudes*, Book II; Pederson, *Intermediate Etudes for Tenor trombone*. Bass Trombone — Bordogni-Rochut, *Melodious Etudes;* Blazevich, *Advanced Studies*, Book I for Tuba; Weissenborn, *Studies*, Book II for Bass Trombone. Solo materials to include: Tenor Trombone — Hindemith, *Sonata;* Bozza, *Homage A Bach;* Casterede, *Sonatine*. Bass trombone — Ross, *Prelude Fugue and Big Apple;* Stevens, *Sonatina*. Junior Recital. Prereq.: Trombone 609. 6+6+6 q.h.

807, 808, 809. Culmination of all playing fundamentals in a solo recital. Introduction of study on the alto trombone. Perfection of orchestral audition repertoire. Study materials such as: Tenor Trombone — Bordogni-Rochut, *Melodious Etudes Book II;* Pederson, *Advanced Etudes for Tenor Trombone;* Mazted, *20 Advanced Studies*. Bass trombone — White, *Tetra Ergon; Persichetti, Serenade for Unaccompanied Tuba;* Beversdorf, *Sonata for Tuba*. Senior Recital. Prereq.: Trombone 709. 6+6+6 q.h.

Baritone Horn

Major/Performance

504, 505, 506. Study of fundamentals. Development of daily practice and warm-up routine. Knowledge of bass and treble clefs. Introduction to tenor clef. Study materials such as Arban, *Complete Method;* Bordogni-Rochut, *Melodious Etudes*, Vol. 1; Kopprasch, *6 Etudes*, Vol. 1; Blume, *26 Etudes*. Solo literature to include Galliard, *Sonata in G;* Barat, *Introduction and Dance;* Telemann, *Sonata in F;* Morel, *Piece in F;* Marcello, *6 Sonatas*. 4+4+4 q.h.

607, 608, 609. Continued emphasis on fundamentals. Introduction of alto clef. Orchestra and band parts. Emphasis on sight-reading. Study materials such as Arban, *Complete Method;* Bordogni-Rochut, *Melodious Etudes*, Vols. I and II; Voxman, *Selected Etudes;* Bitsch, *20 Etudes*. Solo literature to include Hindemith, *Bassoon Sonata;* Bach, *Cello Suites;* David, *Concertino;* Mozart, *Bassoon Concerto;* Whear, *Sonata;* Pryor, *Blue Bells of Scotland*. Prereq.: Baritone Horn 506. 6+6+6 q.h.

707, 708, 709. Continued study of orchestra and band parts. Study of trombone recommended. Study materials such as Smith, *Top Tones for Trumpet;* Bordogni-Rochut, *Melodious Etudes*, Vol. II; Bitsch, *20 Etudes*. Solo literature to include Ross, *Partita;* Stevens, *Sonatina;* Jolivet, *Air;* Bach, *Sonata in G;* White, *Lyric Suite*. Junior Recital. Prereq.: Baritone Horn 609. 6+6+6 q.h.

807, 808, 809. Continued study of orchestra and band parts. Study materials such as Bozza, *13 Etudes Caprices;* Bordogni-Rochut, *Melodious Etudes*, Vol. III; Rieunier, *22 Dechiffranges Rythmiques*. Solo literature to include Jacob, *Fantasia;* Bozza, *Homage a Bach;* Yoshioka, *Extase;* Hindemith, *Trumpet Sonata;* Bach, *Sonata in D*. Senior Recital. Prereq.: Baritone Horn 709. 6+6+6 q.h.

Tuba

Major/Performance

504, 505, 506. Study of fundamentals. Development of daily practice and warm-up routine. Playing of study and solo literature one octave lower. Study materials such as Blazhevich, *70 Studies*, Vol. 1; Arban, *Complete Method;* Kopprasch, *60 Etudes*, Vol. 1; Bordogni-Rochut, *Melodious Etudes*, Vol. 1. Solo literature to include David, *Concertino;* Telemann, *Sonata in F;* Lebejew, *Konzert;* Marcello, *6 Sonatas;* Barat, *Introduction and Dance*. 4+4+4 q.h.

607, 608, 609. Introduction to tenor clef. Orchestra parts; chamber literature. Study materials such as Blazhevich, *70 Studies*, Vol. II; Kopprasch, *60 Studies*, Vol. II; Barbatou; *Melodious Etudes*, Vols. I and II. Solo literature to include Hindemith, *Sonata;* Mozart,

Concerto No. 3; Blavet, *Sonata in G;* Vinci, *Sonata in D;* Wilder, *Sonata.* Prereq.: Tuba 506. 6+6+6 q.h.

707, 708, 709. Continued study of orchestra parts and chamber literature. Study materials such as Bordogni-Rochut, *Melodious Etudes,* Vols. I and II; Bitsch, *20 Studies;* Maenz, *Zwolf Spezliastudien.* Solo literature to include Schumann, *Adagio and Allegro;* Stevens, *Sonatina;* Bach, *Sonata in G;* Mozart, *Concerto No. 2;* Strauss, *Concerto No. 1.* Junior Recital. Prereq.: Tuba 609. 6+6+6 q.h.

