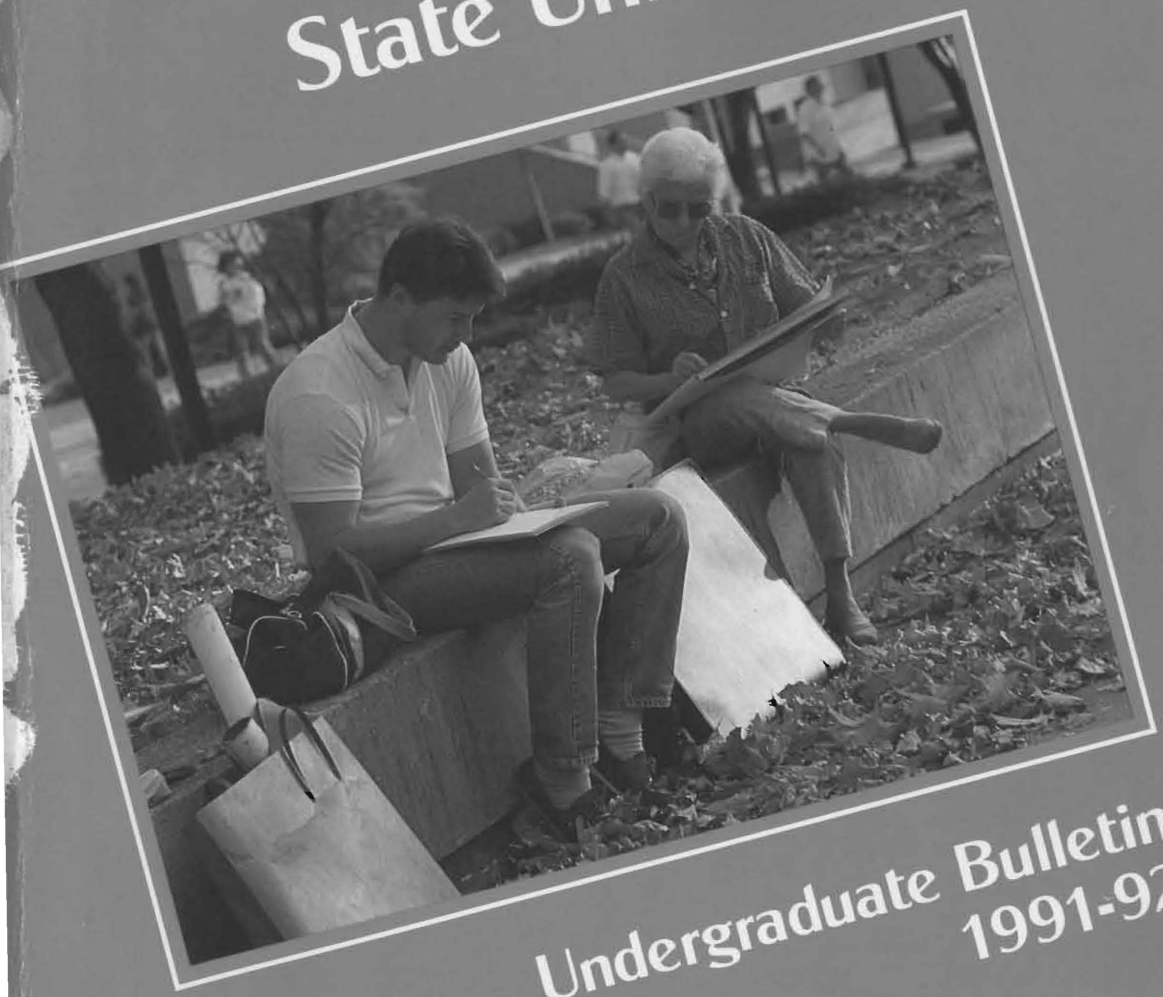
Youngstown State University



Undergraduate Bulletin 1991-92

YOUNGSTOWN STATE UNIVERSITY

UNDERGRADUATE BULLETIN 1991-92

EFFECTIVE SEPTEMBER, 1991
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 committed to a policy of nondiscrimination on the basis of sex, race, religion, color, age, national origin, handicap or identification as a disabled veteran, or veteran of the Vietnam Era, in respect to students and/or to applicants for admission, to employees and/or to applicants for employment, and to organizations providing contractual services to Youngstown State University.

Inquiries should be directed to Youngstown State University's Assistant to the President for Affirmative Action, who is responsible for coordinating the University's programs for compliance with Section 504 of the Rehabilitation Act of 1973 and Title IX of the Education Amendments of 1972. Inquiries can be initiated in writing or by calling (216) 742-3370.

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UNDERGRADUATE CATALOG ISSUE

EFFECTIVE SEPTEMBER, 1991
YOUNGSTOWN, OHIO

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Academic Calendar 1991-92

FALL 1991

Date	Day	Time	Event
Sept. 16	Mon.	1000	Faculty Meeting
Sept. 25	Wed.	0800	Classes Begin
Oct. 1	Tues.	1800	Last Day to Add a Class
Oct. 7	Mon.	1830	Last Day to Apply for Fall Quarter Graduation
Nov. 5	Tues.	1800	Last Day to Withdraw with a W
Nov. 11	Mon.		Legal Holiday — University Closed (Veterans Day)
Nov. 27	Wed.	2300	Thanksgiving Academic Break Begins
Nov. 28	Thurs.		Legal Holiday — University Closed
Nov. 29	Fri.		Legal Holiday — University Closed
Dec. 2	Mon.	0800	Thanksgiving Academic Break Ends
Dec. 9	Mon.	0800	Final Examinations Begin
Dec. 14	Sat.	1700	Final Examinations End
Dec. 24	Tues.		Legal Holiday — University Closed
Dec. 25	Wed.		Christmas Holiday — University Closed
Jan. 1	Wed.		New Year's Holiday — University Closed

WINTER 1992

Jan. 6	Mon.	0800	Classes Begin
Jan. 11	Sat.	1200	Last Day to Add a Class
Jan. 13	Mon.	1830	Last Day to Apply for Winter Quarter Graduation
Jan. 20	Mon.		Legal Holiday — University Closed (Martin Luther King Day)
Feb. 15	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 1992

Mar. 30	Mon.	0800	Classes Begin
Apr. 4	Sat.	1200	Last Day to Add a Class
Apr. 6	Mon.	1830	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 1992

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 29	Mon.	1800	Last Day to Add a Class — Entire Summer Quarter
June 29	Mon.	1800	Last Day to Apply for Summer Quarter Graduation
July 3	Fri.		Legal Holiday — University Closed
July 4	Sat.		Legal Holiday — University Closed (Independence Day)
July 13	Mon.	1800	Last Day to Withdraw with a W — First Term Classes
July 25	Sat.	1700	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.	1800	Last Day to Withdraw with a W — Entire Summer Quarter
Aug. 17	Mon.	1800	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 Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology include chemical engineering (jointly accredited by the American Institute of Chemical Engineers), civil engineering, electrical engineering, industrial engineering, and mechanical engineering. The associate and bachelor's programs in civil, electrical and mechanical engineering technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. The Bachelor of Science in Nursing program is accredited by the National League of Nursing and is approved by the Ohio State Board of Nursing Education and Nurse Registration. 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 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's 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 a 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 1990'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, 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 Assistant to the President for Affirmative Action, 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 uses 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 allied health, civil engineering technology, computer information systems, 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 curricula qualify the student to enter technical or professional fields upon graduation. It provides the arts and sciences courses in the curricula 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, economics, English, French, geography, geology, German, health education, history, Italian, labor relations, Latin, mathematics, philosophy, physical education, physics, political science, psychology, Russian, religious studies, social work, sociology, black studies, Spanish, or a combined major in American studies, earth science, labor relations, combined 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 art in conjunction with the Art Department, advertising and public relations, fashion retailing in conjunction with the Home Economics Department, finance, general administration, industrial management, industrial marketing, management (behavioral or management information systems tracks), marketing management, public administration, retail marketing or shopping center management.

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 education courses for teacher certification while the student is earning 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 music education; with the College of Fine and Performing Arts in the preparation of teachers of art, speech and drama/theatre; and with the College of Applied Science and Technology in the preparation of business education, home economics teachers, and pre-kindergarten teachers.

THE WILLIAM RAYEN SCHOOL OF ENGINEERING

The William Rayen School of Engineering offers complete curricula in chemical, civil, electrical, industrial, mechanical and materials 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, telecommunication studies, theatre or music theory and composition; or (in conjunction with the School of Education) in art education, music education, speech education or drama/theatre 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 general business, 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. Emphasis on the basic sciences continues throughout the last four years of medical school and 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 extraordinary 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 UNIVERSITY OUTREACH

The Office of University Outreach develops and administers courses and programs outside the traditional degree programs through Continuing Education, Education Outreach, EduTravel, College for the Over Sixty and the Center for Quality and Productivity. Through both credit and noncredit course offerings at a variety of convenient times and locations, it makes academic programs, along with administrative and support services, available to nontraditional students.

Through the Office of University Outreach, YSU attempts to make the lifelong process of education possible for the adult with family and work obligations.

Youngstown State University offers degree and nondegree programs — courses, workshops, and seminars, all specifically designed and planned to meet the varied needs of adults. The University has the flexibility to build a schedule that is both comfortable and convenient for adults.

Continuing Education

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

Area residents participate annually in more than 200 noncredit 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 Continuing Education function is manifested in several series of noncredit offerings described below.

COMMUNITY EDUCATION PROGRAMS

–provide noncredit courses, seminars, and conferences to meet the personal development and leisure, general interest and recreation needs of the greater Youngstown area.

HEALTH AND HUMAN SERVICES PROGRAMS

–provide noncredit courses, seminars, and conferences developed to meet the needs of local, county, state and federal government, public and community agencies, nursing, allied health, criminal justice, home economics, nursing home administration, day care centers, social work, education, mental health, food service and related areas.

BUSINESS AND MANAGEMENT PROGRAMS

–have the responsibility to serve this sector of the community, including courses, seminars and conferences in management, supervision, accounting, purchasing, marketing, advertising, public relations, small business, construction, production and inventory control, real estate, secretarial and office management, banking and finance, insurance, labor relations, traffic and transportation and related areas.

ENGINEERING, TECHNICAL AND COMPUTER PROGRAMS
–serve this sector of the community with courses, seminars, and conferences in engineering, engineering technology, computer and data processing and related ares.

TELECONFERENCES
–link the educational resources of the world through satellite-delivered educational teleconferences in a variety of professional and academic fields to personnel at YSU and in the Mahoning and Shenango valleys.

The Office in accordance with the Board of Trustees and Senate policy, awards the Continuing Education (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 noncredit post-secondary courses.

YSU's Office of University Outreach is also responsible for the administration of:

COLLEGE FOR THE OVER SIXTY
–a state-mandated program providing for the enrollment of Ohioans 60 years of age or older who have been residents of the State for the preceeding 12 months in undergraduate credit classes on a space available basis.

EDUTRAVEL
–provides adults with the opportunity to explore cultural learning by visiting foreign countries to experience another land and culture. Travel-study programs in this series provide on-site lectures, seminars and field experiences and also provide visits to sites and facilities often not available to the average tourist.

EDUCATION OUTREACH
–coordinates the off-campus delivery of credit classes throughout the service area at instructional settings including business, agency or community locations. Evening off-campus credit programs are designed for people who find the traditional daytime courses on campus inaccessible. They permit students, with or without prior credit, to undertake courses for an undergraduate degree during evenings or weekends or both.

The Education Outreach unit also provides a variety of re-entry opportunities for adult learners by providing one-on-one educational information and counseling sessions at public libraries in the five county service area.

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.

CENTER FOR QUALITY AND PRODUCTIVITY
–established through a grant from the Ohio Board of Regent's Productivity Improvement Challenge Program, serves as a training center to assist small to medium-sized businesses in applying present day quality and productivity approaches and techniques.

Further information may be obtained from the Office of University Outreach, Room B089, Cushwa Hall: (216) 742-3221, or for noncredit programs, (216) 742-3358.

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 environment.

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 the Public Broadcasting Service 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.

The Institute works with community 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.

The Microbiology Testing Laboratory provides public health testing to more than 60 state and local public agencies, hosts meetings and seminars on community health and services as a focal point for the dissemination of public health information.

Center for Urban Studies

The Center for Urban Studies is a research and community service department. 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) Rapid sampling of public opinion by telephone, mail questionnaire or personal interviews. (3) Data processing and analysis. (4) 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. (5) Access to census tapes, technical reports and other publications related to urban public management. (6) Training processes, workshops, seminars and symposia to bring information on urban problems to the attention of public administrators, citizens and faculty. (7) Urban planning, including urban design, economic base analysis, general and specific land use studies, zoning, and economic revitalization strategy development. (8) Participation in community improvement efforts through information sharing.

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 works to promote the creation of jobs by encouraging new business ventures and by assisting established firms to improve their production capabilities. It operates programs which:

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

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 use 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.

The Cushwa Center has been designated as a Small Business Development Center by the Ohio Department of Development. Through this adjunct activity, which is supported by state and federal grants, the Cushwa Center accesses organizational, financial, marketing and technical assistance from state agencies and sponsors business workshops and seminars for small businesses in Mahoning, Trumbull and Columbiana Counties.

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.

Engineering Services Center

The Engineering Services Center provides convenient access to the significant technical and engineering expertise of the faculty and staff of the William Rayen School of Engineering and the Department of Engineering Technology in the College of Applied Science and Technology. The services offered to organizations outside the University do not duplicate those provided by engineering consultants in the area. Both development and testing services are available.

PHYSICAL PLANT

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 105 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

One of the oldest buildings 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, Counseling and Testing, Financial Aids, Graduate School, Records, Registrar's, Student Data Services and Student Developmental Services Offices.

Tod Hall

The University's main administrative offices are in Tod Hall, 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, Audits and Systems, Budget, Controller, Executive Director of Facilities, Payroll, Personnel, Purchasing, and News Service/Publications offices; Parking office; YSU Credit Union; Substance Abuse Program; 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 Tech Library System) with over 20 terminals in the Maag Library, remote access from several buildings on campus and direct dial-up via phone modem and through the microcomputer center network. Several CD-ROM data bases are available in the reference area.

The library includes instructional and research materials in books, periodicals and microforms. These holdings number 583,550 volumes, 887,787 microforms, and 163,673 government documents. 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

Meshel Hall, dedicated January 1986, 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 90,100 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 6 classrooms, 16 specialized computerized laboratories, 26 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 for decentralized access by faculty, staff and students throughout the University. The Center occupies the fourth floor of Meshel Hall, an 87,000 square-foot advanced technology center. Serving both academic and administrative needs, the Computer Center operates an AMDAHL 5868 Multiprocessor (equivalent to two IBM 3081 GXs) with 64 megabytes (67.1 million characters) of main memory. The Amdahl 5868 Multiprocessor supports MVS/Extended Architecture (MVS/XA) and is complimented by an Amdahl 5860 Uniprocessor executing VM/ESA with the System/370 architectural feature. The Amdahl 5860 Uniprocessor supports 32 megabytes (33.6 million characters) of main memory. The two mainframe processors provide on-line access to over 65.6 gigabytes of conventional direct access disk storage along with access to a 192 megabyte high-performance solid-state storage device. The computer complex is complemented by approximately 700 on-line devices, including terminals, personal computers, printers, plotters and projection systems.

Students have access to the computer either in the batch mode or interactively using IBM 3270 color display terminals located in various academic departments throughout campus. The main facilities are located in Meshel Hall which contains 7 classrooms and 12 laboratories dedicated to student use. Telephone lines are provided for remote access off-campus.

A total of 225 IBM PCs is available on a local area network for instruction and research. These networked PCs allow access to a variety of software, as well as other facilities, such as the MAAG Library Online Catalog and the Youngstown FreeNet community computer system.

An Ethernet backbone through the heart of campus connects the AMDAHL 5860 with the Mathematical and Computer Sciences Department's UNIX-based parallel processor along with Maag Library's Online Catalog. Access to the Cray YMP8/864 supercomputer located at the Ohio Supercomputer Center in Columbus is also supported via the network.

A full-time professional staff and part-time student assistants are available for consultation on course work and research projects. 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.

Ward Beecher 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 built with funds contributed by Mahoning Valley Industries and area industrialist Ward Beecher. Presently the building contains 48 laboratories including a planetarium, 7 classrooms, 52 academic offices, 10 faculty-research rooms, and a conference-seminar room. A $12,000,000 renovation and remodeling project consisting of two phases was completed in March 1987. Phase I included renovation to the Engineering Science Building. Phase II included a renovation of the entire Ward Beecher building with an infill to the breezeway area linking old and new Ward Beecher. Construction also included 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 upgrading of all interior finishes. The most recent Phase III is complete with the new ground level green house addition, the most significant renovation.

Pollock House (Wick-Pollock Inn)

Pollock House, built in 1900, was given to the University in 1950 by its former owners, Mr. and Mrs. William B. Pollock II. The renovation and addition to the original structure is complete with full occupancy of 80 rooms, banquet rooms and dining area. The Inn is operated by Pollock Inn Restoration Associates.

Historical Buildings

Renovations to the Alumni House, University Police Building and Coffelt Hall have been consistent with the recommendations in the Facilities Master Plan. 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." Renovation efforts were dedicated to maintaining the visual, architectural and physical character of these structures while recognizing, identifying and preserving their heritage.

ALUMNI HOUSE — The 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 remodeled and restored to house the Youngstown State University Alumni Association, the Youngstown State University Foundation, and the Edison Foundation. The Alumni House is the oldest building on campus.

UNIVERSITY POLICE BUILDING —This two-story stucco building was constructed in 1865 and renovated in 1985 to house the YSU Police Department.

Coffelt Hall —This two-story brick building, located on the north side of Spring Street, was constructed in 1933, remodeled in 1978 and renovated in 1986. It is 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.

Fedor Hall

The School of Education Building, located on the west side of Elm Street was 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 6 classrooms, 15 laboratories, a large curriculum resource center, and 69 offices. It also houses developmental education activities which include the reading, mathematics, writing and JTPA academic skills laboratories. A current $1,100,000 renovation project includes energy conservation measures, i.e. replace existing windows with a new energy efficient window system, new brick veneer and various minor interior renovations. The construction is scheduled to begin in the fall of 1991.

Kilcawley Center

Kilcawley Center is the community center of the University and its facilities include dining rooms, seminar rooms, lounges, a word processing/computer access center, stamp machines, U.S. mail drop, and recreational areas including rooms for billiards, chess and backgammon. Student organization offices are located in the center, as are the University Bookstore, campus information center, bank, 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 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 (216) 742-3516.

William Rayen School of Engineering

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 57 laboratories, 26 classrooms, 8 research and development rooms, 6 conference rooms, and 59 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 25 classrooms and 64 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. It was remodeled again in 1988.

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 for 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 $2,940,000 interior renovation and addition of a ceramics/sculpture laboratory recommended in the Facilities Master Plan was completed 1989. Phase II renovations will begin in fall 1991.

John J. McDonough Museum of Art

The John J. McDonough Museum of Art, located on Wick Avenue between Bliss Hall and Meshel Hall, will be opened for the fall quarter of 1991. The 14,000 sq. ft. multi-level building will exhibit faculty and student art work, which in the past has been displayed in the Bliss Art Gallery and the Kilcawley Center Art Gallery. It will also exhibit work by artists from other universities as well as local and regional artists, and will serve the academic program of the Art Department with shows and competitive exhibits. Initial funding came

from more than one million dollars received by the University from the sale of a painting donated by retired physician and surgeon, John J. McDonough, M.D. The balance of the funds have been appropriated by state capital improvement funds. The museum will have the following spaces and functions: Installation gallery, traditional galleries, art lecture hall, work/preparation area, storage (vault area), public lobby and restrooms, offices, loading dock and receiving area, and the necessary mechanical and electrical equipment spaces.

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 include 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.

All-Sports Complex

Located on an 18-acre site adjacent to Beeghly Physical Education Center, the All-Sports Complex includes Arnold D. Stambaugh Stadium and Beede Field, an artificial-turf sports field for football and soccer, with seating for 16,000 spectators; officials' dressing rooms; varsity athletic offices; classrooms, handball courts, gymnasiums, weight rooms 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, athletic and intramural programs utilize the athletic fields and well-equipped sports centers in Mill Creek Park; Evans Field and Pemberton Park for baseball; Harrison Field in Smokey Hollow for softball; and for other activities, the McGuffey Bowling Lanes on North Garland Avenue and the Avalon Golf Course.

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. The Youngstown Employment and Training Corporation is currently housed in this building. One of the largest buildings on campus, it contains 27 classrooms, 38 laboratories, 146 offices, 23 conference-seminar rooms, and two lecture halls with seating capacities of 180 and 198. Many of the classrooms were recently renovated as part of a campus-wide classroom renovation project.

DeBartolo Hall

First occupied in 1978, De Bartolo Hall houses 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. In this six-story structure are over 167 offices for faculty and staff, 5 student lounge and study areas, 16 classrooms, 13 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 housed in Ward Beecher Hall; language, psychology and athropology/achaeology 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 Center is in Fedor Hall

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 a multi-channel console through which audio programs are transmitted to the students, as well as a 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 oversized carrels house video equipment. Audio-visual programs are available for audio/oral practice and for study of foreign cultures.

In the psychology laboratories, located in the basement of DeBartolo 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 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, is a full service bookstore. The bookstore carries required textbooks and supplies as well as a wide array of emblematic apparel, gifts, stationery and specialty items.

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, is located at the corner of Spring and Elm Streets. 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 BUILDING is located on Spring Street north of Tod Hall and houses University printing services, office supplies and campus mail services.

University Police Department

A well-trained and well-equipped campus police force is maintained by Youngstown State University. The department is located in the YSU Police Department Building on Spring Street, just west of Wick Avenue.

The staff consists of 27 sworn police officers and associated personnel. The department is a personal-service, technology-efficient law enforcement unit. The staff is supported by a sophisticated communication system, card entry systems, closed circuit television, well-equipped cruiser/patrol vehicles and computer-based record keeping.

The training of departmental personnel is ongoing and crime prevention is a departmental priority.

The University Police 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" brochure contains additional information about University controlled parking. For information on registration of vehicles and applicable fees, see the Fees and Expenses section of this catalog.

TUTORIAL SERVICES

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.

Reading Laboratory

The Reading Laboratory is operated by the Department of Elementary Education and Reading to provide individualized and group instruction in reading and study skills for all students in the University. The Reading Lab staff includes members of the Reading and Study Skills faculty, undergraduate and graduate tutors, a full-time Coordinator, and a Coordinator of Education 510. Services include diagnostic testing, individualized instruction, tutoring, reading and study skills workshops and help with independent study. The Reading Laboratory also maintains a laboratory component for Education 510A and 510B.

The Reading Laboratory services are free of charge to all registered YSU students. The Reading Laboratory is located in the School of Education, Room 2014, and is open from 8:00 A.M. to 4:00 P.M. on weekdays, and from 5:00 P.M. to 8:00 P.M. on Monday and Wednesday evenings. For further information contact the Reading Laboratory, Telephone: (216) 742-3099.

Mathematics Laboratory

The Mathematics Laboratory is an academic support service which is intergrated with the Department of Mathematical and Computer Sciences. The laboratory provides in dividualized and small-group tutorial assistance free of charge to any YSU student currently enrolled in one or more of the following courses: Math 506, 508, 509, 510, 511, 512, 513, 515, 516, 520, 525, 550, 570, 571, 572, 580H, 581H, 642. Assistance is limited to these courses only.

In addition to the many services offered by the Mathematics Laboratory, workshops on selected topics are made available and computer-assisted instruction is provided.

The staff of the Mathematics Laboratory includes a Coordinator, assistant to the Coordinator, graduate assistants and undergraduate tutors. The lab maintains hours for the fall, winter, and spring quarters as follows: Monday through Thursday 9:00 A.M. to 3:00 P.M. and 5:00 P.M. to 8:00 P.M. and Friday 9:00 A.M. to 1:00 P.M. Hours for summer quarter may vary. For additional information, contact the Mathematics Laboratory at (216) 742-3274.

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 lower division courses, exclusive of those served by 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. 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 (216) 742-7253.

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 six units. OFFICE OF VICE PRESIDENT, STUDENT SERVICES—Responsible for Student Discipline process; THE CODE; staff professional development; Student Services research; responding to individual student problems and concerns; and administrative liaison with Student Government and Student Publications. ENROLLMENT SERVICES—includes the Office of the Registrar (Registration, Records and Student Data Services) and the Office of Admissions. SCHOLARSHIPS AND FINANCIAL AID—Administers federal, state and local grant-in-aid, scholarship and loan programs; day care assistance; and veterans' affairs. STUDENT DEVELOPMENTAL SERVICES—Provides the New Student Orientation program; Counseling and Health Enhancement Services including Handicapped Student Services and Substance Abuse Services; and Career Services. STUDENT ACTIVITIES AND AUXILIARY SERVICES—includes Student Activities and Programs; Kilcawley Center; Housing Services; and the Bookstore. SPECIAL STUDENT SERVICES—Involves International Student Services, Minority Student Services, the Student Enrichment Center, Mentoring Services, Student Tutorial Services, Nontraditional and Evening Student Services, and Women's Resource Center.

New Student Orientation

The University provides an orientation program for all newly-admitted students. The New Student Orientation Office, which operates year-round, addresses the needs and concerns of first-time traditional, adult, and transfer students.

The primary goal of the New Student Orientation Program is to fully acquaint students with various policies, procedures, programs, and services. Initially special needs or concerns are addressed which will facilitate students' matriculation; advisement and registration procedures are explained; and, for those who are unfamiliar with the campus, tours of the University and its buildings are provided.

The New Student Orientation Office is staffed by upper-class student employees who receive extensive training regarding special needs of new students. Student Assistants serve as a valuable resource and friend and are readily available to provide support and encouragement during students' first year of attendance at Youngstown State University.

The New Student Orientation Office is located in 3048 Jones Hall. Any individuals who are interested in receiving more information about the orientation program are encouraged to call (216) 742-3536.

Counseling, Testing and Handicapped Services

Counseling Services staff includes several counseling psychologists and a testing coordinator. All are ex-

perienced 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 offers advisement and support services for students with handicaps. The office coordinates accomodations for the special needs of students by acting as liaison between faculty and staff and community agencies. Services provided include assistance with taking examinations (readers, transcribers, time extensions), library search and special parking privileges. Advance registration is available to assist with class location and time.

Counseling Services Office is located in Jones Hall, 3046.

Health Enhancement Services

The University subscribes to a holistic view of health and has services and programs which enhance the health of the whole person. Substance Abuse Services and the Holistic Health Program come under this advocacy.

SUBSTANCE ABUSE SERVICES: Substance Abuse Services offers prevention/education programs as well as intervention/referral services for students, faculty and staff. It is staffed by student peer educators and coordinated by a certified addictions counselor, who also serves as the associate director of Health Enhancement Services.

Its programs include educational presentations on various aspects of alcohol and other drugs and prevention activities among students, faculty and staff. The prevention focus offers the campus community alternatives to the abuse of alcohol and the use of drugs as a means of coping.

Substance Abuse Services offers an open resource library containing books and articles from periodicals and magazines on various substance abuse topics to fulfill research needs.

The intervention/referral service directs students, faculty, and staff to appropriate treatment or support services in the community or on campus for the treatment of alcohol and/or drug abuse.

Substance Abuse Services is located in Tod Hall B-101, (216) 742-3322.

HOLISTIC HEALTH PROGRAM: Ten Holistic Health committees comprising faculty, administrators, classified personnel and students meet on a regular basis to increase awareness of and provide programming in the following areas: Exercise & Fitness, Inner Search, Life-Work Strategies, Mental Creativity, Nutrition, Self-Care, Sexuality/Relationships, Stress Management, Substance Abuse and Tobacco Abuse.

The committees are also charged with the task of making recommendations for changes to existing and/or adoption of new policies or procedures that affect the holistic health of the campus community.

The associate director of Health Enhancement Services is an ex officio member of each committee.

Career Services

The University maintains a comprehensive Career Services Office to provide professional assistance to students and alumni in career exploration/planning 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. Individual career counseling is available, as well as an interactive career guidance system named "Discover" and an interactive job search guidance system named "Navigator".

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 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 Information Center in the office has career and organization information from over 1,400 employers, plus many other career-related resources. Mock interview sessions as well as over 250 video taped presentations on career and employer 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) represents the combined effort of Youngstown State University administrators, faculty and students assisting new freshman students adjust to college.

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 also may 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 student's 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.

MENTORING SERVICES: The mentoring service is available to any freshman through senior student who wants consultation on educational matters and advice on requirements and procedures.

Mentoring provides supplemental guidance to students in the achievement of educational goals and assists in relating the educational process to goal achievement. Also, it enhances interaction between students and faculty/staff while promoting the development of supportive relationships.

Prospective mentees meet with the coordinator to determine their willingness to participate in the program and their preference for mentor assignment. Mentors are assigned on the basis of the same academic department, a supportive administrative department or some other area related to the students' interests and concerns. Mentors are volunteers from the YSU faculty/staff. They represent many different academic and administrative departments.

The SEC is located in Kilcawley Center West below the YSU Bookstore. For more information call (216) 742-3746 or (216) 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, African-American and Hispanic-American.

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, available scholarships, etc., are 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 that provides current information on the activities of minority students. The newsletter highlights cultural events, outstanding accomplishments of minority students, and offers 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.

HISPANIC AWARENESS WEEK: A week-long celebration in April, focuses on the experiences and contributions of Hispanics to America. The Office of Minority Student Services, the Hispanic Awareness Week Committee, and Hispanic students hold a series of events to make students and the community aware of Hispanics and their culture.

Students seeking further information and/or assistance are encouraged to visit the Minority Student Services office, located in Kilcawley Center, or telephone (216) 742-7175 or (216) 742-3538.

International Student Services

The International Students and Scholars Office (ISSO) provides international and intercultural exchange programs and services at YSU. Services and advising are available for foreign students and scholars, U.S. immigrants and refugees. Study abroad services are also provided for U.S. students. ISSO is the primary University liaison with foreign and U.S. governments, agencies and organizations regarding international educational exchange. ISSO is located in Kilcawley West.

Foreign Students and Scholars Services

Programs for nonimmigrant academic and English language scholars are directed by ISSO. Program services for sojourners include assistance with arrival, cross-cultural orientation, matriculation, authorization of special opportunities during the program of study, and assistance with re-entry to their home culture. Confidential advisement and counseling are available at

ISSO concerning language and cultural interaction, international educational and career preparation, and legal/immigration matters.

Study Abroad Services

Study abroad information offered through YSU and other institutions is maintained in the office for use by prospective study abroad students. In addition to the materials resources, advice and assistance is provided on overseas study as part of a YSU degree program.

ISSO co-sponsors and coordinates several intercultural programs and activities on campus and in the regional communities, designed to foster international and intercultural awareness including:

WorldFEST

The WorldFEST series of special culture presentations provides major guest speakers, forums and multicultural festivities to encourage in-depth investigation of our global connections.

International Living and Learning Center (ILLC)

An international center for residence and activities is maintained to aid in internationalizing the University experience. ILLC provides a global blend of cultures and languages, stimulating learning. Affiliated with Bolton Hall, the center is located convenient to campus at 746 Bryson Street, Youngstown.

International Friendship Programs

The American Friend Families are area residents who provide hospitality and friendship for arriving international sojourners during their initial six months of study.

The International Speakers Bureau provides cultural and language experts from all corners of the globe to hosting classes on campus, and community groups or schools.

The International Coffee Hour provides weekly opportunities for international students to interact informally with campus hosts.

Campus VIP's provide an opportunity for YSU students to meet and assist new sojourners as peer counselors. As a Partner in American Language (PAL), a native English speaker and English-as-a Second language speaker are matched to exchange conversation and cultural information.

NONTRADITIONAL AND EVENING STUDENT SERVICES: This department was established to serve as advocate and point of contact for the growing number of nontraditional (25 years of age or older, or out of school for more than 4 years) and evening students.

Services of the NTESS office include information and referral, special programs and workshops, evening hours to access materials not readily available in the evening, and communication to faculty and staff to raise awareness of nontraditional and evening student needs. The staff also coordinates orientation for new nontraditional students in cooperation with the Non-Traditional Students Organization.

Additionally, NTESS sponsors the Nontraditional Student Lounge located on the lower level of Dana Hall. The lounge offers an opportunity for nontraditional students to interact informally with one another, share information, and receive personal support. (Vending machines, a refrigerator, microwave, comfortable furnishings, and a quiet study area are provided.)

For more information, visit NTESS on the lower level of Dana Hall or call 216/742-3313.

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. Programs 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 has 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, (216) 742-3783.

Housing Services

UNIVERSITY HOUSING

YSU owns and operates 4 housing facilities for students: Kilcawley House, located on Spring Street; the newly built Lyden House on Madison Avenue; and the Wick (soon to be opened) and Weller Houses on Wick Avenue. On-campus options for students range from traditional residence hall-type facilities to apartment-style housing.

On-campus living provides students many advantages and opportunities. University housing facilities are structured environments. Each is a small community, and as such, has procedures and regulations addressing such things as noise, fire, safety, guests and security. University Houses have full-time professional and part-time student staff that oversee the operation of the Houses and assist students with the problems of daily college life. Each facility has state-of-the-art building security systems. On-campus living is a good place to get to know many students in a short period of time. Sharing bathrooms, lounge space, and corridors with a group means you can't help but make friends quickly. Being on campus also means that classes, the library, the university center and the computer center are never very far away.

KILCAWLEY HOUSE

Kilcawley House was constructed in 1965. This traditional type, seven-story housing facility can accommodate 242 students. Kilcawley residents live in double occupancy rooms, complete with bunk beds, wall to wall carpeting, built-in desks, and plenty of closet and drawer space. Lounges are available on each floor, with two formal study lounges located on the ground level. The basement contains a game room equipped with big screen TV, ping-pong, pool and foosball tables. Its residents have the advantage of being located in the heart of the YSU campus, and can use all of Kilcawley Center's facilities, including Dollar Bank, computer center, and copying service, without going outdoors.

LYDEN HOUSE

When Lyden House opened in the fall of 1990, a new era began for on-campus housing at Youngstown State. The impressive five-story structure reflects a traditional collegiate gothic style with clean, contemporary lines.

Lyden House located just north of campus along Madison Avenue houses 300 students. A typical student room is approximately 12'x 17', and houses two students. In addition to a bunk bed, which can be stacked or separated, each student has a desk and chair, a dresser, a shelving unit and an armoire wardrobe unit. The furniture is uniquely designed to interchange to suit the individual student's tastes in personal decor.

Rooms also feature individually room controlled heating as well as air conditioning units, decorator vertical window blinds, overhead lighting and tiled floors. All rooms in Lyden are designed to be handicapped accessible.

Each wing of this beautifully designed Residence Hall includes convenient shower and restrooms, quiet study rooms, and comfortable conversation lounges. Students have full access to a kitchenette/vending area, and laundry facilities in the lower level of Lyden. A convenient parking area is also available adjacent to Lyden House.

WELLER HOUSE
WICK HOUSE

The University designed Weller House and Wick House to meet the needs of the upper class students.

Both Houses are located along Wick Avenue and have a unique historical setting located next to the Arms Museum and near the Butler Institute of American Art. Both of these houses were purchased by the University, and were then completely renovated, and now each accommodate 40-42 upperclass, Junior and Senior tenants. Complete renovations also included all new energy efficient windows, heating and air conditioning units, carpeting, and lighting. Furnishings provided for each student are similar to those previously listed for Lyden House residents.

Weller House opened in Fall 1991 offering apartment-style on-campus living facilities with each unit having a full bathroom with tub and/or shower. A kitchen furnished with modern cabinets, an electric range, refrigerator/freezer,garbage disposal and a dining table. Apartments range in size and are designed to accommodate two to five students.

Weller also offers students a comfortable, group lounge with convenient laundry facilities in the lower level.

The Wick House, constructed in 1906, offers the traditional architecture style of the turn of the century. This former mansion is four floors and features a breathtaking, historically preserved dual staircase. It offers women students a wide variety of housing options, ranging from single occupant rooms to accomodating four students per room. Rooms vary in size and share showers and restroom facilities.

Wick House residents enjoy security monitoring, a conversation lounge and laundry facilities.

CHRISTMAN DINING COMMONS

The Christman Dining Commons recently opened for Fall Quarter 1991, and serves any student with an on-campus resident meal card. The Commons is located adjacent to Lyden House and is easily accessible from Elm Street, Madison Avenue and Custer Street.

This gracious single floor dining facility architecturally compliments the Lyden House and seats 300 and will serve over 600 per meal.

The Commons offers a wide variety of dining options to campus residents, from self served cold foods, beverages and snack selections to staff served grille specialties and hot entrees.

Various meal plans are also available to those current students not living in University-owned facilities.

Application for Housing

Applications are available from the Housing Services Office. You can request an application by mail, by phone or in person. If you indicate an interest in housing on your application for admission, an application will be sent to you.

In order to be accepted for University housing a student must first be admitted to the University. YSU has limited housing space and cannot guarantee that space if available for each applicant. Space is allocated on a first-come first-served basis. If you have not yet applied to the University, contact our Admissions Office at (216) 742-3150.

PRIVATE HOUSING

Three privately owned and operated residence halls are also located on or near the YSU campus. Each hall is different, and truly offers something for everyone. Although the Housing Office does not take applications for these halls, we would be more than happy to answer questions and refer you to the appropriate contact person.

INDEPENDENT LIVING

Off-campus housing is an attractive option for many of our students. In the greater Youngstown area, there are a wide variety of apartments, houses, and rooms for rent at surprisingly reasonable rates. Much of this housing is within walking distance to campus so students without their own transportation are able to take advantage of them. Many students with transportation opt to live further from campus.

Independent living offers its own advantages. Many students who live off-campus feel that it is more economical than living on campus. Students can save money by living with others, preparing their own meals, and managing their utilities. Off-campus students can choose from apartment complexes, houses, flats, and rooms in a variety of locations and price ranges. There is truly something for everyone. Off-campus dwellings are much less structured than residence halls. Students make their own rules about cleaning, noise, guests, etc. Independent living can often be much more private than residence halls. Many students prefer the atmosphere of living by themselves rather than sharing their quarters with large numbers of students.

On-campus living has advantages. Independent liv ing has advantages. You can decide which you prefer based on priorities of what is more important to you.

Whatever kind of housing you are interested in, we can help you find it. Please contact the Housing Office at (216) 742-3547 for more information.

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 Bytes and Pieces.

STUDENT ACTIVITIES

Youngstown State University offers numerous opportunities to interested individuals who want to become 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 be involved. In addition a varied social and cultural program, including concerts and musical groups, performers, lecturers, and dramatic groups, is provided to students.

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" or 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 aimed at making free-time activity an integral part of a YSU 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 students. A breakfast is offered beginning at 7:00 a.m., and 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. 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 government representatives 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 Government selects two student members of the University Board of Trustees.

Student Publications

The University supports several student publications which provide an avenue for students to express their literary 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; and *The Penguin Review*, a literary magazine, are recognized student publications on campus.

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 also presents topical debates to clubs and other organizations, offering 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. Membership in the University Chapter of Pi Kappa Delta, the national honorary forensics fraternity, is open to YSU students who qualify.