807, 808, 809. Introduction to F Tuba (if not already used). Continued study of orchestra parts and chamber music. Study materials such as Bordogni-Rochut, *Melodious Etudes,* Vol. III; Reynolds, *48 Etudes;* Sauter, *Eight Random Thoughts;* Karg-Elert, *30 Caprices.* Solo literature to include Takacs, *Sonata Capricciosa;* Strauss, *Concerto No. 2;* Penn, *Three Essays;* Reynolds, *Sonata;* Woolf, *Per Tuba Ad Astram.* Senior Recital. Prereq.: Tuba 709. 6+6+6 q.h.

Percussion

Major/Performance

504. *Mallet Instruments. Mallet Control* by George Stone; *First Practical Studies for Trumpet* by Getchell-Hovey; *Second Practical Studies for Clarinet* by Nilo Hovey. Solos at this level. All major and natural minor scales and chromatic scales. One octave MM+80. 4 q.h.

505. *Snare Drum. Drum Method II* by Haskell Harr; *Rudimental Swing Solos* by Charley Wilcoxon; *The All American Drummer* by Wilcoxon; *Modern Contest Solos* by Pratt. Snare drum solos by other writers. All major, natural minor and chromatic scales one octave MM+104. All standard 26 drum rudiments. Prereq.: Percussion 504. 4 q.h.

506. *Marching Percussion. Modern Reading Text in 4/4* by Louis Bellson. Technics of writing for marching percussion, standard and contemporary. All major, minor (natural, harmonic, melodic) and chromatic scales. One octave MM+120. All standard 26 rudiments. Prereq.: Percussion 505. 4 q.h.

604. *Mallet Instruments. Mallet Technique* by Firth; *Modern School for Mallets* by Goldenburg; *Streamlined Etudes* by Huffnagle; Book I and II *Solos for Marimba* by Joliff; *Masterpieces for Marimba* by McMillan. Various solos at this level. All scales increased to 2 octaves. Major scales played broken and together in thirds. Major, minor, diminished, dominant and diminished seventh arpeggios, 2 mallets. All standard rudiments. Prereq.: Percussion 506. 6 q.h.

605. *Drum Set. Advanced Techniques for the Modern Drummer* by Chapin; *Realistic Rock* by Appice; *Big Band Drum Charts* by Rothman; *Show Drumming* by Greene; *New Directions in Rhythm* by Morello. Latin beats applied to the drum set. Scales and arpeggios are the same as level 604 with increased tempo. Prereq.: Percussion 604. 6 q.h.

606. *Timpani. Timpani Method* by Friese and Lepak; *Classic Overtures for Timpani* by Goldenberg; *The Solo Timpanist, 26 Etudes* by Firth. Various solos at this level. Scales and arpeggios are the same as 604 with tempo increased. Prereq.: Percussion 605. 6 q.h.

704. *Percussion Accessories. Techniques of playing bass drum, cymbals and accessories* by Al Payson; *Modern School for Snare Drum* by Goldenberg; *Contemporary Studies for Snare Drum* by Albright. A multiple percussion solo must be written using these instruments. All scales and arpeggios increase to 3 octaves. Four mallets on chords and inversions. Prereq.: Percussion 606. 6 q.h.

705. *Latin Percussion. Latin-American Rhythm Instruments and How to Play Them* by Henry Adler. Scales and arpeggios same as 704 with tempo increased. Prereq.: Percussion 704. 6 q.h.

706. *Excerpts. The Snare Drum in the Concert Hall* by Payson; *Progressive Studies* by Gardner; *Modern School for Mallets* by Goldenberg; *Classic and Romantic Symphonies for Timpany* by Goldenberg. For scales and arpeggios see level 705. Prereq.: Percussion 705. 6 q.h.

804. *Multi-Percussion Solos. Studies in Solo Percussion* by Goldenberg. Selection of recital pieces. Scales and arpeggios see level 704 with increased tempo. Prereq.: Percussion 706. 6 q.h.

805. *Recital.* The preparation of a Senior recital. For scales and arpeggios see level 705 with increased tempo. Prereq.: Percussion 804. 6 q.h.

806. *Writing Technics for Multi-Percussion and Percussion Ensemble.* Scales and arpeggios see level 706 with increased tempo. Senior Recital. Prereq.: Percussion 805. 6 q.h

THEORY AND COMPOSITION

501. *Applied Theory.* Applications of theory of diatonic harmony; development of independent study and research projects in such areas as analysis, aural perception, scoring, and arranging. May be repeated once. Prereq.: Permission of instructor. 2 q.h.

520. *Materials of Music.* Musical styles, listening concepts, and harmonic technics as they relate to the literature of music. For students who do not qualify for Music 532. Satisfies the University's area requirement in the humanities. 4 q.h.

530, 531, 532. *Theory 1.* A study of the harmonic, melodic, rhythmic and contrapuntal materials in diatonic tonal music. The instruction entails harmonic progression and voice leading, harmonic and formal analysis; laboratory practice in ear training, keyboard harmony and sightsinging. Meets five days a week. Prereq.: 520 or a minimum score of 50% on the theory placement test. 3+3 +3 q.h.

601. *Applied Theory.* Applied instruction in music theory of chromatic harmony which develops independent study and research projects in such areas as

analysis, aural perception, scoring, and arranging. May be repeated once. Prereq.: Permission of instructor. 2 q.h.

501, 502, 503. *Composition A*

601, 602, 603. *Composition B*

Composition for composition majors. Creative use of the materials of music; beginning study of instrumentation; composition of short works for solo and chamber media. Analysis of representative compositions in various styles. Prereq.: Grade of *B* or better in lower division theory courses, or concurrent with Music 530, 531, 532. 2 q.h. each

704, 705, 706. *Composition C*

804, 805, 806. *Composition D*

Composition for composition majors. Private instruction employing contemporary techniques; compositions for solo instruments, vocal and instrumental chamber groups, and large ensembles. Editing and proofreading of scores (and parts) to prepare compositions for performance or publication. A recital of at least one hour duration will be presented of selected works of the student as a requirement for graduation. Prereq.: Music 603, 706. 4 q.h. each

630, 631, 632. *Theory 2.* A study of which includes the chromatic materials used in tonal music. The instruction entails harmonization; harmonic and formal analysis; reading choral scores, chamber music and orchestral excerpts; laboratory practice in ear training, keyboard harmony and sightsinging. Meets five days a week. Prereq.: 532 with grade of C or better. 3+3+3 q.h.

701. *Applied Theory.* Applied instruction in music theory of modal and/or non-tonal music which will develop independent study and research projects in such areas as analysis, aural perception, scoring and arranging. May be repeated once. Prereq.: Permission of instructor. 2 q.h.

750. *Analytical Techniques.* Analysis of representative repertoire from the renaissance, baroque, classical, romantic, and contemporary periods. Prereq.: Music 632 with a grade of C or better. 4 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 are composed both for piano alone, and in combination with other instruments or voice. May be repeated by composition majors to meet requirements for composition A and composition B. Prereq.: Music 632 with a grade of C or better, or by permission of the instructor for composition majors. 2+2+2 q.h.

830. *Materials of Twentieth-Century Music.* A study of the various elements of twentieth-century compositions, including melody, harmony, rhythm, texture, and form. Prereq.: Music 632 with a grade of C or better. 3 q.h.

831. *Counterpoint I.* 16th-century contrapuntal style including introduction of species technique; analysis of liturgical and secular repertoire; writing of imitative counterpoint with stylistic rhythms and cadences. Prereq.: Music 632 with a grade of C or better. 3 q.h.

832. *Counterpoint II.* Contrapuntal style of baroque music including analysis of examples in imitative and invertible counterpoint; writing of 2- and 3-part inventions and 3- and 4-part fugal expositions. Prereq.: Music 632 with a grade of C or better. 3 q.h.

833. *Theory Seminar.* Topics in music theory not covered in regular upper division offerings. May be repeated once with different topic. Prereq.: Music 632 with a grade of C or better. 3 q.h.

834. *Electronic Music I.* Techniques of Musique Concrete; exploration of sound synthesis and alteration; mixing and recording techniques. The care and use of the synthesizer and attendant recording equipment. Composition of short works. Prereq.: For composition majors, Music 506 or equivalent; for non-composition majors, Music 632 with a grade of C or better; for non-music majors, permission of instructor. 2 q.h.

835. *Electronic Music II.* Composition in electronic and mixed media. May be repeated once. Prereq.: Music 834. 2 q.h.

840. *Instrumentation.* 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 632 with a grade of C or better. 4 q.h.

MUSIC HISTORY AND LITERATURE

512. *A Survey of Musical Theatre.* Identical to Speech 512. Satisfies the University's area requirement in the humanities. 4 q.h.

518, 519. *Survey of Music Literature.* An introduction to the elements of musical style with emphasis on the acquisition and development of perceptive listening skills. Study of representative literature from all historical periods. Comprehensive listening assignments are an integral part of the course. 518 is prerequisite to 519. 3+3 q.h.

522. *Introduction to World Music.* Historical survey of music of non-western societies as it relates to the different cultures. Study of development of instruments, vocal practices and performance media within the specific cultures. 4 q.h.

617. *Film Music.* An historical survey of the use of music in the motion picture. Examination of different styles in works by major composers. 4 q.h.

618. *Rock 'n Roll to Rock.* An historical survey of the evolution of rock 'n roll into rock with emphasis on the interrelationships of the music and social and political influence and the interaction of rock with other musics. 4 q.h.

622. *Popular Music in America.* The changing styles in American popular music from its origins to the

present day studied through an examination of representative compositions and performers. Satisfies the University's area requirement in the humanities. 4 q.h.

709, 710, 711. *History and Appreciation of Art and Music: General.* Identical with Art 709, 710, 711. Satisfies the University's area requirement in the humanities. 4+4+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 styles of individual composers are also stressed. Prereq.: Music 531 (or 621 for the non-music major). 4+4+4 q.h.

852. *Woodwind Literature.* An historical survey of solo and ensemble literature of the woodwind family with emphasis on the evolution of the woodwind instruments and the development of their literatures. Prereq.: Music 772. 3 q.h.

860. *Piano Literature.* A chronological investigation of solo piano works by major composers from Bach to Cage. Prereq. or Concurrent: Music 770, 771, 772. 4 q.h.

869. *Organ Literature.* A study of the organ and its literature from earliest times to the present day. Prereq.: Music 632 and 772. 3 q.h.

871. *Baroque Music.* Musical thought and stylistic developments during the period 1600-1750. A historical survey of the music literature of the time: opera from Monteverdi to Handel; keyboard and instrumental works; significant choral and orchestral works, etc. Prereq.: Music 632 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; historical and stylistic elements contributing to the rise of classicism and culminating in the works of Mozart, Haydn, Beethoven. Prereq.: Music 632 and 772. 3 q.h.