Theatre

All students in the University are invited to participate in the production of plays. The University Theatre presents five 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 *West Side Story, The Birthday Party, A Midsummer Night's Dream, Don Pasquale, The Lion in Winter,* and *Ring Round the Moon.*

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 makeup artist Irene Corey, Edward Albee, Robert E. Lee (who attended the opening performance of his *Inherit the Wind*), Fred Voelpel (who taught an advanced seminar in design and designed costumes, scenery, and lighting for YSU'S production of *Tartuffe*), stage combat master David Boushey, Earl Hyman (who played the title role in YSU'S production of *Othello*), playwright Barry Stavis, and Christopher Martin (who directed Stavis' *Harpers Ferry*). Marni Nixon, (who did a workshop on vocal crossover techniques from opera to musical comedy), Barb Anderson (taught workshop on costume design) and well-known lighting designer, David Segal, (conducted workshops and design for production of *Ring Round the Moon*).

Another feature of University theatre is its sponsorship each year of student-directed one-act plays. University Theatre, with funding from the YSU Foundation, sponsors guest artist workshops and special theatre programs for area high schools and other area theatre agencies.

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.

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 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 department gallery/lounge in Bliss Hall. Exhibits of nationally known artists are also held in this area. 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, Youngstown, 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 eligibility regulations. Men's teams compete in intercollegiate baseball, basketball, cross country, football, golf, tennis and track. Women's intercollegiate teams compete in basketball, cross country, softball, tennis, track and volleyball.

The University's intercollegiate athletic programs are governed by the National Collegiate Athletic Association (NCAA).

Students are encouraged to participate as athletes, cheerleaders, 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.

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 co-educational 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, karate, cycling, triathalon and volleyball.

The YSU Intramural/Recreation Department, is located in Room 103 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 chairperson of that area, or the Student Activities Office, second floor, Kilcawley Center.

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

Golden Key — National Honor Society for achievement in all undergraduate fields of study

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

Pi Kappa Delta — National Honorary Forensics Fraternity

Pi Mu Epsilon — Mathematics Honorary

Psi Chi — Honorary Psychology

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 to encourage participation in campus life. The awards are presented annually at the Student Activities Awards Banquet in May. Staff, faculty and students are encouraged to nominate worthy recipients.

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.

Arby's 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. Candidates will be judged on basis such as involvement, leadership and scholarship. Recipients will receive a voucher to be used toward tuition and fees. Nominated students will be mailed an application for the scholarship. Each year students, faculty and staff are invited to nominate outstanding individuals for the Arby's Leadership 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.

Student Services Award
Gillespie — Painter Award

Awards to recognize outstanding achievement in serving, motivating and supporting the students of YSU. All faculty, staff and members of the YSU community are eligible for the awards. Nominations will be reviewed, and recipients will be selected by the Student Services Awards Task Force.

Edna K. McDonald
Cultural Awareness Award

Award to recognize an outstanding individual who has made a lasting contribution to encourage and increase awareness of cultural diversity at Youngstown State University. All faculty, staff, students, and members of the extended YSU community are eligible for the award.

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 extracurricular activity through four years of college: $200.

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

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

To the student ranking first in the social science sequence courses: $100.

The 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 upperclass students 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 Gilda DeCapita Award is given annually by the nursing chapter of the YSU Alumni Association to an honors student in the nursing 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 is given annually to the member of the graduating class in the nursing program who has the best scholastic record in clinical nursing.

Outstanding Home Economics Student Award is given to a graduating student chosen by the faculty for superior academic achievement and service

The Corydon Palmer Dental Society Award. This award is presented to two outstanding dental hygiene students in year one of the program and one to a graduating student on a yearly basis.

The Wilma A. Brown Home Economics Award. This award was established by Dr. Wilma A. Brown, the first chair 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 annually to the member of the graduating class in the nursing program who has the highest grade point average.

YSU Nutrition Society Scholarship award to a YSU dietetics student who has been an active Society member and has displayed outstanding academic achievement.

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 Candace Gay Memorial Awards were established by Professor Thomas Gay and the late Dr. Carol Gay of the Department of English in memory of their thirteen-year-old daughter, Candace McIntyre Gay, who died in 1977. This fund provides $750 or three $250 prizes for junior and senior high school students who exhibit distinctive writing ability in the Candace Gay Memorial Essay Contest. A grand total of $1875 in prizes 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 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 Geology Department Scholarship is awarded to a geology major to help defray tuition at YSU or at an appropriate field camp, and is based on academic achievement.

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 Gary L. Green Award was established in 1990 in memory of Dr. Gary L. Green, who served with distinction as a faculty member in the department of English. The Gary L. Green memorial fund provides $300 annually to an English major with 48-107 hours who has done outstanding work in Introduction to Literary Studies and otherwise shown strong academic promise. The income from an endowment makes this annual award possible.

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 Chairperson's Award is a monetary award given for the best undergraduate research paper in any field of history.

The Clingan Jackson Prize in Political Science to be awarded for scholarship invigorated by the traditions of a free and inquiring press and by active participation in the work of a government agency or political party.

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 Charles Dobson Memorial Award is given each year in memory of Dr. Dobson as recognition for achievement in research by an undergraduate psychology student.

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 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 Raymond J. Shuster Award for Excellence in Human Resources Management is given annually to undergraduate and graduate students.

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 Society is an honorary organization for juniors and seniors majoring in accounting, advertising/public relations, finance, marketing and management.

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 her or his 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 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 Alpha Psi Omega Award is given annually to a freshman student who has demonstrated distinguished accomplishment in dramatic arts through participation in University Theatre productions.

SCHOLARSHIPS/FINANCIAL AID

The University has a comprehensive program of financial assistance which includes scholarships, loans, grants-in-aid and college work study employment. All these programs are administered by the Director of Scholarships/Financial Aid 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 Scholarship/Award Request Form (if interested in scholarship only). (2) Youngstown State University Perkins Loan Request Form (if interested in need based aid) and (3) 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 Aid 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.

**Kenmore B. Drake Memorial Award.* This award was established by students and faculty of the Business Education and Technology Department in memory of Kenmore B. Drake. Applicants must be juniors preparing for certification for teaching one of the following areas: Business Education Comprehensive, Vocational Business Education Comprehensive, Bookkeeping and Basic Business, or Stenography. Selection criteria by a committee of the Business Education and Technology Department will include a minimum of 2.5 GPA, leadership, and a demonstrated commitment and enthusiasm for teaching Business Education

John W. and Lucille G. Fedor Scholarships. Funds for these scholarships are awarded annually to elementary and special education students in the School of Education. The number of scholarships and amount of each depend on available funds and on each applicant's financial need and academic record. Scholarships are available for both part-time and full-time students. Renewal is possible.

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.

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 Scholarships and Financial Aid 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.

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

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.

Harvey Neal Kretzer Memorial Scholarship Fund. Funded by an endowment, this scholarship is for a School of Education Master's candidate in school counseling and/or related pupil personnel services. If no recipient is available, it may be awarded to undergraduate students pursuing a career in teaching disadvantaged students, based upon scholarship and need.

Albert W. and Adele Krotzer Scholarship Fund. This scholarship, established in 1987, will annually provide two scholarships for students, one for a student enrolled in the College of Arts and Sciences and one for a student enrolled in the Williamson School of Business Administration. The business recipient must have a cumulative grade point average of at least 3.0 with at least 96 q.h. completed and a declared business major. At least 3.0 must be maintained to retain the scholarship. No other major sources of tuition funding are permissible.

New Center Associates Scholarship. This $1000 award is given to a full-time junior or senior with a GPA of 2.0. Must be a student who, without the scholarship, would not be able to pursue his or her education.

Ohio Masonic Lodge Scholarship. This scholarship of $1,000 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.

Rudy M. Prince Memorial Scholarship. Established in 1991 by the Boardman Rotary Club and the Prince Family, this endowment will be awarded annually to a student from the Mahoning County Vocational School who will attend Youngstown State University.

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

The Nicola and Rocchina Richley Memorial Award. This annual award, given to a sophomore student of Engineering or Engineering Technology, was established by family and friends in memory of Nicola and Rocchina Richley. Applicants must have completed at least one term of the sophomore year of their program, have a GPA of 3.0, and demonstrate a commitment to complete the program. The recipient will be selected by a committe of Engineering and Engineering Technology faculty.

Mary P. Rigo Memorial Scholarship. Established in 1986, this endowment will be awarded to students in the Dana School of Music who have completed 95 hours. Students must be music majors with emphasis in keyboard instruments. Selection, made on the basis of talent, will be determined by the Dana School of Music faculty. Students must be residents of Mahoning County. The scholarship is renewable.

Michael A. Rigo Memorial Scholarship. An endowment established in 1986, this scholarship is awarded to Mechanical Engineering students who have completed 95 hours. Awards will be based on academic achievement determined by the faculty of the Rayen School of Engineering and financial need determined by the Office of Scholarships and Financial Aid. Students must be residents of Mahoning County. The scholarship is renewable.

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 at YSU, all laboratory fees, a flat rate for textbooks, and some 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.

The Gerhardt M. Stein Electrical Engineering Scholarship. This fund provides an award each year to an electrical engineering student. It was established in memory of Dr. Stein, a former professor or electrical engineering at YSU, by a daughter, Dr. Waltraut J.H. Stein of Atlanta and his son, Dr. Ronald P. Stein of Seattle.

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

Louis D. Tauro Scholarship Fund. This endowment was established in 1986. Awards are available to entering freshmen based on financial need and high school academic achievement. The scholarship is renewable for four years provided the students maintain a 3.0 accumulative grade point average. Recipients may be nominated by the donor. The annual award will be in the amount sufficient to cover the instructional fee for a full-time student.

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 Scholarships and Financial Aid.

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.

Western Reserve Public Relations Society Scholarship. This scholarship is awarded to a Williamson School of Business Administration student majoring in advertising and public relations. The student must be a junior, have a GPA of 3.0, show financial need, and complete a 500 word essay. Recipient will be selected by the Board of the Western Reserve Public Relations Society.

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 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 Aid 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:

Abdoo Memorial Scholarship. The Dr. John Abdoo Memorial Scholarship was established by the family and friends of the former South High School principal to benefit students at Youngstown State University who are recent graduates of South High School.

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 records 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.

Credit Reporting Services Scholarship. Credit reporting Services, Inc., has established an endowment, which will provide a full one-year scholarship for a junior or senior student with a major in Business Administration, who has achieved a grade point average of at least 3.0 in his or her academic major. Recipients will be students who have no other significant sources of financial assistance.

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 are awarded to sixteen students in each of the six undergraduate colleges and schools within the University. The Deans' Scholarships are renewable for up to three years providing recipients continue to meet the criteria established by their particular college or school. For each undergraduate school or college there will be 4 continuing scholarships at $1,500, 3 continuing scholarships at $1,650, 3 continuing scholarships at $1,800, and 3 new first-year student awards at $2,000 each.

Because the individual college and schools decide which students will receive the Dean's Scholarships, each college and school has its own set of criteria that students must meet.

**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. Upperclass students evidencing outstanding scholastic performance in criminal justice studies are eligible for this award.

Lester F. Donnell Memorial Athletic Scholarship Fund. Lester F. Donnell's interest in athletics and higher education prompted the creation of this scholarship fund. This scholarship addresses the belief in development of the total person. It seeks to encourage the student athlete to strive for excellence, both in his academic and athletic pursuits. Sophomore, Junior

and Senior students who have a cumulative grade point average of at least 3.00 and are members of a YSU inter-collegiate athletic team are eligible to apply.

**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 or her 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.

George A. Gabler Music Scholarship. Fund provides scholarships to those students who are attending the Dana School of Music and are majoring in piano. In the event that the Music School no longer offers a major in piano, then this scholarship should be for other students in the Dana School of Music within the discretion of the YSU Foundation.

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.

**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 or 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.

Arthur L. Jones Accounting Scholarship. The Arthur L. Jones fund will provide two $1500 scholarships per year to worthy students majoring in Accounting.

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 eligible for more than one scholarship. Recipients will be selected by YSU Scholarships/Financial Aid Office on the basis of need, from the first 20 applications received.

Lions Club of Downtown Youngstown Special Scholarship. This scholarship established in 1987 by the Lions Club of Downtown Youngstown, provides a one year award to a Sophomore, Junior or Senior student majoring in special education. Recipients are selected by a committee within the School of Education.

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 or 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.

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 completed 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 Chairperson 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.

J. Ronald Pittman Memorial Scholarship. This scholarship was created by the Citizens League of Greater Youngstown as a memorial to the life of J. Ronald Pittman, who was a charter member and officer. It provides a $500 award to a student majoring in business who displays the leadership and community commitment exemplified by Mr. Pittman. Recipients will be chosen by a selection committee of the Greater Youngstown Citizens League.

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 (Gold Bar) Scholarships. Thirty (30) one year scholarships were established by the Youngstown State University Foundation in the amount of $300 per quarter. Available to entering freshmen and current YSU sophomores. Scholarships do not incur a military service obligation and aid in the retention to the Military Science III level at YSU.

**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 upperclass student 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.

John C. Vitullo Political Science Scholarship. This scholarship is given in honor of John C. Vitullo, former Mahoning County Democratic Party Chairman, to a junior or senior Political Science major. Preference will be given to Mahoning County residents.

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.

***These awards are primarily made by the specific schools and colleges of the University during the annual Honors Convocation held each spring quarter.**

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 Perkins-National Direct Student Loan program. 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 or 9 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 Aid Office.

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 Aid Office.

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

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 Aid Office and from high school guidance counselors. These applications are submitted to the Ohio Board of Regents in Columbus.

Martin Luther King Inner-City Achievement Award Program Grant-In-Aid. Awards of up to $750 per academic year may be made to graduates of Calvary Christian Academy, Cardinal Mooney, Chaney, East, Rayen, South, Ursuline, Wilson, Youngstown Christian School, Warren Western Reserve, Warren Harding and John F. Kennedy who show academic promise, are making satisfactory progress at YSU (if already attending, this shall mean a 2.00 cumulative grade point average and registered for at least 12 hours), and who have financial need which cannot be met satisfactorily from some other scholarship, grant or loan program. Awards may be made on a pro-rata basis for part-time students who otherwise qualify.

Employment

To help pay for educational and living costs, students should register at the Career Services Office for

on-campus student employment which is available in various departments for full-time students in good standing.

If interested in off-campus job opportunities, students should also register at the office where part-time and full-time non-degreed and degreed openings are posted daily.

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.

Five Warren P. Williamson, Jr. Fellowships are available to eligible MBA graduate students. Each fellowship covers tuition, general fees, and textbooks for all course requirements in the MBA program. Selection of the recipients is based on academic excellence. Applications are 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 or she 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 ask 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.

Residency for State Subsidy and 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 for Subsidy and 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.

(3) A dependent child of a parent or legal guardian, or the spouse of a person who, as of the first day of a term of enrollment, has accepted full-time employment and established domicile in the State of Ohio for reasons other than gaining the benefit of favorable tuition rates.

Documentation of full-time employment and domicile shall include both of the following documents: (a) A sworn statement from the employer or the employer's representative on the letterhead of the employer or the employer's representative certifying that the parent or spouse of the student is employed full-time in Ohio.

(b) A copy of the lease under which the parent or spouse is the lessee and occupant of rented residential property in the state; a copy of the closing statement on residential real property located in Ohio of which the parent or spouse is the owner and occupant; or if the parent or spouse is not the lessee or owner of the residence in which he or she has established domicile, a letter from the owner of the residence certifying that the parent or spouse resides at that residence.

(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 motor vehicle 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 Subsidy and 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 or her employer beyond the territorial limits of the 50 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 under the provisions of section (C)(1) of this rule 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) For students who qualify for residency status under (C)(3), residency status is lost immediately if the employed person upon whom resident student status was based accepts employment and establishes domicile outside Ohio less than twelve months after accepting employment and establishing domicile in Ohio.

(4) Any person once classified as a nonresident, upon the completion of twelve consecutive months of residency, must apply to the institution he or she attends 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 institution which may require, among other things, the submission of documentation regarding the sources of a student's actual financial support.

(5) 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.

(6) Any institution of higher education charged with reporting student enrollment to the Ohio Board of Regents for state subsidy purposes and 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. Such an institution 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 1991	Aug. 15, 1991	Sept. 1, 1991
Winter 1992	Nov. 15, 1991	Dec. 1, 1991
Spring 1992	Feb. 15, 1992	Mar. 1, 1992
Summer 1992	May 15, 1992	June 1, 1992

The Director of Admissions has discretionary authority regarding these requirements under an approved procedure.

Application Fee

Every applicant must pay an application fee, which is 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 and be ranked 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) and have the results sent directly to the Admissions Office. 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. Upon graduation, applicants must have a final high school transcript showing graduation date, sent to the Admissions Office.

TRANSFER AND POSTGRADUATE APPLICANTS

An applicant who has graduated from high school and was enrolled in another college or university 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 an official copy of their high school transcript and an official 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/she 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 or current Youngstown State University students who attend any regionally accredited institution, including YSU, during a suspension or dismissal period are not given credit, (or may be required to complete additional course work) for courses completed during the period of suspension, generally consisting of the two quarters immediately following the suspension or dismissal.

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 four or more consecutive quarters 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 BACHELOR OF SCIENCE/DOCTOR OF MEDICINE APPLICANTS (B.S./M.D.)

Prospective students seeking admission to YSU 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. Official results from either the ACT or SAT must be sent directly to the Admissions Office from the testing agency. Also, high school transcripts with grades through the junior year must be mailed directly from the high school to the Admissions Office.

The application deadline is December 31 preceding the summer in which the program begins.

STUDY ABROAD

A number of academic departments offer study abroad opportunities for credit. Students interested in international study should consult with their major departments and the Study Abroad Advisor. Information and procedures for the study abroad are coordinated by the Department of Foreign Languages in conjunction with the University Global Awareness Committee.

INTERNATIONAL STUDENT APPLICANTS

General Admission Statement

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

International Freshmen and Overseas Transfer Students

Applicants from overseas must submit the following information well in advance of the desired date of admission. The only available quarters for overseas students are fall and spring. Deadline for the fall term is May 15 and for the spring term, November 15.

1. A completed application form, a $20 nonrefundable application fee and 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 minimum 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. 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.

International Transfer Student (within U.S.A.)

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 15—Fall Quarter; November 15—Winter Quarter; January 15—Spring Quarter.

Transfer applicants must submit the following to be considered for admission:

1. A completed application form, a $20 nonrefundable application fee, and a list of all educational experiences including 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 a key to the grading system. (If credentials are not in English, official translations must be provided.)
3. Official credentials and transcripts showing one academic year of full-time study at a U.S college or university, 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.)
4. 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.
5. A complete medical examination on the form provided.
6. Certification of financial resources available for education and living expenses while attending the University.
7. Recommendation from the foreign student advisor of the previous college or university.
8. Applicants may be required to submit additional materials.

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 International Students

All entering international 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.

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

All University requirements apply to international 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 only scholarship assistance for undergraduate international 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, on-campus employment must be approved by the coordinator of International Student Services. If the work is off-campus, it must be approved 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 UNIVERSITY OUTREACH

Individuals interested in a continuing education program or off campus instruction 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 and others eligible for VA educational benefits.

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 Univeristy'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 chairperson 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. They will be required to enroll in at least one course each quarter aimed at removing their deficiency and must have the deficiency completely removed 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

*Students who have graduated 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.

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.

Institutional Transfer

The Ohio Board of Regents, following the directive of the Ohio General Assembly, has developed a new statewide policy to facilitate movement of students and transfer credits from one Ohio public college or university to another. The purpose of the State Policy is to avoid duplication of course requirements and to enhance student mobility throughout Ohio's higher education system. Since independent colleges and universities in Ohio may or may not be participating in the transfer policy, students interested in transferring to an independent institution are encouraged to check with the college or university of their choice regarding transfer agreements.

Transfer Module

The new Ohio Board of Regents' Transfer and Articulation Policy established the Transfer Module, which is a specific subset of the entire set of a college or univeristy's general education requirements. The Transfer Module contains 54-60 quarter hours or 36-40 semester hours of specified course credits in English composition, mathematics, fine arts, humanities, social science, behavioral science, natural science, physical science, and interdisciplinary coursework.

A transfer module completed at one college or university will automatically meet the requirements of the transfer module at the receiving institution, once the student is accepted. Students may be required, however, to meet additional general education requirements that are not included in the Transfer Module.

Conditions for Transfer Admission

Students meeting the requirements of the Transfer Module are subject to the following conditions:

1. The policy encourages receiving institutions to give preferential consideration for admission to students who complete the Transfer Module and either the Associate of Arts or the Associate of Science degrees. These students will be able to transfer all courses in which they received a passing grade of D or better. Students must have an overall grade point average of 2.0 to be given credit for the Transfer Module.
2. The policy also encourages receiving institutions to give preferential consideration for admission to students who complete the Transfer Module with a grade of C or better in each course and 90 quarter hours or 60 semester hours. Students must have an overall grade point average of 2.0 to be given credit for the Transfer Module and only courses in which a C or better has been earned will transfer.
3. The policy encourages receiving institutions to admit on a non-preferential consideration basis students who complete the Transfer Module with a grade of C or better in each course and less than 90 quarter hours or 60 semester hours. These students will be able to transfer all courses in which they receive a grade of C or better.

Admission to a given institution, however, does not guarantee that a transfer student will be automatically admitted to all majors, minors, or fields of concentration at that institution. Once admitted, transfer students shall be subject to the same regulations governing applicability of catalog requirements as all other students. Furthermore, transfer students shall be accorded the same class standing and other privileges as native students on the basis of the number of credits earned. All residency requirements must be successfully completed at the receiving institution prior to the granting of a degree.

Responsibilities of Students

In order to facilitate transfer with maximum applicability of transfer credit, prospective transfer students should plan a course of study that will meet the requirements of a degree program at the receiving institution. Specifically, students should identify early in their collegiate studies an institution and major to which they desire to transfer. Furthermore,

*Two units in one language.

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

students should determine if there are language requirements or any special course requirements that can be met during the freshman or sophomore year. This will enable students to plan and pursue a course of study that will articulate with the receiving institution's major. Students are encouraged to seek further information regarding transfer from both their advisor and the college or university to which they plan to transfer.

Appeals Process

A multi-level, broad based appeal process is required to be in place at each institution. A student disagreeing with the application of transfer credit by the receiving institution shall be informed of the right to appeal the decision and the process for filing the appeal. Each institution shall make available to students the appeal process for that specific college or university.

If a transfer student's appeal is denied by the institution after all appeal levels within the institution have been exhausted, the institution shall advise the student in writing of the availability and process of appeal to the state level Articulation and Transfer Appeals Review Committee.

The Appeals Review Committee shall review and recommend to institutions the resolution of individual cases of appeal from transfer students who have exhausted all local appeal mechanisms concerning applicability of transfer credits at receiving institutions.

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.	TM[1]
BASIC COURSES	(These Figures Mean Quarter Hours of Credit)									
English Comp.	8	8	8	8	8	8	8	8	4-8	8
Health/Phys.Ed.	6	6	6	6	6	6	6	6	3[5]	
Speech	—	—	4	—	4	—	—	—	—	
AREA COURSES:										
Humanities	16	16	8-18[7]	8-18	8	8	8-18	8-18	—[6]	12-16[2]
Social Studies	20	20	16-22[8]	16-22	30	16	16-22	16-22	5[6]	12-16[2]
Science	16	12	12-22[10]	12-22	18	46	12-22	12-22	5[6]	12-16[3]
Mathematics										4[4]
FOR THE DEGREE[9]										
Foreign Lang.	8-20[11]	4-16[11]	—	—	—	—	—	—[12]	—[6]	
Other Courses[13]	110-112	126-138	122	126-138	112	113	136	132-159	—[6]	
TOTAL CREDIT HOURS[14]	186	186	186	186-198	186	197	186-212	189-209	96[15]	54

NOTES

[1]Students planning on transferring to another Ohio state assisted institution should complete the Transfer Module (TM). This module is recognized state-wide as being the core for general education requirements at all state assisted institutions of higher education. With proper planning, this module can be a subset of the General Requirements (GR) at YSU (i.e. with the exception of an extra humanities credit for some degrees, students can fulfill the TM with the same courses they use to fulfill the GR). Please contact your Dean's office for a detailed list of requirements. Total quarter hours for TM must equal or exceed 54.

[2]At least two disciplines must be included within both the humanities area and the social studies area.

[3]Must include at least one lab science course.

[4]A course in mathematics, statistics, computer science or logic for which three years of high school college preparatory mathematics is a prerequisite.

[5]H. and P.E. 590. For dental hygiene, emergency medical technology, and nursing students, H. and P.E. 590 is waived.

[6]Curricula in the College of Applied Science and Technology Section.

[7]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.

[8]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.

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

[10]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.

[11]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.

[12]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).

[13]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 curricula in the pertinent sections of this catalog.

[14]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.

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

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 make certain all degree requirements are complete. The student must fulfill the: 1) University-wide, 2) school or college, and 3) departmental requirements as well as the minimum credit hours.

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. It is the student's responsibility to fulfill any high school unit deficiency(ies) for the desired degree. 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 or she is studying, as his or her high school preparation, even though satisfactory for the original objective, may not be satisfactory for the new one. *A student admitted to the University to study for one degree does not mean that he or she 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. Each student must complete a major. Each must also complete a minor, unless a combined major is elected or enrollment occurs in a school or college offering approved professional or technical curricula 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 chairperson 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 a major, he or she should consult with the chairperson of the major department. While no student is compelled to declare a major before completing an *Intention to Graduate* form, early consultation with the chairperson 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

Students at YSU wishing to enter professional schools with the option of completing their baccalaureate degree in absentia may do so with the completion of at least 141 quarter hours of coursework, which must include the following:

1. All general university requirements
2. Completion of major
3. Completion of minor (if required)
4. 60 q.h.'s of upper division coursework (700-800-Level)

The University will accept the completion of not more than 45 quarter hours from any professional school granting any of the degrees listed below and approved by the accrediting agency of that profession,

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

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: Doctor of Dental Surgery or equivalent; Doctor of Medicine, Doctor of Osteopathy, Doctor of Veterinary Medicine, Doctor of Jurisprudence or equivalent; Doctor of Ministry or equivalent; Bachelor of Divinity or equivalent.

The policy above 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.

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 Chairperson 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 Chairperson 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 this requirement. Applicable courses include the following: literature courses in the English or Foreign Language Departments (600-level or above); 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) or HPE 698 (Survey of Dance). Candidates for Ohio High School Teaching Certificates must have at least one course in any two of the following areas: fine arts, philosophy, religion, black studies and literature.

Social Studies. The candidate must have completed at least 16 quarter hours, and may apply no more than 22 quarter hours in satisfaction of this requirement. Courses must be selected from at least two of the following disciplines: black studies (only Black Studies 600–Introduction to Black Studies I may be used), economics, geography, history, political science, psychology, social science, and sociology. Elementary Education majors must take additional course work as specified in the School of Education section.

Science/Mathematics. The candidate must have completed at least 12 quarter hours, and may apply no more than 22 quarter hours in satisfaction of this requirement. At least eight quarter hours of science must be taken from among the following disciplines: astronomy, biology, chemistry, physical geography, geology, and physics. No more than 10 quarter hours of mathematics may be applied toward this requirement.

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 14 quarter hours of mathematics (Mathematics 515, Mathematics 516 and Mathematics 617).

Students seeking a high school teaching certificate must have at least one mathematics course. (Mathematics above 511).

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 degree of Bachelor of Arts (A.B.) are stated in the College of Arts and Sciences section, and in the College of Fine and Performing Arts section.

Those for the degree of 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 curricula 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:

Courses	Cr. Hrs.
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:

Courses	Cr. Hrs.
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 1	3
MS 703 Advanced Leadership and Management 2	3
MS 704 Advanced ROTC Summer Camp	6
MS 725 Individual Study	4
MS 801 The Military Team	3
MS 802 Seminar in Leadership and Management 1	3
MS 803 Seminar in Leadership and Management 2	3

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. Curricula)
   - 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.

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

REQUIREMENTS FOR A SECOND DEGREE

Any student who has a degree from YSU and desires a second degree (Baccalaureate or Associate level) must earn 27 quarter hours of credit in addition and subsequent to the total compiled when the requirements for the first degree were completed and awarded, 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 (Baccalaureate or Associate level) twice or simultaneously (except in Graduate School); however the student may earn a second major in a given degree subsequent to the time the degree was originally awarded. The second major will be posted on the academic record upon the receipt of a senior sheet from the dean certifying that a second major has been completed.

Any student who has received a degree from another institution and desires a second degree from YSU must complete a minimum of 30 quarter hours for an Associate degree and 45 quarter hours for a Baccalaureate degree, meet all requirements for the second degree and complete the requirements for a new major and minor.

CURRICULA 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 first year.

HONORS DEGREE PROGRAM

I. ADMISSION AND RETENTION OF STUDENTS

A. Initial enrollment is normally accomplished after two quarters of attendance for those who have completed a minimum of 24 QH with a GPA of at least 3.4 on a 4.0 basis. Honors sections of courses such as English will count toward completion of the program if taken prior to admission to the program.

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 or her 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.

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

601, 602, 603. *Beginning 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

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 his or her 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 CODE* which is available at Bytes and Pieces in Kilcawley Center, New Student Orientation or the Vice President - Student Services, Room 203, Tod Hall.

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:
>
> 1. Freshmen (with less than 48 hours of credit).
> 2. Students on warning or probation.
> 3. Students with high school deficiencies.
> 4. First quarter transfer students.
> 5. All former students returning to the University.
>
> 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 chairperson.

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 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.

Students whose English placement is for English 520 or 540 or who are recommended for Education 510 are to enroll in the proper course(s) until the deficiencies are remedied. The course(s) must be completed within the first 45 hours or the student will be limited to only those courses.

Please Note: If you are recommended to enroll in English 520 or 540 and/or Education 510A or 510B, you must do so. You may not withdraw from the above named courses unless you are making a complete withdrawal from the University.

Any of the above named, mandatory courses may not be taken more than twice. Should you not successfully complete any of these courses or withdraw from them twice, you will be dis-enrolled from the University.

ENGLISH REQUIREMENT

A student is required to complete the English requirement within the first 90 hours of course work. A student who does not complete the English requirement within the first 90 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 Student Fees and Charges for amount). 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 chairperson 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 chairperson 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 tuition and other fees must be paid in full prior to processing a change of registration.

Students should consult their advisors prior to changing their schedules. In general, each student who needs an advisor's signature for registration must also have an advisor's signature for add/drop (change of registration). However, advisors' signatures are not required for (1) withdrawing from a course after the first week of classes, (2) changing sections of a course, (3) changing physical activity courses, or (4) withdrawing from all classes before the first day of classes.

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 two weeks 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 the student's 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

Procedure: The student who wishes to withdraw from all classes in a particular quarter must follow the same procedure as in Change of Registration. A complete withdrawal may be executed before classes or after the quarter starts. The student should consult the quarterly *Schedule of Classes* for deadlines.

Eligibility for future registrations:

1. A new applicant or returning former student who withdraws from all classes prior to the fourteenth day of classes will not receive notice for future registrations unless the person requests that the Admissions Office change the entering quarter and year to a future quarter.

2. A student withdrawing after the fourteenth day of classes will receive notice of future registrations for four subsequent quarters.

Academic Record: If a student withdraws from all classes during the first two weeks of the quarter, the academic record will contain the statement "Student Completely Withdrew During the First Two Weeks of the Quarter." For information regarding how withdrawal after the first two weeks of classes affects a student's academic record, see the paragraph on the **W** grade under the section entitled "Grading System."

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)W. A student receiving financial aid should confer with the Scholarships and Financial Aid 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.

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 chairperson 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 or 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 or 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 YSU 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.

The student may appeal any actions affecting the grade. The Student Academic Grievance Subcommittee or the Graduate Student Grievance Committee where appropriate will handle such appeals.

A report of any action will be filed in the office of Vice President-Student Services. Repeated incidents of academic dishonesty or flagrant, single offenses may warrant action beyond a failing grade in the course.

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 CODE*. A copy of this code may be obtained from the offices of New Student Orientation, the Vice President-Student Services or Bytes and Piece in Kilcawley 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 chairperson 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. The Student Academic Grievance Subcommittee was established by the Academic Senate to further hear student complaints concerning instruction. Students wishing to file a complaint should contact the Student Government Secretary of Grievances in Room 2090, Kilcawley Center. Further information may be found in *THE CODE* which may be obtained from the offices of New Student Orientation, the Vice President-Student Services, or Bytes and Pieces in Kilcawley Center.

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 their own welfare they are expected to attend all class meetings of courses in which they are 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.

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 26 credit hours per quarter must seek approval from the dean of their college.

FULL-TIME STATUS

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

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*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.

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 chairperson of the department in which the course is given. *The first quarter of such a course is prerequisite to the second and the second quarter prerequisite to the third.*

Comma. Ordinarily, a comma between numbers (e.g., 501, 502, 503) indicates that the course extends throughout the year, but that credit toward graduation is given for 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.

The key for course area abbreviations can be found on page 317.

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 Office of the Registrar for inclusion in the student's permanent record, with copies to the student, department chairperson, 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 chairpersons 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 third week through the end of the sixth week of any quarter (or from the fifth calendar day through the third week of any 5-week summer term). 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 or her own judgment on the basis of professional standards.

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 grading option beyond the last day to add a class.**

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.

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

PROFICIENCY IN ENGLISH

The student's ability to express himself or herself 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 (TH) completed, including accepted transfer hours. The point averages (PA) required for good standing are as follows:

TH	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 or 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 grades of D and F) earned during the specified quarter or semester and all previous grades (not merely grades of D and F) 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 chairperson, and dean unless the change is from incomplete (I) or a progress (PR). All grade changes must be submitted to the Office of the Registrar by the dean or instructor; they will not be accepted from the student. After a 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 or 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 student's 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 a minimum accumulated point average of 3.00, and have earned at least 12 credits in traditionally graded courses taken during the four quarters (including summer) preceding the quarter in which honors are awarded. Transient students and YSU students who have received a baccalaureate degree prior to spring quarter in the academic year in which the honors convocation is held are not eligible. 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 Convocation.

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.

TRANSCRIPTS

The official transcript is a record of all coursework taken at Youngstown State University. Transcripts may be ordered only by the student. Transcripts may be ordered in person at the Registrar's counter or by mail. Mail requests should be sent to the Records Office and should include the student's name, any former name(s), social security number, dates of attendance, and written signature. Students are advised that most graduate and professional schools and many employers accept transcripts only if sent directly by the University. (For transcript fee see Student Fees and Charges.)

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.

COMMENCEMENT

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 or higher 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.

STUDENT FEES AND CHARGES
1991-92

TUITION

INSTRUCTIONAL FEE *(Including Audit)

Undergraduate Students, 1 to 11 Credits	$	51	per credit
Undergraduate Students, 12 to 16 Credits	$	613	per quarter
Undergraduate Credits in excess of 16 credits per Quarter	$	51	per credit
Graduate Students, All Credits	$	58	per credit

GENERAL FEE*

All Students, 1-11 Credits	$	16	per credit
All Students, 12 Credits or More	$	192	per quarter

NON-RESIDENT TUITION SURCHARGE*

Students, 1 to 11 Credits	$	46	per credit
Students, 12 to 16 credits	$	552	per quarter
Credits in Excess of 16 Per Quarter	$	46	per credit

SPECIAL PURPOSE FEES, SERVICE CHARGES, AND FINES

Performance Music Fee — (Plus Tuition)	$	14	per credit
Application Fee	$	20	
Change of Registration Fee	$	6	
Credit by Examination Fee	$	20	per course
Graduation Fee	$	25	
Proficiency Examination Fee	$	10	per course
Transcript Fee	$	4	per copy
Student Locker Rental	$	5	per academic year
Thesis Binding Charge	$	15	per copy
Health and Physical Education Locker and Towel Charge:			
Student Registered for H&PE Course			no charge
All Others Authorized to Use Facilities	$	10	per quarter
Lock Replacement Charge	$	5	
Towel Replacement Charge	$	5	
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)		8	
Diploma Replacement Charge	$	30	
Career Services Credentials Fee	$	3	
Identification Card Replacement Charge	$	7	
I.D. Card Validation Sticker Replacement Charge	$	4	
Late Registration Fee	$	30	
Late Payment Fee	$	15	
Returned Check or Credit Card Charge	$	20	

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 $11, Plus Cost of Book Replacement Including a $10 Processing Charge.

(3) Unauthorized Removal of Closed Reserve Book: 55¢ Per Day to a Maximum of $11, Plus Cost of Book Replacement, Including a $10 Processing Charge, Plus $5.

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*A student must be enrolled for credit, for 12 q.h. to be considered full-time.

Child Development Laboratory Charge	$	25	per quarter
Elementary Education Reading Specialist Charge	$	25	per quarter
Early Childhood Practicum Charge	$	25	per quarter
Art laboratory Fee	$	15	per course
Quantity Foods Luncheon	$	5	
Parking Permit Fee	$	30	per quarter
Per Day Without Permit	$	2	
Residence Halls			
Room and Board	$	3405	per academic Yr.
(Payable $1135 per Quarter except that an extra $200 is charged the first Quarter of residency and the Spring Quarter is reduced by $200. If a resident does not stay through the Spring Quarter, the $200 is forfeited.)			
Residence Hall Security Deposit (paid first Quarter of occupancy)	$	50	
Single Room Surcharge	$	200	per quarter
Residence Hall Summer Session			
Room—per five-week session	$	220	
Security Deposit	$	50	
Single Room Surcharge—per five-week session	$	50	
Voluntary Board Plan (Students Not Living in Residence Halls)			
Nineteen-meal Plan - per week	$	425	per quarter
Fifteen-meal Plan - per week	$	395	per quarter
Ten-meal Plan - per week	$	370	per quarter
Five-meal Plan - per week	$	210	per quarter
Neon:			
Student, prepaid	$	15	
Non-student or student not prepaid	$	20	
Library Carrel Key Deposit	$	10	
Parking Violation Fines			
Class I—all violations except those in Class II	$	5	
(Fine doubled if not paid within 10 days of issuance of ticket.)			
Class II—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, Altered/Falsified Permit, or in the Campus Core area.	$	25	
(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. Discover, MasterCard 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 Scholarships and Financial Aid Office. The signed award voucher, payment notice, and any balance owed must be sent or delivered to the Bursar's Office 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 12 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 16 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.

Application Fee. This fee is charged every *new* undergraduate student applying for admission and any former YSU student who has not been enrolled the past four quarters. This fee is non-refundable.

Change of Registration Fee. A fee is charged for any change of registration, including complete withdrawal, unless the change is caused by the University (e.g. a class is cancelled). This fee also applies 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.

Child Development Laboratory Charge. 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 or her knowledge of the course material. The fee must be paid before the test can be taken.

Elementary Education Reading Specialist Charge. A fee is charged for each elementary pupil enrolled in the School of Education's Reading Center.

Early Childhood Practicum Charge. 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; it 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.

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 and non-resident tuition surcharge 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.

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 and 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.

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

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. University housing is available for the academic year and summer terms. The academic year contract includes fall, winter, and spring quarters. Charges are billed quarterly. 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 University Housing.

Returned Check Charge. A charge is levied on anyone whose check or charge 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 anyone with outstanding debts owed to 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 20 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.

REDUCTION/REFUND OF FEES CHARGES UPON WITHDRAWAL

To withdraw from a single course, or all courses, it is necessary to complete a change of registration form and present it to the Bursar's Payment Window, Jones Hall. Changes of registration are not valid until processed by the Bursar and the change of registration fee has been paid. Nonattendance of class or notification to the instructor or department does not constitute official withdrawal.