873. *Opera History.* An historical survey of opera: its development as an art form from its beginnings to the present. Prereq.: Music 632 and 722. 3 q.h.

874. *Nineteenth Century: The Romantic Period.* Musical developments from Beethoven through Wagner; aesthetic, formal, technical and historical trends with special emphasis on nationalism and the music drama. Prereq.: Music 632 and 772. 3 q.h.

875. *Contemporary Music.* See Music 830.

878. *Selected Topics in Music History.* A study of a specific topic to be announced each time the course is offered. May be repeated once with different topic. Prereq.: Music 632 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. Prereq.: Music 632 and 772. 3 q.h.

884. *History and Literature of Brass Instruments.* The history and literature of brass instruments with emphasis on the evolution of brass in the orchestra, solo literature, chamber music literature, and bibliography. Prereq.: Music 632 and 772. 3 q.h.

CONDUCTING

715. *Fundamentals of Conducting.* Conducting techniques and rehearsal procedures for instrumental and choral ensembles. Emphasis is on discovering the implications of the score and enlarging the student's expressive resources. Students in the class provide an ensemble for practice in conducting. Prereq.: Music 632 or junior standing. 3 q.h.

716. *Instrumental Conducting Practicum.* A practical course in conducting instrumental ensembles for actual conducting experience. Prereq.: Fundamentals of Conducting 715. 1 q.h.

717. *Vocal Conducting Practicum.* A practical course in conducting with total concentration on vocal ensemble problems and solutions. Students are assigned to one of the vocal ensembles for actual conducting experience. Prereq.: Music 715. 1 q.h.

MUSIC EDUCATION

511. *Introduction to Music Education.* Through classroom observations and seminars the student studies the place of music in the curriculum and the function of the music teacher at all levels of instruction. Includes 2 hrs. observation a week. Prereq.: Educ. 501. 1 q.h.

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.

621. *Music Literature and Appreciation.* The development of listening technics applicable to western and non-western music through the comparison and contrast of the music of significant historical periods. For non-music majors. Satisfies the University's area requirement in the humanities. Prereq.: Music 521. 4 q.h.

721. *Music Education for Elementary Teachers.* Discussion and demonstration of repertoire, techniques, and teaching aids for teaching music in the elementary school. Prereq.: Music 621 and admission to the School of Education. 3 q.h.

722. *Music in Early Childhood.* Repertoire, materials, and technics for teaching music to pre-school and kindergarten children. 3 q.h.

812. *New Directions in Music Education.* Contemporary philosophies, materials, and methods in music education including those of Orff, Kodaly, and Dalcroze. Prereq.: Music 823. 2 q.h.

813. *Non-Performance Music Courses in the Middle and Secondary School.* Current developments in general music, theory, history, and humanities related to the secondary school curriculum. A study of courses, content, scheduling, and innovative practices. Prereq.: admission to the School of Education. 2 q.h.

814. *Selected Topics in Music Education. The Schedule of Classes* will list course title each quarter. May be repeated for credit as long as topic is different. Prereq.: Music 815.

Topics will include:

Vocal Ensembles in the High School. A study of methods and materials for small vocal groups at the high school level including madrigals, swing choirs, and other small chamber ensembles. Prereq.: admission to the School of Education. 2 q.h.

Marching Band Techniques. Organizing and conducting the marching band. Gridiron, charting, and marching procedures, precision drills, formations, and pageantry. 2 q.h.

Music and the Related Arts. Techniques and materials for teaching humanities or related-arts classes at the elementary or secondary level. Relationships among music, art, architecture, literature, drama, and films. Prereq.: admission to the School of Education. 2 q.h.

Marching Band Arranging. A study of instrumentation, suitable instrumental ranges, and scoring procedures for attaining the sound-power for outdoor performance. 2 q.h.

Instrument Repair. Practical experience in the basic skills needed by the prospective instrumental teacher in repairing string, brass, woodwind, and percussion instruments. 2 q.h.

Jazz Ensemble in the Secondary School. Organizing, scheduling, and rehearsing the jazz ensemble, and a study of suitable jazz materials for the secondary school with emphasis on interpretation, style characteristics, and improvisation procedures. 2 q.h.

815. *Vocal and Instrumental Music Education.* Methods of organizing, administering, and conducting music in the schools. A study of the literature, instructional methods, library organization, festival participation, scheduling and other problems facing the music teacher. Includes 2 hrs. of field experience per week. Prereq.: Music 717 and admission to the School of Education. 4 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. Includes 2 hrs. of field experience a week. Prereq.: admission to the School of Education. 4 q.h.

841. *Music Workshop.* For students and teachers in service; topics may vary from year to year. Specific topics are announced each time the workshop is offered. May be repeated with different topic. 1-4 q.h.

851. *Woodwind Pedagogy.* Various teaching approaches to each of the woodwind instruments with special emphasis on doubling problems. Basic concepts of tone production, embouchure and study materials utilizing extensive demonstration by students and faculty. Prereq.: Music 506 or 509. 2 q.h.

858, 859. *Piano Pedagogy.* Methods and materials involved in teaching of piano. 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.

882. *String Pedagogy.* An examination of the problems of string teaching. Survey of grades and levels of instruction, string literature, psychological aspects of individual proficiency, and teaching devices. Demonstration with students in a teaching situation. Prereq.: String 701 or 704. 2 q.h.

885. *Brass Pedagogy.* Designed for the brass major 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.: Brass 506 or 509. 2 q.h.

APPLIED MUSIC CLASSES

A series of instrumental and vocal classes at the beginning level to explore technics and approaches appropriate to school music instruction. Music education majors select varying numbers of these courses in addition to pedagogy as described in the curriculum outline section. A minimum level of performance is required. Each class meets two hours a week.

555. *Guitar Class.* 1 q.h.

556. *Singer's Diction: English/Italian.* Application of the principles of Lyric diction; utilization of the International Phonetic Alphabet in developing and reading phonetic transcriptions of English/Italian song texts. Meets 2 times per week. 1 q.h.

557. *Singer's Diction: German.* Application of the principles of Lyric diction; utilization of the International Phonetic Alphabet in developing and reading phonetic transcriptions of German song texts. Meets 2 times per week. Prereq.: Music 556. 1 q.h.

558. *Singer's Diction: French.* Application of the principles of Lyric diction; utilization of the International Phonetic Alphabet in developing and reading

phonetic transcriptions of French song texts. Meets 2 times per week. Prereq.: Music 556. 1 q.h.

657. *Violin/Viola Class.* 1 q.h.

658. *Snare Drum Class.* 1 q.h.

659. *Voice Class.* 1 q.h.

660. *Flute and Single Reeds Class.* 1 q.h.

661. *High Brass Class.* 1 q.h.

756. *Double-Reed Class.* 1 q.h.

759. *Cello and Bass Class.* 1 q.h.

762. *Low Brass Class.* 1 q.h.

763. *Mallet, Timpani and Accessories Class.* 1 q.h.

KEYBOARD MUSICIANSHIP CLASSES

580, 581, 582. *Keyboard Musicianship I.* Elements of keyboard techniques, with emphasis on sight-reading, interpretation of simple music, harmonization, transposition, and analysis. All major and minor scales and related chords, hands together. Required of all non-keyboard majors. Must be taken in sequence. 1+1+1 q.h.

590, 591, 592. *Keyboard Musicianship for Keyboard Majors.* Laboratory and ensemble experience to develop skill in sight-reading, transposition, analysis, harmonization, modulation, and multi-part score-reading. Must be taken in sequence. Prereq.: Music 662 or equivalent. 1+1+1 q.h.

680, 681, 682. *Keyboard Musicianship II.* A continuation and intensification of studies begun in Music 580, 581, 582, with emphasis on accompanying, modulation, repertoire, and stylistic analysis. Must be taken in sequence. Prereq.: 582 or equivalent. 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.

887, 888, 889. *Piano Duet and Duo Playing.* Investigation and performance of works for four hands at one or two pianos, such as Mozart, *Sonata,* K. 44B; 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 in ensemble performance. May be repeated for credit. Prereq.: Music 695. 1+1+1 q.h.

ACCOMPANYING

601A, 602A, 603A. *Accompanying I.* Private instruction in solo vocal accompanying and coaching, with emphasis on piano technique, balance, style, and ensemble. Literature to include art songs, operatic excerpts, continuo playing. Concurrent with Accompanying 690, 691, 692. Prereq.: Keyboard Musicianship 592. 2+2+2 q.h.

693A, 694A, 695A. *Accompanying II.* A study of technics useful in playing the piano for instrumentalists, with supervised studio and recital experience. For accompanying majors only. Prereq.: Music 592. 2+2+2 q.h.

701A, 702A, 703A. *Accompanying II.* Private instruction in solo instrumental accompanying and coaching, with emphasis on piano technique, balance, style, and ensemble. Literature to include solo sonatas, continuo playing, orchestral reductions for paino of representative concertos. Concurrent with Accompanying 693, 694, 695. Prereq.: Keyboard Musicianship 592. 2+2+2 q.h.

801A. *Accompanying III.* Continuation of studies begun in 601A through 703A, with private instruction in preparation of one half-hour senior recital in vocal accompanying. Prereq.: Piano 703A. 2 q.h.

802A. *Accompanying III.* Continuation of studies begun in 601A through 703A, with private instruction in preparation of one half-hour senior recital in instrumental accompanying. Prereq.: 801A. 2 q.h.

895. *Advanced Vocal Accompanying.* Study and refinement of vocal accompanying technics. Supervised preparation for a recital of at least 30 minutes to be performed during the quarter. Prereq.: Music 692 and 879. 4 q.h.

896. *Advanced Instrumental Accompanying.* Study and refinement of instrumental accompanying technics. Supervised preparation for a recital of at least 30 minutes to be performed during the quarter. Prereq.: Music 695 and 865. 4 q.h.

JAZZ

510. *Survey of Jazz.* A historical survey of performers, compositions, origins, influences, and stylistic features from its roots to the present. 3 q.h.

625. *Music in Mass Media.* Music for a variety of media (filmstrips, television) used for commercial, dramatic, artistic, and educational communication. Recording, synchronization, timing, and editing techniques are applied to student projects. 3 q.h.

666, 667, 668. *Jazz Improvisation.* Jazz technics, with emphasis on analysis of harmonic progression, form, style, and performance requirements of the jazz idiom. Prereq.: Music 531 or permission of the instructor. 3+3+3 q.h.