A full reduction of the instructional, general, performance music, and art laboratory fees, and the nonresident surcharge, will be provided for all withdrawals in conformity with the following schedule:

COURSE DURATION*	100 PERCENT REFUND**	NO REFUND
10 weeks or more	6th day of term or earlier	7th day of term or later
5-9 weeks	5th day of term or earlier	6th day of term or later
less than 5 weeks	3rd day of term or earlier	4th day of term or later

*Every day of the week is counted except Sunday.

**For complete withdrawals from any term, in addition to the change of registration fee, a withdrawal charge of $25 as well as all applicable fees, fines and penalties will be deducted from all refunds. Student accounts paid with financial assistance will be billed the $25 charge. The YSU student identification card must be surrendered before the refund is paid. After the refund period, the $25 withdrawal charge is not assessed.

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.

No refunds or adjustments are made on student accounts until the tenth day of the term.

Any withdrawal, or reduction in academic hours, **after** the schedule outlined above will not be entitled to a reduction of charges and/or refund. If a student withdraws for reasons beyond his or her control (e.g., illness, military service, job transfer, or shift change imposed by the employer which creates a direct conflict with the class schedule), the fee charges may be reduced in direct proportion to the number of weeks in attendance. An application for Involuntary Withdrawal can only be processed for courses in which the student has already received a grade of "W" (withdrawn). All Applications for Involuntary Withdrawal must be documented, and are processed only by mail on forms provided by the Bursar. Address such correspondence to the Fees and Charges Appeals Board, c/o Bursar, Youngstown State University, Youngstown, OH 44555.

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

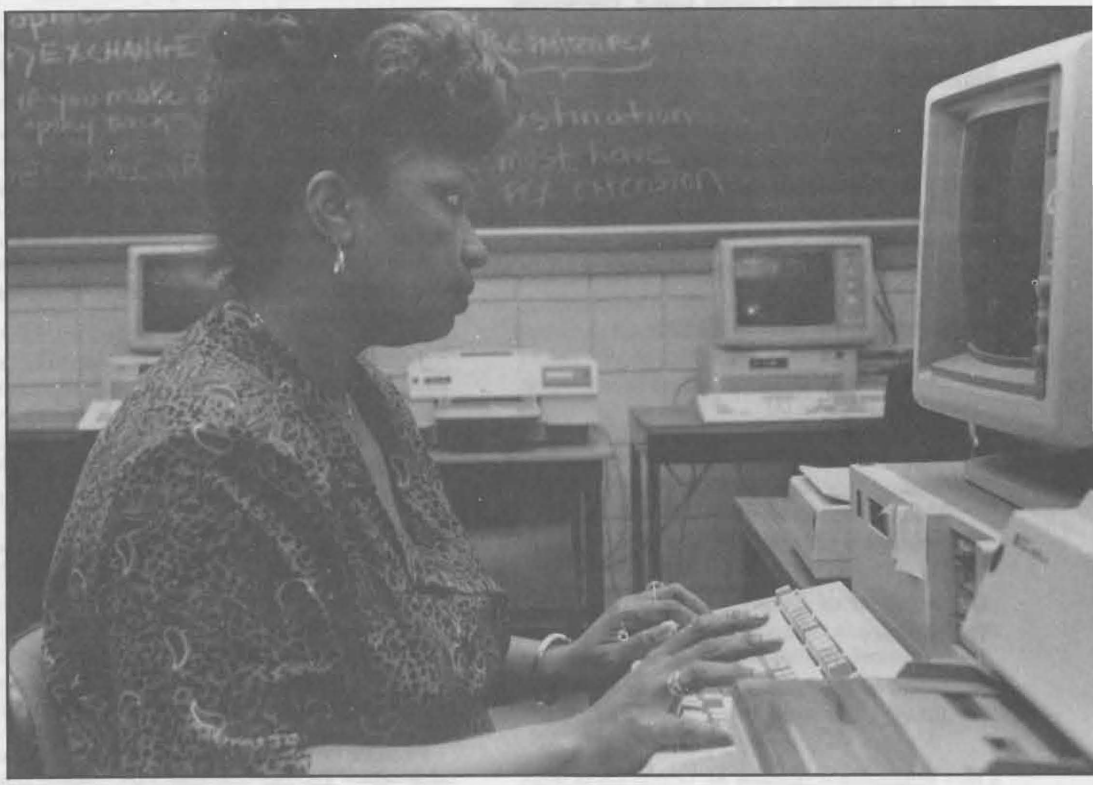
SUMMER

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

The Offices of the Bursar and Scholarships and Financial Aid are also open by appointment during late and final registration and change of registration.

The College of Applied Science and Technology

John J. Yemma, Acting 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. The college offers both baccalaureate degree programs which focus on the application of the 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 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. 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

Allied Health (B)
* Dental Hygiene (A)
Emergency Medical Technology (A)
Medical Assisting Technology (A)
* Medical Laboratory Technology (A)
* Medical Technology (B)
* Respiratory Care (A)

Department of Business Education and Technology

Accounting Technology (A)
** Business Education (B)
Business Management Technology (A)
Labor Studies Technology (A)
Marketing Management Technology (A)
Office Services and Administration (A)

Department of Criminal Justice

Criminal Justice (B)
Police Science Technology (A)

Department of Engineering Technology

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

Department of Home Economics

Pre-Kindergarten Associates (A)
Dietetic Technology (A)
Merchandising: Fashions & Interiors (B)
Food and Nutrition (B)
Home Economics Services (B)
Hospitality Management (A)
** Vocational Home Economics Education (B)

Department of Nursing

* Nursing (B)

Students 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.

CURRICULA AND COURSES OF INSTRUCTION

DEPARTMENT OF ALLIED HEALTH

Professor Yemma (Chair); Associate Professors Boyd, Feld, Harris; Assistant Professors Betz, Boehm, Delost, Haggerty, Harig, Mistovich, Vendemia; Instructor Obertots.

The department offers associate and baccalaureate allied health programs for future members of the health delivery team. Associate degree programs are offered in Dental Hygiene, Emergency Medical Technology, Medical Assisting Technology, Medical Laboratory Technology, and Respiratory Care. Baccalaureate programs are offered in Allied Health and Medical Technology. Detail on program requirements appears under the specific program.

Associate Degree Programs

Admission to all programs except Medical Assisting is on a restricted basis since only a limited number of students can be accommodated. Detailed information on admission criteria and closing dates is available in

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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.

the Allied Health department or Admissions Office. Each program has specific requirements regarding grades in required courses and cumulative point average. Grades of "C" or better are required in all courses in Allied Health programs. Information on program policy is available in the Allied Health department.

Baccalaureate Degree Program in Allied Health

The department offers a baccalaureate program leading to the degree Bachelor of Science in Applied Science with a major in Allied Health. This program is intended to serve health associate degree graduates who wish to upgrade their academic credentials to include the baccalaureate degree. Major components of the program for Dental Hygiene, Emergency Medical Technology, or Respiratory Care graduates are:

Associate Degree in D.H., E.M.T. or R.T.	96-110 q.h.
General Allied Health Courses	26 q.h.
Advanced Discipline Courses	16 q.h.
Minor in Biology, Chemistry, Management, Education or other	21 q.h.
University General Requirements	20-28 q.h.
Total	186-194 q.h.

Graduates of regionally and professionally accredited associate degree programs in Dental Hygiene, Emergency Medical Technology, and Respiratory Care will be admitted to the baccalaureate program as juniors. Graduates of non-accredited programs will be provisionally admitted and placed at a level determined by an evaluation of their academic transcripts.

Graduates with an associate degree in a health related discipline will be admitted to the multidisciplinary track of the BSAS in Allied Health. Major components of the program are:

Associate Degree in Health Related Discipline	96-110 q.h.
Required Allied Health Courses	26 q.h.
Required Health Related Courses	16 q.h.
Student Selected Minors	21 q.h.
University General Requirements	20-28 q.h.
Total	186-196 q.h.

Pre-admission counseling is required for students seeking entry to the BSAS in Allied Health. For greater detail on program content or admissions, students should contact the Allied Health Department.

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. 4 q.h.

706. *Practice Management for the Dental Hygienist.* Management of dental hygiene care including appointment control, developing and manintaing recall systems, and insurance management. Dental marketing problem solving and the business relationship between dental patients and dental hygiene professionals will be discussed. Prereq.: DENHY 602L or permission of the instructor. 3 q.h.

707. *Multidisciplinary Health Care Delivery.* Health care delivery methodologies useful in the reduction of duplication of health care services will be examined, including the team approach to health care delivery. Prereq.: Graduation from a health related program or permission of the instructor. 4 q.h.

708. *Preventive Public Health Care.* Application of current health care philosophies in disease prevention. In-depth case study of a specific public health problem and its prevention. Prereq.: Graduation from a health related program or permission of the instructor. 3 q.h.

709. *Periodontics.* The study of soft tissue curretage, root planing, antimicrobial agents and therapy in the management of periodontal patients. Prereq.: DENHY 603L or permission of the instructor. 4 q.h.

710. *Gerodontology.* An indepth study of geriatrics as it relates to dental hygiene care and specific concerns of the elderly. An extramural experience with a geriatric patient will be included. Prereq.: DENHY 503 or permission of the instructor. 4 q.h.

720. *Emergency Medical Services Management.* A review of EMS system design, staffing, chain of command, medical education, policies and procedures, record keeping, inter-agency relationships, community resources and involvement, and legal aspects relevant to private and public emergency medical services. Prereq.: Graduation from a health related program or permission of the instructor. 4 q.h.

721. *Pediatric Emergency Procedures.* A study of the pathophysiology, symptomatology, advanced diagnostic and therapeutic techniques of medical and traumatic emergencies unique to the pediatric patient. Prereq.: Graduation from a health related program or permission of the instructor. 4 q.h.

730. *Cardiopulmonary Stress Testing.* A study of the basic physiological response to exercise, various factors interacting with this response, the clinical significance of stress testing, and the relationship of test results to disease processes in case study format. Prereq.: RESPC 607 or permission of the instructor. 4 q.h.

731. *Respiratory Services Management.* A study of the basic managerial process, organizational concepts, budgeting, quantitative planning, decision-making, and the issues of control as they relate to the manager of a hospital- based respiratory care department. Prereq.: RESPC 607 or permission of the instructor. 4 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 AHLTH 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 AHLTH 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.: HPE 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.: EDUC 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.: AHLTH 803 or permission of instructor. 4 q.h.

807. *Epidemiology for the Health Care Practitioner.* A study of the interrelationship of the host, agent, and environment in determining the causation, frequency, and distribution of disease. Prereq.: Junior standing or permission of instructor. 4 q.h.

808. *Environmental Concerns for the Health Care Practitioner.* Industrial hygiene, hazardous and infectious waste, air and water quality, and sanitation policies in health care facilities. Pertinent federal, state, and local legislation included. Prereq.: Associate degree in health related program, AHLTH 708, or permission of instructor. 4 q.h.

810. *Management Skills for the Health Care Supervisor.* A study of the conceptual framework of supervision in Health Care Organizations with emphasis on managerial skills, formulation of policies, principles of budgeting, performance appraisals, and community relations. Prereq.: Graduate of 2 year health related program or instructor's permission. 4 q.h.

Dental Hygiene

Assistant Professors Betz, Haggerty (Program Coordinator), Harig and Vendemia.

The two-year program in Dental Hygiene leads to the Associate in Applied Science degree. The program is designed to prepare dental hygienists for work in private practice, in public health settings, or in other health care delivery systems.

At the end 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.

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; dietary management; dental charting; making periodontal evaluations; administering fluoride therapy;

polishing amalgam restorations, 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 '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 1 to start in September of any year.

500. *Dental-Medical Emergencies.* Instructions on medical diseases and conditions in relationship to dental procedures. Prereq.: Permission of coordinator. 2 q.h.

501. *Dental Hygiene 1.* 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 1.* 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.

502. *Dental Hygiene 2.* Discussion of individualized patient education instruction, the appropriate preventive dental agents and devices, and the techniques for utilization. Prereq.: DENHY 501. 2 q.h.

502L. *Clinical Dental Hygiene 2.* Clinical application of dental hygiene techniques. Services include oral prophylaxis, fluoride application, and patient education. Nine hours of clinic per week. Prereq.: DENHY 501L. 3 q.h.

503. *Dental Hygiene 3.* Discussion of modified dental hygiene procedures as it relates to special needs dental patients. Presentation of specialized areas of dentistry to which dental hygiene services are closely allied. Prereq.: DENHY 502. 2 q.h.

503L. *Clinical Dental Hygiene 3.* Clinical application of dental hygiene techniques. Oral prophylaxis, radiographs, fluoride application, and patient education. Nine hours of clinic per week. Prereq.: DENHY 502L. 3 q.h.

520. *Dental Anatomy.* Numbering systems of permanent and primary dentitions, basic terminology of hard and soft oral structures, the anatomy of the head and neck, and the physiology and function of primary and permanent teeth and the stomatognathic system. Prereq.: Permission of coordinator. 2 q.h.

520L. *Dental Anatomy Lab.* Applied study of individual tooth morphology through the recognition and identification of natural teeth, and by tooth drawings. Practical application of the didactic study of head and neck anatomy in the examination of actual hard structures of the skull. Prereq.: Permission of coordinator. 1 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.: DENHY 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 4.* Introduction of principles of ultrasonic and heavy scalers. Case presentations emphasizing dental hygiene care. Application of practical knowledge of nutrition science to patient evaluation and education as related to clinical dental hygiene. Prereq.: DENHY 503. 2 q.h.

601L. *Clinical Dental Hygiene 4.* Continued clinical experience. Completion of one dietary management patient in addition to a specified number of periodontal patients. Use of ultrasonic scalers, titan-S scaler and the prophy jet. Experience on a mobile dental unit and in a hospital dental clinic. Twelve hours of clinic per week. Prereq.: DENHY 503L. 4 q.h.

602. *Dental Hygiene 5.* Introduction to patient management and pain control in dentistry. Case presentations emphasizing current dental hygiene care. Prereq.: DENHY 601. 2 q.h.

602L. *Clinical Dental Hygiene 5.* Completion of one mock board patient and one dietary management patient in addition to a specified number of periodontally involved patients. Use of ultrasonic scalers and titan-S scalers continued. Experience with sealant application and amalgam polishing required. Hospital dentistry placements continued. Twelve hours of clinic per week. Prereq.: DENHY 601L. 4 q.h.

603. *Dental Hygiene 6.* Introduction to dental office management and business administration. Study of the responsibilities and changing roles of the dental hygienist. Prereq.: DENHY 602. 2 q.h.

603L. *Clinical Dental Hygiene 6.* Continued clinical experience. Completion of all clinical requirements at exit level proficiency. Emphasis on professionalism, patient management and time management, as well as dental hygiene care. Twelve hours of clinic per week. Prereq.: DENHY 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 DENHY 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 DENHY 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 1.* Introduction to Periodontics for the dental hygienist. Etiology, clinical manifestations, classification of periodontal disease, and treatment-planning. The hygienist's role in its prevention through patient education. Prereq.: DENHY 535. 2 q.h.

621. *Periodontics 2.* Surgical techniques, root planning, curettage, and periodontal maintenance therapy will be presented and discussed. Prereq.: DENHY 620. 2 q.h.

625. *Dental Public Health.* An introduction to public health dentistry, including study of 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 lab per week. Prereq.: DENHY 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.: DENHY 625. 1 q.h.

641. *Ethics and Jurisprudence.* The historical, professional, legal and ethical aspects of dental hygiene and dentistry. Prereq.: DENHY 601. 1 q.h.

DENTAL HYGIENE CURRICULUM

SUMMER

Courses	Cr. Hrs.
BIOL 551 Physiology and Anatomy 1	4
BIOL 552 Physiology and Anatomy 2	4
	8

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
DENHY 501 Dental Hygiene 1	3
DENHYH 501L Clinical Dental Hygiene 1	2
DENHY 520 Dental Anatomy	2
DENHY 520L Dental Anatomy Lab	1
CHEM 505 Chemistry for the Allied Health Sciences 1	4
ENGL 550 Basic Composition 1	4
	16

SECOND QUARTER

Courses	Cr. Hrs.
DENHY 500 Dental-Medical Emergencies	2
DENHY 502 Dental Hygiene 2	2
DENHY 502L Clinical Dental Hygiene 2	3
DENHY 530 Dental Radiology	2
DENHY 525 Oral History and Embryology	3
CHEM 506 Chemistry for the Allied Health Sciences 2	4
SOCST/HUMAN Elective	3
	19

THIRD QUARTER

Courses	Cr. Hrs.
DENHY 503 Dental Hygiene 3	2
DENHY 503L Clinical Dental Hygiene 3	3
DENHY 530L Dental Radiology Laboratory	1
DENHY 535 General and Oral Pathology	3
BIOL 560 Paramedical Microbiology	5
HOMEC 551 Normal Nutrition 1	4
	18

SECOND YEAR
FOURTH QUARTER

Courses	Cr. Hrs.
DENHY 601 Dental Hygiene 4	2
DENHY 601L Clinical Dental Hygiene 4	4
DENHY 611 Dental Materials	2
DENHY 611L Dental Materials Laboratory	1
DENHY 615 Dental Health Education	3
DENHY 620 Periodontics	2
PSYCH 560 Introduction to Psychology	4
	18

FIFTH QUARTER

Courses	Cr. Hrs.
DENHY 602 Dental Hygiene 5	2
DENHY 602L Clinical Dental Hygiene 5	4
DENHY 621 Periodontics 2	2
DENHY 625 Dental Public Health	3
MATEC 605 Introduction to Pharmacology	4
	15

SIXTH QUARTER

Courses	Cr. Hrs.
DENHY 603 Dental Hygiene 6	2
DENHY 603L Clinical Dental Hygiene 6	4
DENHY 626 Dental Public Health Clinical Experience	1
DENHY 641 Ethics and Jurisprudence	1
SOCIO 500 Fundamentals of Sociology	4
SPCH 550 Principles of Speech Communication	4
	16
Total Credit Hours	**110**

Emergency Medical Technology

Assitant Professor Mistovich (Program Coordinator); Instructor Obertots.

Emergency medical technology programs are designed to train persons to provide emergency prehospital care to people experiencing health crises. The goals of these programs are on three different levels: Emergency Medical Technician—Ambulance; 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 national standard paramedic curriculum objectives and is accredited by the Committee on Allied Health Education and Accreditation and the Ohio Department of Education (3-2-004).

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 teaching 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. A physical examination to attest good health is 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 the 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. Three lecture hours per week. Must be taken concurrently with EMTEC 501L. 3 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 EMTEC 501. 2 q.h.

506. *Principles of Trauma.* Study of traumatic emergencies normally encountered with emphasis on pathophysiology, etiology, and symptomatology. Prereq.: Admission to EMT Program or permission of instructor. 4 q.h.

507. *Emergency Medical Techniques 1.* Study of techniques necessary to treat the traumatic emergency conditions introduced in EMTEC 506. Must be taken concurrently with EMTEC 506 and 507L. 2 q.h.

507L. *Emergency Medical Techniques 1 Lab.* Laboratory includes simulated emergency traumatic situations and actual patient contact emphasizing physical assessment, patient interviewing, and management techniques. Six hours of combined departmental and clinical laboratory per week. Must be taken concurrently with EMTEC 506 and 507. 2 q.h.

509. *Introduction to Emergency Medical Technology.* Introduction to the roles, responsibilities, EMS Systems, medical and legal considerations of the EMS profession. Prereq.: Admission to EMT Program or permission of instructor. 2 q.h.

515. *Medical Conditions and Management Techniques.* Study of pathophysiology, symptomatology, etiology, and management techniques of commonly encountered medical emergencies. Prereq.: EMTEC 506 and EMTEC 507. Concurrent with EMTEC 515L. 4 q.h.

515L. *Emergency Medical Techniques 2 Lab.* Simulated situations and actual patient contact emphasizing performance of emergency medical techniques utilized to manage common medical emergencies. Nine hours of combined departmental and clinical hours per week. Must be taken concurrently with EMTEC 515. 3 q.h.

522. *Cardiovascular Emergencies.* Intense study of the pathophysiology and symptomatology of cardiovascular conditions including vascular disease, myocardial infarction, angina pectoris, congestive heart failure, and congenital myocardial problems. Also includes electrophysiology and EKG interpretation. Prereq.: EMTEC 515 or Admission to EMT Program or permission of instructor. 4 q.h.

524. *Emergency Cardiovascular Techniques.* Pharmacologic therapy and mechanical techniques utilized to manage the cardiovascular emergencies discussed in EMTEC 522. Prereq.: Admission to EMT Program or permission of instructor. Must be taken concurrently with EMTEC 522, 525 and 526L. 4 q.h.

525. *Pulmonary Emergencies.* Study of pathophysiology, symptomatology and treatment techniques of respiratory conditions and emergencies. Prereq.: Admission to EMT Program or permission of instructor. Concurrent with EMTEC 524 and 526L. 2 q.h.

526L. *Cardiovascular/Pulmonary Techniques Lab.* Performance of fundamental techniques employed in the management of the cardiovascular and/or respiratory emergency. Three hours of laboratory a week. Must be taken concurrently with EMTEC 524, 525 and 527. 1 q.h.

527. *Clinical Experience 1.* Hospital clinical experience to include practical management of the airway, endotracheal intubation, physical assessment and patient interviewing in critical care situations. Eight hours of clinical a week. Must be taken concurrently with EMTEC 526L. 2 q.h.

528. *ALS Field Internship 1.* Clinical experience with an approved advanced life support unit under the direct supervision of a selected paramedic field preceptor. Ten hours of clinic a week. Prereq.: EMTEC 515 and 515L. 2 q.h.

530. *Emergency Rescue Techniques.* Introduction to common rescue tools and techniques utilized in basic victim disentanglement and extrication. Prereq.: Admission to EMT Program or permission of instructor. 2 q.h.

601. *Advanced Emergency Conditions 1.* Treatment of severely emergent medical conditions, with emphasis on assessment, monitoring, and life-supporting procedures. Prereq.: EMTEC 520. To be taken concurrently with EMTEC 602. 3 q.h.

602. *EMT-P Clinical Experience 1.* Clinical experiences in hospitals, and emergency vehicles under severely emergent medical conditions. Twelve clinical hours a week. To be taken concurrently with EMTEC 601. 3 q.h.

605. *Emergency Medical Special Topics.* Examination of obstetrical/gynecological, pediatric, neonatal, geriatric, and psychiatric emergencies to include pathophysiology, symptomatology, and management techniques. Prereq.: EMTEC 522, EMTEC 524, and EMTEC 525 or permission of instructor. Concurrent with EMTEC 605L. 4 q.h.

605L. *Emergency Medical Special Topics Lab.* Techniques necessary to effectively manage conditions in EMTEC 605. Three hours of laboratory a week. Must be taken concurrently with EMTEC 605. 1 q.h.

606. *Clinical Experience 2.* Practical experience in obstetric/gynecologic, pediatric, neonatal, and psychiatric emergencies. Eight hours of clinical a week. Must be taken concurrently with EMTEC 605. 2 q.h.

608. *ALS Field Internship 2.* Performance of advanced life support procedures in the pre-hospital setting under the direct supervision of a selected paramedic field preceptor. Prereq.: EMTEC 528. Twenty hours of clinical a week. 4 q.h.

610. *Advanced Emergency Conditions 2.* The treatment of severely emergent medical conditions, with emphasis on assessment, monitoring, and life-supporting procedures. Prereq.: EMTEC 601. 3 q.h.

611. *EMT-P Clinical Experience 2.* Clinical experiences in hospitals and emergency vehicles, emphasizing severely emergent surgical conditions. Twelve clinical hours a week. To be taken concurrently with EMTEC 610. 3 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.: EMTEC 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.: EMTEC 610. 1-5 q.h.

EMERGENCY MEDICAL TECHNOLOGY CURRICULUM

FIRST YEAR
FIRST QUARTER (FALL)

Courses	Cr. Hrs.
BIOL 551 Physiology & Anatomy 1 with Lab	4
EMTEC 506 Principles of Trauma	4
EMTEC 507 Emergency Medical Techniques 1	2
EMTEC 507L Emergency Medical Techniques 1 Lab	2
EMTEC 509 Intro. to Emergency Medical Technology	2
	14

SECOND QUARTER (WINTER)

Courses	Cr. Hrs.
MATEC 605 Introduction to Pharmacology	4
BIOL 552 Physiology & Anatomy 2 with Lab	4
EMTEC 515 Medical Conditions & Management Tech.	4
EMTEC 515L Emergency Medical Techniques 2 Lab	3
	15

THIRD QUARTER (SPRING)

Courses	Cr. Hrs.
EMTEC 522 Cardiovascular Emergencies	4
EMTEC 524 Emergency Cardiovascular Techniques	4
EMTEC 525 Pulmonary Emergencies	2
EMTEC 526L Cardiovascular/Pulmonary Techniques Lab	1
EMTEC 527 Clinical Experience 1	2
EMTEC 528 ALS Field Internship 1	2
EMTEC 530 Emergency Rescue Techniques	2
	17

FOURTH QUARTER (SUMMER)

Courses	Cr. Hrs.
EMTEC 605 Emergency Medical Special Topics	4
EMTEC 605L Emergency Medical Special Topics Lab	1
EMTEC 606 Clinical Experience 2	2
EMTEC 608 ALS Field Internship 2	4
	11

Total for EMT-Certificate Level 57

SECOND YEAR
FIFTH QUARTER (FALL)

Courses	Cr. Hrs.
PSYCH 560 General Psychology	4
CHEM 505 Chemistry for the Allied Health Sciences 1	4
EMTEC 601 Advanced Emergency Conditions 1	3
EMTEC 602 EMT-P Clinical Experience 1	3
*Technical Elective	4
	18

SIXTH QUARTER (WINTER)

Courses	Cr. Hrs.
SOCIO 500 Fundamentals of Sociology	4
CHEM 506 Chemistry for the Allied Health Sciences 2	4
EMTEC 620 Leadership in Paramedic Technology	2
ENGL 550 Composition 1	4
	14

SEVENTH QUARTER (SPRING)

Courses	Cr. Hrs.
SPCH 550 Public Speaking	4
*SOCSC or HUMAN Elective	4
EMTEC 610 Advanced Emergency Conditions 2	3
EMTEC 611 EMTEC-P Clinical Experience 2	3
	14

Total Credit Hours 103

Medical Assisting Technology

Associate Professor Feld (Program 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, 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 1, algebra 2 or geometry, and business typing (personal typing does not substitute).

A grade of C or better is required in all medical assisting, BUTEC, 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 all deficiencies have been made up.

The student must have a physical examination report with a negative tuberculin-screening test and serology test prior to MATEC 620, MATEC 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; medicare, medicaid, Workers' Compensation and Disability Insurance and the completion of required forms.Prereq.: MATEC 501. 3 q.h.

602. *Medical Diagnostic and Procedural Coding.* Emphasis will be on identifying and utilization of coding systems (ID-9-CM, CPT) directly related to medical practices and current government regulations. Prereq.: MATEC 501 or instructor's permission. 3 q.h.

605. *Introduction to Pharmacology.* Identification and interactions of drugs used in patient care including the pharmacological action and effects on the patient.

*Elective must be approved by the EMTEC Program Coordinator.

Various modes of administration and patient education regarding the effects of common drugs are included. Prereq.: CHEM 505, 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.: MATEC 501. 4 q.h.

611L. *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.: MATEC 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.: MATEC 610, 611L, BIOL 552 and concurrently with MATEC 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 MATEC 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.: MATEC 610 and MATEC 611L and BIOL 560 or taken concurrently. 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 MATEC 680. Three hours of laboratory a week. 1 q.h.

692. *Medical Assisting Externship.* Twenty-one hours per week of practical experience in offices of qualified physicians (family practice and internal and accredited hospitals and/or clinics.) Sites are selected by the director of the program. Prereq.: MATEC 620, MATEC 680, BET 612-614. Must be taken concurrently with MATEC 694. 3 q.h.

694. *Medical Assisting Seminar.* Selected Medical Assisting topics as related to student's externship experiences. Must be taken concurrently with MATEC 692. 1 q.h.

MEDICAL ASSISTING TECHNOLOGY: CURRICULUM

General University Requirements

Courses	Cr. Hrs.
ENGL 550, 551 Basic Composition 1, 2	8
PSYCH 560 General Psychology	4
SOCIO 500 Fundamentals of Sociology	4
SOCSC Elective (Advisor's Approval)	4
CHEM 505 Chemistry for the Allied Health Sciences 1	4
BIOL 551, 552 Physiology & Anatomy 1, 2	8
BIOL 560 Para-Medical Microbiology	5
HPE Health Education	3
*HPE 601 First Aid & Emergency Care	3
*HPE 604 Cardio-Pulmonary Resucitation	1
OR	
*EMTEC 501, 501L Emergency Med. Tech.-Amb. & Lab	4
	44

Major Requirements

Courses	Cr. Hrs.
MATEC 501 Medical Terminology	4
MATEC 502 Medical Law & Ethics	4
MATEC 600 Medical Insurance Forms	3
MATEC 605 Intro. to Pharmacology	4
MATEC 610 Intro. to Disease Processes	4
MATEC 611L Clinical Procedures Lab	1
MATEC 620 Advanced Clin. Procedures	3
MATEC 620L Advanced Clin. Procedures Lab	1
MATEC 680 Lab Proced. for Medical Office	2
MATEC 680L Proced. for Med. Off. Lab	1
MATEC 692 Medical Assisting Externship	3
MATEC 694 Medical Assisting Seminar	2
**BET 523 Intermediate Typewriting	3
BET 511 Adm. Medical Assisting	4
BET 613 Microcomputer Application	4
BET 612 Typewriting for Med. Assistant	2
BET 614 Special Dictation for Med. Asst.	4
BET 720 Organizational Behavior	4
BET 712 Records Management for Med. Asst.	3
BUTEC 580 Elementary Accounting	4
	60
Total Credit Hours	**104**

Medical Laboratory Technology

Associate Professor Boyd; Assistant Professor Delost.

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,

*Current CPR and Red Cross First Aid Certification or Ohio State EMT-A Licensure. Substitute of 4 credit hours of elective course work required.

**Typing courses will depend on typing background.

public health facility, or pharmaceutical laboratory, performing a variety of clinical tests under appropriate supervision. These tests may be used 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, and accredited by the Committee of Allied Health Education and Accreditation.

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 1 and algebra 2 or geometry. Taken concurrently with MLTEC 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 MLTEC 501. 1 q.h.

502. *Medical Laboratory Methodology 1.* Theory and techniques in the chemical analysis of urine. Prereq.: BIOL 506, 507, and MLTEC 501. Taken concurrently with MLTEC 502L. 2 q.h.

502L. *Medical Laboratory Methodology 1 Laboratory.* Chemical and microscopic examination of urine with emphasis on formed elements and abnormal substances. Three hours of laboratory a week. Taken concurrently with MLTEC 502. 1 q.h.

503. *Medical Laboratory Methodology 2.* The fundamental theories and techniques of immunohematology. Prereq.: BIOL 506, 507 and MLTEC 501. Taken concurrently with MLTEC 503L. 2 q.h.

503L. *Medical Laboratory Methodology 2 Laboratory.* ABO and Rh typing, antibody screening and compatibility testing. Three hours of laboratory per week. Taken concurrently with MLTEC 503. 1 q.h.

601. *Medical Laboratory Methodology 3.* Theoretical and practical knowledge related to chemistry in the medical laboratory, with emphasis on quality control and instrumentation. Prereq.: CHEM 517 and MLTEC 502 and 503. Must be taken concurrently with MLTEC 601L. 3 q.h.

601L. *Medical Laboratory Methodology 3 Laboratory.* Test procedures include titremetric, colorimetric, and spectrophotometric methods and various automated equipment to perform glucose, bilirubins, and electrolytes. Three hours of laboratory per week. Taken concurrently with MLTEC 601. 1 q.h.

602. *Medical Laboratory Techniques.* The study of various human body fluids, including composition, normal and abnormal states and relevance in diagnosis of disease. CHEM 517, BIOL 508 and MLTEC 601. 2 q.h.

603. *Methodology 4.* Theory of laboratory instrumentation, trouble shooting, quality control, quality assurance and preventative maintenance. Prereq.: MLTEC 501 and MLTEC 501L. 2 q.h.

603L. *Methodology Laboratory 4.* Simple instrument maintenance, performance verification, proficiency surveys, internal quality control, choice and implementation of new instruments and methods. 2 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, MLTEC 601 & 601L or advanced standing in the M.T. Program. To be taken concurrently with MLTEC 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 MLTEC 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 MLTEC 703L. Identical with BIOL 703. Prereq.: MLTEC 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 MLTEC 703. 1 q.h.

705L. *Clinical Laboratory.* Twenty-one hours per week of practical application of skills learned in previous courses under the constant supervision of a medical technologist. The laboratory to be taken concurrently with MLTEC 706. Prereq.: Successful completion of the previous six quarters of MLTEC courses. 7 q.h.

706. *Medical Laboratory Seminar.* Special problems concerning the internship are discussed with the coordinator. To be taken concurrently with MLTEC 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 MLTEC 502 and 502L, or advanced standing in the Med Tech Program. To be taken concurrently with MLTEC 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 MLTEC 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 MLTEC 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 MLTEC 787. 2 q.h.

MEDICAL LABORATORY TECHNOLOGY CURRICULUM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
CHEM 505 Chemistry for the Allied Health Sciences 1	4
BIOL 506 Principles of Biology 1	4
MLTEC 501 Introduction to Medical Technology	3
MLTEC 501L Introduction to Medical Technology Laboratory	1
BIOL 551 Anatomy and Physiology 1	4
	16

SECOND QUARTER

Courses	Cr. Hrs.
CHEM 506 Chemistry for the Allied Health Sciences 2	4
BIOL 507 Principles of Biology 2	4
MLTEC 502 Medical Laboratory Methodology 1	2
MLTEC 502L Medical Laboratory Methodology 1 Lab	1
MLTEC 503 Medical Laboratory Methodology 2	2
MLTEC 503L Medical Laboratory Methodology 2 Lab	1
	14

THIRD QUARTER

Courses	Cr. Hrs.
BIOL 508 Principles of Biology 3	4
MLTEC 729 Clinical Hematology	2
MLTEC 729L Clinical Hematology Laboratory	2
BIOL 552 Physiology and Anatomy II	4
BIOL 702 Microbiology	4
	16

FOURTH QUARTER (SUMMER)

Courses	Cr. Hrs.
ENGL 550 Basic Composition 1	4
PSYCH 560 General Psychology	4
MLTEC 601 Medical Laboratory Methodology 2	3
MLTEC 601L Medical Laboratory Methodology 2 Laboratory	1
MATH 714 Probability and Statistics	5
	17

FIFTH QUARTER

Courses	Cr. Hrs.
MLTEC 703 Clinical Immunology	2
MLTEC 703L Clinical Immunology Lab	1
MLTEC 700 Diagnostic Labled Immunoassays	2
MLTEC 700L Diagnostic Labled Immunoassays Laboratory	1
MLTEC 787 Diagnostic Microbiology	2
MLTEC 787L Diagnostic Microbiology Laboratory	2
MLTEC 602 Medical Laboratory Technology	2
MLTEC 603 Methodology IV	2
MLTEC 603L Methodology Lab IV	2
	16

SIXTH QUARTER

Courses	Cr. Hrs.
MATEC 501 Medical Terminology	4
ENGL 551 Basic Composition 2	4
HPE 590 Health Education	3
SOCST Elective	3
	14

SEVENTH QUARTER

Courses	Cr. Hrs.
*MLTEC 705 Medical Laboratory Internship	7
MLTEC 706 Medical Laboratory Seminar	1
SOCST Elective	4
	12
Total Credit Hours	**105**

*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).

*Work in the MLT Program.

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

Associate Professor Boyd; Assistant Professor Delost.

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 used 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.

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 through the National Accrediting Agency of Laboratory Science, 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

Courses	Cr. Hrs.
MLTEC 501 Introduction to Medical Technology	4
CHEM 515, 516, 517	12
BIOL 506, 507, 508	12
ENGL 550, 551	8
HPE Activity Course	1
BIOL 551, 552	8
HPE 590 Health Education	3
	48

SECOND YEAR

Courses	Cr. Hrs.
CHEM 719, 720, 721	12
CHEM 603, 604	10
MATH 714	5
MLTEC 700 Diagnostic Labled Immunoassays	3
BIOL 702	4
MLTEC 787, 787L Diagnostic Microbiology and Laboratory	4
PHYS 501	4
ELCTVS (See Note A)	8
	50

THIRD YEAR

Courses	Cr. Hrs.
CHEM 711, 712, 713	8
PHYS 502, 502L, 503, 503L	8
HPE Activity Course	2
MLTEC 703 Clinical Immunology	3
MLTEC 729 Clinical Hematology	3
ELCTVS (See Note A)	16
ELCTVS (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.

Courses	Cr. Hrs.
Clinical Experience 1 (Clinical Microbiology and Lab) (Clinical Immunology and Lab)	(12 q.h.)
Clinical Experience 2 (Urinalysis and Lab) (Immunohematology and Lab)	(12 q.h.)
Clinical Experience 3 (Clinical Mycology) (Clinical Parasitology) (Clinical Chemistry and Lab) (Topics in Laboratory Education)	(12 q.h.)
Clinical Experience 4 (Clinical Hematology and Lab) (Coagulation) (Topics in Laboratory Management) (Special Topics in Medical Technology)	(12 q.h.)
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 by a professional school.

Respiratory Care

Associate Professor Harris (Program Coordinator); Assistant Professor Boehm.

Respiratory care 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, Western Reserve Care System, Trumbull Memorial Hospital, Youngstown Osteopathic Hospital, Robinson Memorial Hospital and St. Joseph Riverside Hospital. Admission to the program is restricted. Copies of the admission policy are available in the Allied Health Department.

500. *Introduction to Respiratory Therapy Clinics.* This course will give initial exposures to respiratory technician students in basic procedures and patient assessment techniques. It is also designed to familiarize the student with the hospital environment and functioning. Five clinic hours. Must be taken concurrently with RESPC 501. 1 q.h.

501. *Introduction to Respiratory Care.* 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 Care Laboratory.* Familiarization with fundamental equipment, basic patient-care techniques, and departmental design; visits to hospitals. Must be taken concurrently with RESPC 501. Three hours of laboratory. 1 q.h.

502. *Introduction to Respiratory Care Equipment.* An in-depth study of the apparatus used in providing respiratory care. Three hours lecture. Must be taken concurrently with RESPC 502L. 3 q.h.

502L. *Introduction to Respiratory Care Equipment Laboratory.* Practice in the use and maintenance of the equipment discussed in RESPC 502. Must be taken concurrently with RESPC 502. Three hours of Laboratory. 1 q.h.

503. *Respiratory Procedures 1.* Indications, hazards, and techniques used to administer various respiratory procedures. Procedural demonstration will be required for medical gas administration, aerosol therapy, incentive spirometry, IPPB therapy, and chest physiotherapy. Must be taken concurrently with RESPC 504. 3 q.h.

503L. *Respiratory Procedures 1 Laboratory.* Integration of theory and patient-care skills in a simulated clinical setting. Three hours of laboratory a week. Must be taken concurrently with RESPC 503. 1 q.h.