712, 713, 714. *Jazz Arranging I, II, III.* Scoring in the jazz idiom with emphasis on harmonic concepts, voicing procedures, forms and stylistic trends developed by major jazz composer-arrangers. Detailed study of instrumental techniques and effects with projects scored for small combos through large ensemble. Student arrangements will be performed in reading sessions and concerts. Must be taken in sequence. Prereq.: Theory 532 or consent of instructor.
3+3+3 q.h.

780, 781, 782. *Jazz Keyboard I, II, III.* (Non-Keyboard Majors): Class instruction and keyboard experience in melodic, harmonic, and rhythmic improvisation. 1+1+1 q.h.

866, 867, 868. *Advanced Jazz Improvisation.* Advanced jazz techniques, with emphasis on analysis of harmonic progressions, form, style, and performance requirements of the jazz idiom. Prereq.: Music 668.
3+3+3 q.h.

ENSEMBLES

In order to obtain experience in the performance of music written for large instrumental and vocal groups, students are required to participate in ensembles as follows:

All vocal and instrumental majors must be in a major ensemble for every quarter of their four years. The director of the School of Music may waive ensemble participation in exceptional cases, and during the student teaching quarter. Major ensembles are orchestra, wind ensemble, concert band, chorale and University chorus. Keyboard majors may follow the ensemble program specified in their curriculums.

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. The courses are:

		Cr. Hrs.
002	*Dana Chorale*	1
003	*Madrigal Singers*	1
004	*University Chorus*	1
005	*Concert Band*	1
006	*Marching Band*	1
007	*Symphonic Wind Ensemble*	1
008	*Symphony Orchestra*	1
009	*Percussion Orchestra*	1
010	*String Ensemble*	1
011	*Men's Chorus*	1
012	*Opera Workshop*	1

Open to all students of the University who are interested in the art of lyric theatre. Students may audition for roles, in which they are prepared musically and dramatically. In a practical working atmosphere, students become exposed directly to the practical problems of lighting, set construction, costuming, and make-up. Both singers and stage crew may aquaint 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 given in accordance with the amount of work to be undertaken by the student. 1-3 q.h.

		Cr. Hrs.
013	*Contemporary Ensemble*	1
014	*Women's Chorus*	1
015	*Collegium Musicum*	1
016	*Woodwind Ensemble*	1

Outgrowths of the woodwind ensemble may include quartets, quintets, and various other combinations of instruments. 1 cr. hr. each

Outgrowths of the brass program also include:

		Cr. Hrs.
017	*Brass Ensemble*	1
018	*Horn Choir*	1
019	*Trombone Choir*	1
020	*Tuba Ensemble*	1
021	*Brass Chamber Ensemble*	1
022	*Trumpet Ensemble*	1
023	*Jazz Ensemble*	1
024	*Composers' Ensemble*	1

Performance of works by student composers or other works which will assist student composers in the development of an original, creative style. Meets two hours per week. 1 q.h.

		Cr. Hrs.
026	*Chamber Orchestra*	1
028	*Chamber Winds*	1
029	*Guitar Ensemble*	1

CURRICULUM FOR PERFORMANCE DEGREES

I. General University requirements common to all performance degrees:

	Cr. Hrs.
Composition 550, 551	8
Social Studies Elective	16
H&PE 590 and Activities	6
Math/Science (Including Physics 608)	12
Humanities (See Music 770, 771, 772)	15

II. Music requirements common to all performance degrees:

	Cr. Hrs.
Major Instrument or Voice 504-809	*66
Music Theory 530—750	22
Music History 770, 771, 772	12
Junior and Senior Recitals	N/C
Music Literature 518, 519	6
Conducting 715	3
Applied Minor 501, 502, 503 or completion of Keyboard 682	6

III. Requirements in addition to the above but unique to each program:

*Voice is only 60.

1. Piano	Cr. Hrs.
Keyboard Musicianship 590, 591, 592	3
Accompanying 690 — 695	6
Piano Duo 887, 888, 889	3
Piano Chamber Music 890, 891, 892	3
Theory elective	12
Piano Pedagogy 858, 859	4
Piano Literature	4
Elective	7

2. Organ	Cr. Hrs.
Keyboard Musicianship 590, 591, 592	3
Accompanying 690 — 695	6
Theory elective	12
Major Ensemble	6
Piano Pedagogy 858, 859	4
Organ Literature	3
Elective	12

3. Instrumental	Cr. Hrs.
Major Ensemble	12
Theory elective	12
Chamber Ensemble	3
Pedagogy	2
Music History Elective	3
Electives	14

4. Voice	Cr. Hrs.
Major Ensemble	9
*Italian, French, German	24
Music History elective	3
Vocal Pedagogy 880, 881	4
Music Theory Elective	6
Diction	3
Electives	3

I. General University requirements common to both composition concentrations.

Composition	Cr. Hrs.
Composition 550, 551	8
Social Studies elective	16
HPE 550 and activities	6
Math/Science (Including Phy. 608)	12
Humanities (See Mus 770, 771, 772) Philosophy and Music Elective	24
Language 501, 502, 503 or equivalent	12

II. Music requirements common to both composition concentrations.

	Cr. Hrs.
Music Theory 530—750	22
Music History 770—772	12
Composition 504—806	36
Junior/Senior recitals	N/C
Major ensemble	12
Theory 831 and 832	6
Music History elective	3
Theory electives	9
Music Literature 518, 519	6

III. Requirements in addition to the above but unique to both composition concentrations.

*If the student has 2 units of high school French, German, or Italian, the corresponding course may be waived.