504. *Clinical Practice 1.* 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 RESPC 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.: RESPC 502 or permission of instructor. 2 q.h.

601. *Respiratory Procedures 2.* 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 RESPC 601L. Prereq.: RESPC 503. 3 q.h.

601L. *Respiratory Procedures 2 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 RESPC 601. Prereq.: RESPC 503. 1 q.h.

602. *Clinical Practice 2.* 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.: RESPC 504. 5 q.h.

603. *Pathology for Respiratory Care.* 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 3.* 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 RESPC 604L. Prereq.: RESPC 503. 3 q.h.

604L. *Respiratory Procedures 3 Lab.* Application and troubleshooting with mechanical ventilators in a simulated patient setting, including 3rd-generation microprocessor ventilators. 5 hours per week lab. Must be taken concurrently with RESPC 604. Prereq.: 503. 2 q.h.

605. *Clinical Practice 3.* Operation and maintenance of pulmonary function equipment and the drawing and interpretation of arterial blood gases. Twenty-five clinical hours. Prereq.: RESPC 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 RESPC 606L. Prereq.: RESPC 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 RESPC 606. Prereq.: RESPC 502. 1 q.h.

607. *Clinical Practice 4.* Advanced studies of mechanical ventilation, pulmonary functions, blood gases, and adult and pediatric respiratory therapy. Thirty clinical hours. Prereq.: RESPC 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.: RESPC 601 or permission of instructor. 3 q.h.

610L. *Cardio-Pulmonary Diagnostics Lab.* Theory and practice in setting up and evaluating EKGs. Basic and advanced dysrhythmia identification and recommended pharmacuetical interventions will also be discussed. Experience with 12 lead EKGs, telemetry, and hardwire monitoring equipment is included. Three hours laboratory. Prereq.: RESPC 606 or permission of instructor. 1 q.h.

RESPIRATORY CARE TECHNOLOGY TWO-YEAR THERAPIST CURRICULUM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
BIOL 551 Physiology and Anatomy of Man 1	4
CHEM 505 Chemistry for the Allied Health Sciences 1	4
RESPC 501 Introduction to Respiratory Care	3
RESPC 501L Introduction to Respiratory Care Laboratory	1
BIOL 560 Paramedical Microbiology	5
	17

SECOND QUARTER

Courses	Cr. Hrs.
RESPC 502 Introduction to Respiratory Care Equipment	3
RESPC 502L Introduction to Respiratory Care Equipment Laboratory	1
BIOL 552 Physiology and Anatomy of Man 2	4
CHEM 506 Chemistry for the Allied Health Sciences 2	4
ENGL 550 Basic Composition 1	4
	16

THIRD QUARTER

Courses	Cr. Hrs.
PHYS 506 Physics for the Health Sciences	4
RESPC 507 Introduction to Pulmonary Disease	2
MATEC 605 Introduction to Pharmacology	4
RESPC 503 Respiratory Procedures 1	3
RESPC 503L Respiratory Procedures 1 Laboratory	1
RESPC 606 Pulmonary Function and Blood Gas Analysis/Lab	4
	18

FOURTH QUARTER (SUMMER)

Courses	Cr. Hrs.
RESPC 604 Respiratory Procedures 3/Lab	4
RESPC 601 Respiratory Procedures 2/Lab	4
RESPC 504 Clinical Practice 1	5
	13

SECOND YEAR
FIFTH QUARTER

Courses	Cr. Hrs.
RESPC 602 Clinical Practice II	5
RESPC 603 Pathology for Respiratory Care	4
RESPC 609 Pediatric Respiratory Care	3
RESPC 610L Cardio-Pulmonary Diagnostics Lab	1
	13

SIXTH QUARTER

Courses	Cr. Hrs.
SOCIO 500 Fundamentals of Sociology	4
RESPC 605 Clinical Practice III	5
RESPC 608 Clinical Specialties	4
PSYCH 560 General Psychology	4
	17

SEVENTH QUARTER

Courses	Cr. Hrs.
MATEC 502 Law and Ethics	4
HPE 590 Health Education	3
RESPC 607 Clinical Practice IV	5
ELCTV	3
	15
Total Credit Hours	**109**
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 and fine and performing arts, science or mathematics, or social studies.

The Associate in Arts degree is intended for students not seeking other associate or baccalaureate degrees. The Associate in Arts degree will not be awarded to students earning other degrees unless prior written approval is obtained from the Dean of the College. Students pursuing an Associate in Arts degree as a second degree must complete a concentration area different from their first degree major and must comply with the University requirements for a second degree. To pursue an Associate in Arts degree, consult the Dean's Office in the College of Applied Science and Technology.

DEGREE REQUIREMENTS

Courses	Cr. Hrs.
ENGL 550 and 551	8
HUMAN	16
SCI and MATH	12
SOCST	16
HPE 590	3
HPE Activity Courses (3 maximum)	3
Concentration*	32
ELCTVS	6-22
Total Credit Hours	**112**

DEPARTMENT OF BUSINESS EDUCATION AND TECHNOLOGY

Professors Boggess (Chair); Phillips and Russo; Associate Professors Campbell, C., Duda and Sebestyen; Assistant Professors Campbell, R.; Kohut and Vendemia; Instructors Jones, Kos, Kunar.

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 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 Management Technology; and Office Services Administration. The Business Management Technology major may concentrate in Business Management or Small Business Management. The Marketing major may concentrate in Graphics Technology, Marketing Management Technology, or Real Estate Technology. The Office Services Administration student can major in Court/Conference Reporting, or can choose Executive Secretary, Legal Secretary, Medical Secretary, Office Information Systems Management, Information/Word Processing or Desktop Publishing/Printing as a concentration area.

Office Services Administration students who prefer work in allied health areas should follow the medical secretary concentration. The office information systems management concentration is designed for students who want to manage an information processing center. The information 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. Office Services Administration 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 majors in court/conference reporting must have an ACT English score of at least 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.

*Must have a C or better in concentration area.

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.

Office Information Systems Management students must have a 3.0 GPA in major area.

Office Services Administration, Business Technology, and Business Education majors scoring less than 16 on the English ACT must take BET 505 during the first or second quarter.

After completing the two-year Office Services Administration 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 and a grade of C or higher in all courses.

Curriculum sheets and course rotation schedules may be obtained from the Department of Business Education and Technology or from advisors in Cushwa Hall 2067.

Business Education and Technology

Lower Division Courses

505. *Business Language Skills.* Grammatical proficiencies and transcription skills necessary for successfully completing programs in the Business Education & Technology Department. Students taking this course must add four hours to degree requirements. 4 q.h.

506. *Information Processing Skills.* Extensive practice and applications in correct word usage, spelling, and punctuation. Transcription from tapes, hardcopy, and rough drafts. Prereq.: BET 505 or ACT English score of 16, and BET 523 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 523 and BET 505 or ENGL 550. 4 q.h.

513. *Business Computer Systems 1.* 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/Keyboarding.* Beginning typewriting/keyboarding for all students. Taught on microcomputers and electronic typewriters. Includes use of word processor/hard disk, typing reports and business letters. One hour of lecture and three hours of lab per week. 2 q.h.

523. *Intermediate Typewriting.* Business letters, manuscripts, and business reports. Two hours of lecture, two hours of laboratory. Prereq.: BET 520 or equivalent. 3 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 1.* 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 1.* Learning the theory of machine shorthand. Prereq.: BET 505. 4 q.h.

536. *Machine Shorthand 2.* Review of theory with emphasis on dictation speed and transcription. A speed of 60-80 words a minute should be attained. Prereq.: BET 523 and 535. 4 q.h.

537. *Machine Shorthand 3.* Emphasis on dictation speed and transcription. A dictation speed of 80-100 words a minute should be attained. Prereq.: BET 536. 4 q.h.

538. *Machine Shorthand 4.* Emphasis on dictation speed and transcription. A dictation speed of 120 words a minute should be attained. Prereq.: BET 537. 4 q.h.

539. *Alphabetic Shorthand 2.* 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 523. 4 q.h.

572. *Introduction to Typography.* Terminology, principles, and trends related to typography. 3 q.h.

612. *Typewriting for Medical Assistants.* Advanced specialized typewriting in the medical office. For medical assisting majors only. Prereq.: BET 523. 2 q.h.

613. *Microcomputer Applications.* Microcomputer vocabulary, DOS commands, disk care, documentation, and hardware/software selection criteria. Courseware will include tutorials and LAPS for microcomputer software products; e.g., word processing, database, spreadsheets and integrated packages. 4 q.h.

614. *Specialized Dictation for Medical Assistants.* Dictation and transcription in medicine. Includes machine transcription. Four hours lecture only. Open student-monitored lab. For medical assisting majors only. Prereq.: BET 523 and MATEC 501. 4 q.h.

615. *Information Processing Machines.* Includes dictation, transcription, composer, phototypesetter, personal computers, dedicated word processors and equipment maintenance. Two hours lecture, two hours laboratory. Prereq.: BET 523 and BET 513. 3 q.h.

623. *Advanced Typewriting.* Typing problems including specialized applications will be covered. Two hours of lecture, two hours of laboratory. Prereq.: BET 523. 3 q.h.

624. *Specialized Typewriting.* Material to be covered includes advanced specialized typewriting in the technical, medical, legal, or executive office. One hour lecture, three hours of laboratory. Prereq.: BET 623. 2 q.h.

630. *Shorthand 2.* 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 523 and BET 530 or equivalent. 4 q.h.

631. *Shorthand 3.* 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 5.* Emphasis on dictation speed and transcription. A dictation speed of 140 words a minute should be attained. Prereq.: BET 538. 4 q.h.

636. *Machine Shorthand 6.* Emphasis on dictation speed and transcription. A dictation speed of 160 words a minute should be attained. Prereq.: BET 635. 4 q.h.

637. *Machine Shorthand 7.* Emphasis on dictation speed and transcription. A dictation speed of 175 words a minute should be attained. Prereq.: BET 636. 4 q.h.

638. *Machine Shorthand 8.* 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. 4 q.h.

640. *Information Processing Concepts.* 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. Two hours of lecture, two hours of laboratory. 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 BUTEC 500. 3 q.h.

650. *Reprographics.* Equipment use, forms design, cost comparison, copy life, and quality of material. Prereq.: BET 615. 3 q.h.

651. *Introduction to WordPerfect.* All basic word processing functions, including footnotes, merges, and columns. One hour lecture, three hours of laboratory per week. Prereq.: BET 520 or equivalent. 2 q.h.

652. *Desktop Publishing Using WordPerfect.* Includes graphics, lines, fonts, and style sheets. Will produce flyers, brochures, and newsletters. One hour lecture, three hours of laboratory per week. Prereq.: BET 651 or equivalent. 2 q.h.

653. *Introduction to Spreadsheets.* Software package will use Lotus 1-2-3 command structure. Includes commands, techniques, formats, ranges, windows, prints, graphics, and macros. One hour lecture, three hours of laboratory per week. 2 q.h.

654. *Disk Operating System (DOS).* Comprehensive coverage of Disk Operating System used on IBM PCs or compatibles. Includes internal and external commands, batch files, directories, file management, and hard disk management. One hour lecture, three hours of laboratory per week. 2 q.h.

655. *PC Desktop Publishing.* Includes Introduction to Command structure of desktop publishing software package. Does not include design considerations. Will produce documents that combine text and graphics. One hour lecture, three hours of laboratory per week. 2 q.h.

670. *Concepts of Electronic Publishing.* Historical perspectives of phototypesetting. Includes evolution of printing technology, study of desktop publishing movement, and issues related to hardware and software selection. Prereq.: BET 572. 3 q.h.

671. *Professional Publication-Layout and Design.* Intergration of graphic, text, and scanned images. Student will design publications ranging from simple brochures to multi-chapter documents. Two hours lecture, two hours lab. Prereq.: BET 572. 3 q.h.

672. *Desktop Publishing 1.* Document creation using desktop publishing software on a microcomputer. Application must be mastered on a software package used by industry. Two hours lecture, two hours lab. Prereq.: BET 671, ART 503. 3 q.h.

673. *Desktop Publishing 2.* Specialized and advanced document creation using desktop publishing software used by industry. A second software package must be mastered. Two hours lecture, two hours lab. Prereq.: BET 672. 3 q.h.

690. *Courtroom Experience.* Supervised courtroom experience. Student will take testimony as recorded by court reporter and transcribe. Four hours of class and four hours of courtroom dictation per week. Prereq.: BET 638 and dictation proficiency of 225 wpm. 4 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.: ENGL 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 BUTEC 500. 4 q.h.

710. *Business Computer Systems 2.* 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.

712. *Records Management for Medical Assistants.* Includes electronic filing, micrographics, information management and interactive processing. For medical assisting majors only. Prereq.: BET 513 or permission of instructor. 3 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 4.* 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 623 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 623, 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 two-year requirement for vocational certification. Students will take this course concurrently with approved work experience and will be permitted to double the hours of work for the purpose of vocational certification. The course may be repeated for a maximum of 2,000 work experience hours. Grading for BET 760 is CR/NC. Prereq.: Approval of BET Chairperson. 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 two-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, with a different topic of study, for a maximum of 8 quarter hours' credit. Grading for BET 762 is CR/NC. Prereq.: Approval of BET Department Chairperson. 1-4 q.h.

805. *Office Practicum.* Terminal course for refinement of secretarial skills and techniques in simulated office procedures. Prereq.: BET 615 and 623. 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 523. 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 Business Education.* Organization, administration, implementation, and evaluation of Intensive and Cooperative Business Education programs at the secondary and adult education levels. Selection, instruction, curriculum, and placement of vocational students. Same as EDUC 826. Prereq.: EDUC 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.: MATH 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.: BUTEC 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.: BUTEC 500 or concurrent with BUTEC 500. 4 q.h.

533. *Fundamentals of Public Relations.* Introduction to public relations — its development, definitions, practice and tools. Prereq.: BUTEC 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.: BUTEC 500 or concurrent with BUTEC 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.: BUTEC 500 or concurrent with BUTEC 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.: BUTEC 500 or concurrent with BUTEC 500. 4 q.h.

580. *Elementary Accounting Tech. 1.* Basic principles, concepts, and terminology related to the accounting cycle. Includes an examination of procedures related to control of cash and payroll activities. 4 q.h.

581. *Elementary Accounting Tech. 2.* Basic principles applied to merchandising firms and partnerships. Includes analysis of short and long-term assets. Prereq.: BUTEC 580. 4 q.h.

582. *Elementary Accounting Tech. 3.* Basic principles applied to corporations. Includes analysis of long-term liabilities and financial statements. Prereq.: BUTEC 581. 4 q.h.

584. *Hospitality Industry Accounting.* The application of accounting principles to the hospitality industry: budgets, interpretation of financial statements, payroll accounting, and effective internal controls. Prereq.: BUTEC 580. 4 q.h.

586. *Financial Management.* Financial planning, problem analysis, capital budgeting, management of short and long-term financial assets. Prereq.: BUTEC 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.: BUTEC 510. 3 q.h.

604. *Real Estate Appraisal 1.* 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.: BUTEC 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.: BUTEC 510 and BUTEC 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.: BUTEC 603. 3 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.: BUTEC 530. 3 q.h.

640. *Warehousing and Traffic Management.* Examination of transportation, warehousing, materials handling, containerization, inventory control, purchasing, and warehouse location. Prereq.: BUTEC 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.: BUTEC 540. 4 q.h.

642. *Industrial Merchandising.* Marketing functions as they relate to industrial organizations. Includes pricing, marketing channels, legal controls and planning. Prereq.: BUTEC 540. 4 q.h.

643. *Purchasing.* "Marketing in reverse," including buying quantity, inspection and quality control, and sources and assurance of supply. Prereq.: BUTEC 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.: BUTEC 540. 4 q.h.

648. *Sales Management.* Procedures and techniques necessary to manage the sales force, including recruitment, orientation, compensation, supervision, and organization. Prereq.: BUTEC 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.: BUTEC 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.: BUTEC 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.: BUTEC 560 or BET 640. 4 q.h.

667. *Small Business Management.* Management functions as related to starting and successful operations of small enterprises. Prereq.: BUTEC 560. 4 q.h.

669. *Case Problems in Management.* Analysis of case material for the purpose of developing procedures for solving management problems. Prereq.: BUTEC 540, BUTEC 560, BUTEC 586, BUTEC 660 and BUTEC 662. 4 q.h.

680. *Accounting Analysis.* Income determination, current asset and current liabilities valuation. Prereq.: BUTEC 582. 4 q.h.

681. *Accounting Systems for Small Businesses.* Spreadsheet analysis and integrated accounting systems. Applications on microcomputers. Prereq.: BUTEC 582. 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.: BUTEC 560 and 582. 4 q.h.

684. *Tax Accounting.* Application of current federal tax law. Also includes federal, state, and local tax treatments. Prereq.: BUTEC 581. 4 q.h.

685. *Nonprofit Accounting.* Concepts and reporting practices of non-profit organizations. Prereq.: BUTEC 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 HIST 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.: LSTEC 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.: LSTEC 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.: LSTEC 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.: LSTEC 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.: LSTEC 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.: LSTEC 501 or permission of instructor. 4 q.h.

CURRICULA

The following curricula 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 chairperson.

BUSINESS TECHNOLOGY

Business Technology curricula include the following:

Accounting Technology
Business Management Technology
  Small Business Management
Marketing Management Technology
  Graphics
  Real Estate

General University requirements for all Business Technology curricula:

Courses	Cr. Hrs.
ENGL 550, 551, Basic Composition 1 and 2	8
PSYCH 560, General Psychology	4
ECON 520, Principles of Econ. 1	4
HLTH 590, Health Education	3
MATH 642, Applied Finite Math	5
Total Credit Hours	**24**

ACCOUNTING TECHNOLOGY

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BUTEC 540 Principles of Marketing	4
BUTEC 560 Business Management Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 581 Elementary Accounting Tech. 2	4
BUTEC 582 Elementary Accounting Tech. 3	4
BUTEC 586 Financial Management	4
BUTEC 680 Accounting Analysis	4
BUTEC 681 Accounting Systems for Small Businesses	4
BUTEC 683 Cost Accounting	4
BUTEC 684 Tax Accounting	4
BUTEC 685 Nonprofit Accounting	4
BET 513 Business Computer Systems 1	4

BET 643 Electronic Files Management 3
BET 704 Business Communications 4
BET 706 Business Law 4
BET 710 Business Computer Systems 2 4
BET 720 Organizational Behavior 4
ECON 621 Principles of Economics 2 3
ECON 622 Principles of Economics 3 3

Total Credit Hours **101**

BUSINESS MANAGEMENT TECHNOLOGY

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BUTEC 540 Principles of Marketing	4
BUTEC 560 Business Management Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 581 Elementary Accounting Tech. 2	4
BUTEC 582 Elementary Accounting Tech. 3	4
BUTEC 586 Financial Management	4
BUTEC 660 Personnel Practices	4
BUTEC 662 Operations and Production Mgmnt.	4
BUTEC 669 Case Problems in Management	4
BUTEC 683 Cost Accounting	4
BUTEC Approved Elective	4
BET 513 Business Computer Systems 1	4
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Business Computer Systems 2	4
BET 720 Organizational Behavior	4
ECON 621 Principles of Economics 2	3
LSTEC 501 Introduction to Organized Labor	4
Total Credit Hours	**99**

Alternate requirements for Small Business Concentration:

BUTEC 530 Introduction to Advertising instead of BUTEC Elective.
BUTEC 667 Small Business Management instead of BUTEC 683 Cost Accounting.
ECON 622 Principles of Economics 3

Total Credit Hours 98

MARKETING MANAGEMENT TECHNOLOGY

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BUTEC 530 Introduction to Advertising	4
BUTEC 540 Principles of Marketing	4
BUTEC 541 Sales Principles	4
BUTEC 560 Business Mgmt. Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 581 Elementary Accounting Tech. 2	4
BUTEC 640 Warehousing and Traffic Mgmnt	4
BUTEC 641 Retail Merchandising	4
BUTEC 643 Purchasing	4
BUTEC 644 Consumer Behavior	4
BUTEC 648 Sales Management	4
BET 513 Business Computer Systems 1	4
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Business Computer Systems 2	4
BET 720 Organizational Behavior	4
ECON 621 Principles of Economics 2	3
LSTEC 501 Introduction to Organized Labor	4
Total Credit Hours	**99**

GRAPHICS TECHNOLOGY

Courses	Cr. Hrs.
ART 501 Drawing 1	3
ART 502 Design 1	4
ART 503 Design 2	4
*ART 612 Silk Screen	4
ART 623 Graphic Design 1	3
ART 624 Graphic Design 2	3
ART 625 Graphic Design 3	3
ART 727 Graphic Design 4	3
ART 728 Graphic Design 5	3
ART 729 Graphic Design 6	3
ART 780 Photography 1	4
ART 782 Photography 3	4
ART 800 Studio Problems	4
BUTEC 500 Survey of American Business	4
BUTEC 530 Introduction to Advertising	4
BUTEC 540 Principles of Marketing	4
BUTEC 541 Sales Principles	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 581 Elementary Accounting Tech. 2	4
BUTEC 644 Consumer Behavior	4
ECON 621 Principles of Economics 2	3
Total Credit Hours	**100**

REAL ESTATE

Students wishing to have a concentration area in Real Estate will substitute the following courses for BUTEC 640, 641, 648, LSTEC 501 and ECON 621 in the Marketing Management Technology curriculum:

BUTEC 510 Real Estate Principles and Practices
BUTEC 582 Elementary Accounting Technology 3
BUTEC 586 Financial Management
BUTEC 604 Real Estate Appraisal
BUTEC 610 Real Estate Law
BUTEC 611 Real Estate Finance
BUTEC 660 Personnel Practices

Total Credit Hours **104**

More specific information regarding the real estate concentration may be obtained from the BET Department Office.

LABOR STUDIES

General University requirements for Labor Studies Technology:

*ART 601 waived as a prerequisite.

Courses	Cr. Hrs.
ENGL 550, 551, Basic Composition 1 & 2	8
PSYCH 560, General Psychology	4
HPE 590, Health Education	3
SCI elective	4
HUMAN elective	4
MATH elective	5
Approved elective	4
	32

Other Requirements for Labor Studies Technology:

Courses	Cr. Hrs.
BUTEC 502 Fund. of Occupational Safety	4
BUTEC 560 Business Management Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
ECON 520 Principles of Economics 1	4
ECON 621 Principles of Economics 2	3
ECON 622 Principles of Economics 3	3
LSTEC 501 Introduction to Organized Labor	4
LSTEC 502 History of the Labor Movement	4
LSTEC 510 Union Leadership Skills	4
LSTEC 515 Labor Law	4
LSTEC 520 Union Democracy	4
LSTEC 530 Negotiations	4
LSTEC 610 Administration of Unions	4
LSTEC 620 Contract Administration	4
LSTEC 630 Grievance Procedure	4
LSTEC 640 Labor Studies Seminar	4
SPCH 652 Business & Professional Speech	3
Technical Elective	4
Total Credit Hours	**101**

OFFICE SERVICES AND ADMINISTRATION PROGRAM

General University requirements for all associate degree Office Services and Administration curricula except Court/Conference Reporting:

Courses	Cr. Hrs.
ENGL 550, 551 Basic Composition 1, 2	8
PSYCH 560 General Psychology	4
ECON 520 Principles of Economics 1*	4
HPE 590 Health Education	3
MATH 506 Math of Business**	5
	24

EXECUTIVE SECRETARIAL STUDIES

Courses	Cr. Hrs.
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC Electives	8
BET 510 Office Procedures	4
BET 513 Business Computer Systems 1	4
BET 523 Intermediate Typewriting	3
BET 615 Information Processing Machines	3
BET 623 Advanced Typewriting	3
BET 624 Specialized Typewriting	2
BET 630 Shorthand 2	4
BET 631 Shorthand 3	4
BET 641 Magnetic Media	3
BET 643 Elec. Files Management	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Business Computer Systems 2	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

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BUTEC 560 Business Management Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 663 Office Management	4
BET 506 Information Processing Skills	3
BET 510 Office Procedures	4
BET 513 Business Computer Systems 1	4
BET 523 Intermediate Typewriting	3
BET 615 Information Processing Machines	3
BET 623 Advanced Typewriting	3
BET 624 Specialized Typewriting	2
BET 640 Information Processing Concepts	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 Business Computer Systems 2	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

Courses	Cr. Hrs.
BUTEC 580 Elementary Accounting Tech. 1	4
BET 510 Office Procedures	4
BET 513 Business Computer Systems 1	4
BET 523 Intermediate Typewriting	3
BET 615 Information Processing Machines	3
BET 623 Advanced Typewriting	3
BET 624 Specialized Typewriting	2
BET 630 Shorthand 2	4
BET 631 Shorthand 3	4
BET 641 Magnetic Media	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Business Computer Systems 2	4

*Students concentrating in Medical Secretarial Studies will take HIST 699, History of Science and Medicine, instead of ECON 520, Principles of Econ. 1.

**Students concentrating in Office Information Systems Management will take MATH 642, Applied Finite Math, instead of MATH 506.

BET 718 Automated Office Systems 4
BET 720 Organizational Behavior 4
BET 731 Specialized Dictation 4
BET 805 Office Practicum 4
CRJUS 500 Introduction to Criminal Justice 4
CRJUS 621 Evidence 4
CRJUS 720 Legal Terminology & Research 4
SPCH 652 Business & Professional Speech 4

Total Credit Hours 102

MEDICAL SECRETARIAL STUDIES

Courses	Cr. Hrs
BUTEC 580 Elementary Accounting Tech. 1	4
BET 510 Office Procedures	4
BET 513 Business Computer Systems 1	4
BET 523 Intermediate Typewriting	3
BET 615 Information Processing Machines	3
BET 623 Advanced Typewriting	3
BET 624 Specialized Typewriting	2
BET 630 Shorthand 2	4
BET 641 Magnetic Media	3
BET 704 Business Communications	4
BET 706 Business Law	4
BET 710 Business Computer Systems 2	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 731 Specialized Dictation	4
BET 805 Office Practicum	4
MATEC 501 Medical Terminology	4
MATEC 502 Medical Law & Ethics	4
MATEC 600 Medical Insurance Forms	4
MATEC 610 Introduction to Disease Processes	4
MATEC 611L Clinical Procedures Lab	1
SPCH 652 Business & Professional Speech	4
Total Credit Hours	**103**

OFFICE INFORMATION SYSTEMS MANAGEMENT

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BUTEC 560 Business Management Tech.	4
BUTEC 580 Elementary Accounting Tech. 1	4
BUTEC 581 Elementary Accounting Tech. 2	4
BUTEC 582 Elementary Accounting Tech. 3	4
BUTEC 586 Financial Management	4
BUTEC 660 Personnel Practices	4
BUTEC 663 Office Management	4
BET 513 Business Computer Systems 1	4
BET 523 Intermediate Typewriting	3
BET 615 Information Processing Machines	3
BET 640 Information Processing Concepts	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 Business Computer Systems 2	4
BET 718 Automated Office Systems	4
BET 720 Organizational Behavior	4
BET 740 Records Management	3
SPCH 652 Business & Professional Speech	4
SPCH 756 Principles of Effective Interviewing	4
Total Credit Hours	**106**

COURT/CONFERENCE REPORTING

General University requirements:

Courses	Cr. Hrs.
ENGL 550, 551 Basic Composition 1 and 2	8
POLIT Elective	4
HLTH 590 Health Education	3
SOCST Elective	3
SCI/MATH Elective	4/5
	22/23

Other requirements:

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
BET 510 Office Procedures	4
BET 523 Intermediate Typewriting	3
BET 535 Machine Shorthand 1	4
BET 536 Machine Shorthand 2	4
BET 537 Machine Shorthand 3	4
BET 538 Machine Shorthand 4	4
BET 615 Information Processing Machines	3
BET 623 Advanced Typewriting	3
BET 635 Machine Shorthand 5	4
BET 636 Machine Shorthand 6	4
BET 637 Machine Shorthand 7	4
BET 638 Machine Shorthand 8	4
BET 690 Court Reporting Practicum	4
BET 704 Business Communications	4
BET 706 Business Law	4
CRJUS 602 American Criminal Courts*	4
CRJUS 621 Evidence*	4
CRJUS 720 Legal Terminology & Research*	4
MATEC 501 Medical Terminology	4
Total Credit Hours	**100/101**

DESKTOP PUBLISHING/PRINTING

Courses	Cr. Hrs.
ART 502 Design 1	4
ART 503 Design 2	4
ART 623 Graphic Design 1	3
BUTEC 500 Survey of American Business	4
BUTEC 580 Elem. Acctg. Tech. 1	4
BET 513 Business Computer Systems 1	4
BET 572 Intro. to Typography	3
BET 615 Information Proc. Machines	3
BET 623 Advanced Typewriting	3
BET 641 Magnetic Media	3
BET 650 Reprographics	3
BET 670 Concepts of Elec. Publ.	3
BET 671 Prof. Publ./Layout & Design	3

*Criminal Justice prerequisite waived.

BET 672 Desktop Publishing 1 3
BET 673 Desktop Publishing 2 3
BET 704 Business Communication 4
BET 710 Business Computer Systems 2 4
BET 718 Automated Office Systems 4
BET 720 Organizational Behavior 4
ECON 621 Principles of Economics 2 3
ECON 622 Principles of Economics 3 3
ENGL 743 Technical Communication 4

Total Credit Hours 100

DEPARTMENT OF CRIMINAL JUSTICE

Professors Cummings, Lateef (Chair) and Swank; Associate Professors 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 with a major 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 follows the course descriptions.

BACHELOR OF SCIENCE IN APPLIED SCIENCE DEGREE

All Bachelor of Science in Applied Science students must complete a minimum of 55 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: CRJUS 500, 601, 602, 603, 630, 710, 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: CRJUS 714, 714L, 722 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: CRJUS 701, 702L, 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: CRJUS 621, 720, 722, 825 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: CRJUS 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. The department requires that a minimum of 8 hours be completed from upper division courses.

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 In the United States.* The evolution, structure, and functions of modern police organizations; the role of police in a democratic society; the impact of social, economic, and political influences; contemporary practices and controversial issues. Prereq.: CRJUS 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.: CRJUS 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.: CRJUS 500. 4 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.: CRJUS 500. 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 SOCIO 630. 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.: CRJUS 601. 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.: CRJUS 603. 4 q.h.

702. *Institutional-Community Corrections.* Contemporary theory, practice, and research findings in the administration of juvenile and adult correctional facilities. Community-based programs and institutional resources will be examined within the perspectives of prevention, control, and rehabilitation of the criminal offender. Prereq.: CRJUS 603. Must be taken concurrently with CRJUS 702L. 3 q.h.

702L. *Field Techniques in Institutional-Community Corrections.* Contact, observational, and on-site examination and comparison of community programs, and institutional facilities varying from half-way houses, jails, and medium to maximum security institutions. On-site contact will involve 6 hours per week, usually on a single day. Facilities in Ohio and Pennsylvania will be selected. Prereq.: CRJUS 603 and must be taken concurrently with CRJUS 702. 3 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.: CRJUS 701. 4 q.h.

710. *Social Statistics 1.* Cross-listed with SOCIO 701. 4 q.h.

711. *Social Statistics 2.* Cross-listed with SOCIO 702. 4 q.h.

712. *Criminal Justice Research.* Analysis of the major components of social research, including research design, sampling, measurement, data collection, and analysis and interpretation of findings. Prereq.: CRJUS 710. 4 q.h.

714. *Forensic Science Investigation.* Scientific study of the significance of physical materials associated with crime scenes and qualitative and quantitative analytical concepts in the examination of the physical evidence. Must be taken concurrently with CRJUS 714L. Prereq.: CRJUS 601. 4 q.h.

714L. *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 and demonstrations concerning the examination of the physical and chemical properties of physical evidence. One laboratory class per week of 3 hours. Taken concurrently with CRJUS 714. Prereq.: CRJUS 601. 1 q.h.

715. *Criminal Justice Management Concepts* Modern criminal justice management theory; organizational behavior, organizational development, personnel management, executive decision making, supervision problems. Prereq.: CRJUS 601. 4 q.h.

719. *Criminal Law.* Development, theories, and purposes of criminal law; elements of a crime, parties to a crime. Prereq.: CRJUS 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.: CRJUS 630 or permission of instructor. 4 q.h.

722. *Criminal Procedure.* Legal and practical applications of the laws of arrest, criminal procedure, search and seizure, court structures, and federal civil rights. Prereq.: CRJUS 602. 4 q.h.

735. *Juvenile Delinquency.* Social and Psychological factors underlying delinquency; the juvenile court and probation; treatment and preventative measures. Cross-listed with SOCIO 735. Prereq.: SOCIO 500. 4 q.h.

748. *Commercial and Industrial Security.* Plant protection, merchandising safety and security; credit and insurance investigative procedures. Prereq.: CRJUS 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.: CRJUS 601. 4 q.h.

765. *Human Relations in Criminal Justice.* Methods of coping with conflicts arising from law violation intervention; programs for improving interpersonal relations between police and the community. Prereq.: SOCIO 500, PSYCH 560, and 12 q.h. in CRJUS. 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.: CRJUS 719. 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.

807. *Criminal Justice Internship.* Field experiences in an appropriate criminal justice agency under the direction of experienced and qualified professionals. The grading is CR/NC. May be repeated for a maximum of 12 q.h. Prereq.: Junior standing in CRJUS and CRJUS 715. 4-12 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.

836. *Theory of Criminal Behavior.* An analysis of theory and research on epidemiology and etiology of crime. Prereq.: CRJUS 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.: CRJUS 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.: CRJUS 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.: CRJUS 602 and senior standing or instructor's permission. 4 q.h.

POLICE SCIENCE TECHNOLOGY CURRICULUM

DEPARTMENTAL REQUIREMENTS

Courses	Cr. Hrs.
500 Introduction to Criminal Justice	4
601 Law Enforcement and Investigatory Concepts	4
602 American Criminal Courts	4
630 Criminology	4
653 Traffic Law and Investigation	4
714 Forensic Science Investigation	4
714L Forensic Science in Investigation Laboratory	1
719 Criminal Law	4
722 Criminal Procedure	4
765 Human Relations in Criminal Justice	4
Any Criminal Justice Electives	8
Minimum Required Hours	**45**

GENERAL DEGREE REQUIREMENTS

Courses	Cr. Hrs.
English:	
550 Basic Composition 1	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 1 16
Science:
Astronomy, Biology, Chemistry, Geology, or Physics 8
Other:
*BET 520 Typing 1 2
Electives 13

49

Total Credit Hours 95

DEPARTMENT OF ENGINEERING TECHNOLOGY

Professors Barsch (Chair), Chrobak, Crum, Gardner; Associate Professors Hankey, Kumar; Assistant Professors Gaydos, Krygowski, Messuri, Zenovzi, Zupanic; Instructors Bodnovich, Bosela, Hogue, Slanina, Wood.

The Department of Engineering Technology offers "two-plus-two" programs in engineering technology and computer information systems. 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 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 Information Systems
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 (manual or CAD), 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 using both manual and CAD techniques.

Bachelor of Science in Applied Science Degree

The Civil, Electrical, and Mechanical Engineering Technology programs and the Computer Information Systems 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 and Registration

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, including Ohio and Pennsylvania, Bachelor degree graduates are qualified to take the Engineer in Training (EIT) exam, and with sufficient work experience, the Professional Engineers (PE) exam.

*If taken in high school, waived, but two hours must be added to general elective requirements.

Certificate Programs

Certificate programs of 45 quarter hours are available in:

Architectural and Construction Technology
Architectural/Mechanical Drafting Technology
Computer Information Systems
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 Civil, Electrical, and Mechanical Engineering Technology, and Computer Information Systems, 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.

Admission to Drafting and Design Technology, 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 2.0 point average.

Students not meeting the above admission requirements are enrolled as pre-majors in the College of Applied Science and Technology. While advising is provided by professional advisors within the college, these students are also encouraged to see the coordinator of the program in which they are interested for further orientation.

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); Assistant Professor Zupanic; Instructor Wood.

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. A co-op program with the Ohio Department of Transportation enables CITEC students to gain experience and income during their junior and senior years.

604. *Properties and Strength of Materials.* Introduction to the physical and chemical properties of materials and their behavior under various loads and environments. Concepts of stress and strain. Use and care of testing equipment. Instruction in methods of data retrieval and reduction and report preparation. Three hours lecture and three hours laboratory per week. Prereq.: METEC 515 and CHEM 501 or PHYS 501/503. 4 q.h.

607. *Solid Mechanics 1.* Elementary theory in the resistance of solids to external loadings. Relationships among load, deformation, stress and strain in the design of members in tension, compression, torsion, and bending. Three hours lecture and three hours computational laboratory per week. Prereq.: CITEC 604. 4 q.h.

610. *Structural Analysis 1.* Fundamental determination of member forces in trusses, beams, arches, frames and cables. Influence lines for moving loads. Deflection calculations. Three hours lecture and three hours computational laboratory per week. Prereq.: CITEC 607 or concurrent. 4 q.h.

611. *Specifications and Estimating.* Fundamentals of writing and interpreting specifications for materials and methods. Estimating material and labor costs for construction projects. Prereq.: CITEC 617 or METEC 630 or consent of instructor. 4 q.h.

612. *Structural Design and Drafting.* Familiarization with design using AISC, SJI, ACI and similar codes. Selection of members and connections in accordance with manuals and specifications. Design and drafting projects. Application of CADD. Prereq.: CITEC 610 and DD 605 or equivalents. Three hours lecture and three hours laboratory per week. 4 q.h.

615. *Soil Mechanics.* Study of the properties of soils, soil classification, soil strength, bearing capacity. Consolidation, and compressibility. Seepage and frost action. Principles and procedures of soil testing. Prereq.: CITEC 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 CITEC 615. (W) 1 q.h.

617. *Construction Methods and Materials.* Basic properties of construction materials. Processing and placement methods. Purchase, use and replacement of construction equipment. Application of engineering economics to construction. Use of building codes. Prereq.: CITEC 604. 3 q.h.

617L. *Construction Methods and Materials Laboratory.* Physical testing of construction materials such as concrete, aggregates, wood, and bituminous materials. Field trips to construction sites. Practice in construction inspection procedures. Three hours per week. Concurrent with CITEC 617. 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.: METEC 615, CHEM 501. (SP) 4 q.h.

705. *Computing for Technologists.* Further development of computer techniques used in solutions to problems in all fields of engineering technology. Students will develop computerized solutions to problems with which they are familiar. Use of data base management, spreadsheets, etc. May be taken by non-CITEC majors. Three hours lecture and three hours laboratory per week. Prereq.: Junior standing or consent of instructor. 4 q.h.

707. *Advanced Steel Design.* A continuation of CITEC 612 with heavier emphasis on design applications in steel. Practical solutions to more complex members and load applications. Emphasis on understanding and applying AISC and AISI codes. Design projects are required. Three hours lecture and three hours laboratory per week. Prereq.: CITEC 710. 4 q.h.

710. *Structural Analysis 2.* A continuation of CITEC 610. Analysis techniques for common structures. Introduction to classical approaches to statistically indeterminant structures. Use of standard computer programs such as STRUDL, STAAD, etc. Practice in developing students own programs for special cases. Three hours lecture and three hours computational laboratory per week. Prereq.: CITEC 610, CITEC 705 (or concurrent). 4 q.h.