1. Keyboard concentration	Cr. Hrs.
Piano 501—703	18
Secondary applied 501	2
Applied classes	10
Music electives	4

2. Non-keyboard concentration	Cr. Hrs.
Keyboard 580—682	6
Applied Music 501—701	14
Applied classes	10
Music electives	4

CURRICULUM FOR JAZZ DEGREES

I. General University requirements common to all jazz degrees:

	Cr. Hrs.
Composition 550, 551	8
Social Studies elective	16
H&PE and Activities	6
Math/Science (Including Physics 608)	12
Humanities (See Music 770, 771, 772, Philosophy and Music Elective)	19

II. Music requirements common to the jazz degrees:

	Cr. Hrs.
Theory 530 — 750	22
Arranging 712,713,714	9
**Major Ensemble	15
Survey of Jazz 510	3
Music History 770, 771, 772	12
Conducting 715	3
Theory electives	6
Improvisation 666 — 868	18
Senior Recital	N/C
Music Literature 518, 519	6
Pedagogy	2

III. Requirements in addition to the above but unique to each program:

1. Non-Keyboard	Cr. Hrs.
Applied Instrument 504 — 806	48
Keyboard 580 — 682	6
Jazz Keyboard 780 — 782	3
Music Electives	4

2. Keyboard	Cr. Hrs.
Keyboard 504 — 806	48
Keyboard 590, 591, 592	3
Jazz Keyboard 780, 781, 782	3
Music Electives	7

CURRICULUM FOR MUSIC EDUCATION DEGREES

I. Minimum general University requirements common to all music education degrees:

	Cr. Hrs.
Composition 550, 551	8
Science/Math (Including Physics 608)	12
H&PE 590 and Activities	6

**Jazz ensemble is the major ensemble for the jazz major only (3 additional major ensemble hours are needed).

Social Studies (Including Psych. 560 and 709) 16
Speech 554 4
Humanities (Including Music 770, 771, 772, Music History elective, and Philosophy elective) 19

II. Music requirements common to all music education degrees:

	Cr. Hrs.
Major Instrument or Voice (501 — 802)	22
Theory 530 — 750	22
Music History 770 — 772	12
Conducting 715, 716, or 717	4
Music Ed 511, 823, 810 or 811	13
Theory elective	2
Senior Recital	N/C
Music Literature 518, 519	6

III. Requirements in addition to the above but unique to each program:

1. Instrumental	**Cr. Hrs.**
Keyboard Musicianship 580 — 682	6
Major Ensemble	11
Applied Classes	6
Pedagogy	2
Chamber Ensemble	2
Music History elective	3

2. Voice	**Cr. Hrs.**
Keyboard Musicianship 580 — 682	6
Applied Classes	5
Vocal Pedagogy	4
Chamber Ensemble	3
Music History elective	3
Major Ensemble	9

3. Keyboard	**Cr. Hrs.**
*Secondary Applied 501— 503	6
Keyboard Musicianship 590 — 592	3
Applied Classes	4 or 5
Accompanying 690 — 695	6
Major Ensemble	3 or 4
Piano or Organ Literature	3 or 4
Piano Pedagogy	4

4. School of Education Requirements common to all music education majors	**Cr. Hrs.**
Education 501	4
Education 700	2
Education 702	1
Education 704	3
Education 706	4
Education 706L	3
Education 708	4
Education 710	4
Education 730	2
Education 844	15
Total Hours	42

*Organ major must take piano.

CURRICULUM FOR BACHELOR OF ARTS DEGREES

I. General University requirements common to all performance degrees:

	Cr. Hrs.
Composition 550, 551	8
Social Studies	20
H&PE 590 and Activities	6
Math/Science	16
Humanities (See Music 770, 771, 772, Philosophy and Music History Elective)	19
Language	8 to 20
**Minor Field	21

II. Music requirements common to all performance degrees:

	Cr. Hrs.
Music Theory 530 — 750	22
Music History 770, 771, 772	12
Conducting 715	3
Music Literature 518, 519	6
Major Ensemble	6

III. Requirements in addition to the above but unique to each program:

1. Music History	**Cr. Hrs.**
Applied Instrument or Voice	24
Music elective	11
Music History electives	18
Theory elective	6

2. Applied Music	**Cr. Hrs.**
Applied Instrument or Voice	42
Music History electives	3
Electives	8
Theory elective	6

3. Theory	**Cr. Hrs.**
Applied Instrument or Voice	24
Music electives	15
Music History electives	6
Theory elective	14

**The requirements for the minor are found in the section concerned with that college.

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E. Terry Deiderick ..... Marketing

1974-1975

Esotto Pellegrini ..... Music
James P. Rhonda ..... History

1975-1976

Larry E. Esterly ..... Political Science

THE WALTER E. AND CAROLINE H. WATSON FOUNDATION MERIT AWARDS

1977-1978

Donald W. Byo ..... Music
Frank A. D'Isa ..... Mechanical Engineering

1978-1979

Gilda M. Decapita ..... Nursing
Victor A. Richley ..... Engineering Technology

1979-1980

Barbara H. Brothers ..... English
Frank J. Seibold . Advertising and Public Relations
John H. Yemma ..... Allied Health