712. *Architectural Design Technology.* Overall planning, layout and design of building elements. Study of the use of architectual concepts and materials such as masonry and wood in design. Design projects in compliance with applicable building Codes. Three hours lecture and three hours design laboratory per week. Prereq.: CITEC 610 and CITEC 617. 4 q.h.

717. *Underground Construction.* Design and construction procedures for foundations, retaining walls, caissons, tunnels and other underground structures. Prereq.: CITEC 615, 610. 4 q.h.

724. *Public Works Technology.* Technological aspects of the functions and responsibilities of a public works department. Emphasis on the effective use, maintenance and renovation of water, wastewater, drainage systems and road and transit systems. Studies of current infrastructure problems and alternative methods of solution. Prereq.: CITEC 617 and CITEC 624. 4 q.h.

730. *Transportation Technology.* Introduction to transportation planning and highway system design. Familiarization with AASHTO manuals. Capacity analysis. Geometric design and signalization of highway and rail segments. Route selection. Cost-benefit analysis for transportation projects. Earthwork calculations. Prereq.: CIEGR 610 and CITEC 617. 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.: CITEC 604 and ELTEC 625 or equivalent and junior standing. 4 q.h.

807. *Design Project Management.* Application of engineering skills to a total design project. Teaches and requires utilization of technical and management skills necessary to lead a project from proposal through design and preparation of bid plans and specifications. A design project is required. Three hours lecture and three hours design laboratory per week. Prereq.: MGT 604, CITEC 710 or CITEC 812. 4 q.h.

812. *Advanced Concrete Design.* A continuation of CITEC 607 and CITEC 612 with more emphasis on modern techniques in concrete. Applications of reinforced, prestressed and precast concrete. Three hours lecture and three hours design laboratory per week. Prereq.: CITEC 612. 4 q.h.

817. *Construction Management.* Design/Construction office techniques. Planning and scheduling. Computer methods for program planning and updating. Financial, labor and material resource allocation and tracking. Construction reports. Contracts, specifications and general conditions. Relationships among owner, architect/ engineer and constructor. Prereq.: MGT 604, CITEC 617 or equivalent. 4 q.h.

824. *Environmental Technology.* A continuation of CITEC 624 with emphasis on application of environmental principles to land planning and development. Wastewater treatment processes and system design. Application of water and wastewater management to specific sites. Permitting and endangerment assessment. Prereq.: CITEC 624, CITEC 724 or equivalent. 4 q.h.

ASSOCIATE IN APPLIED SCIENCE DEGREE

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
MATH 513 Intensive Intermediate Algebra	4
ENGL 550 Basic Compostion 1	4
ENTEC 505 Elements of Engineering Technology	4
CHEM 501 Survey of Chemistry	4
CHEM 510L Survey of Chemistry Lab	1
	17

SECOND QUARTER

Courses	Cr. Hrs.
MATH 520 Trigonometry	4
ENGL 551 Basic Comp. 2	4
ECON 520 Principles of Economics 1	4
HPE 590 Health Education	3
METEC 515 Mechanics 1	4
	19

THIRD QUARTER

Courses	Cr. Hrs.
MATH 570 Calc. for Engr. Tech. 1	5
METEC 516 Mechanics 2	4
CITEC 604 Properties & Strength of Materials	4
DDT 605 CAD Technology 1	4
	17

SECOND YEAR
FOURTH QUARTER

Coursess	Cr. Hrs.
METEC 615 Fluid Mechanics	3
METEC 615L Fluid Mechanics Lab	1
CITEC 607 Solid Mechanics 1	4
CITEC 617 Construction Methods and Materials	3
CITEC 617L Construction Methods and Materials Lab	1
CIEGR 610 Surveying 1	4
CIEGR 610L Surveying 1 Lab	1
	17

FIFTH QUARTER

Courses	Cr. Hrs.
CITEC 610 Structural Analysis 1	4
CITEC 615 Soil Mechanics	3
CITEC 615L Soil Mechanics Lab	1
MATH 670 Calc. for Engr. Tech. 2	4
CITEC 611 Spec. and Estimating	4
	16

SIXTH QUARTER

Courses	Cr. Hrs.
SOCST Elective*	4
CITEC 612 Structural Design and Drafting	3
CITEC 612L Structural Design and Drafting Lab	1
CITEC 624 Environmental Analysis	4
PHYS 502 Fundamentals of Physics 2	3
PHYS 502L Fundamental of Physics 2 Lab	1
SPCH 652 Business & Professional	3
	19
Total Credit Hours	**105**

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

Courses	Cr. Hrs.
ENGL 743 Technical Communications	4
MATH 770 Calculus for Engineering Technology 3	4
CITEC 705 Computing for Technologists	4
CITEC 710 Structural Analysis 2	4
HPE Activity Course Elective	1
	17

EIGHTH QUARTER

Courses	Cr. Hrs.
MATH 785 Matrix Algebra & Numerical Methods	4
MGT 604 Legal Environment of Business	4
CITEC 707 Advanced Steel Design	4
CITEC Elective (700/800 Level)	4
	16

NINTH QUARTER

Courses	Cr. Hrs.
HUMANITY Elective	4
PHYS 503 Fundamentals of Physics 3	3
PHYS 503L Fundamentals of Physics Laboratory 3	1
CITEC Elective (700/800 Level)	4
CITEC 717 Underground Construction	4
	16

*Social Studies Elective: Select Social Science courses from Geography (excluding physical geography), History, Political Science, Psychology, Sociology, Economics, or Black Studies.

FOURTH YEAR
TENTH QUARTER

Courses	Cr. Hrs.
HUMANITY Elective	4
ELTEC 625 Electrical Systems 1	4
CITEC 724 Public Works Tech	4
CITEC 730 Transportation Tech	4
HPE Activity Course	1
	17

ELEVENTH QUARTER

Courses	Cr. Hrs.
GEOG 808 Land Use and Transportation	4
ELTEC 810 Electrical Systems Design	4
CITEC 800 Building Systems	4
CITEC 812 Advanced Concrete Design	4
	16

TWELFTH QUARTER

Courses	Cr. Hrs.
GEOG 732 Advanced Cartography	4
CITEC 807 Design Project Management	4
CITEC 817 Construction Management	4
METEC 870 Applied Finite Element Method	4
HPE Activity Course	1
	17

Total Credit Hours 4 Years 204

Computer Information Systems

Professor Chrobak (Program Coordinator); Associate Professor Kumar; Assistant Professor Gaydos; Instructors Bodnovich, Hogue.

The Computer Information Systems 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 computer applications and information needs in business. Emphasis on hardware, software functions, software packages available for microcomputers, and mainframe computing. 4 q.h.

601. *Scientific Programming 1.* 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 2.* A continuation of CIS 601 stressing the application of Fortran, to advanced problems in science, engineering, and business. Fundamental numerical techniques applied to problem-solving. Prereq.: CIS 601 or consent of instructor. (W)4 q.h.

607. *Business Programming 1.* An introductory Cobol programming course using structured and top-down programming. Three hours of lecture and three hours of laboratory per week. Prereq.: CIS 500 or consent of instructor. (F, W, SP) 4 q.h.

608. *Business Programming 2.* The application of Cobol Language to the solution of advanced problems in business. Techniques of programming using mass storage devices. Prereq.: CIS 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.: CIS 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.: CIS 601 or CIS 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.: CIS 601 or CIS 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.: CIS 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.: CIS 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.: CIS 611. 4 q.h.

618. *Data-Processing Application.* Business data-processing applications such as payroll, accounts payable, budget control, inventory control, and production control will be covered, using COBOL

language, VSAM and CICS commands. Three hours of lecture and three hours of laboratory per week. Prereq.: CIS 608 and CIS 609. 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.: CIS 611. (SP) 4 q.h.

624. *Microcomputer Programming.* The use of microcomputer programming languages and operating systems. Prereq.: CIS 601 or consent of instructor. 4 q.h.

700. *Data Structures and Design.* The theory and application of data structures. Linked structures, chain processing, trees, networks and graphs will be implemented. Prereq.: CIS 624. 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.: CIS 601, MATH 570 or equivalent. (F) 4 q.h.

711. *Advanced Assembler Programming.* Advanced symbolic programming techniques, exercises, and case studies. Prereq.: CIS 611. (F) 4 q.h.

716. *Advanced Operating Systems.* An advanced study of operating systems, including UNIX, with emphasis on multiprogramming, multiprocessing, interprocess communication, time-sharing, and virtual memory and storage. Prereq.: CIS 616. 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.: CIS 611 or consent of instructor. (SP) 4 q.h.

804. *Programming in Operations Research Applications.* Basic operations-research techniques and programming. Linear programming, queuing, mathematical modeling, and network analysis. Prereq.: CIS 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.: CIS 611 or consent of instructor. May be repeated up to 8 q.h. 1-4 q.h.

814. *Advanced Business Systems and Procedures.* The study of system analysis, design, and implementation using the data flow analysis and systems development life cycle approach. Prereq.: CIS 618 and junior standing. 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.: CIS 618. (W) 4 q.h.

820. *Computer Center Operations.* The organization of a computer center with emphasis on features and selection criteria of communication equipment including mainframe, minicomputer, and microcomputer systems. Prereq.: Concurrent CIS 700. 4 q.h.

822. *Data Base Applications.* Design and development of applications using data base languages. Prereq.: CIS 624 and CIS 818. 4 q.h.

824. *Artificial Intelligence in Decision Making.* A study of software from the field of artificial intelligence. Topics may include software for robotic control, expert systems, or logic programming. Prereq.: CIS 700 and CIS 818. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
CIS 500 Data Processing Concepts	4
ENGL 550 Basic Composition 1	4
HPE 590 Health Education	3
MATH 513 Intensive Intermediate Algebra	4
	15

SECOND QUARTER

Courses	Cr. Hrs.
CIS 601 Scientific Programming 1	4
CIS 607 Business Programming 1	4
ENGL 551 Basic Composition 2	4
MATH 520 Trigonometry	4
	16

THIRD QUARTER

Courses	Cr. Hrs.
CIS 608 Business Programming 2	4
CIS 609 Interactive Computer Applications	4
BET 500 Survey of American Business	4
MATH 570 Calculus for Engineering Technology 1	5
	17

SECOND YEAR
FOURTH QUARTER

Courses	Cr. Hrs.
CIS 613 Programming — RPG	4
CIS Elective*	4
ECON 520 Principles of Economics 1	4
SPCH 651 Communication for Business and the Professions	3
	15

*CIS Electives:

CIS 612 Programming PL/1	4 q.h.
CIS 701 Scientific Programming Appiications	4 q.h.
CIS 720 Telecommunications	4 q.h.
ELTEC 620 and 620L Digital Fundamentals	4 q.h.
ELTEC 645 and 645L Microprocessor Systems 1	4 q.h.

FIFTH QUARTER

Courses	Cr. Hrs.
CIS 611 Programming S/360 Assembler	4
CIS 624 Microcomputer Programming	4
ACCTG 605 Elementary Accounting 1	5
SCI Elective*	4
	17

SIXTH QUARTER

Courses	Cr. Hrs.
CIS 616 Operating Systems	4
CIS 618 Data Processing Applications	4
ECON 624 Economics & Social Statistics	4
SOCST Elective	4
	16
Total Credit Hours	**96**

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

Courses	Cr. Hrs.
CIS 700 Data Structure & Design	4
CIS 711 Advanced Assembler Programming	4
MATH 670 Calc. for Engr. Tech. 2	4
ACCTG 606 Elementary Accounting 2	5
	17

EIGHTH QUARTER

Courses	Cr. Hrs.
CIS 716 Advanced Operating Systems	4
HUMAN Elective	4
MGT 725 Fundamentals of Management	4
SCI Elective (Non-Math)	4
	16

NINTH QUARTER

Courses	Cr. Hrs.
CIS 720 Telecommunications	4
ACCTG 711 Basic Cost Accounting	4
MGT 735 Comm. for Mgmt. and Business	4
SOCST Elective	4
	16

FOURTH YEAR
TENTH QUARTER

Courses	Cr. Hrs.
CIS Elective**	4
HPE Activity Course	1
HUMAN Elective	4
SOCST Elective	4
	17

ELEVENTH QUARTER

Courses	Cr. Hrs.
CIS 814 Advanced Business Systems & Procedures	4
CIS 818 Development of Data Bases	4
Free Elective (700/800Level)*	4
HPE Activity Course	1
MGT 789 Operations Management 1	4
	17

TWELFTH QUARTER

	Cr. Hrs.
CIS 820 Computer Center Operations	4
CIS 822 Data Base Applications	4
HPE Activity Course	1
MGT 737 Management Science or MGT 820 Operations Management 2	4
	13
Total Credit Hours 4 Years	**192**

*Science Elective: Select one from Physics, Chemistry or Biology.

**CIS Electives:

CIS 612 Programming PL/1	4 q.h.
CIS 622 Utility Programs	4 q.h.
CIS 701 Scientific Programming Applications	4 q.h.
CIS 804 Programming in Operations Research	4 q.h.
CIS 810 Special Topics	4 q.h.
CIS 824 Artificial Intelligence in Decision Making	4 q.h.
ELTEC 620 and 620L Digital Fundamentals	4 q.h.
ELTEC 645 and 645L Microprocessor Systems 1	4 q.h.
ELTEC 745 and 745L Microprocessor Systems 2	4 q.h.

Drafting and Design Technology

Assistant Professor Zupanic (Program Coordinator).

This program prepares students to function as design drafters in either the mechanical or civil-architectural field. They study design (the determination of size, form, and clearance) and CAD 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.: ENTEC 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.: DDT 605. 4 q.h.

*Free Elective—should be selected so as to complete a minor (21 q.h. of C or better) in Mathematics, Accounting or Management.

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.: DDT 560 or equivalent. 4 q.h.

605. *CAD Technology 1.* Basic instruction in the use of the AUTOCAD computer-aided drafting system. Includes primary 2D commands including layers, blocks, plotting and an introduction to attributes and 3D. Three hours lecture, three hours lab per week. Prereq.: MECH 500 or equivalent or permission of instructor. 4 q.h.

606. *CAD Technology 2.* Includes more advanced features of AUTOCAD and some customizing. Scripts, menu creation, 3D entities, attributes, CDF and SDF extraction and introduction to LISP will be among topics covered. Three hours lecture, three hours lab per week. Prereq.: DDT 605 or equivalent. 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.: DDT 560 or equivalent. 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. Two hours lecture; four hours lab per week. Prereq.: MECH 500 or equivalent or consent of instructor. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
MECH 501 Engineering Drawing	3
ENTEC 505 Elements of Engr.Technology	4
MATH 513 Intensive Intermediate Algebra	4
SOCST Elective*	4
	15

SECOND QUARTER

Courses	Cr. Hrs.
DDT 605 CAD Technology 1	4
ENGL 550 Basic Composition 1	4
MATH 520 Trigonometry	4
Science Elective	4
	16

THIRD QUARTER

Courses	Cr. Hrs.
SPCH 652 Business & Professional Speech	3
DDT 602 Civil & Architectural Drafting	4
DDT 560 Statics & Properties of Materials	4
HPE 590 Health Education	3
SOCST Elective*	4
	18

SECOND YEAR
FOURTH QUARTER

Courses	Cr. Hrs.
METEC 630 Manufacturing Techniques	3
METEC 630L Manufacturing Techniuqes Lab	1
DDT 606 CAD Technology 2	4
CITEC 617 Construction Methods and Materials	3
CITEC 617L Construction Methods and Materials Lab	1
CITEC 607 Solid Mechanics 1	4
	16

FIFTH QUARTER

Courses	Cr. Hrs.
DDT 608 Machine Elements	4
CITEC 611 Specifications & Estimating	4
Elective from CITEC, METEC, DDT, ELTEC, or CIS	4
DDT 603 Piping and HVAC CAD	4
	16

SIXTH QUARTER

Courses	Cr. Hrs.
DDT 613 Electronic & Elect. CAD	3
CITEC 612 Structural Design and Drafting	3
CITEC 612L Structural Design and Drafting Lab	1
METEC 620 Tool Design	3
SOCST Elective	4
MATH/SCI Elective	4
	18
Total Credit Hours	**99**

Electrical Engineering Technology

Professor Gardner (Program Coordinator); Associate Professor Hankey; Assistant Professor Messuri; Instructors Bosela and Slanina.

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

*Social Studies Elective—Select one course from Geography (excluding Physical Geography), History, Political Science, Psychology, Sociology, Social Science, Economics or Black Studies.

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 1.* 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, ENTEC 505. (W, SP) 3 q.h.

501L. *Circuit Theory 1 Laboratory.* The use of instruments; measurements of resistance; effect of length, cross section, and material on resistance; measurement of voltage, currents, and power in DC series and parallel circuits; network theorems. Three hours a week. Taken concurrently with ELTEC 501. (W, SP) 1 q.h.

502. *Circuit Theory 2.* 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.: ELTEC 501. Prereq. or concurrent: MATH 520. (F, SP) 3 q.h.

502L. *Circuit Theory 2 Laboratory.* Experiments of the measurement of inductance and capacitance; simple transient circuits; hysteresis curves; average and effective values; AC impedance. Three hours of laboratory per week. Taken concurrently with ELTEC 502. (F, SP) 1 q.h.

503. *Circuit Theory 3.* Analysis of AC circuits (steady state solution); phasor diagrams; network theorems; power, power factor; series and parallel resonant circuits; polyphase circuits; mutually coupled circuits. Prereq.: ELTEC 502. Prereq. or concurrent: MATH 570. (F, W) 3 q.h.

503L. *Circuit Theory 3 Laboratory.* The measurement of voltage, current and power in AC single-phase series and parallel circuits; resonant circuits mutually coupled circuits. Three hours a week. Taken concurrently with ELTEC 503. (F, W) 1 q.h.

600. *Measurements.* Measurement errors; basic meter in DC measurement; basic meter in AC measurement; DC and AC bridges; electronic voltage and current meters; cathode ray oscilloscope; counting and digital display instruments; transducers. Prereq.: ELTEC 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 ELTEC 600. (F). 1 q.h.

605. *Electronics 1.* 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.: ELTEC 502. Concurrent with ELTEC 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 ELTEC 605. 1 q.h.

606. *Electronics 2.* 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.: ELTEC 503, ELTEC 605. Concurrent with ELTEC 606L. 3 q.h.

606L. *Electronics 2 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 ELTEC 606. 1 q.h.

607. *Electronics 3.* 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.: ELTEC 606. Concurrent with ELTEC 607L. 3 q.h.

607L. *Electronics 3 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 ELTEC 607. 1 q.h.

610. *Direct Current Machines.* Construction and principles of operation of DC motors and generators; characteristics, efficiency, control, and associated equipment; specialized DC machines. Prereq.: ELTEC 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 ELTEC 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.: ELTEC 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 ELTEC 611. (SP) 1 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 ELTEC 620 lecture. Taken concurrently with ELTEC 620. Three hours of lab per week. 1 q.h.

625 and 625L. *Electrical Systems 1 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 1.* An introduction to microprocessor architecture and organization. Emphasis on machine/assembly language programming. Prereq.: ELTEC 620 or CIS 500. Concurrent with ELTEC 645L. 4 q.h.

645L. *Microprocessor Systems 1 Laboratory.* Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in ELTEC 645. Three hours laboratory per week. Taken concurrently with ELTEC 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.: ELTEC 503; Prereq. or concurrent: MATH 770. Concurrent with ELTEC 710L. 4 q.h.

710L. *Networks Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 710. Three hours of laboratory per week. Taken concurrently with ELTEC 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.: ELTEC 607. Concurrent with ELTEC 720L. 4 q.h.

720L. *Pulse Circuit Design Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 720. Three hours of laboratory per week. Taken concurrently with ELTEC 720. 0 q.h.

725. *Electrical Systems 2.* A continuation of ELTEC 625 with emphasis on AC/DC machinery, electronics, and controls. Prereq.: ELTEC 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.: ELTEC 605, ELTEC 620. Concurrent with ELTEC 730L. 4 q.h.

730L. *Logic Systems Design Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 730. Three hours of laboratory per week. Taken concurrently with ELTEC 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.: ELTEC 620. 4 q.h.

745. *Microprocessor Systems 2.* Continuation of ELTEC 645 with emphasis on advanced programming techniques, memory mapping, I/O ports, and basic I/O interfacing. Prereq.: ELTEC 645, ELTEC 607. Concurrent with ELTEC 745L. 4 q.h.

745L. *Microprocessor Systems 2 Laboratory.* Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in ELTEC 745. Three hours laboratory per week. Taken concurrently with ELTEC 745. 0 q.h.

750. *Industrial Controls.* Introduction to motor control principles and hardware. Examination of motor startup and speed control systems, as well as overload protection. Emphasis on solid-state logic control using programmable controllers as well as variable frequency ac motor drives. Prereq.: ELTEC 607, 611, 620. Concurrent with ELTEC 750L. 4 q.h.

750L. *Industrial Controls Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 750. Three hours of laboratory per week. Taken concurrently with ELTEC 750. 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.: ELTEC 607. Concurrent with 780L. 4 q.h.

780L. *Communication System Fundamentals Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 780. Three hours laboratory per week. Taken concurrently with ELTEC 780. 0 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.: ELTEC 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.: ELTEC 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.: ELTEC 740. 4 q.h.

845. *Microprocessor Systems 3.* Continuation of ELTEC 745 with emphasis on real data acquisition, A/D and D/A conversions, and industrial applications. Prereq.: ELTEC 745, ELTEC 730. Concurrent with ELTEC 845L. 4 q.h.

845L. *Microprocessor Systems 3 Laboratory.* Laboratory exercises utilizing a microcomputer to provide practical applications of concepts developed in ELTEC 845. Three hours laboratory per week. Taken concurrently with ELTEC 845. 0 q.h.

850. *Integrated Circuit Applications.* An introduction to integrated circuits technology and typical application. Prereq.: ELTEC 607. Concurrent with ELTEC 850L. 4 q.h.

850L. *Integrated Circuit Applications Laboratory.* Laboratory exercises dealing with applications of concepts developed in ELTEC 850. Three hours of laboratory per week. Taken concurrently with ELTEC 850. 0 q.h.

870. *Process Controls Technology.* An introduction to process control technology. Topics include control system components, transfer functions, and the analysis of linear control systems. Prereq.: ELTEC 611, ELTEC 710. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
MATH 513 Intensive Intermediate Algebra	4
ENGL 550 Basic Composition 1	4
Drawing/CAD Elective	4
ENTEC 505 Elements of Engineering Technology	4
HPE 590 Health Education	3
	19

SECOND QUARTER

Courses	Cr. Hrs.
MATH 520 Trigonometry	4
ENGL 551 Basic Composition 2	4
SOCST Elective*	4
ELTEC 501 Circuit Theory 1	3
ELTEC 501L Circuit Theory 1 Laboratory	1
	16

THIRD QUARTER

Courses	Cr. Hrs.
MATH 570 Calc. for Engr. Tech 1	5
PHYS 501 Fundamentals of Physics 1	4
SPCH 652 Business and Professional	3
ELTEC 502 Circuit Theory 2	3
ELTEC 502L Circuit Theory 2 Laboratory	1
	16

SECOND YEAR
FOURTH QUARTER

Courses	Cr. Hrs.
MATH 670 Calc. for Engr. Tech. 2	4
ELTEC 503 Circuit Theory 3	3
ELTEC 503L Circuit Theory 3 Lab	1
ELTEC 605 Electronics 1	3
ELTEC 605L Electronics 1 Lab	1
ELTEC 620 Digital Fundamentals	3
ELTEC 602L Digital Fundamentals Lab	1
	16

FIFTH QUARTER

Courses	Cr. Hrs.
PHYS 503 Fundamentals of Physics 3	3
PHYS 503L Fundamentals of Phys. 3 Lab	1
ELTEC 600 Measurements	3
ELTEC 600L Measurements Lab	1
ELTEC 606 Electronics 2	3
ELTEC 606L Electronics 2 Lab	1
ELTEC 610 Direct Current Machines	3
ELTEC 610L Direct Current Machines Laboratory	1
	16

SIXTH QUARTER

Courses	Cr. Hrs.
ECON 520 Principles of Economics 1	4
ELTEC 607 Electronics 3	3
ELTEC 607L Electronics 3 Lab	1
ELTEC 611 Alternating Current Machines	3
ELTEC 611L Alternating Current Machines Lab	1
ELTEC 645 Microprocessor Sys 1	4
ELTEC 645L Microprocessor Sys 1 Lab	0
	16
Total Credit Hours	**99**

BACHELOR'S DEGREE PROGRAM

THIRD YEAR
SEVENTH QUARTER

Courses	Cr. Hrs.
MATH 770 Calc. for Engr. Tech. 3	4
CIS 601 Scientific Programming 1	4
CITEC 604 Properties & Strength of Materials	4
ELTEC 720 Pulse Circuit Design	4
ELTEC 720L Pulse Circuit Design Lab	0
	16

EIGHTH QUARTER

Courses	Cr. Hrs.
MATH 785 Matrix Alg. & Num. Methods	4
METEC 630 Manufacturing Techniques	3
METEC 630L Manufacturing Techniques Lab	1

*Social Studies Elective—Select courses from Economics, Geography (excluding Physical Geography), History, Political Science, Psychology, Sociology or Black Studies.

SCI Elective* 4
ELTEC 730 Logic Systems Design 4
ELTEC 730L Logic Systems Design Lab 0
HPE Activity Course 1

17

NINTH QUARTER

Courses	Cr. Hrs.
ECON 624 Economics & Social Statistics 1	4
HUMAN Elective	4
SOCST Elective	4
ELTEC Elective (700/800 Level)	4
ELTEC 710 Networks	4
ELTEC 710L Networks Lab	0
	20

FOURTH YEAR
TENTH QUARTER

Courses	Cr. Hrs.
ENGL 743 Technical Communications	4
CITEC 800 Building Systems	4
ELTEC 745 Microprocessor Sys. 2	4
ELTEC 745L Microprocessor Sys. 2 Lab	0
ELTEC Elective (700/800 Level)	4
HPE Activity Course	1
	17

ELEVENTH QUARTER

Courses	Cr. Hrs.
MGT 725 Fundamentals of Management	4
METEC 700 Physical Measurements	4
ELTEC Elective (700/800 Level)	4
ELTEC 810 Electrical Systems Design	4
HPE Activity Course	1
	17

TWELFTH QUARTER

Courses	Cr. Hrs.
Technical Elective (700 level or above)	4
HUMAN Elective	4
MGT 789 Operations Management 1	4
ELTEC 820 Power Transmission	4
	16
Total Credit Hours 4 Years	**202**

Mechanical Engineering Technology

Professor Barsch; Assistant Professors Krygowski (Program Coordinator), Zenovzi.

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.

*Science elective to be selected from Chemistry (excluding CHEM 500) or Physics (excluding PHYS 500).

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 1.* 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.: ENTEC 505, concurrent: MATH 520. (W) 4 q.h.

516. *Mechanics 2.* Continuation of METEC 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.: METEC 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, METEC 516. 4 q.h.

606. *Machine Design 1.* 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: CITEC 607. (W) 4 q.h.

607. *Machine Design 2.* 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.: METEC 606. (SP) 4 q.h.

610. *Mechanical Equipment.* Study of common mechanical equipment such as heat exchangers, refrigerators, pumps, and internal combustion engines. Three hours of lecture and three hours of laboratory per week. Prereq.: METEC 605 or METEC 615. 4 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.: METEC 516. (F) 3 q.h.

615L. *Fluid Mechanics Laboratory.* Tests and applications of concepts covered in METEC 615. Three hours laboratory per week. Concurrent with METEC 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.: METEC 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 METEC 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.: ELTEC 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.: METEC 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.: METEC 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.: METEC 630. 4 q.h.

812. *Numerical Control.* A study of the programming of numerically-controlled machine tools. Students prepare and verify programs for controlling NC machines using manual and computer assisted techniques. Three hours of lecture and three hours of laboratory per week. Prereq.: DDT 605, METEC 630 or consent of instructor. 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.: METEC 715, METEC 720, ELTEC 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.: METEC 620. 4 q.h.

840. *Mechanisms 2.* 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.: METEC 720, CIS 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.: METEC 610. 4 q.h.

860. *Robotics Technology.* An application oriented course on the technology and use of industrial robots, including classification, tooling, sensors, workcell design, safety, and programming. Prereq.: METEC 820. Concurrent with METEC 860L. 3 q.h.

860L. *Robotics Technology Laboratory.* Practice in the programming and application of industrial robots and associated equipment. Construction of simulated robotic workcells using actual industrial robots, programmable controllers, sensors and grippers. Three hours laboratory per week. Concurrent with METEC 860. 1 q.h.

870. *Applied Finite Element Method.* Basic concepts of the finite element method and their application 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, DDT 605, and METEC 607 or CITEC 610, or permission of instructor. 4 q.h.

ASSOCIATE DEGREE PROGRAM

FIRST YEAR
FIRST QUARTER

Courses	Cr. Hrs.
MATH 513 Intensive Intermediate Algebra	4
MECH 501 Engineering Drawing	3
ENTEC 505 Elements of Engineering Technology	4
CHEM 501 Survey of Chem. 1	4
CHEM 510 Survey of Chem. Lab	1
	16

SECOND QUARTER

Courses	Cr. Hrs.
MATH 520 Trigonometry	4
ENGL 550 Basic Composition 1	4
SOCST Elective*	4
METEC 515 Mechanics 1	4
	16

*Social Studies Elective—Select courses from Economics, Geography (excluding Physical Geography), History, Political Science, Psychology, Sociology or Black Studies.

THIRD QUARTER

Courses	Cr. Hrs.
MATH 570 Calc. for Engr. Tech. 1	5
ENGL 551 Basic Composition 2	4
METEC 516 Mechanics 2	4
CITEC 604 Properties/Strength of Materials	4
	17

SECOND YEAR
FOURTH QUARTER

Courses	Cr. Hrs.
METEC 630 Manufacturing Techniques	3
METEC 630L Manufacturing Techniques Laboratory	1
METEC 615 Fluid Mechanics	3
METEC 615L Fluid Mechanics Laboratory	1
CITEC 607 Solid Mechanics	4
MATH 670 Calc for Engr. Tech. 2	4
	16

FIFTH QUARTER

Courses	Cr. Hrs.
METEC 605 Thermodynamics	4
METEC 606 Machine Design 1	4
DDT 605 CAD Technology 1.	4
PHYS 502 Fundamentals of Physics 2	3
PHYS 502L Fundamentals of Physics 2 Laboratory	1
HLTH 590 Health Education	3
	19

SIXTH QUARTER

Courses	Cr. Hrs.
MET 610 Mechanical Equipment	3
METEC 610L Mechanical Equipment Lab	1
METEC 607 Machine Design 2	4
METEC 620 Tool Design	3
SPCH 652 Business and Professional	3
SOCST Elective*	4
	18
Total Credit Hours	**102**

THIRD YEAR
SEVENTH QUARTER

Courses	Cr. Hrs.
MATH 770 Calc for Engr. Tech 3	4
ENGL 743 Technical Communication	4
ELTEC 625 Electrical Systems 1	4
ECON 624 Economics & Social Statistics	4
HPE Activity Course	1
	17

EIGHTH QUARTER

Courses	Cr. Hrs.
METEC 700 Physical Measurements	4
CIS 601 Scientific Programing 1	4
ELTEC 725 Electrical Systems 2	4
SOCST Elective*	4
HPE Activity Course	1
	17

NINTH QUARTER

Courses	Cr. Hrs.
METEC 715 Fluid Power	4
METEC 720 Mechanisms	4
MATH 785 Matrix Alg. & Num. Methods	4
PHYS 503 Fundamentals of Physics 3	3
PHYS 503L Fundamentals of Physics 3 Lab	1
HPE Activity Course	1
	17

FOURTH YEAR
TENTH QUARTER

Courses	Cr. Hrs.
METEC 820 Machine Systems	4
MGT 725 Funds of Management	4
METEC 810 Manufacturing Systems Analysis	4
CITEC 800 Building Systems	4
	16

ELEVENTH QUARTER

Courses	Cr. Hrs.
MGT 789 Operations Management 1	4
METEC Elective	4
METEC Elective (Upper Division)	4
HUMAN Elective	4
	16

TWELFTH QUARTER

Courses	Cr. Hrs.
METEC 860 Robotics Technology	3
METEC 860L Robotics Technology Lab	1
METEC 830 Advanced Tool Design	4
HUMAN Elective	4
Free Elective	4
	16
Total Credit Hours 4 Years	**201**

DEPARTMENT OF HOME ECONOMICS

Professor Beaubien (Chair); Associate Professors Hassell, Horvath and Varma; Assistant Professors Aboul-Ela, Dishaw and Elias; Instructor Howse.

The Department of Home Economics offers six programs: two-year programs in Pre-Kindergarten Associate, Dietetic Technology and Hospitality Management each leading to the Associate in Applied Science degree; four-year programs in Food and Nutrition (Dietetics), Home Economics Services, and Merchandising: Fashion & Interiors, each leading to the Bachelor of Science in Applied Science degree; and

*Social Studies Elective—Select courses from Economics, Geography (excluding Physical Geography), History, Political Science, Psychology, Sociology or Black Studies.

(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.

Pre-Kindergarten Associate

Professor Beaubien, Program Coordinator

The two-year program leads to an Associate Certification in Pre-Kindergarten Education. Graduates are qualified to teach in or manage licensed daycare and preschool programs. Graduates are eligible for associate pre-kindergarten teacher certification. Much of the course work can be applied to a four-year degree in Home Economics Services or to Home Economics Education. Within the framework of their required courses, students complete 300 hours of clinical/field work as required by the State Department of Education. A suggested schedule is provided at the end of this section.

Pre-Kindergarten Education

This ICP Bachelor's program leads to pre-kindergarten certification. An undergraduate student seeking certification in Pre-Kindergarten Education must complete all courses of the two year pre-kindergarten associate program, a specified series of general education courses, and upper division professional education courses designed to meet state certification standards.

In addition all students are required to complete a 30 quarter hour area of concentration. Because of the wide range of choices available in this component, students should seek assistance from academic advisors in the Home Economics Department.

Validation of Certificates

Persons certified for teaching kindergarten/primary, elementary, home economics and/or special education may obtain validation for pre-kindergarten teaching by completing 30 quarter hours of prescribed courses including pre-kindergarten student teaching.

Dietetic Technology

Assistant Professor Aboul-Ela (Program Coordinator).

The program is approved by The American Dietetic Association. Graduates of the program who successfully write the Registration Examination for Dietetic Technicians are entitled to use the initials "DTR", to signify professional competance.

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.

A suggested schedule is provided at the end of this section. Many courses can be applied toward the B.S. in A.S. degree with a major in Food and Nutrition (Dietetics).

Hospitality Management

Assistant Professor Dishaw (Program Coordinator)

The Hospitatlity Management Program provides students with the knowledge and skills needed to be successful and competent in this fast-growing field — not only in the United States, but throughout the world.

This two-year program in Hospitality Management leads to an Associate in Applied Science Degree (AAS) with a major in Hospitality Management. Courses from this program are applicable toward four year degrees. A suggested schedule is provided at the end of this section.

Food and Nutrition (Dietetics)

Associate Professor Varma.

This four-year program meets the Plan V 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 an approved pre-professional practice program, 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.).

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, 611L, 731, 751, 751L, 759, 760, 780, 810, 850, 858, 860, 862, 872, 873; Acctg. Tech. 580; Anthropology 602; Biology 551, 552, 604; Chemistry 502, 503, 705; Computer Information Systems 500, Education 872; Economics 520 ; Management 725, 750, 804; Psychology 560, 709; Sociology 500; Electives.

Coordinated Program in Dietetics (CPD)

Associate Professor Hassell, Program 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 CPD. Graduates are eligible to take the examination to become registered dietitians.

Admission to the CPD 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 the CPD only in Fall, and start the program during Fall quarter. The current closing date for applications and all credentials is:

April 7 - 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, 802, 802L, 858L, 860L, 872L, 874, 874L, 885.

The prescribed sequence of CPD courses, which must be followed by all students, appears at the end of this section.

Merchandising: Fashion & Interiors

Instructor Howse. (Program Coordinator).

Merchandising: Fashion & Interiors is an interdisciplinary program offered through the departments of Home Economics and Marketing. Students complete a block of interdisciplinary courses, and general and professional courses for their specific degrees. The program has a strong academic base in economics, the sciences, communication and computers. All students will have the opportunity for field experiences in various levels and types of retailing. The program in the Home Economics Department leads to a Bachelor of Science in Applied Science degree.

Merchandising: Fashion & Interiors prepares students for a variety of positions in manufacturing and retailing of apparel, furnishings, accessories and personal care products.

Interdisciplinary requirements are HOMEC/MKTG 525, 635, MGT 604, 725, MKTG 625, 703, 709, 731, 733, 809, 848, HOMEC 705, 764, 780, 835, ADVER 704.

Department requirements: HOMEC 543, 550, 731, 771, 850, and 25-40 q.h. in one emphasis, either fashion or interiors.

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, 606, 705, 731, 763, 764, 780, 835, 850, 852 and 16-30 hours of Home Economics electives.

Community Services:

1. Choose Home Economics electives from: 514, 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

The Vocational Home Economics Education major leads to a Bachelor of Science in Education. The student may choose from the following teacher certification options: 1. Secondary Home Economics; 2. Vocational Home Economics-Consumer/Homemaking; 3. Vocational Home Economics-Job Training with endorsements in: a. Multi Area Cooperative; b. Community and Home Service; c. Food Service; d. Fabric Service; e. Child Care Service. More than one certificate may be obtained by completing requirements as listed for each certificate.

Students who earn certification in Secondary Home Economics may have that certificate validated for prekindergarten teaching by adding the following courses: HOMEC 875, HOMEC 664 or HOMEC 886, HOMEC 859, HOMEC 663, and EDUC 811, 811A.

Vocational Home Economics Education is jointly administered by the School of Education and the Department of Home Economics. The student should refer to the section of the catalog detailing requirements for the Department of Administration and Secondary Education. The student is a major in Secondary Education with a teaching field of Home Economics. Academic advisors in the School of Education as well as the Home Economics teacher educator in the Department of Home Economics should be consulted regularly.

In addition to all general University and School of Education Requirements, the general education component for all home economics education students includes one course in art appreciation or history, one course in philosophy or theology, CHEM 501 and eight additional hours in biology or chemistry, PSYCH 506, 709, SOCIO 500, ECON 510 or 520.

The professional education sequence of courses is listed under Administration and Secondary Education. However, home economics majors omit EDUC 702 and EDUC 800 and are required to take HOMEC 771 and 799. Subject matter courses required for all certifications are HOMEC 550, 731, and 850. Listed below are additional courses for each option:

1. Secondary Home Economics: HOMEC 506, 508, 551, 552, 606, 606L, 604, 705, 706, 763, 764, 780, 800, 852; BIOL 604 and PSYCH 755.
2. Vocational Home Economics-Consumer/Homemaking: All courses listed for Secondary Home Economics except HOMEC 604. Add HOMEC 618, 631, 853 and HLTH 692.

3. Vocational Home Economics-Job Training: All endorsements require HOMEC 835, 890, MATH 506 and BUTEC 500.

a. Multi-Area Cooperative: All courses listed for Secondary Home Economics except HOMEC 604 and 800. Add HOMEC 514.

b. Community and Home Service: HOMEC 551, 606, 606L, 611, 611L, 632, 652, 705, 706, 763, 780, 830, 852, 875, BIOL 604, PSYCH 755.

c. Food Service: HOMEC 551, 552, 606, 606L, 609, 610, 611, 611L, 626, 628, 763, 780 or 852, 810, BIOL 604.

d. Fabric Service: HOMEC 506, 508, 525, 543, 604, 635, 702, 703, 705, 763, 764, 780 or 852, 730 or 888, 875, ART 502.

e. Child Care Service: HOMEC 514, 531, 543 or 672, 631, 632, 706, 663, 664, 763 or 764, 780 or 852, HPE 623, ELED 630, PSYCH 755, MUSIC 722, ART 759.

Courses

550. *Home Economics Profession.* History, philosophy, current trends and careers; interrelationships of the specialized areas of home economics; development of personal and professional attitudes and values relevant to practice in each specialization. Prereq.: EPT placement in English 550 or completion of English 540. 2 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.

771. *Presentation Techniques.* Application of demonstration, audio-visual, and public relations tools and techniques in communicating Home Economics information to target groups from pre-schoolers to adults. Two hours of lecture and four hours of lab per week. Prereq.: Eight hours of Home Economics credit and ENGL 550 and SPCH 550 or equivalent speech course. 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 or ECON 510. 4 q.h.

799. *Vocational Home Economics Education.* History, philosophy, scope and requirements of vocational home economics programs. Prereq.: HOMEC 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: HOMEC 799. 3 q.h.

802. *Research Methods in Home Economics.* Overview of research methodology and applications in the field of nutrition, dietetics, and home economics. Prereq.: MATH 714 or EDUC 872. 2 q.h.

802L. *Research Methods in Home Economics Laboratory.* Applications of basic concepts of research methodology and statistics to dietetic practice. Four hours of laboratory each week. To be taken concurrently with HOMEC 802. 2 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.: HOMEC 731 or equivalent. 4 q.h.

835. *Field Experience in Home Economics.* Internship in a community agency or commercial enterprise related to home economics. Four hours of experience or two hours of seminar weekly equal one credit hour. May be repeated for up to eight (8) hours of credit. Prereq.: Twelve hours of Home Economics credit and junior standing. Student must file application one quarter prior to registering. 4-8 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.: HOMEC 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.: HOMEC 731 or PSYCH 707 or SOCIO 705. 4 q.h.

853. *Family Management Experience.* Application of family resource management theory to specific perennial family problems. Two hour seminar and 4 hours of experience in consumer and homemaking activities. Prereq. or concurrent: HOMEC 852. 3 q.h.

870. *Home Economics Workshop.* Special workshops in a professional area of Home Economics as needed. Prereq.: Junior standing. 2-4 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.

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: HOMEC 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.: HOMEC 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.: HOMEC 731, Junior Standing, and permission of instructor and HOMEC department chairperson. 2-6 q.h.

Food and Nutrition

502. *Nutrition Fundamentals.* Basic nutrition principles and their relation to growth, development, and the maintenance of health. Not applicable to Food and Nutrition major or minor. 4 q.h.

543. *Personal Nutrition.* Basic normal nutrition adaptable to individual lifestyles throughout the lifespan. Emphasis on valid nutrition information, wellness and healthful food choices. 2 q.h.

551. *Normal Nutrition 1.* The fundamentals of normal nutrition as they apply to health; nutritional needs during various stages of the life cycle; dietary guides and their application to the selection of adequate diets; problems of nutritional deficiencies and excesses. Prereq.: CHEM 501 or equivalent. 4 q.h.

551L. *Nutrition Laboratory.* Principles, procedures, techniques used in assessing the normal diet and nutritional status in healthy individuals. Four hours of lab a week. Prereq.: MATH 511 or 512 or high school equivalent; HOMEC 551 (or concurrent). 2 q.h.

552. *Food Management for Families.* Nutritional, aesthetic, social, and economic factors in meeting individual and family food needs. 2 q.h.

552L. *Food Management for Families Laboratory.* Application of principles from HOMEC 552. Four hours laboratory per week. Must be taken concurrently with HOMEC 552. 2 q.h.

603. *Diet Therapy.* Principles and methods of diet modifications for common diseases; planning and evaluation of modified diets; application of computers for diet analysis. Must be taken concurrently with 603L. Prereq.: HOMEC 551L, BIOL 552, CHEM 502. 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 HOMEC 603. 1 q.h.

606. *Food Science.* The physical and chemical properties of food. Basic principles and methods in selection, purchase and preparation. Prereq.: High school laboratory science course; MATH 509 or equivalent; HOMEC 522L or high school food course. 4 q.h.

606L. *Food Science Laboratory.* Application of principles from HOMEC 606. Must be taken concurrently with HOMEC 606. Six hours of laboratory weekly. 2 q.h.

609. *Food Systems 1: 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 foodservice departments. Prereq.: HOMEC 550 and 606. 4 q.h.

609L. *Food Systems 1: Clinical Experience.* Observation of foodservice facility organization and management function; participation in the operations of a clinical foodservice facility. Six hours of clinical experience per week. Prereq.: BUTEC 580 with a grade of C or better, prerequisite or concurrent with HOMEC 609 and 610. 2 q.h.

610. *Organization and Management.* Concepts of organization and management related to hospitality/health care; selecting, training, developing and supervising for the advancement of personnel. Emphasis will be placed on labor-management relations and legal aspects of the management-guest relationship with particular attention to personal and property liability. 4 q.h.

611. *Food Systems 2: Production and Service.* Standards, principles and techniques in quantity food production and "front-of-the-house" management and service. Must be taken concurrently with HOMEC 611L. Prereq.: HOMEC 609. 2 q.h.

611L. *Food System 2: 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 HOMEC 611. 3 q.h.

613L. *Nutritional Care Clinical Experience.* Application of nutritional care process in a hospital setting. Includes conferences, 2 hour on-campus seminar, and 6 hours supervised clinical experience per week. Prereq.: HOMEC 603, 603L. 4 q.h.

618. *Preclinical Skills.* Employee evaluation and client assessment: interviewing, counseling, documentation, application of educational and socioeconomic principles in planning/teaching positive behaviors. Two hour lecture and three hour lab per week. Prereq.: HOMEC 551 and 603 or 552. 3 q.h.

626. *Foodservice 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.: HOMEC 610, 611. 4 q.h.

628. *Practicum in Dietetic Technology.* Experience in supervision of food production, assisting in the assessment of the individual patient, documentation and teaching. One hour of lecture and 21 hours of clinical experience per week. Overall average of 2.2 required. Prereq.: HOMEC 609L and 626, and application filed with instructor one quarter prior to registration for course. 4 q.h.

650. *Seminar in Dietetic Technology.* The role of the dietetic technician in the health care delivery system; overview of current opportunities in the foodservice field; standards of professional responsibility, practice and self-development. Prereq.: HOMEC 628. 1 q.h.

750. *Orientation to Dietetics.* Orientation to the clinical and administrative aspects of the dietetic profession. Prereq.: Admission into CPD. 1 q.h.

759. *Normal Nutrition 2.* Integrated approach to nutrition and health, emphasizing metabolism and functions of nutrients at the cellular level; nutritional needs for optimum health; problems of overnutrition and undernutrition. Prereq.: HOMEC 551, BIOL 552, CHEM 705 (or concurrent). 4 q.h.

759L. *Normal Nutrition 2 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. Two hours of laboratory and two hours of lecture per week. Taken concurrently with HOMEC 759. 3 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.: HOMEC 603, 759. 4 q.h.

760L. *Clinical Nutrition Laboratory.* Selected clinical experiences providing opportunities for application of the nutritional care process to individuals exhibiting special nutritional needs. Six hours of laboratory and one hour of lecture per week. To be taken concurrently with HOMEC 760. 3 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.

810. *Experimental Foods.* Advanced study of food science and technology; methodology of food research including evaluation by sensory and objective methods. Prereq.: CHEM 503; HOMEC 606. 3 q.h.

810L. *Experimental Foods Laboratory.* Application of scientific principles and experimental procdedures to cooking processes. Must be taken concurrently with HOMEC 810. Three hours laboratory per week. 1 q.h.

825. *Current Nutrition Concepts.* Readings and critical appraisal of research literature in nutrition. Prereq.: HOMEC 759, CHEM 705. 4 q.h.

858. *Foodservice Systems Management.* Advanced foodservice systems management principles and pro cesses as they relate to resources and operating subsystems. Focus will be on subsystem interrelationships. Prereq.: HOMEC 611 and a minimum of 20 hours of Home Economics credit. 6 q.h.

858L. *Foodservice Systems Management Laboratory.* Application of the management process to the hospital foodservice system. Twenty-five hours of supervised practice and one hour of lecture per week. Taken concurrently with HOMEC 858. 6 q.h.

860. *Advanced Clinical Nutrition.* Advanced study of the nature and etiology of disease conditions with focus on the complex dietetic problems accompanying them. Prereq.: HOMEC 760 or permission of instructor. 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 and one hour lecture per week. To be taken concurrently with HOMEC 860. 3 q.h.

862. *Cultural Foods.* Food practices of selected world cultures. Evaluation of these practices in meeting dietary needs with consideration of the existing social, economic, and environmental conditions. Prereq.: ANTHR 602. 3 q.h.

862L. *Cultural Foods Laboratory.* Must be taken concurrently with HOMEC 862. Three hours laboratory weekly. 1 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. *Maternal and Child Nutrition.* Principles of the nutritional care process as it relates to the the maternal and pediatric population. Prereq.: HOMEC 760. 4 q.h.

872L. *Maternal and Child Nutrition Laboratory.* Selected clinical experiences providing opportunities for application of nutritional care process to the maternal and child population. Five hours of clinical experience and one hour of lecture per week. Taken concurrently with HOMEC 872. 2 q.h.

873. *Nutrition and Aging.* Nutritional needs of the elderly as influenced by the aging process and disease states; factors affecting the food availability, food intake and nutritional status of the elderly; nutrition services for the elderly. Prereq.: HOMEC 760. 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.: HOMEC 603. 2 q.h.

874L. *Community Nutrition Laboratory.* Selected clinical experiences providing opportunities for application of the nutritional care process to individuals in community health care settings. Five hours of clinical experience and one hour of lecture per week. Taken concurrently with HOMEC 874. 2 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 thirty-five hours of clinical experience per week. Prereq.: 860L, 858L, and Senior Standing. 7 q.h.

Fashion & Interiors

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. Course is designed for those with no sewing experience. 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.: HOMEC 507 or proficiency exam score of 75 percent or higher. 3 q.h.

525. *The World of Fashion.* Social, cultural and business aspects of fashion in apparel; career opportunities, current problems, challenges and strategies created by constant changes in retailing products which make up the near environment. Identical with MKTG 525. 2 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.: HOMEC 508 or examination. 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. Two hours of lecture and three hours laboratory. Prereq.: HOMEC 525, MKTG 625. Identical with MKTG 635. 3 q.h.

642. *Applied Fabric Design.* The use of dyes and needlework in clothing and home furnishings. One hour lecture and four hours laboratory. 3 q.h.

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 of laboratory per week. Prereq.: HOMEC 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.: HOMEC 604. 4 q.h.

704. *Design by Draping.* Creating new dress designs through the draping technique. Two hours lecture and four hours laboratory per week. Prereq.: HOMEC 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.

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.

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 of laboratory per week. Prereq.: HOMEC 550 or ART 502 or HOMEC/MKTG 525. 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. Three hours of lecture and two hours of laboratory per week. Prereq.: PSYCH 560 and SOCIO 500. 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.: HOMEC/MKTG 525 and acceptance of written application. 1-2 q.h.

877. *Historic Costume.* The chronological study of costumes, silhouettes, accessories, and fabrics from ancient to modern times and their influences on current fashion with consideration of cultural forces that affected their development. Prereq.: 8 hours of humanities plus 8 hours of social studies and junior standing. 4 q.h.

879. *History of Interiors & Furnishings.* Study of furniture, interiors and decorative arts and designs from ancient times through the 20th century with emphasis on social/cultural factors that affected their development. Prereq.: 8 hours of humanities plus 8 hours of social studies, and junior standing. 3 q.h.

Hospitality Management

500. *Hospitality Industry.* Overview of the field as a single, interrelated industry encompassing the restaurant business, institutional foodservice, hotel-motel operations, and tourism. Importance of technical skills, management skills, and service orientation. 3 q.h.

575. *Travel and Tourism.* A study of history, growth and future of travel and tourism to include the

significance of the economic, social and political impact of travel and tourism; focus on markets, transportation, demographics, trends and financial significance related to the hospitality industry. 3 q.h.

600. *Front Office Procedures.* Operation and supervision of a hotel-motel front office. Computerized property management systems, reservations, registration, checkout, guest accounting, and handling guest needs. Three hours lecture, two hours lab. Prereq.: BET 613. 4 q.h.

615. *Housekeeping, Security and Maintenance.* Recordkeeping, selection and use of materials and equipment, and evaluation of products. Security and safety methods for guest protection and loss prevention, preventive maintenance and responsibilities of the engineering department. Prereq.: BUTEC 500. 4 q.h.

625. *Food and Beverage Manangement.* 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.: HOMEC 606. 3 q.h.

645. *Hospitality Sales and Marketing.* The application of basic marketing principles to successful sales of hospitality services. Methods, techniques and services for successful meetings and conventions. Prereq.: BUTEC 540. 4 q.h.

690. *Hospitality Internship.* Directed practice in a hospitality operation supervised by management. Written and oral reports required. One hour seminar and 5 hours of directed practice per week. Prereq.: HOMEC 500, 600, 606, 606L. 2 q.h.

691. *Hospitality Cooperative Work Experience.* Work experience in which the student is expected to assume supervisory responsibilities within an assigned foodservice or lodging facility. One hour seminar and 20 hours work experience per week. Prereq.: HOMEC 690 and 645 or 625. 3 q.h.

Child and Family

514. *Prekindergarten Programs.* Each aspect of the preschool/day care program as it interfaces with family relationships and the development of the child. Thirty hours of field experience are required. 3 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. 3 q.h.

532. *Pre-School Child Care.* Care and guidance of 2-to-5-year-old children in a group setting; emphasis on behavior management. 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. 4 q.h.

632. *Child Health and Safety.* Health care practices applied to child care in group facilities; home nursing skills for non-health personnel. Students receive certification in first aid, communicable disease management and child abuse detection and prevention. Prereq.: HPE 590. 3 q.h.

663. *Professional Laboratory Experience Pre-Kindergarten.* Application of pre-kindergarten methods in community preschool settings. Includes conferences, 2 hour on-campus seminar and 14 hours supervised participation per week. Application for permit must be filed prior to registration. Prereq.: Good standing, completion of high school deficiencies, ENGL 551, ELED 630, and HOMEC 706. 4 q.h.

664. *Management of Child Care.* The philosophy and organization of a child care center to include planning the environment, people and resources, recordkeeping, and legal and ethical aspects of pre-kindergarten education. Off-campus observations are required. Prereq.: HOMEC 514 and 706. 4 q.h.

672. *Nutrition and the Young Child.* Nutritional needs of the developing child in the home and group setting: emphasis on nutrition education for development of desirable food habits. Prereq.: HOMEC 543 or 502 or 551. 4 q.h.

706. *Preschool Laboratory.* Participation in the campus early child development laboratory. One hour lecture and 6 hours laboratory per week. Prereq. PSYCH 755; ELED 630 or FOUND 501. 3 q.h.

716. *Infant Laboratory.* Observation and participation in infant and toddler programs. One hour lecture and six hours practicum per week. Prereq.: HOMEC 531 and PSYCH 560. 2 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. 4 q.h.

833. *School-Age Child Care.* Developing and administering extended day and vacation programs for children K-6, in schools and other facilities. Prereq.: HOMEC 731 or ELED 830. 3 q.h.

859. *Prekindergarten Teaching Methods and Materials.* Methods and techniques used to implement the pre-kindergarten curriculum with emphasis on communication and creative arts, social, emotional and physical development and concept formation. Required for prekindergarten validation of other teaching certificates. Prereq.: HOMEC 731 or equivalent. Identical with ELED 859. 4 q.h.

866. *Administration of Prekindergarten Programs.* The role of the administrator of an early childhood center in coordination, management, budgeting, curriculum development, research, evaluation, advocacy and public policy formation. Prereq.: HOMEC 706 & 664, or ELED 841, or SEDUC 842. 4 q.h.

PRE-KINDERGARTEN ASSOCIATE CURRICULUM

FIRST YEAR

Courses	Cr. Hrs.
ENGL 550 Basic Composition 1	4
ENGL 551 Basic Composition 2	4
HOMEC 514 Pre-Kindergarten Programs	3
HOMEC 543 Personal Nutrition	2
HOMEC 550 Home Economics Profession	2
PSYCH 560 General Psychology	4
SOCIO. 500 Fundamentals	4
BIOL 505 Biology and Modern World	4
HLTH 590 Health Education	3
HOMEC 531 Infant and Toddler Care	3
HOMEC 532 Preschool Child Care	4
PSYCH 755 Devel. Psychology 1	4
HOMEC 706 Child Devel. Lab	3
HOMEC 716 Infant Laboratory	2
PE 623 Phys. Ed. for Pre-school Children	3
Total Credit Hours	**49**

Second Year

Courses	Cr. Hrs.
ELED 630 Creative Experience in the Preschool	4
MUSIC 722 Music Ed. for Early Childhood	4
SPCH 705 Speech Problems of Children	3
HOMEC 632 Child Health & Safety	3
HOMEC 672 Nutrition and the Young Child	4
SCWK 726 The Black Family	4
ART 761 Art Strategies	4
HOMEC 631 Parent Involvement	4
HOMEC 731 Ind. & Family Dev.	4
SPED 731 Educ. of Young Handicapped Children	4
HOMEC 664 Management of Child Care	4
HOMEC 663 Practicum	4
Humanities	3-4
Total Credit Hours	**49-50**
TOTAL CREDIT HOURS	**98-99**

DIETETIC TECHNOLOGY CURRICULUM

FIRST YEAR

Courses	Cr. Hrs.
ENGL 550 Basic Composition 1	4
ENGL 551 Basic Composition 2	4
CHEM 502 Survey of Chemistry 2	4
HOMEC 550 Home Economics Profession	2
HOMEC 551 Normal Nutrition 1	4
HOMEC 551L Nutrition Laboratory	2
SOCIO 500 Fundamentals	4
PSYCH 560 General Psychology	4
HLTH 590 Health Education	3
HOMEC 606 Food Science 1	4
HOMEC 606L Food Science 1 Lab	2
HOMEC 610 Organization and Management	4
BIOL 551 Anatomy & Physiology	4
BIOL 552 Anatomy & Physiology 2	4
Total Credit Hours	**49**

Second Year

Courses	Cr. Hrs.
ECON 520 Principles 1	4
HOMEC 609 Food Systems 1: Operations	4
HOMEC 609L Food Systems 1: Laboratory	2
HOMEC 618 Preclinical Skills	3
HOMEC 603 Diet Therapy	4
HOMEC 603L Diet Therapy Lab	1
HOMEC 613L Nutr. Care Lab	2
BIOL 604 Food Microbiology	4
BUTEC 580 Elem. Accounting Tech. 1	4
HOMEC 611 Food Systems 2: Production	2
HOMEC 611L Food Systems 2: Lab	3
HOMEC 626 Foodservice Management	4
HOMEC 628 Practicum	4
HOMEC 650 Seminar in Dietetic Technology	1
Electives	6
Total Credit Hours	**48**
TOTAL CREDIT HOURS	**97**

HOSPITALITY MANAGEMENT

FIRST YEAR

Courses	Cr. Hrs.
BUTEC 500 Survey of American Business	4
HOMEC 500 Hospitality Industry	3
MATH 506 Math of Business	5
BUTEC 540 Principles of Marketing	4
HOMEC 543 Personal Nutrition	2
ENGL 550 Composition 1	4
ENGL 551 Composition 2	4
PSYCH 560 General Psychology	4
HOMEC 575 Travel and Tourism	3
BUTEC 580 Elementary Acctg. Tech. 1	4
HLTH 590 Health Education	3
HOMEC 606 Food Science	4
HOMEC 606L Food Science Lab	2
BET 613 Microcomputer Applications	4
	50

SECOND YEAR

Courses	Cr. Hrs.
BUTEC 584 Hospitality Industry Acctg.	4
HOMEC 600 Front Office Procedures	4
HOMEC 609 Food Systems 1: Operations	4
HOMEC 610 Organization and Management	4
HOMEC 611 Food Systems 2: Production and Service	2
HOMEC 611L Food Systmes 2: Lab	3
HOMEC 615 Housekeeping, Security and Maintenance	4

HOMEC 625 Food and Beverage Management & Controls 3
HOMEC 645 Hospitality Sales and Marketing ... 4
SPCH 653 Small Group Communication 4
HOMEC 690 Hospitality Internship 2
HOMEC 691 Hospitality Cooperative Work Study 3
BET 706 Business Law 4
BET 720 Organizational Behavior 4

49

COORDINATED UNDERGRADUATE PROGRAM (CPD) IN DIETETICS

THIRD YEAR
FIRST QUARTER

Courses	Cr. Hrs
HOMEC 750 Orientation to Dietetics	1
HOMEC 759 Normal Nutrition 2	4
HOMEC 759L Normal Nutrition 2 Lab	2
MGT 725 Fundamentals	4
HPE Activity	1
HUMANITIES	4
	16

SECOND QUARTER

Courses	Cr. Hrs.
HOMEC 760 Clinical Nutrition	4
HOMEC 760L Clinical Nutrition Lab	3
MGT 750 Human Behavior in Organizations	4
FOUND 872 Statistical Methods in Education	3
HPE Activity	1
	15

THIRD QUARTER

Courses	Cr. Hrs
HOMEC 860 Advanced Clinical Nutrition	4
HOMEC 860L Advanced Clinical Nutrition Lab	3
HOMEC 810 Exp. Foods	3
HOMEC 810L Exp. Foods Lab	1
MGT 804 Human Resource Management 1	4
HPE Activity	1
	16

FOURTH QUARTER

Courses	Cr. Hrs.
HOMEC 802 Research Methods	2
HOMEC 802L Research Methods Lab	2
HUMAN Elective	4
	8

FOURTH YEAR
FIFTH QUARTER

Courses	Cr. Hrs.
HOMEC 858 Foodservice Systems Mgt	6
HOMEC 858L Foodservice Systems Lab	6
	12

SIXTH QUARTER

Courses	Cr. Hrs.
HOMEC 862 Cultural Foods	3
HOMEC 862L Cultural Foods Lab	1
HOMEC 872 Maternal & Child Nutrition	4
HOMEC 872L Maternal and Child	2
HOMEC 874 Community Nutrition	2
HOMEC 874L Community Nutrition Lab	2
	14

SEVENTH QUARTER

Courses	Cr. Hrs.
HOMEC 850 Contemporary Issues	2
HOMEC 885 Practicum in Dietetics	7
Electives	6-8
	15-17

NURSING

Professor Engelhardt; Associate Professors Kennedy, and McCarthy (Chair); Assistant Professors Bateman, Fitzgerald, Mosca, Schmidt, Schuster, Shipton, and Zehr; Instructors Bosley, Ferris, Hodgson, Kuite, Phillips, and Wood.

The Department of Nursing at Youngstown State University offers a Bachelor of Science in Nursing degree.

The program is accredited by the National League for Nursing.

ACADEMIC REQUIREMENTS FOR THE NURSING PROGRAMS

Admission into the Bachelor of Science in Nursing degree program 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, College of Applied Science and Technology and the Admissions Office. Malpractice insurance is required for all clinical nursing experience and is provided by the University.

Students are admitted to the program only at limited times during the year. The current closing date for applications and all credentials is:

March 15 — For Fall admission of RN students only.
September 1 — For the following Winter Quarter.

Applicants for the baccalaureate degree program must meet the following requirements:

1. General University pre-college requirements for the Bachelor of Science degree.
2. Nursing pre-college requirements.
3. Completion of pre-nursing* courses with a "C" or better and an overall GPA of 2.5 in these courses.
4. Cumulative GPA of 2.0 in all college work.

*Required for admission into RN track only.

5. Evidence of current CPR certification.
6. Complete a personal data sheet, physical and dental forms, and immunization requirements.

Pre-nursing courses include:

Biology 506, 507, 710, **792 and 702 or 787 and 787L

Chemistry 502 and 503

Psychology 560, 755, and *756

English 550 and 551

Philosophy 600

Home Economics 551

Sociology 500

Nursing **640 and **641

Former and transfer students are considered on an individual basis. Advanced placement is provided for LPN and RN's.

*Required for admission into RN track only.

**Not required for admission into RN track.

Lower Division Courses

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.* This course applies the system of nursing care through theoretical and clinical challenges for RN's and advanced placement students. Three hours of challenges per week. Prereq.: NURSG 640, NURSG 641, or permission of instructor. 1 q.h.

642. *Contemporary Nursing for Registered Nurses.* Concepts and theories related to professional nursing from a historical perspective, program philosophy and organizational framework are presented. Prereq.: Must be a registered nurse. 4 q.h.

643. *Therapeutic Self-Care Requisites.* The development of interpersonal communication and psychomotor skills necessary to comprehensively conduct an assessment of the self-care agency. To be taken concurrently with NURSG 643L. Prereq.: Admission to the BSN Program or permission of instructor. 3 q.h.

643L. *Therapeutic Self-Care Requisites Laboratory.* Practical application of interpersonal and psychomotor skills necessary to conduct a comprehensive assessment of the self-care agency. Three hours of laboratory each week. To be taken concurrently with NURSG 643. 1 q.h.

645. *Nursing Systems 1.* 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 and recovery from illness. To be taken concurrently with 645L. Prereq.: NURSG 643. 3 q.h.

645L. *Nursing Systems 1 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 and recovery from illness. Nine hours of laboratory each week. To be taken concurrently with NURSG 645. 3 q.h.

646. *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.: BIOL 710, 792, 795, and either 702 or 787/787L. 4 q.h.

Upper Division Courses

740. *Concepts and Theories of Self-Care 2.* Concepts and theories related to Orem's conceptual framework are presented from a health focus of recovery, illness of undetermined and determined origin, and active treatment. Prereq.: NURSG 640, NURSG 641, NURSG 645 or RN. 2 q.h.

741. *Nursing Systems 2.* 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 NURSG 741L. Prereq.: NURSG 645, NURSG 646, PSYCH 756 and PSYCH 757. 3 q.h.

741L. *Nursing Systems 2 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 focus is illness of undetermined origin and recovery. Twelve hours of laboratory each week. To be taken concurrently with NURSG 741. 4 q.h.

742. *Nursing Systems 3.* 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 NURSG 742L. Prereq.: NURSG 740, NURSG 741. 4 q.h.

742L. *Nursing Systems 3 Laboratory.* Selected clinical experiences provide for the application of the system of nursing care in partly compensatory and educative-supportive nursing situations. The health focus is illness of undetermined origin, treatment, and recovery. Nine hours of laboratory each week. To be taken concurrently with NURSG 742. 3 q.h.

743. *Leadership.* Leadership concepts, theories and roles are explored as they relate to the practice of professional nursing. Prereq.: NURSG 741 or admission to RN track. 3 q.h.

744. *Nursing Systems 4.* Nursing assistive actions and the system of nursing are studied as they relate to adult clients experiencing chronic developmental and health-deviation self-care requisites. To be taken concurrently with NURSG 744L. Prereq.: NURSG 742, 743. 3 q.h.

744L. *Nursing Systems 4 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 NURSG 744. 3 q.h.

749. *Nursing Research.* Methods and techniques of research in the investigation of nursing problems are explored. Prereq.: BET 613 or COMP 500, PSYCH 613 and 614, NURSG 743, or permission of instructor. 3 q.h.

750. *Nursing Process and Clinical Pharmacology.* Nursing implications of drug therapy with emphasis on clinical decision making, client education, and self-care. Prereq.: BIOL 792. 3 q.h.

830. *Nursing Systems 5.* Nursing assistive actions and the system of nursing care. The developmental and health-deviation self-care requisites in the antepartum, intrapartum, and post-partum phases are studied. To be taken concurrently with NURSG 830L. Prereq.: NURSG 748, NURSG 749, and Philosophy 725. 3 q.h.

830L. *Nursing Systems 5 Laboratory.* Selected clinical experiences 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 NURSG 830. 3 q.h.

831. *Nursing Systems 6.* 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 NURSG 831L. Prereq.: NURSG 748, NURSG 749 and PHIL 725. 3 q.h.

831L. *Nursing Systems 6 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 NURSG 831. 3 q.h.

832. *Concepts, Theories, and Contemporary Issues for Registered Nurses.* Concepts, theories, and contemporary issues related to the evolving roles of professional nursing are analyzed from a health focus of illness, treatment, and recovery. Prereq.: NURSG 642 and must be a registered nurse. 4 q.h.

833. *Self-Care Requisites for RN's.* Knowledge and applications necessary to conduct a comprehensive assessment of self-care agency adapted to meet the unique needs of registered nurses. Prereq.: Must be a registered nurse. 4 q.h.

841. *Nursing Systems 8.* 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 NURSG 841L. Prereq.: NURSG 830, 831. 4 q.h.

841L. *Nursing Systems 8 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 recovery, illnes of determined origin, and active treatment. Nine hours of laboratory each week. To be taken concurrently with NURSG 841. 3 q.h.

842. *Nursing Systems 7.* Nursing assistive actions and the system of nursing care. The therapeutic self-care requisites related to intrapersonal, interpersonal, family and social deficits are studied. To be taken concurrently with NURSG 842L. Prereq.: NURSG 830, NURSG 831. 3 q.h.

842L. *Nursing Systems 7 Laboratory.* Selected clinical experiences with clients experiencing intrapersonal, interpersonal, family, and social deficits. Nine hours of laboratory each week. To be taken concurrently with NURSG 842. 3 q.h.

844. *Nursing Systems 9.* Nursing assistive actions and the system of nursing care are studied as they apply to communities and clients experiencing therapeutic self-care requisites. To be taken concurrently with NURSG 844L. Prereq.: NURSG 842 and NURSG 843. 3 q.h.

844L. *Nursing Systems 9 Laboratory.* Selected laboratory experiences are provided for the application of the system of nursing care to communities and individuals experiencing therapeutic self-care requisites. Nine hours of laboratory each week. To be taken concurrently with NURSG 844. 3 q.h.

845. *Professional Issues.* Contemporary issues related to the practice of professional nursing and the emerging roles on the nurse are analyzed. Prereq.: NURSG 842 and NURSG 843 or permission of instructor. 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 NURSG 847L. Prereq.: NURSG 842 and NURSG 843. 1 q.h.

847L. *Nursing 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 NURSG 847. 3 q.h.

Nursing Electives

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.: NURSG 740. 3 q.h.

747. *Individual Studies.* The study of special problems or a review of the literature relating to specific problems or issues. May be repeated for a maximum of six hours with different problems. Prereq.: Admission to Nursing Program and permission of the Chairperson. 1-4 q.h.

851. *System of Nursing Care for the Child.* Current trends, issues and approaches in nursing practices with children are considered from a wellness perspective. Emphasis is on prevention of developmental self-care deficits. Nursing roles in child health specialties are explored. Prereq.: NURSG 831 or registered nurse. 4 q.h.

CURRICULUM LEADING TO THE BACHELOR OF SCIENCE IN NURSING DEGREE

FRESHMAN YEAR
FALL QUARTER
(pre-nursing)

Courses	Cr. Hrs.
BIOL 506 or 507 Principles of Biology 1 or 2	4
CHEM 502 Survey of Chemistry 2	4
ENGL 550 Composition 1	4
SOCIO 500 Fundamentals of Sociology	4
	16

WINTER QUARTER
(pre-nursing)

Courses	Cr. Hrs.
BIOL 507 or 506 Principles of Biology 2 or 1	4
CHEM 503 Survey of Chemistry 3	4
ENGL 551 Composition 2	4
HPE Education Activities	1[S]1[S]1
	15

SPRING QUARTER
(pre-nursing)

Courses	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)

Courses	Cr. Hrs.
HOMEC 551 Normal Nutrition 1	4
BIOL 792 Introduction to Animal Physiology	5
PSYCH 755 Developmental Psychology I - Child	4
NURSG 640 Introduction to Nursing	3
NURSG 641 Concepts and Theories of Self-Care 1	2
	18

WINTER QUARTER
(nursing major)

Courses	Cr. Hrs.
PSYCH 756 Developmental Psychology 2 - Adolescent	4
SPCH 550 Theory and Practice of Public Speaking	4
NURSG 643 Universal Self-Care Requisites	3
NURSG 643L Universal Self-Care Requisites Lab	1
BIOL 795 Coordinated Body Functions	3
*NURSG 641L Concepts and Theories of Self-Care Lab	1
	16

SPRING QUARTER
(nursing major)

Courses	Cr. Hrs.
PSYCH 757 Developmental Psychology 3 - Adult	4
NURSG 646 Health Deviation Self-Care Requisites	4
PSYCH 613 Statistical Methods in Psychology 1	3
NURSG 645 Nursing Systems 1	3
NURSG 645L Nursing Systems 1 Laboratory	3
	17

JUNIOR YEAR
FALL QUARTER
(nursing major)

Courses	Cr. Hrs.
PSYCH 614 Statistical Methods in Psychology 2	4
NURSG 740 Concepts and Theories of Self-Care 2	2
NURSG 741 Nursing Systems 2	3
NURSG 741L Nursing Systems 2 Laboratory	4
NURSG 750 Nursing Process and Clinical Pharmacology	3
	16

WINTER QUARTER
(nursing major)

Courses	Cr. Hrs.
BET 613 Microcomputer Applications or CIS 500	4
Electives	4
NURSG 742 Nursing Systems 3	4
NURSG 742L Nursing Systems 3 Laboratory	3
NURSG 743 Leadership	3
	18

*Advanced placement students only.

SPRING QUARTER
(nursing major)

Courses	Cr. Hrs.
PHIL 725 Biomedical Ethics	4
NURSG 748 Nursing Systems 4	4
NURSG 748L Nursing Systems 4 Laboratory	3
NURSG 749 Nursing Research	3
	14

SENIOR YEAR
FALL QUARTER
(nursing major)

Courses	Cr. Hrs.
Elective	4
NURSG 830 Nursing Systems 5	3
NURSG 830L Nursing Systems 5 Laboratory	3
NURSG 831 Nursing Systems 6	3
NURSG 831L Nursing Systems Laboratory	3
	16

WINTER QUARTER
(nursing major)

Courses	Cr. Hrs.
Elective	4
NURSG 842 Nursing Systems 7	3
NURSG 842L Nursing Systems 7 Laboratory	3
NURSG 843 Nursing Systems 8	3
NURSG 843L Nursing Systems 8 Laboratory	3
	16

SPRING QUARTER
(nursing major)

Courses	Cr. Hrs.
Elective	4
NURSG 844 Nursing Systems 9	3
NURSG 844L Nursing Systems 9 Laboratory	3
NURSG 845 Professional Issues	2
NURSG 847 Nursing Synthesis	1
NURSG 847L Nursing Synthesis Laboratory	3
	16

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:

General University Requirements

Courses	Cr. Hrs.
ENGL 550, 551 Basic Composition 1 & 2	8
Humanities Elective	4
BIOL 505	4
Science or Math Elective	4
HOMEC 502 Nutrition	4
BUTEC 510 Office Procedures	4
HLTH 590 Health Education	3
SOCIO 500 Fundamentals of Sociology	4
SOCIO 700 Minority Groups	5
Electives	10
	50

Department Course Requirements

Courses	Cr. Hrs.
SOCWK 620 Introduction to Social Work	4
SOCWK 622 Social Work Processes	4
SOCWK 641 American Social Welfare	4
SOCWK 642 Human Behav. & Soc. Env. 1	4
SOCWK 644 Human Behav. & Soc. Env. 2	4
SOCWK 718 Human Behav. & Soc. Env. 3	4
SOCWK 719 Health Care Systems	3
SOCWK 722 Social Work Methods 1	4
SOCWK 736 Social Work Methods 2	4
SOCWK 695 Applied Social Work (Two 4 q.h. courses)	8
Other technical Social Work Courses	3
	46
Total Credit Hours	**96**

The College of Arts and Sciences

Bernard J. Yozwiak, Dean

Gordon E. Mapley, Assistant 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 and Literatures

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, Combined Science, Earth Science, 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 Chair 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 or she 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 or she 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 or she 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 courses in one language, or the three elementary courses of each of two languages, but in either case he or she 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; Russian 505, 506 are the equivalent of the full elementary course in Russian.)

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 or she 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:

	Quarter Hours of Credit	
BASIC COURSES (Same as under General Requirements and Regulations)	**A.B.**	**B.S.**
English 550-551, Basic Composition 1-2	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: courses in the department of Philosophy & Religious Studies, literature courses from the department of English and Foreign Languages, 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	8-20	4-16
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.		
Balance required for graduation	100-112	95-107
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.*		

COURSES OF INSTRUCTION AND CURRICULA

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 (Coordinator).

Advisory Committee: *Assistant Professor 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; 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 PHIL 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 (Chair), Fishbeck, Kreutzer, MacLean, Peterson, Schroeder, Sobota, Toepfer, Yemma; Associate Professors Chuey, Karas, Leipheimer, Ruth, Sebastiani; Assistant Professors Krontiris-Litowitz, 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 BIOL 506, 507, 508 and at least 33 other hours of Biology, of which 21 hours must be in upper division courses. Also required is CHEM 515, 516, 517. Recommended courses in other sciences are CHEM 719, 720, 721 (Organic) and a year of PHYS (501, 502, 502L, 503, 503L); a mathematics course in statistics, MATH 714, is also recommended.

For the B.S. degree, the Biology major must include BIOL 506, 507, 508 and at least 41 other hours of Biology, of which 30 must be in upper division courses. Also required are CHEM 515, 516, 517 and 719, 720, 721; PHYS 501, 502, 502L, 503, 503L; and MATH 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 1
507 — Principles of Biology 2
508 — Principles of Biology 3
721 — Genetics
790 — Molecular Biology of the Gene
790L— Molecular Biology of the Gene Laboratory
836 — Molecular Biology of the Cell
836L— Molecular Biology of the Cell Laboratory
702 — Microbiology
713 — Vertebrate Histology
770 — Vertebrate Zoology
775 — Comparative Anatomy
792 — Introduction to Animal Physiology
834 — Vertebrate Physiology 1
835 — Vertebrate Physiology 2

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
530 — Computer Literacy
550 — Calculus for Social, Managerial, and Life Sciences I
714 — Probability and Statistics

PHYSICS

501, 502, 502L, 503, 503L — Fundamentals of Physics 1, 2, 3

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. *Principles of Biology 1.* A laboratory course for students who need biology for entrance into various professional schools; including chemical and physical foundations of biology, structure and function of cells, cellular organelles and structure and function of plants. High school chemistry or equivalent recommended. Three hours lecture and two hours laboratory a week. 4 q.h.

507. *Principles of Biology 2.* A laboratory course of study including the structure and function of animals. Required of all biology majors. Three hours lecture and two hours laboratory a week. 4 q.h.

508. *Principles of Biology 3.* A laboratory course of study including genetics, evolution, ecology, taxonomy and the diversity of organisms. Required of all biology majors. Three hours lecture and two hours laboratory a week. 4 q.h.

551, 552. *Physiology and Anatomy of Humans.* Structure and function of the human organism. Prereq.: High school chemistry and biology, or equivalent. 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. 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 chair. 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 HLTH 692, PSYCH 692 and SOCIO and ANTHRO 692. Prereq.: HPE 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 chair. 1 q.h.