1980-1981

Thomas N. Dobblestein ..... Chemistry
James C. Morrison ..... Psychology
Virginia K. Phillips ..... Business Education and Technology

1981-1982

George D. Beelen ..... History
Lewis B. Ringer .. Health and Physical Education

1982-1983

Jack D. Bakos ..... Civil Engineering
Warren M. Young ..... Physics and Astronomy

1983-1984

Mary J. Beaubien ..... Home Economics
Barbara H. Brothers ..... English

1984-1985

Frank A. D'Isa ..... Mechanical Engineering
Richard C. Mitchell ..... Art

1985-1986

Barbara Brothers ..... English
John Yemma ..... Allied Health

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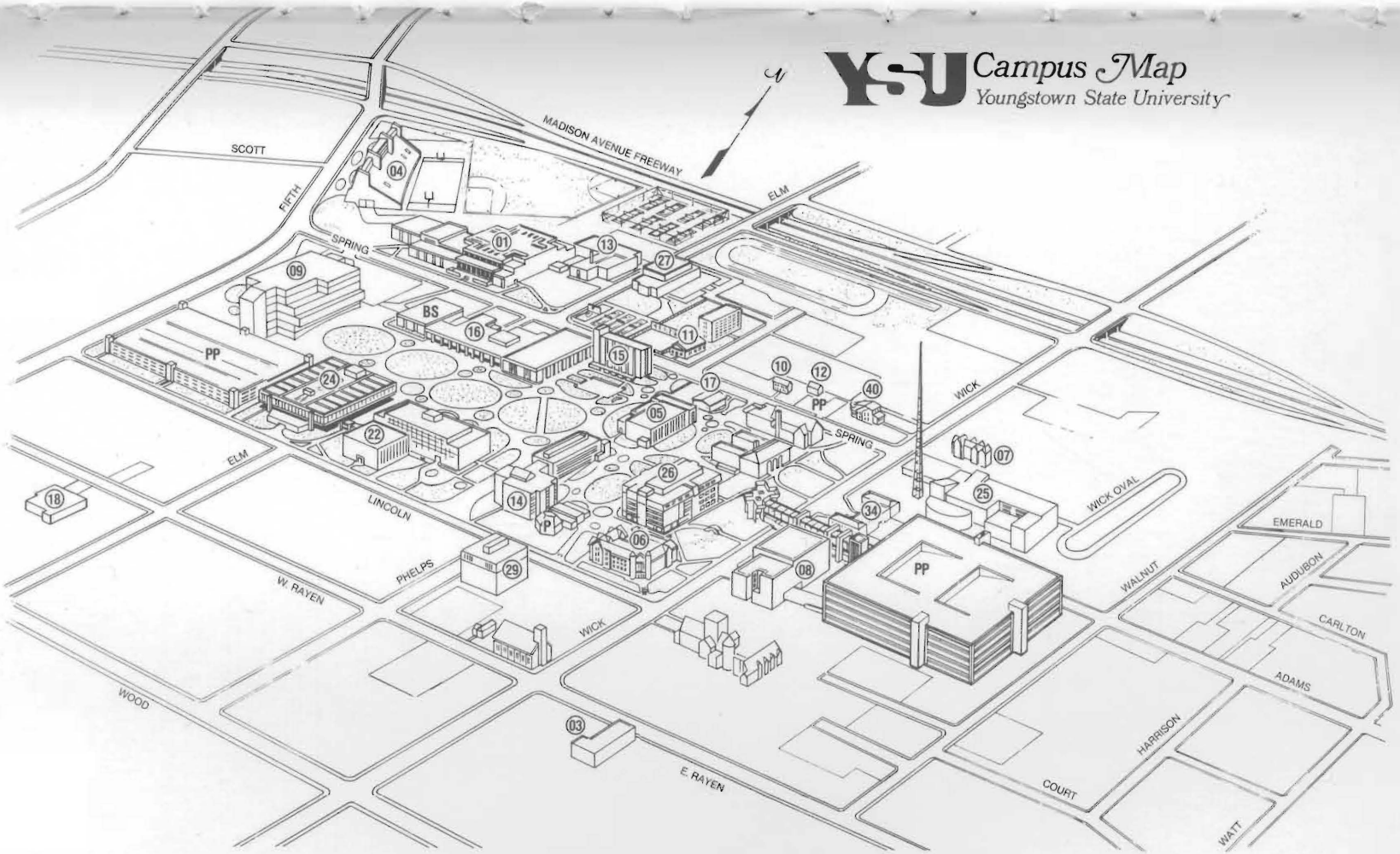
— NOTES —

YSU Campus Map

Youngstown State University



01 — Beeghly Center
03 — Clingan-Waddell Hall
04 — Stambaugh Stadium
05 — Tod Administration Building
06 — Jones Hall
07 — Pollock Inn
08 — Meshel Hall
09 — DeBartolo Hall
10 — North Annex
11 — Dana Hall
12 — Campus Security Building
13 — School of Education
14 — Ward Beecher Science Hall
15 — Kilcawley Residence Hall
16 — Kilcawley Center
17 — Central Services Building
18 — Central Receiving/Warehouse
22 — Engineering Science Building
24 — Cushwa Hall
25 — Bliss Hall
26 — Maag Library
27 — Central Utility Plant
29 — Williamson Hall
34 — Office Annex
40 — Alumni House

BS — Bookstore
P — Planetarium
PP — Public Parking

5/20/98