Upper Division Courses

700. *Non-Vascular Plants.* A presentation of classification, morphology, reproduction, ecology, and economic aspects of monera, algae and fungi. 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 MLTEC 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 MLTEC 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, meiosis, 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.

751. *Water Quality Analysis 1.* An introduction to physical, chemical and biological measurements of water quality. Provides laboratory experience in the analysis of natural waters, drinking water and wastewater. Emphasizes procedures for the collection and interpretation of data on current environmental problems. Two hours lecture and six hours laboratory per week. Identical to CHEM 751 and CIEGR 751. Prereq.: CHEM 603. 4 q.h.

752. *Water Quality Analysis 2.* Advanced analytical techniques for evaluation of environmental problems. Topics include pollutant transport in natural waters, toxic contaminants in drinking water and advanced wastewater treatment. Experience with several modern laboratory instruments is provided. Experiments focus on analysis of samples from local water bodies and treatment facilities. Two hours lecture and six hours lab per week. Identical to CHEM 752 and CIEGR 752. Prereq.: BIOL 751. 4 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 and mosses. 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 MLTEC 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 MLTEC 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. *Human Beings and the Technological Society.* An interdisciplinary critical examination of human beings 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 Biology of the Gene.* Physical and chemical structure of nucleic acids, DNA replication, transcription, translation, recombinant DNA and genetic engineering and regulation of gene activity in prokaryotes and eukarayotes. Two hours lecture a week. Prereq.: BIOL 506, 507 and 508; or admission to the NEOUCOM-YSU program or consent of instructor. 2 q.h.

790L. *Molecular Biology of the Gene Laboratory.* The quantitative determination of protein, deoxyribonucleic acid, and ribonucleic acid in cultures of microorganisms subjected to various antibiotic treatments. Four hours laboratory a week. Prereq. or concurrent: BIOL 790. 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.

795. *Coordinated Body Functions.* Mechanisms of function of human respiratory, renal, and digestive systems and special senses. Not applicable to the Biology Major. Prereq.: BIOL 792. 3 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. Three hours lecture and four hours laboratory a week. Prereq.: BIOL 770 or admission to the NEOUCOM-YSU program or consent of instructor. 5 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. *Molecular and Population Genetics.* Concepts of gene structure and action; aspects of inheritance in populations. Four hours lecture a week. Prereq.: BIOL 721 or permission 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.

827. *Gene Manipulation.* The use of restriction endonucleases for isolation and cloning of foreign DNA in bacteria via plasmid and phage vectors. Introduction of foreign DNA into cultured mammalian cells using the calcium chloride and vector-assisted techniques. Two hours lecture and four hours laboratory per week. Prereq.: BIOL 702 and 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.

832. *Principles of Neurobiology.* Topics include cell and molecular biology of the neuron, properties of excitable membranes, functional neuroanatomy, motor systems of the brain, integration of sensory and motor systems, localization of higher cortical functions, and diseases of the central nervous system. Prereq.: BIOL 792 or consent of instructor. 4 hours lecture per week. 4 q.h.

833. *Mammalian Endocrinology.* A detailed examination of the hormones of the hypothalamus, pituitary, thyroid, adrenal, pancreas, gonads, and other organs with putative 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.: BIOL 792 or consent of instructor. 4 q.h.

834. *Vertebrate Physiology 1.* Detailed study of the cardiovascular system, fluid exchange dynamics of blood interstitial fluid, lymph and renal regulation of extracellular fluid composition, volume, and acid-base balance with emphasis on human physiology. Three hours lecture, four hours lab per week. Prereq.: BIOL 792, or consent of instructor. 5 q.h.

835. *Vertebrate Physiology 2.* Detailed study of respiratory and gastrointestinal systems, metabolism, and temperature regulation. Three hours lecture, four hours laboratory per week. Prereq.: BIOL 834; or consent of instructor. 5 q.h.

836. *Molecular Biology of the Cell.* Relationship of eukaryotic cell structure to function, integrating the biochemical dynamics of biomembrane systems including receptors, bioenergetics and the physiochemical environment. Three hours lecture a week. Prereq.: BIOL 790 or consent of instructor. 3 q.h.

836L. *Molecular Biology of the Cell Laboratory.* Current techniques involved in isolation, observation, and characterization of eukaryotic cells and their components. Four hours laboratory a week. Prereq. or concurrent: BIOL 836. 2 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.

840. *Pathogenic Bacteriology.* Biology, epidemiology and pathology of the medically important bacteria. Two hours lecture and four hours laboratory per wek. Prereq.: BIOL 702. 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 Brown-Clark (Director).

The purpose of this interdisciplinary major is to facilitate 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 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 1
Black Studies 601 . . . . . 4 q.h.
Introduction to Black Studies 2
Black Studies 700 Black Studies Colloquium 1 . . . . . 4 q.h.
Black Studies 701 Black Studies Colloquium 2 . . . . . 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 1.* 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 2.* 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 Courses

700. *Black Studies Colloquium 1.* A social studies seminar focusing on the historical, economic, political, or social aspects of the experiences of people of African descent. Prereq.: BLKST 600 or consent of instructor. May be repeated once with different content. 4 q.h.

701. *Black Studies Colloquium 2.* A humanities seminar focusing on the art, music, literature and/or philosophy of people of African descent. Prereq.: BLKST 601 or consent of the instructor. May be repeated once with different content. 4 q.h.

BOTANY

See Biological Sciences.

CHEMISTRY

Professors Cohen, Del Bene, Dobbelstein (Chair), Foldvary, Gebelein, Koknat, Lukin, Mettee, Phillips, Reeder, Schildcrout, F. W. Smith, R. K. Smith, Spiegel, von Ostwalden, Yingst; Associate Professor Mincey; Assistant Professor Mike.

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.

Eye protection must be worn in all chemistry laboratories at all times.

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

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. *Chemistry in Modern Living.* A one-quarter introduction to basic chemical concepts, the scientific method, and the impact of chemistry on human life and society. Examples may include water treatment, air quality, plastics, drugs, cosmetics, energy resources, food, and the chemical basis of life. Four hours lecture-discussion; no laboratory. 4 q.h.

501. *Introduction to Chemistry.* Chemical concepts and principles with their relation to the properties of simple chemical systems. Development of problem-solving skills. For students without high school chemistry and others needing preparation for Chemistry 505 or 515. Four hours lecture-recitation; no laboratory. Prereq.: One unit each of high school algebra and geometry or MATH 511 or equivalent. 4 q.h.

505, 506. *Chemistry for the Allied Health Sciences 1, 2.* Fundamentals of inorganic, organic, and biological chemistry including applications to the human organism. Three hours lecture and three hours laboratory-discussion. Prereq.: CHEM 501 or one unit of high school chemistry; two units of high school mathematics (algebra or geometry) or MATH 511 or equivalent. 4+4 q.h.

510. *Introduction to Chemistry Laboratory.* Accompanies Chemistry 501, for those desiring laboratory experience. Three hours laboratory-discussion. Prereq. or concurrent: CHEM 501. 1 q.h.

515, 516, 517. *General Chemistry 1, 2, 3.* 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 512 or their equivalents), and one unit of high school chemistry or CHEM 501 or 505. 4+4+4 q.h.

515H, 516H, 517H. *General Chemistry 1, 2, 3.* 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 1, 2.* 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 chair. Concurrent: CHEM 593 with 591; 594 with 592. 3+3 q.h.

593, 594. *Principles of Chemistry Laboratory 1, 2.* 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 1, 2.* 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. 5+5 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 chair. 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 506. 4 q.h.

711, 712. *Biochemistry 1, 2.* 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, 721; 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 1, 2, 3.* 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 1.* The fundamental principles underlying the structure and properties of the elements and their compounds. Prereq. or concurrent: 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 1, 2, 3.* Principles and applications of physical chemistry. Three hours lecture and three hours laboratory. Prereq.: CHEM 603; PHYS 610, 611, 610L, 611L or PHYS 650, 502L, 503L. Prereq. or concurrent: MATH 674. 4+4+4 q.h.

751. *Water Quality Analysis 1.* An introduction to physical, chemical, and biological measurements of water quality. Provides laboratory experience in the analysis of natural waters, drinking water, and wastewater. Emphasizes procedures for the collection and interpretation of data on current environmental problems. Two hours lecture and six hours laboratory per week. Identical to CIEGR 751 and BIOL 751. Prereq.: CHEM 603. 4 q.h.

752. *Water Quality Analysis 2.* Advanced analytical techniques for evaluation of environmental problems. Topics include pollutant transport in natural waters, toxic contaminants in drinking water, and advanced wastewater treatment. Experience with several modern laboratory instruments is provided. Two hours lecture and six hours lab per week. Identical to CIEGR 752 and BIOL 752. Prereq.: CHEM 751. 4 q.h.

796. *Fundamentals of Biochemistry 1.* Amino acids, nucleic acids, enzymes, and coenzymes; biochemical energetics. Three hours lecture. Prereq.: Admission to NEOUCOM-YSU program or consent of instructor and department chair, CHEM 603 and 721. 3 q.h.

797. *Fundamentals of Biochemistry 2.* 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 1, 2.* Analysis and separation techniques of biochemistry. Three hours laboratory-discussion. Prereq.: CHEM 603,721. 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 592; PHYS 503; MATH 550 or 681; and senior standing. 4 q.h.

803, 804. *Chemical Instrumentation 1, 2.* 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; 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. 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; 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. 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. 3 q.h.

824. *Polymer Chemistry.* Polymerization processes and polymer structure-property relationships. Prereq.: CHEM 720. 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 2 and 3.* 2: Current interpretations of the chemistry of nonmetals and pretransition metals. 3: 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. or concurrent: CHEM 729, 740. 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 chair. 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 and either 604 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

Courses	Cr. Hrs.
CHEM 515, 516, 517	12
ENGL 550, 551	8
MATH 571, 572, 673	14
HLTH 590	3
Electives	11
	48

SECOND YEAR

Courses	Cr. Hrs.
CHEM 719, 720, 721	12
CHEM 603, 604	10
PHYS 510, 610, 610L, 611, 611L	14
MATH 674	4
Electives	5
	45

THIRD YEAR

Courses	Cr. Hrs.
CHEM 739, 740, 741	12
CHEM 729	3
HPE Activities	3
Electives	30
	48

FOURTH YEAR

Courses	Cr. Hrs.
CHEM 803, 804	7
CHEM 822 or 823	3
CHEM 829 or 830	2
CHEM 831	2
Electives	31
	45

NOTE: The electives must include 6 q.h. from the following courses: CHEM 805, 807, 813, 821, 824, 825, 835, 836, 850, 864, and approved upper division courses in mathematics, computer science, physics, biological science, and chemical and materials engineering. One elective course must be an upper-division chemistry laboratory course, which may be from the preceding list.

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

Courses	Cr. Hrs.
CHEM 515, 516, 517	12
ENGL 550, 551	8
MATH 571, 572, 673	14
HLTH 590	3
Electives	11
	48

SECOND YEAR

Courses	Cr. Hrs.
CHEM 719, 720, 721	12
CHEM 603, 604	10
MATH 674	4
PHYS 510, 610, 610L, 611, 611L	14
Electives	8
	48

THIRD YEAR

Courses	Cr. Hrs.
CHEM 739, 740, 741	12
CHEM 729	3
HPE Activities	3
Electives	27
	45

FOURTH YEAR

Courses	Cr. 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

Courses	Cr. Hrs.
CHEM 515, 516, 517	12
ENGL 550, 551	8
MATH 571, 572	9

BIOL 506, 507, 508 12
HLTH 590 3
Electives 3

47

SECOND YEAR

Courses	Cr. Hrs.
CHEM 719, 720, 721	12
CHEM 603, 604	10
PHYS 510, 610, 610L, 611, 611L	14
MATH 673, 674	9
	45

THIRD YEAR

Courses	Cr. Hrs.
CHEM 739, 740, 741	12
BIOL 790, 721, 808	13
CHEM 729	3
HPE Activities	3
Electives	16
	47

FOURTH YEAR

Courses	Cr. Hrs.
BIOL 702, 834, 836	12
Electives	35
	47

COMBINED B.S./M.S. PROGRAM IN CHEMISTRY

This is a five year program. Prospective students seeking admission to the program may submit an application to the Chemistry Department during their senior year in high school. Students in the program start graduate studies after three years. They will normally receive the BS degree after 3½ years and the MS degree after 5 years.

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 I. Khawaja (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 Earth 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: 42 quarter hours from Specified courses, and either 28 q.h. from Electives I or 28 q.h. from Electives II.

Specified (42 q.h.)

ASTRO 504 Descriptive Astronomy 4
ASTRO 608 Moon and Planets 4
GEOG 603 Weather 4
GEOG 737 Soils and Land Use 4
GEOL 505 Physical Geology 4
GEOL 513 Physical Evolution of North America 4
GEOL 514 Life of the Geologic Past 4
GEOL 602 Intro to Oceanography 4
GEOL 608 Geology Laboratory 4
GEOL 615 Geology and the Environment 1 ... 4
GEOL 815 Geology and the Environment 2 ... 2

Electives 1 (28 q.h.) for Earth Science Teaching Professionals

BIOL 508 Principles of Biology 3 4
CHEM 515, 516 General Chemistry I, II 8
CIS 530 Computer Literacy 4
GEOG 730 Climatology 4
GEOL 604 Megascopic Petrography 6

*Interested students should consult the Chair of the Department of Geology.

GEOL 701 Geomorphology 6
GEOL 702 Glacial Geology 4
GEOL 704 Structural Geology 5
GEOL 706 Geol. of Economic Mineral Deposits . 5
GEOL 714 Principles of Paleontology 4
GEOL 801 Mineralogy 6
GEOL 802 Stratigraphy and Sedimentation 4

Electives II (28 q.h.) for other professionals
At least two courses from the following Geology:

GEOL 604 Megascopic Petrography 6
GEOL 701 Geomorphology 6
GEOL 702 Glacial Geology 4
GEOL 704 Structural Geology 5
GEOL 706 Geol. of Economic Mineral Deposit . 5
GEOL 714 Principles of Paleontology 4
GEOL 801 Mineralogy 6
GEOL 802 Stratigraphy and Sedimentation 4
GEOL 803 Optical Mineralogy 6
GEOL 806 Intro. to X-Ray Diffraction 3
FIELD GEOLOGY 4
CHEM 515, 516, 517 General
Chemistry I, II, III 12
CIS 530 Computer Literacy 4
ENVI SCI 751, 752 Water Quality
Analysis I, II 8
MATH 714 Probability and Statistics 5
MATH 550 or MATH 570 or MATH 571
Calculus 5

ECONOMICS

Professors Bee, Kermani, Koss, Liu, Mehra, Milley, Stocks (Chair); Associate Professors Morris, Petruska, Porter, Riley, Ronaghy, Smythe, Usip.

The Department of Economics offers majors in Economics and in Labor Relations.

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 ECON 709, 710 or 712. The following courses may be applied toward a major in Economics: HIST 714 and MKTG 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.

Lower Division Courses

510. *Economic Theory and the Individual.* Microtheory'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 1.* 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 2.* 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 2, 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 3.* 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 3, Honors.* An honors course in Principles 3 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 1.* 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 2.* 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.* 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.: ECON 520 and MATH 673. 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 SOCIO 787. Prereq.: Junior standing. 4 q.h.

801. *Economics of Industrial Organization.* 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.: ECON 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.: ECON 622. 4 q.h.

803. *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.: ECON 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.* This course is designed to provide students with an understanding of the development of economic ideas to include: Mercantilism, Physiocrats, the English Classical School, Utilitarianism, Early Socialist Thought, Karl Marx, the German Historical School, Institutionalists and the Keynesian School. Prereq.: ECON 622. 4 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.* 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.* 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. 4 q.h.

825. *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 analysis of variance results, discriminant analysis and canonical correlation, principal 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. 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.* Identical with LREL 833. 4 q.h.

843. *Fair Employment Opportunity and Income Security.* Identical with LREL 843.

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.

855. *Health Economics.* This course applies basic economic principles to the study of the health care industry. Topics include the supply and demand of medical care, the effects of private and public insurance on the health care industry, trends in health care costs, public policies to equalize access to medical care and the dilemma caused by the improvement in life-sustaining technology. Prereq.: ECON 622. 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 chair. 2-5 q.h.

CURRICULA

The following curriculums all lead to the degree of Bachelor of Arts with a major in Economics.

SPECIALIZATION IN INTERNATIONAL TRADE

FIRST YEAR

Courses	Cr. Hrs.
ECON 520 Principles 1	4
ENGL 550, 551 Basic Composition 1, 2	8
MATH 550 Calc/Soc. Mgt. Sci. 1	5
Science Requirement	4
Social Studies Requirement	8
Humanities Requirement	4
Foreign Language or Elective	0-20
HPE Activity Courses	3
	36-56

SECOND YEAR

Courses	Cr. Hrs.
ECON 621, 622 Principles 2, 3	6
ECON 701, Money and Banking	4
CSCI 530 Computer Literacy	4
Social Studies	12
Humanities Requirement	4
Science Requirement	4
HLTH 590 Health Education	3
Electives	8
	45

THIRD YEAR

Courses	Cr. Hrs.
ECON 702, Public Finance	4
ECON 624, 705, Statistics 1, 2	8
ECON 709 Mathematical Economics	4
ECON 710 Intermediate Micro	5
ECON 712 Intermediate Macro	5
Humanities Requirement	8
Science Requirement	4
Minor or Elective*	10
	48

FOURTH YEAR

Courses	Cr. Hrs.
ECON 802 Comparative Systems	4
ECON 787 or 803 Population	4

*Courses in geography, anthropology, history or political science are recommended for a minor or as electives.

ECON 810 Managerial Economics 4
ECON 811 Theory of International Trade 4
ECON 812 International Finance 4
ECON 820 Regional Economic Analysis 4
ECON 824 Applied Time Series Analysis 4
MKTG 845 International Marketing or Elective .. 4
Elective or Minor* 16

48

SPECIALIZATION IN MONEY AND BANKING

FIRST YEAR

Courses	Cr. Hrs.
ECON 520, 621 Principles 1, 2	7
ENGL 550, 551 Basic Composition 1, 2	8
MATH 550 Calc/Soc. Mgt. Sci. 1	5
CIS 607 Bus. Prog. 1	4
Humanities Requirement	8
HPE Activity Courses	3
HLTH 590 Health Education	3
Foreign Language or Electives	0-20
	38-58

SECOND YEAR

Courses	Cr. Hrs.
ECON 622 Principles 3	3
ACCTG 605, 606 Elem. Acctg. 1, 2	10
ECON 624 Statistics 1	4
Humanities Requirement	6
Science Requirement	12
CIS 608 Bus. Prog. 2	4
Electives	10
	49

THIRD YEAR

Courses	Cr. Hrs.
CIS 611 Prog/Assem.	4
CIS Tech. 613 Prog. RPG	4
ECON 701 Money and Banking	4
ECON 702 Public Finance	4
ECON 705 Statistics 2	3
ECON 710 Intermediate Micro	5
ECON 712 Intermediate Macro	5
Electives	18
	47

FOURTH YEAR

Courses	Cr. Hrs.
ACCTG 703, 704, 705 Intermediate Acctg 1, 2, 3	12
CIS 616 Operating Sys.	4
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	17
	52

*Courses in geography, anthropology, history or political science are recommended for a minor or as elective.

SPECIALIZATION IN REGIONAL AND URBAN ANALYSIS*

FIRST YEAR

Courses	Cr. Hrs.
ECON 520 Principles 1	4
ENGL 550, 551 Basic Composition 1, 2	8
GEOG 650 Econ. Geography	4
Humanities Requirement	7
MATH 550 Calc/Soc. Mgt. Sci. 1.	5
Science Requirement	12
HPE Activity Courses	3
HLTH 590 Health Education	3
Electives	3
	49

SECOND YEAR

Courses	Cr. Hrs.
CIS 601, 602 Scientific Programming 1, 2	8
ECON 621, 622 Principles 2, 3	6
ECON 624 Statistics 1	4
Humanities Requirement	7
HIST 605, 606 History of U.S. 1, 2	8
POLIT 601 American Government	4
Foreign Language or Electives	0-20
	37-57

THIRD YEAR

Courses	Cr. Hrs.
ECON 705, Statistics 2	4
ECON 710 Intermediate Micro	5
ECON 712 Intermediate Macro	5
GEOG 640 Human Geography	4
GEOG 726 Urban Geography	4
HIST 714 Economic History of the U.S.	4
HIST 744 History of American Business	4
POLIT 706 Minority Group Politics	3
POLIT 721 Urban Government	3
Electives	12
	48

FOURTH YEAR

Courses	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

*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 808 Land Use and Transportation 4
GEOG 809 City and Regional Planning 4
HIST 736 Urban History 4
POLIT 722 State & Local Gov't 3
Electives 11

46

SPECIALIZATION IN QUANTITATIVE METHODS

FIRST YEAR

Courses	Cr. Hrs.
ECON 520, 621, 622 Principles 1, 2, 3	10
ENGL 550, 551 Basic Composition 1, 2	8
Humanities Requirement	8
Science Requirement	8
HPE Activity Courses	3
HLTH 590 Health Education	3
Foreign Language or Electives	0-20
	40-60

SECOND YEAR

Courses	Cr. Hrs.
CIS 601, 602 Scientific Programming 1, 2	8
ECON 624, 705, Statistics 1, 2	8
Humanities Requirement	6
MATH 571 Calculus 1	5
MKTG 703 Fund. of Marketing	5
Electives	16
	48

THIRD YEAR

Courses	Cr. Hrs.
ECON 701 Money and Banking	4
ECON 710 Intermediate Micro	5
ECON 712 Intermediate Macro	5
ECON 709 Mathematical Economics	4
MGT 737 Management Science	4
MATH 572 Calculus 2	4
MATH 573 Calculus 3	5
Foreign Language or Electives	16
	47

FOURTH YEAR

Courses	Cr. Hrs.
ECON 702 Public Finance	4
ECON 811 International Trade	4
ECON 824 Applied Time Series Analysis of Economic and Business Data	4
MKTG 815 Marketing Research	4
MATH 743 Mathematical Statistics 1	4
Electives	28
	47

LABOR RELATIONS

To graduate with a major in Labor Relations a student must take all of the following required courses: ECON 520, 621, 622, 624, 705, 831; LREL 833, 835, 841, 843, 845, 849; and MGT 725, 750, 804. The student must also take either POLIT 601 and 707, or PSYCH 560 and 712, or SOCIO 500 and 706. In addition, the student must complete 12 quarter hours from the following list of courses: ACCTG 605, 606, ECON 710, 712, LSTEC 520, 610, 630, MGT 805, POLIT 720, PSYCH 716 and SOCIO 758.

The Labor Relations major incorporates a multidisciplinary approach to employer-employee relations. 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.

Upper Division Courses

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. Listed also as ECON 833. 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. Listed also as Economics 843. 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 MGT 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 MGT 750. 4 q.h.

Curriculum

The following suggested curriculum leads to the degree of Bachelor of Arts with a major in Labor Relations.

FIRST YEAR

Courses	Cr. Hrs.
ECON 520 Principles 1	4
ECON 621 Principles 2	3
ECON 622 Principles 3	3
ENGL 550 Composition 1	4
ENGL 551 Composition 2	4
MATH 642 App. Finite Math	5
Humanities Requirement	8
Foreign Language Requirement	0-20
Electives	8
	39-59

SECOND YEAR

Courses	Cr. Hrs.
ECON 624 Econ. & Soc. Stat. 1	4
ECON 705 Econ. & Soc. Stat. 2	4
MATH 550 Calculus Soc. Managerial 1	4
HLTH 590 Health Education	3
HPE Activity Courses	3
Humanities Requirements	8
Science Requirement	8
Electives	13
	47

THIRD YEAR

Courses	Cr. Hrs.
ECON 831 Labor Markets	4
LREL 833 Collect. Barg. & Arb.	4
LREL 841 Occup. Saf. & Health	4
MGT 725 Fund. Management	4
MGT 750 Human Behav. in Org.	4
Electives	26
	46

FOURTH YEAR

Courses	Cr. Hrs.
LREL 835 Labor Legislation	4
LREL 843 Equal Employ. Opport.	4
LREL 845 Thy. Oper. Labor Org.	4
LREL 849 Sem/Wksp Labor Rel.	4
MGT 804 Human Res. Mgmt. 1	4
Electives	26
	46

ENGLISH

Professors Baird-Lange, Brothers (Chair), Budge, Copeland, Gay, Hankey, Henke, Houck, McCracken, Murphy, Salvner, Secrist, Sniderman, Wilkinson; Associate Professors Alderman, Bowers, Brown-Clark, Finney, W. Greenway, Knapp, Martindale, Monseau, Nelson, Shale, Stephan; Assistant Professors Begum, Brady, Brown, Gergits, B. Greenway, Linkon, Mullen, Reese, Schramer, Tingley, Van Gorder.

Beyond the freshman sequence the English major comprises at least 48 hours, including the following distribution.

Courses

Required of all English Majors:

English 690–Introduction to Literary Study
English 890–Seminar in Literary Study

American Literary Studies

Two courses from the following: 618, 770, 780, 862, 864, 871.

Total hours in the area: Minumum of 8.

British Literary Studies

One course chosen from the following (literature before the Romantic period): 860, 881, 882, 883, 884, 886.

One course chosen from the following (literature from the Romantics to the present): 887, 891, 892, 895, 896.

One other course chosen from the courses in British literary studies: 860, 881, 882, 883, 884, 886, 887, 891, 892, 895, 896.

Total hours in the area: Minumum of 12

Other Literary Studies

One world literature course (humanities) chosen from the following: 610, 620, 631, 638, 710, 738.

One course chosen from the following: world literature–610, 620, 631, 638, 710, 738; or film studies–665, 765, 865; or other literature courses-609, 617, 632, 633, 708, 709*.

Total hours in the area: Minimum of 8

Language, Writing, and Discourse

One upper-level writing course, chosen from the following: 740, 741*, 743, 716, 717, 746, 747.

One linguistics course: 755.

One or two of the following: 716, 717, 740, 741, 743, 744, 746, 747, 749, 750, 757, 758, 859.

Total hours in the area: Minimum of 11.

Please note: If you have taken minimum hours in-each of the areas, you will need to take an additional course to complete the minimum of 48 hours required for the major.

English 709* and English 741* are required of all English majors planning to teach. English 741 is offered each fall (and may be offered winter as needed) as part of the English education block (Education 704, Education 883, and English 741). Check with an English education advisor. English majors preparing to teach should take Education 800E, not Education 800G.

Senior Seminar in Literary Study (English 890) replaces the 2 senior papers previously required of English majors.

For requirements for the PROFESSIONAL WRITING AND EDITING major, see alphabetized catalog listing.

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.

Literature courses count toward the general requirement in the humanities area, but courses in linguistics and composition do not.

A quarterly newsletter with detailed descriptions of forthcoming course offerings is available at the department office.

The Department of English maintains the Writing Center for supplemental, noncredit instruction in writing. English majors may 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 ENGL 501, and 501L 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. *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, a grade of *PR* or *F* is given. *Does not count toward a degree.* 4 q.h.

501L. *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 ENGL 501, until English proficiency requirements are met; until then, a grade of *PR* or *F* is given. *Does not count toward a degree.* 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 a week for lecture and three hours a 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 is *A,B,C,NC.* 4 q.h.

540. *Introductory College English.* Practice in developing the reading and writing skills necessary to begin English 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 is *A,B,C,NC.* 4 q.h.

550. *Composition 1.* 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 is *A,B,C,NC.* 4 q.h.

550H. *Honors Composition 1.* 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 is *A,B,C,NC.* 4 q.h.

551. *Composition 2.* 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 English Placement Test results. Grading for English 551 is *A,B,C,NC.* 4 q.h.

551H. *Honors Composition 2.* 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 is *A,B,C,NC.* 4 q.h.

601. *Intermediate Composition For Teachers.* A course to increase proficiency in writing expository prose, based upon readings and with emphasis upon the constraints of context and evidence. Limited to students intending to meet School of Education standards. Does not count toward the English major. Prereq.: ENGL 551 or its equivalent. 4 q.h.

609. *Introduction to Literature.* Primarily British or American works, chosen to illuminate a central topic or theme, are read and discussed critically to promote understanding and enjoyment of reading. Students with credit for ENGL 615 or 640 will not get credit for ENGL 609. Prereq.: ENGL 551. 4 q.h.

610. *Introduction to Classic World Literature.* A selection of classics from a variety of cultures from antiquity to 1900. Prereq.: ENGL 551. 4 q.h.

617. *Women in Literature.* Examination of works by and about women, drawn primarily from American and English writers. Prereq.: ENGL 551. 4 q.h.

618. *American Literature and Society.* Writers and works in relation to the changing conditions of American culture, politics, lifestyles, and social movements. Prereq.: ENGL 551. 4 q.h.

620. *Introduction to African Literature.* A survey of the literature of modern Africa, with emphasis on Black African writers. Prereq.: ENGL 551. 4 q.h.

622. *Basic Journalism.* Identical with Journalism 622. 4 q.h.

626. *American Journalism.* Identical with Journalism 626. 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. 4 q.h.

632. *Representations of Woman in Western Culture.* An examination through language, literature, film, folklore, and myth, of the ways in which the meanings and representations of woman have been constructed and implemented in Western culture. Introduces key concepts and theoretical frameworks drawn from current scholarship about women. Prereq.: ENGL 551. 4 q.h.

633. *Peace and War in Literature.* An examination of the literature of peace and war and related critical and cultural issues, with emphasis on the twentieth century. Prereq.: ENGL 551. 4 q.h.

638. *Introduction to Modern World Literature.* Fiction, poetry, prose, and drama by writers of the twentieth century from various cultures read to raise questions about how literature represents and criticizes society. Prereq.: ENGL 551. 4 q.h.

646. *Introduction to Fiction Writing.* An examination and application of narrative techniques and conventions designed to introduce the basic elements of writing fiction. Prereq.: ENGL 551. 3 q.h.

647. *Introduction to Poetry Writing.* An examination and application of poetic techniques and conventions designed to introduce the basic elements of writing poetry. Prereq.: ENGL 551. 3 q.h.

648. *Introduction to Script Writing.* An examination and application of dramatic techniques and conventions designed to introduce the basic elements of writing plays and screenplays. Prereq.: ENGL 551. 3 q.h.

651. *Introduction to Language.* An introduction to language principally for prospective teachers, with emphasis on the nature and function of language and its history, variations, and acquisition. *Does not fulfill the linguistics requirement for English majors.* Prereq.: ENGL 551. 4 q.h.

665. *Introduction to Film Study.* Principles of film study and interpretation of films through written analysis. Students with credit for ENGL 616 will not get credit for ENGL 665. Prereq.: ENGL 551. 4 q.h.

690. *Introduction to Literary Study.* Emphasis on the skills used in reading literature and writing literary analysis. This course is a prerequisite for all upper-division literature. Prereq.: ENGL 551. 4 q.h.

Upper-Division Courses

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.: Any 600-level literature course in English or permission of department chair. 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.: Any 600-level literature course in English or permission of department chair. 4 q.h.

710. *Selected Topics in European Literature.* A comparative examination of a genre, historical period, or literary movement (e.g., Continental Romanticism, Surrealism, Expressionism, Post-Modernism). Prereq.: any literature course in English or permission of department chair. 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 JOURN 721L. 3 q.h.

723. *Make-up and Design.* Identical with JOURN 723. 4 q.h.

738. *Selected Topics in World Literature.* A comparative examination of a genre, historical period, or literary movement (e.g., Nativism, protest literature, colonialism, cultural conflict). Prereq.: any literature course in English or permission of department chair. 4 q.h.

740. *Advanced Writing.* A course designed to strengthen proficiency in essay writing, with emphasis on development of ideas, analysis of style, clarity of thought and expression, editing, and proofreading. Prereq.: ENGL 551 and junior standing. 4 q.h.

741. *Advanced Writing for Teachers.* A course designed to strengthen proficiency in writing, with emphasis on issues related to the teaching of English. Limited to students seeking English or Comprehensive Communications certification. Prereq.: Admission to upper division status in the School of Education. 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.: ENGL 551. 4 q.h.

743L. *Text Processing.* A lab-based introduction to word/information processing to be taken concurrently with ENGL 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.: ENGL 743. 4 q.h.

745L. *Videotext Workshop.* Application of journalistic and technical writing principles through student videotext publications. Students will learn the theory and practice of electronically transmitting word-processed text. Prereq.: ENGL 622 or ENGL 743. The course may be repeated twice. 2 q.h.

746. *Fiction Writing Workshop.* A supervised workshop in which students may develop their individual narrative skills, styles, and talents. May be repeated once. Prereq.: ENGL 646 or permission of the instructor based on a portfolio of fiction. 3 q.h.

747. *Poetry Writing Workshop.* A supervised workshop in which students may develop their individual poetic skills, styles, and talents. May be repeated once. Prereq.: ENGL 647 or permission of the instructor based on a portfolio of poetry. 3 q.h.

750. *Language and Culture.* Language structure as an instrument in human behavior and social institutions. Prereq.: ENGL 551 or equivalent, and ANTHR 602 or equivalent. Listed also as ANTHR 750. 4 q.h.

755. *Principles of Linguistic Study.* Survey of elements of linguistic structure, methods of analysis and description, theoretical models, and the role of language in human affairs. Prereq.: ENGL 551. 4 q.h.

757. *Development of the English Language.* Sounds, vocabulary, grammar, and usage–from old to contemporary English. Prereq.: ENGL 755. 4 q.h.

758. *English Grammar.* Descriptions and analysis of English language structure. Prereq.: ENGL 551. 4 q.h.

765. *Film Genres.* A study of a particular type of film such as comedy, western, documentary, or science fiction. May be repeated once with a different topic. Prereq.: ENGL 690 or 665 or permission of department chair. 4 q.h.

770. *Historical Periods in American Literature.* Poetry and prose in the context of a specific era of U.S. literary history. May be repeated once with a different topic. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

780. *American Genres.* A study of a particular type of literature (e.g., the short story, autobiography, or film) as it developed in the United States. May be repeated once with a different topic. Prereq.: ENGL 690 or pemission of department chair. 4 q.h.

820. *Advising Student Publications.* Identical with JOURN 820. 4 q.h.

824. *Press Law and Ethics.* Identical with JOURN 824. 4 q.h.

825. *Selected Topics in Journalism.* Identical with JOURN 825. 4 q.h.

849. *Professional and Technical Editing.* A study of the skills needed to make appropriate editorial changes in the grammer, mechanics, style, format, and organization of manuscripts for scholarly, trade, and professional publications. The course deals with stages in the publishing process, mechanical and substantive editing, and the use of house or press style. Prereq.: ENGL 551 and junior standing. 4 q.h.

859. *Selected Topics in Discourse.* Study in depth of a specific topic such as stylistics, semantics, or rhetoric. May be repeated once with a different topic. Prereq.: 740 or 741 or 755 as appropriate to topic. 4 q.h.

860. *Chaucer and the Medieval World.* Chaucer's principal works with some study of his immediate predecessors and contemporaries. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

862. *American Literary Circles.* A study of one group of American writers who shared a cultural context or who influenced each other's work. May be repeated once with a different topic. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

864. *Selected Topics in American Literature.* An important aspect of or approach to America's literary heritage not covered in other courses in the curriculum. May be repeated once with a different topic. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

865. *Selected Topics in Film.* An important aspect of or approach to film not covered in other courses in the curriculum. May be repeated once with a different topic. Prereq.: ENGL 690 or 665 or consent of the department chair. 4 q.h.

871. *The Black Experience in American Literature.* Literature by and about blacks in America. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

881. *Shakespeare and the Elizabethan World.* Drama of the period, with emphasis on the plays of Shakespeare. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

882. *The English Renaissance.* Literature of the age of Spenser, Donne, and Herrick, with emphasis on poetry. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

883. *Milton and the Renaissance Legacy.* Poetry and selected prose, with emphasis on *Paradise Lost.* Prereq.: ENGL 690 or permission of department chair. 4 q.h.

884. *The Restoration and Early Eighteenth Century.* Literature of the age of Dryden, Pope, and Swift presented in literary and social context. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

886. *The Eighteenth Century.* British literature presented and read in the context of the period's culture and history, with emphasis on the novel. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

887. *The Romantic Period.* British literature presented and read in the context of the period's culture and history. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

890. *Seminar in Literary Study.* A study in depth of a literary figure, group, or aspect of literary theory. Prereq.: 12 hours in upper-division literature courses. 4 q.h.

891. *The Victorian Period.* British literature presented and read in the context of the period's culture and history, with emphasis on poetry and nonfiction prose. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

892. *Nineteenth-Century British Studies.* Nineteenth-century writers, works, or themes in cultural context, focusing on but not limited to the novel. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

895. *Early Twentieth-Century British Studies.* Literature presented and read in the context of the period's literary movements, culture, and history. Prereq.: ENGL 690 or permission of department chair. 4 q.h.

896. *British Literature from World War II to the Present.* Literature presented and read in the context of the period's literary movements, culture, and history. Prereq.: ENGL 690 or permission of department chair. 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 are selected on the basis of personal qualifications, including GPA, courses taken, recommendations, and an interview. May be repeated with the approval of department chair. Prereq.: 16 q.h. in Journalism and/or Technical Writing. 2-4 q.h.

ENVIRONMENTAL SCIENCE MINOR

Professor Schroeder; Associate Professors Martin, Mincey (Coordinators).

The Environmental Science minor program is designed to provide students majoring in Biology, Chemistry, Civil Engineering, or other related area, with the background necessary for a successful career in the field of environmental science or engineering. The program was developed in anticipation of a long-term demand for qualified graduates in this field. As the world population continues to grow and become more technologically advanced, environmental professionals will be called upon increasingly to develop and implement innovative programs for environmental protection and pollution control. The leaders of the future in the environmental field wil be individuals with expertise in a wide variety of disciplines. Course offerings in the Environmental Science minor program address this need, providing students with strong backgrounds in analytical chemistry, aquatic ecology, water and wastewater treatment, microbiology, chemical toxicology, and management of solid and hazardous wastes.

PROGRAM REQUIREMENTS:

Required Background Courses:

The following background coursework (or knowledge) is required by all students planning to obtain a minor in Environmental Science:

1. General Chemistry I, II, and III (CHEM 515, 516, 517)
2. Physics (PHYS 502 & 503, OR PHYS 510 & 610)
3. Calculus (MATH 550 or 571)
4. Knowledge of microcomputer operation and BASIC programming language
5. Principles of Biology III (BIOL 508); OR GPA of 3.3 or above; OR score of 3.85 or above on PEP test.

Students may fulfill these requirements in any order that is convenient, provided the specified prerequisites are satisfied before entering each course applicable toward the minor. It is **not** necessary to complete all of the courses listed prior to entering the minor program. It should be noted, however, that all of the above requirements must eventually be met in order to complete the Environmental Science minor.

Minor Courses:

The Environmental Science minor courses consist mainly of selected offerings by the Biological Sciences, Chemistry, and Civil Engineering Departments. A listing of designated minor courses is shown below. To complete the minor program, students must obtain a grade of C or better in at least 21 quarter hours of **out-of-department** courses from this list. The course selections must include:

Water Quality Analysis I and II;
At least one course each in Biological Sciences,

Chemistry, and Civil Engineering (excluding BIOL 850,

CHEM 850 and CE 800), or an approved out-of-department substitute;

At least one undergraduate research project (2 q.h. or more);

Environmental Science Seminar.

The following courses have been designated as applicable oward the Environmental Science minor:

Courses	Cr. Hrs.
BIOL 702 Microbiology	4
BIOL 780 Intro to Ecology	4
BIOL 804 Aquatic Ecology	4
BIOL 850 Problems in Biology	2-4
CHEM 603 Quantitative Analysis I	5
CHEM 604 Quantitative Analysis II	5
CHEM 719 Organic Chemistry I	4
CHEM 720 Organic Chemistry II	4
CHEM 721 Organic Chemistry III	4
CHEM 807 Chem. Instr. Interfacing	4
CHEM 864 Chemical Toxicology	3
CHEM 850 Undergraduate Research	2-4
CIEGR 736 Environmental Engineering I	4
CIEGR 837 Environmental Engineering II	4
CIEGR 884 Solid & Hazardous Waste Mgt.	4
CIEGR 800 Special Topics	2-4
CHEGR 820 Industrial Pollution Control	4
GEOL 804 Ground Water	
GEOG 603 Conservation of Natural Resources	4
GEOG 737 Soils and Land Use	4
CIEGR 751* Water Quality Analysis I	4
CIEGR 752* Water Quality Analysis II	4
Environmental Seminar (to be developed)	

Other Policies:

1. Chemistry and Biology students will require a memo from a program coordinator to the Dean Of Engineering in order to obtain permits for the Engineering courses.

2. It is the policy of the Biological Sciences Department to permit students with a stated interest in this minor program to enroll in BIOL 780 provided prerequisite no. 5 (previous page) is met.

3. Course selections for the minor program are subject to the approval of the program coordinators.

4. Courses taken within the student's major department annot be counted toward the 21 q.h. minor requirement.

FOREIGN LANGUAGES

Professors Aliberti, Linkhorn, Viehmeyer (Chair); Associate Professors del Pozo, Loud; Assistant Professors Becerra, Corbé, Sarkissian, Smith.

*CIEGR 751 and 752 are also cross-listed as CHEM 751 and 752, and as BIOL 751 and 752.

501, 502, 503. *Elementary Foreign Language Topic 1, 2, 3.* Basic study of a foreign language stressing the fundamental skills of speaking, reading, writing, and understanding the spoken language as well as an introduction to the culture of its speakers. Language to be announced each time the course is offered. May be repeated if language is different. The prerequisite for 502 is 501 or equivalent; the prerequisite for 503 is 502 or equivalent. 4+4+4.

FRENCH

Professor Linkhorn; Assistant Professor Corbé.

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. See Administration and Secondary Education for certification requirements.

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 and culture (615, 705, 706, 750, 820, 830, 845, 850, 873) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admissions and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S. degrees.

Lower Division Courses

501, 502, 503. *Elementary French 1, 2, 3.* 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 FRNCH 501 or equivalent; the prerequisite for 503 is FRNCH 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary French.* A review course covering the material of FRNCH 501, 502 and 503 in one quarter. Students who have received credit for FRNCH 503 cannot receive credit for FRNCH 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. *Students with 3 years of high school French or credit for French 601 or higher receive no credit for French 510.* 5 q.h.

601. *Intermediate French 1.* Grammar reviewed through oral and written exercises. Reading of modern prose and poetry. Prereq.: FRNCH 503 or equivalent. 4 q.h.

602. *Intermediate French 2.* Continuation of French 601. Prereq.: FRNCH 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.: FRNCH 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.: FRNCH 602 or equivalent, or permission of instructor. 2-4 q.h.

655. *Conversational French 1.* Facility in oral expression through exercises on, and discussion of, assigned topics, and through prepared and extemporaneous situational dialogs. Prereq.: FRNCH 602 or equivalent. 4 q.h.

675. *French Composition.* Skill in writing developed through directed composition, starting at the intermediate level. Prereq.: FRNCH 602 or equivalent. 4 q.h.

Upper Division Courses

705. *Survey of French Literature 1.* Middle Ages to 1800. Prereq.: FRNCH 615 or permission of instructor. 4 q.h.

706. *Survey of French Literature 2.* 1800 to the Present. Prereq.: FRNCH 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.: FRNCH 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.: FRNCH 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.: FRNCH 602, or consent of instructor. 4 q.h.

755. *Conversational French 2.* Development of auditory comprehension through the use of taped materials featuring a variety of native voices; development of speaking ability through discussion of preassigned topics of current interest. Prereq.: FRNCH 655, or consent of instructor. 4 q.h.

771, 772. *Advanced French Grammar 1, 2.* 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: FRNCH 675 or consent of instructor; for 772, FRNCH 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.: FRNCH 615, and one of the following: FRNCH 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.: FRNCH 615 and one of the following: FRNCH 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.: FRNCH 615 and one of the following: FRNCH 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.: FRNCH 615 and one of the following: FRNCH 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.: FRNCH 615 and one of the following: FRNCH 705, 706, 771, 772. 4 q.h.

874. *Advanced French Composition.* A course designed to develop skills in free composition on assigned topics. Prereq.: FRNCH 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.

GERMAN

Professor Viehmeyer (Chair).

A major in German comprises 45 quarter hours above the elementary level. See Administration and Secondary Education for certification requirements.

No native speaker who has completed high school in a German-speaking country may receive credit for German 501, 502, 503, 505, 506, 510, 601 or 602.

Courses in German literature and culture (615, 750, 751, 860, 861, 875) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admission and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S. degrees.

Lower Division Courses

501, 502, 503. *Elementary German 1, 2, 3.* 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 GERMN 502 is GERMN 501 or equivalent; the prerequisite for GERMN 503 is GERMN 502 or equivalent. 4+4+4 q.h.

505, 506. *German Reading for Translation 1, 2.* 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 GERMN 506 is GERMN 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. *Students with 3 years of high school German or credit for German 601 or higher receive no credit for German 510.* 4 q.h.

601, 602. *Intermediate German 1, 2.* 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 GERMN 601 is GERMN 503 or 2 years of high school German or equivalent; prerequisite for GERMN 602 is GERMN 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.: GERMN 503 or GERMN 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.: GERMN 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.: GERMN 602 or equivalent. 4 q.h.

620. *Intermediate German Composition.* Designed to develop skill in writing German through directed composition. Prereq.: GERMN 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 GERMN 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: GERMN 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.: GERMN 620. 4 q.h.

750. *German Cultural Heritage 1.* A survey of German civilization from the beginnings to 1949, including such topics as literature, history, music, and art. Prereq.: GERMN 615. 4 q.h.

751. *German Cultural Heritage 2.* A survey of German civilization since 1949, including such topics as literature, history, music, and art. Prereq.: GERMN 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.: GERMN 618, or GERMN 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 9th 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.: GERMN 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.: GERMN 615 or permission of instructor. 4 q.h.

874. *Advanced German Composition.* Practice in original German composition with emphasis on appropriate stylistics. Prereq.: GERMN 730, or GERMN 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.: GERMN 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.: GERMN 615 or permission of instructor. 2-4 q.h.

GREEK (ANCIENT)

Assistant Professor Sarkissian.

A major in Greek is not offered, but credit in Greek may be counted toward a major in Latin.

See General Requirements and Regulations for foreign language requirements for admisssion and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S. degrees.

Lower Division Courses

501, 502, 503. *Elementary Greek 1, 2, 3.* 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 1.* 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 2.* Continuation of Greek 601. Prereq.: GREEK 601 or equivalent, or consent of instructor. 4 q.h.

640. *Selected Topics.* Development of reading skills through the study of a selected work of literature. May be taken three times for credit if the topics are different. Total credit in GREEK 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the minor. Prereq.: GREEK 602 or equivalent, or permission of instructor. 2-4 q.h.

ITALIAN

Professor Aliberti.

A major in Italian comprises 45 quarter hours above the elementary level. See Administration and Secondary Education for certification requirements.

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 and culture (708, 709, 801, 802, 830, 840) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admission and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S. degrees.

Lower Division Courses

501, 502, 503. *Elementary Italian 1, 2, 3.* 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 ITALN 502 is ITALN 501 or equivalent; the prerequisite for ITALN 503 is ITALN 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary Italian.* A review course covering the material of ITALN 501, 502 and 503 in one quarter. Students who have received credit for ITALN 503 cannot receive credit for ITALN 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. *Students with 3 years of high school Italian or credit for Italian 601 or higher receive no credit for Italian 510.* 5 q.h.

601. *Intermediate Italian 1.* 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.: ITALN 503 or equivalent. 4 q.h.

602. *Intermediate Italian 2.* A continuation of ITALN 601. Prereq.: ITALN 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 ITALN 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: ITALN 602 or equivalent, or permission of instructor. 2-4 q.h.

Upper Division Courses

708. *Italian Civilization 1.* 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.: ITALN 602 or equivalent. 4 q.h.

709. *Italian Civilization 2.* 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.: ITALN 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.: ITALN 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.: ITALN 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.

LATIN

Assistant Professor Sarkissian.

A major in Latin comprises 45 quarter hours of Latin above the elementary level. With the consent of the department chair, some of these hours may be taken in relevant courses other than Latin. Ancient Greek is recommended. See Administration and Secondary Education for certification requirements.

Courses in Latin Literature (650, 660, 707, 708, 709, 717, 718, 719, 727, 728, 809) and Latin 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admission and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S. degrees.

Lower Division Courses

501, 502, 503. *Elementary Latin 1, 2, 3.* 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.

540. *Latin and Greek Elements in English.* A systematic study of English vocabulary derived directly and indirectly (e.g., through French) from Latin and Greek. 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.

650. *The Augustan Age.* A study of the art, architecture, and literature of Rome from the assassination of Julius Caesar (44 B.C.) to the death of Augustus (14 A.D.), with emphasis on Augustus' exploitation of these media to enhance his image and to promote his consolidation of power and reorganization of the government. All readings will be in English. 4 q.h.

660. *Women in the Ancient World.* Study of various aspects of the lives of women in Ancient Greece and Rome. Emphasis will be on examination and evaluation of primary sources. All readings will be in English. 4.q.h.

Upper Division Courses

707. *Cicero's Orations.* Selections from one or more of Cicero's orations with attention to style and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

708. *Prose Epistle.* Selections from the letters of a Roman epistolographer (e.g., Cicero, Seneca, Pliny) with attention to style and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

709. *Lyric Poetry.* Selections from Catullus' *Carmina,* and Horace's *Odes* with attention to style, meter, and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

717. *Readings from Roman Philosophy.* Selections from the works of a Roman philosophical writer (e.g., Cicero, Seneca) with attention to style and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

718. *Readings from Roman Drama.* Selections from one or more of the plays of Plautus and Terence with attention to style, content, and practical considerations

of dramatic production in Rome. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

719. *Readings from Roman History.* Selections from the works of a Roman historian (e.g., Sallust, Livy, Tacitus) with attention to style and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

727. *Readings from Epic Poetry.* Selections from a Roman epic other than Virgil's *Aeneid* (e.g., Ovid's *Metamorphoses,* Lucan's *Civil War*) with attention to style, meter, and content. Grammatical review and composition. Prereq.: LATIN 602 or equivalent. 4 q.h.

728. *Rhetorical Theory.* Selections from the works of a Roman rhetorical theorist (e.g., Cicero, Quintilian) with attention to matters of content. Grammatical review and composition. Prereq.: LATIN 602 or its 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.: Any 700-level Latin course. 4 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. Prereq.: Any 700-level Latin course. 4 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.

RUSSIAN

Assistant Professor Smith.

A major in Russian comprises 45 quarter hours above the elementary level. With the consent of the department chair, some of these hours may be taken in Russian area studies. See Administration and Secondary Education for certification requirements.

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, 620, 715, 716, 808, 809) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admission and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign language requirements for A.B. and B.S degrees.

Lower Division Courses

501, 502, 503. *Elementary Russian 1, 2, 3.* 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 RUSSN 502 is RUSSN 501 or equivalent; the prerequisite for RUSSN 503 is RUSSN 502 or equivalent. 4⁵4⁵4 q.h.

505,506. *Russian Reading for Translation 1, 2.* 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 RUSSN 506 is RUSSN 505 or equivalent. 4⁵4 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. *Students with 3 years of high school Russian or credit for Russian 601 or higher receive no credit for Russian 510.* 4 q.h.

601. *Intermediate Russian 1.* Continuation of inductive grammar; readings in prose and poetry; oral and written practice based on readings. Prereq.: RUSSN 503 or equivalent. 4 q.h.

602. *Intermediate Russian 2.* A continuation of RUSSN 601. Prereq.: RUSSN 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 RUSSN 763 may not receive credit for RUSSN 604. Prereq.: RUSSN 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 RUSSN 762 may not receive credit for RUSSN 615. Prereq.: RUSSN 602 or equivalent. 4 q.h.

620. *Contemporary Soviet Culture.* An introduction to life in the Soviet Union during the last 20 years. Examination of recent Soviet literature, films, and journalistic media. Taught in English, with supplemental readings in Russian for language majors. 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 RUSSN 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: RUSSN 602 or equivalent, or permission of instructor. 2-4 q.h.

660. *Russian Literature in Translation.* Studies in selected authors, genres, or themes in Russian literature, read in English translation. Topic is announced each time course is offered. May be repeated once for credit if topic is different. 4 q.h.

Upper Division Courses

700. *Third-year Russian Practicum.* Individualized development of language skills for students who have completed one course beyond Russian 602. Concurrent enrollment in another Russian area course is expected. May be taken up to three time for credit for a maximum of 6 q.h. 2 q.h.

715. *The Russian Cultural Heritage 1.* Themes and variations in Russian folklore, literary, religious, and philosophical writings, arts, and architecture, from Kievan Rus' to Imperial Petersburg. Readings, lectures, and discussion in English. Prereq.: Any Russian area course, or sophomore standing, or permission of the instructor. Satisfies the university area requirement in the humanities. 4 q.h.

716. *The Russian Cultural Heritage 2.* Decembrists through Octobrists: a survey of Russian literature, philosophy, and the arts in the Nineteenth and Twentieth Centuries, as they reflect changing views of a distinct national culture. Readings, lectures, and discussions in English. Prereq.: Any Russian area course, or sophomore standing, or permission of the instructor. Satisfies the university area requirement in the humanities. 4 q.h.

765. *Practical Russian Phonetics.* Theory and practice of Russian speech, pronunciation, stress, rhythm, and intonation. Phonemic and morphemic analysis. Prereq.: RUSSN 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.: RUSSN 602 or permission of the instructor. 4 q.h.

800. *Fourth-year Russian Practicum.* Individualized development of language skills for students who have completed 12 or more q.h. beyond Russian 602. Concurrent enrollment in another Russian area course is expected. May be taken up to three times for credit, for a maximum of 6 q.h. 2 q.h.

808. *Russian Literature of the 19th Century.* Reading and interpretation of works by Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov, and Goncharov. 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.

SPANISH

Associate Professors Loud, del Pozo; Assistant Professor Becerra.

A major in Spanish comprises 45 quarter hours above the elementary level, including SPAN 705, 706, 718, 719, and at least one 800-level course. See Administration and Secondary Education for certification requirements.

No native speaker who has completed high school in a Spanish-speaking country may receive credit for SPAN 500A, 500B, 500C, 501, 502, 503, 504, 507, 510, 601, 601Y, 602 or 602Y.

Courses in Spanish Literature and culture (615, 705, 706, 718, 719, 750, 751, 805, 816, 825, 830, 838) and 885 (if the topic deals with literature) satisfy the humanities requirement.

See General Requirements and Regulations for foreign language requirements for admission and degrees.

See Proficiency in a Foreign Language at the beginning of the College of Arts and Sciences section for foreign langauge requirements for A.B. and B.S. degrees.

Lower Division Courses

500A, 500B, 500C. *Elementary Spanish 1, 2, 3.* A competency-based course identical in content to SPAN 501, 502, 503. Each segment is divided into four units, each unit equivalent to one credit. Students sign up for the number of credits they feel they can complete each quarter. A total of four credits can be accumulated in each segment. Prereq. or concurrent: for SPAN 500B: SPAN 500A or 501 or equivalent; for SPAN 500C: SPAN 500B or 502 or equivalent, or SPAN 500A and 500B. 1 - 4+1 - 4+1 - 4 q.h.

501, 502, 503. *Elementary Spanish 1, 2, 3.* 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 SPAN 502 is SPAN 501 or equivalent; the prerequisite for SPAN 503 is SPAN 502 or equivalent. 4+4+4 q.h.

504. *Intensive Elementary Spanish.* A review course covering the material of SPAN 501, 502 and 503 in one quarter. Students who have received credit for SPAN 503 cannot receive credit for SPAN 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 SPAN 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. *Students with 3 years of high school Spanish or credit for Spanish 601 or higher receive no credit for Spanish 510.* 5 q.h.

601. *Intermediate Spanish 1.* Review of grammar through oral and written exercises. Reading of modern prose and poetry. Prereq.: SPAN 503 or equivalent. 4 q.h.

601Y. *Intermediate Special Topics 1.* Material in Spanish at the 601 level in some specialized area. May be taken three times for credit if content is not repeated. Prereq.: SPAN 503 or equivalent. 2 q.h.

602. *Intermediate Spanish 2.* Continuation of SPAN 601. Prereq.: SPAN 601 or equivalent. 4 q.h.

602Y. *Intermediate Special Topics 2.* Material in Spanish at the 602 level in some specialized area. May be taken three times for credit if content is not repeated. Prereq.: SPAN 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.: SPAN 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 SPAN 640 may not exceed 8 q.h. A maximum of 4 q.h. may be applied to the major. Prereq.: SPAN 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.: SPAN 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.: SPAN 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. SPAN 705: to 1700; SPAN 706: since 1700. Prereq.: SPAN 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. SPAN 718: From the beginnings to "Modernismo" (19th Century). SPAN 719: From "Modernismo" to the present. Prereq.: SPAN 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.: SPAN 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.: SPAN 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.: SPAN 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.: SPAN 615 and one 700-level Spanish course. 4 q.h.

816. *Topics in 19th Century Spanish Literature.* The study of major works of 19th 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.: SPAN 615 and one 700-level Spanish course. 4 q.h.

825. *Topics in 20th Century Spanish Literature.* The study of major works of 20th 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.: SPAN 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.: SPAN 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.: SPAN 615 and one 700-level Spanish course, or permission of instructor. 4 q.h.

855. *Topics in Spanish Language and Linguistics.* An introduction to the terminology, concepts, bibliography and current issues in Spanish language and linguistics. Major topics include phonology, morphology, semantics, syntax, applied linguistics, transformational grammar, and other topics related to language variation and society. May be repeated once when topic varies. Prereq.: SPAN 725 & 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.: SPAN 615 plus one 700-level Spanish course. 2-4 q.h.

GEOGRAPHY

Professor Stephens (Chair); Associate Professors Humbertson, Maraffa; Assistant Professors Buckler, Shaklee.

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 following the distribution listed below. At least 30 quarter hours must be earned in upper division geography courses.

Required of all geography majors: GEOG 503, GEOG 640, GEOG 650, GEOG 660, GEOG 750, and One course from: GEOG 603, 630, 730, 735, or 737. One course from GEOG 722, 726, 740, 741 or 830. Two courses from: GEOG 661, 732, 760, 765 or 813.

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.: GEOG 503. 4 q.h.

630. *Weather.* An examination of basic weather elements — temperature, pressure, wind and precipitation. It includes experience in data acquisition, analysis, and elementary forecasting principles. 4 q.h.

Upper Division Courses

730. *Regional Climatology.* A study of the distribution, modification and classification of the earth's climates. Prereq.: GEOG 630. 4 q.h.

735. *Severe Weather.* General weather principles applied to the causes and distributions of droughts, floods, tornados, thunderstorms, hurricanes, blizzards and electrical storms. Prereq.: GEOG 630. 4 q.h.

737. *Soils and Land Use.* Examination of soil characteristics influencing land use planning and development. Topics include the basic physical and chemical properties of soil, soil water, the soil-forming factors, the use and interpretation of county soil reports, and soil characteristics beneficial and detrimental to selected land use practices. Participation in field trips is required. Prereq.: GEOG 503 or GEOL 505; High school chemistry or CHEM 501 recommended. 4 q.h.

820. *Special Problems in Physical Geography.* An in-depth study of a specific problem in physical geography. The problem is dependent upon the student's interest and competence, availability of faculty supervision and departmental equipment. Maximum credit four hours. Prereq.: Thirty hours of Geography. 1-4 q.h.

823. *Special Problems in Atmospheric Studies.* An in-depth study of a specific problem related to atmospheric studies. The problem is dependent upon the student's interest and competence, availability of faculty supervision and departmental equipment. Maximum credit four hours. Prereq.: Thirty hours of Geography. 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 people's utilization of the earth. Topics examined include the distribution of people, spatial variations in culture, urbanization and politization of space. 4 q.h.

650. *Economic Geography.* A study of the place to place variation in economic activities. Particular emphasis is placed on the spatial attributes of industrial, wholesale and retail activities. 4 q.h.

660. *Cartography.* An introduction to cartography with emphasis on problems of data collection, scale, map compilation and the selection of cartographic technique. 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.: GEOG 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.: GEOG 640. 4 q.h.

732. *Advanced Cartography.* A course emphasizing map production, data manipulation, and an examination of the problems and techniques of using computers to create maps. Prereq.: GEOG 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.: GEOG 650. 4 q.h.

741. *Transportation Geography.* Spatial properties of interregional and intraurban transportation. Topics covered include network development, movement patterns of people and commodities and the impact of transportation on other activities. Prereq.: GEOG 650. 4 q.h.

750. *Topics in Regional Geography.* Application of the regional method to selected areas of the world. Topic is announced each time the course is offered. May be repeated three times for credit, if content is not repeated. Maximum credit twelve hours. Prereq.: GEOG 626 or GEOG 640. 4 q.h.

755. *Tourism Geography.* Spatial components of leisure travel and the travel industry. Topics include travelers' origins and destinations; transportation modes and routing; impacts on communities, regions and nations and the role of the government and professional organizations. Prereq.: GEOG 626. 4 q.h.

756. *Tourism Planning.* Examination of the resources, site characteristics, analysis techniques and marketing for potential tourist development. Emphasis is placed on the planning process. Prereq.: GEOG 755. 4 q.h.

760. *Analysis of Geographic Data.* Techniques of data description; introduction to statistical methods, with emphasis on problems unique to geographic data. Prereq.: 8 credit hours of Geography or permission of instructor. 4 q.h.

765. *Geographic Information Systems.* The components of a GIS, the characteristics of spatial data and exploration of GIS applications. Prereq.: one of the following: GEOG 661, GEOG 732 or GEOG 760. 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 is dependent upon the student's interest and competence, availability of faculty supervision and departmental equipment. Maximum credit four hours. Prereq.: Thirty hours of Geography. 1-4 q.h.

822. *Special Problems in Cartography.* An in-depth study of a specific problem in cartography. The problem is dependent upon the student's interest and competence, availability of faculty supervision and departmental equipment. Maximum credit four hours. Prereq.: Thirty hours of Geography. 1-4 q.h.

830. *Topics in City and Regional Planning.* Selected issues related to planning. Topics are announced each time the course is offered. May be taken up to three times for credit, if topics are not repeated. Replaces GEOG 805 and GEOG 809. Prereq.: GEOG 726 recommended or consent of the instructor. 4 q.h.

840. *Seminar in Geography.* Selected aspect of geography not covered in existing courses. Topic to be announced each time the course is offered. May be taken up to two times for credit, if topic is not repeated. Prereq.: Twelve hours of Geography. 1-4 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 Khawaja (Chair), A. Harris, E. Harris, Singler; Associate Professor Abram.

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 58 quarter hours of courses in geology, of which 37 are specified and 21 are elective. The specified courses are Geology 505, 513, 514, 608, 704, 704L, 708, 801 and a course in Field Geology. The latter must carry a minimum of four quarter hours of transferable credit. An additional 32 quarter hours of courses in the sciences area are required from Biology, Chemistry, Physics, Mathematics and Computer Sciences. Students should consult with the geology chair for details in the B.S. program.

The Field Camp and the specific courses for the minor are chosen in consultation with the advisor and the department curriculum committee.

For the Bachelor of Arts the student majoring in Geology must complete, in addition to the general University requirements, 36 quarter hours in Geology and other science courses, and 40 quarter hours of elective courses in Geology, Biology, Chemistry, Civil Engineering, and Geogrpahy. The required courses are Geology 505, 513, 514, 608, 615, CHEM 515, 516, BIOL 508 and CSCI 530. Students should consult with the Geology Chair for details of the B.A. program and for the elective course options. The latter must carry a minimum of four quarter hours of transferable credit (See University limitations 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 and either 502, 502L, or 503, 503L.

Geology 505, 510, 513, 514 and 602 are recommended to satisfy the University science requirement.

All Geology courses apply towards a science requirement.

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.

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.

513. *Physical Evolution of North America.* Origin and evolution of the continent of North America; focus on the geologic evidences and physical changes through geologic time; global role of plate tectonics. 4 q.h.

514. *Life of the Geologic Past.* Origin, classification, and evolution of plants, invertebrates and vertebrates through geologic time as evidenced by the fossil record; contemporary understanding of the extinction of various life forms, such as the dinosaurs. Three hours lecture, two hours lab. 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.

608. *Geology Laboratory.* Identification of minerals and rocks, the interpretation of topographic and geologic maps and outside work as a practicum for geologic problem solving. Four hours lab, two hours lecture. Prereq. or concurrent: GEOL 505 and 513. 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.

615. *Geology and the Environment I.* A study of the interrelationship of human activity and the geologic environment. An examination of geologic hazards, geological considerations in waste disposal, resource utilization, and land use. Prereq.: GEOL 505. 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 Chair 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 use of aerial photographs and topographic maps in recognizing and interpreting landforms. Five hours of lecture and four hours of laboratory a week. Prereq.: GEOL 608. 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 608. 6 q.h.

704. *Structural Geology.* Description and interpretation of geologic structures, mechanical properties; stress-strain relationships, regional structure of North America, and major tectonic theories. Prereq.: GEOL 608. Geology majors must take 704L concurrently with 704. 5 q.h.

704L. *Structural Geology Laboratory.* Structural geology techniques and analyses, including orthographic solutions, stereographic projections, and interpretation of maps. One hour lecture, two hours of lab per week. Prereq. or concurrent: GEOL 704 and MATH 520, or consent of instructor. 2 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 use. Field trips are mandatory. Prereq.: GEOL 608. 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.

708. *Megascopic Petrography.* An in-depth study of the origin, mode of occurence and classification of igneous, sedimentary and metamorphic rocks based upon their megascopic characteristics and mineral constituents. Five hours of lecture and four hours of laboratory a week. Prereq.: "C" or better in GEOL 608. 6 q.h.

714. *Principles of Paleontology.* A detailed study of fossil invertebrates, including their origin, classification, paleoecology and stratigraphic utilization. Three hours of lecture and three hours of laboratory per week. Prereq.: GEOL 514 or consent of instructor. 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 608, 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 513 and 608. 4 q.h.

803. *Optical Mineralogy.* The theory and use of the polarizing microscope and its application to the study of crystalline material, including asbestos materials. Three hours of lecture and six hours of laboratory a week. Prereq.: GEOL 801. 5 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.: GEOL 608. 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 chair 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 chair. 3 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.

815. *Geology and the Environment II.* Focused examination of earth processes, earth resources and properties of earth materials as they relate to human activities and their geologic consequences. Prereq.: GEOL 615 or consent of instructor. 2 q.h.

GERMAN

See Foreign Languages.

GREEK

See Foreign Languages.

HEALTH AND PHYSICAL EDUCATION

Professors Liptak, Longmuir, Philipp, Ringer, Whitney and Wright (Chair); Associate Professors Barret, Laborde, Mines and Ramsey; Assistant Professors Garbe, Mikanowicz, Neville and Walker; Instructors Cobb and Scott.

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 (HLTH 590), and three credit hours are in physical activity classes. HLTH 590 is waived for registered nurses. The following three-hour courses will also fulfill the three hours in physical activities: PE 630, 631, 632. PE 589 fulfills two of the three hours in physical activity. The form of activity is chosen by the student. Activity courses are listed in each quarter's *Schedule of Classes.*

It is suggested that students confer with their physicians prior to enrolling in activity classes. Students with physical disabilities that prevent them from engaging in a regular activity class should register

for PE 614, a 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 from the Chair (Beeghly 307) to take the same class three times for three credits. Otherwise the student will be expected to take three different courses.

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 or women's varsity teams may receive physical activity credit through enrollment in PE 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

Since the following physical education activity courses may require strenuous physical activity, it is highly recommended that the student consult with a physician prior to enrolling in the course to determine whether they have any physical limitations which might adversely affect their participation.

Health Education

Health may be the major subject for the following degree programs: Bachelor of Science in Education (B.S. in Education) and the Bachelor of Arts (A.B.). The B.S. in Education leads to a special provisional certificate for school health teachers K-12. The A.B. program is intended for those interested in patient education, workplace wellness programs, or community health. Students interested in the Health Education programs should consult with an advisor in the Health and Physical Education Department.

Requirements for each of the two programs are as follows:

A.B. DEGREE PROGRAM: ENGL 550, 551, SPCH 550, PHIL 600, 725, CHEM 502, BIOL 551, 552, 560 PSYCH 560, 700, SOCIO 500, SOCWK 620, HLTH 590, three hours of physical education activity. Foreign Language requirements vary–see your advisor. Additional general university requirements include 8 hours in the humanities, and 4 hours in the social sciences. Core requirements in the major include: HLTH 596, 601, 604, 606L, 680, 691, 693, 731, 790, 791, 792, 799, 891, 892, 899, SOCWK 622, HOMEC 551, 551L, SPCH 653, MGT 725, SOCIO 745 or 700. Two of the following: PSYCH 755, 756, 757, HLTH 692. One of the following: SOCIO 701, ECON 624.

All students in the A.B. program must have a minor. A minor consists of 21 hours within a discipline. Recommended minors for A.B. students include Social Work, Psychology, Sociology or Nutrition.

B.S. in EDUCATION: ENGL 550, 551, SPCH 554, 8 hours in the humanities area, BIOL 551, 552, 560, any MATH 512 or above, PSYCH 560, 709, 755, 756, SOCIO. 500, HLTH 590, three hours of physical education activity. Core requirements in the major include: EDUC 501, 700, 702, 704, 706, 706L, 708, 710, 730, 845, HLTH 596, 601, 604, 606L, 680, 691, 692, 693, 721, 731, 790, 791, 794, 892, 899, HOMEC 551, 551L, CHEM 502.

Those students seeking teaching certification in Health must apply for upper division when completing 75 hours of credit. Application forms and other information for admittance to the Health and Physical Education Department can be obtained in the Departmental Office, Room 307 Beeghly Center.

Any individual in the B.S. in Education program should consult with the School of Education when choosing an additional teaching field. An additional teaching field in Health Education consists of 45 quarter hours and leads to certification in grades 7-12.

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 MILSC 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.

606L. *Pre-Professional Experience.* Students participate in an approved school health or a community health education program under faculty supervision. The students observe and assist in the organization and/or teaching of programs. Prereq.: HLTH 596. 1 q.h.

680. *School Health Program.* School health programs with emphasis on school health services, healthful school living, and administration. Prereq.: HLTH 590. 4 q.h.

691. *Health and Stress.* Stress and its relationship to health and wellness. Emphasis on causes, prevention and management. Prereq.: HLTH 590. 3 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 BIOL 692, PSYCH 692, and SOCIO 692. Prereq.: HLTH 590. Does not count toward general University requirements. 4 q.h.

693. *Consumer Health Issues.* An examination of health services, products, information, resources and safety issues that relate to the consumer's decision-making process. Students receiving credit for HLTH 730 will not receive credit for HLTH 693. Prereq.: HLTH 590. 3 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.: HLTH 590 and either upper division status in the HPE Department or in the School of Education or ELED 630. 3 q.h.

731. *Drug Use and Abuse.* Drugs and their relationship to health and wellness. Emphasis on physiological effects, patterns of drug use and abuse, and drug abuse prevention. Students receiving credit for HLTH 730 will not receive credit for HLTH 731. Prereq.: HLTH 691. 3 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.: BIOL 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.: HLTH 590. 4 q.h.

792. *Community Health Planning.* Designed to provide the health educator with the fundamental techniques for developing comunity health programs. Includes needs assessments, methods and materials, implementation and evaluation. One hour lecture and two hours lab. Prereq.: HLTH 606L; 791; and 691 or 693 or 731. 2 q.h.

794. *Secondary School Health Education.* Curricula, 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.: Upper division status in the HPE Department. 4 q.h.

799. *Health Promotion in the Community Setting.* The application of the fundamental techniques of planning specific programs in the workplace, hospital or community settings. Two hours lecture, two hours lab. Prereq.: HLTH 792 3 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.: HLTH 791 and either 794 or 799. 2 q.h.

820. *Computer Applications in Health Education.* Integrating the use of computers in school and community health education. No previous computer experience necessary. Two hours lecture, two hours lab. Prereq.: HLTH 590, 596, 680 and 791 or permission of instructor. 3 q.h.

891. *Community Health Internship.* Supervised experience designed to provide an opportunity to plan, implement and evaluate a program in an approved community health setting. Approximately 35 hours per week. Prereq.: Completion of all required health education courses in the Bachelor of Arts degree program. 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.: Upper division status in the HPE Department and HLTH 792 or any educational methods course. 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.: HLTH 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

Students interested in majoring or minoring in Physical Education should consult with an advisor in the Health and Physical Education Department.

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 a Special Provisional Certificate.

Students interested in taking Physical Education as an additional teaching field must complete 47 quarter hours of specified course work leading to an Ohio High School Provisional Certificate.

Those students seeking teaching certificates in Physical Education must formally apply to the Health and Physical Education Department when they have completed 75 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

Courses	Cr. Hrs.
ENGL 550, 551	4 + 4
SCI ELECTIVE	8
FOUND 501	4
Fine Arts Elective	3-5
SPCH 554	4
HLTH 590, 601	3 + 3
PE 595	2
Gymnastics Activities	2
Team Sport Activities	4
Individual & Dual Sports Activities	2
PE 524 or 528	1
PE 545	1
PE Aquatics	1
MATH 512 or above	4-5

SECOND YEAR

Courses	Cr. Hrs.
Humanities Elective	4
BIOL 551, 552	4 + 4
PSYCH 560, 709	4 + 4
PSYCH 755 or 756	4
Social Science Elective	4
PE 550, 551, 661	1 + 1 + 2
PE 670, 750	2 + 2
Activity Elective	2
Individual & Dual Sports Activities	3

THIRD YEAR

Courses	Cr. Hrs.
SEDUC 704, 706, FOUND 708	3 + 4 + 4
SEDUC 700, FOUND 702, SPED 730	2 + 1 + 2
HLTH 791	4
PE 766, 795	3 + 4
PE 767	3
HLTH 680	4
PE 765, 768, 780	3 + 2 +2
General Electives	

FOURTH YEAR

Courses	Cr. Hrs.
PE 855, 860	4 + 4
PE 895, 896	3 + 4
PE 850	4
SEDUC 846	15
General Electives*	

COACHING MINOR

The coaching minor is available for those students interested in coaching. (Not applicable for physical education majors.) State of Ohio Department of Education Certificate is **not** available for coaches. 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 program offers a non-teaching degree in Physical Education. Students interested in Adapted Physical Education, Athletic Training, Fitness Management, Sports Medicine, etc. should consult with an advisor in the Health and Physical Education Department.

Students seeking an AB degree in Physical Education must complete the following core courses: HLTH 601, PE 595, 618, 670, 765, 795, 850, 855, 860, 895, 896, 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, Room 307, Beeghly Center.

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 1.* 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 2.* Intermediate-to-advanced volleyball skills including diving, rolling, and various team offensive and defensive strategies. Prereq.: PE 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 1.* Fundamentals of bowling the straight ball. Equipment selection, correction of errors, and scoring. Classes meet at McGuffey Classic Lanes. A fee is charged. For beginning bowlers. 1 q.h.

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*Electives should be applied toward minor field.

513. *Bowling 2.* Intermediate bowling. Refinement of bowling skills and use of the hook delivery. Tournament planning, team strategy, and competition. Classes are at McGuffey Classic Lanes. A fee is charged. Prereq.: PE 512 or 100 average. 1 q.h.

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

515. *Fencing 2.* Intermediate techniques and strategy of foil fencing and bouting. Prereq.: PE 514 or consent of instructor. 1 q.h.

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

517. *Gymnastics 2.* Fundamental techniques and methods of appropriate gymnastic apparatus and routine composition. Prereq.: PE 516 or consent of instructor. 1 q.h.

518. *Gymnastics 3.* Techniques of coaching, spotting, and/or performing, with emphasis on methods and advanced skills. Prereq.: PE 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 1.* Fundamental skills of golf. Includes grip, stance, swing patterns, and putting as well as rules of course play. 1 q.h.

521. *Golf 2.* Intermediate Golf. Refinement of swing patterns, methods of instruction, and correction of errors. Emphasis on use of various clubs and types of shots. Prereq.: PE 520 or intermediate skill. 1 q.h.

524. *Physical Fitness and Exercise Programs.* Discussion of and participation in activities designed to develop and improve the health related aspects of physical fitness including weight and stress control. 1 q.h.

525. *Wrestling Skills for Teachers.* Basic techniques of wrestling. Offensive and defensive maneuvers, rules, officiating and methods of teaching. 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. *Advanced Physical Fitness and Exercise Programs.* Discussion of and participation in strenuous activities designed to develop and improve the health and performance related aspects of physical fitness. Prereq.: Men: Run 1.50 miles in less than 13:00; Women: Run 1.25 miles in less than 13:00. 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 1.* 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 2.* 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.: PE 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 1.* 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 1.* Elementary techniques of body movement. Rhythmic fundamentals and improvisation. 1 q.h.

541. *Modern Dance 2.* Intermediate modern dance technique, composition, and improvisation. Prereq.: PE 540 or consent of instructor. 2 q.h.

542. *Dance Composition.* Basic principles of form and structure to choreography. Prereq.: PE 541 or consent of instructor. 1 q.h.

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

546. *Folk and Square Dance 2.* Intermediate and advanced folk and country dances, materials, and practice. Prereq.: PE 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.: PE 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 2.* 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.

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. *Tap and Jazz 1.* 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.: PE 540 or consent of instructor. May be applied as 2 q.h. toward the fulfillment of the University PE activity requirement. This course is identical with SPCH 663. 2 q.h.

571. *Tap and Jazz 2.* Emphasizes basic tap combinations and routines. Continuation of PE 570. Prereq.: PE 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 SPCH 664. 2 q.h.

572. *Ballet 1.* 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 SPCH 568. 2 q.h.

573. *Ballet 2.* Continuation of PE 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 SPCH 569. 2 q.h.

588. *Selected Activities in Physical Education.* Knowledge of and practice in a particular area of dance, fitness or sport. Activity will be announced each time the course is offered. May be repeated up to four credit hours with change in topic. 1-3 q.h.

592. *Volleyball Skills for Teachers.* The analysis and practice of volleyball skills for prospective teachers. Includes playing and teaching strategies and progressions. Intended for PE majors/minors. 1 q.h.

593. *Basketball Skills for Teachers.* The analysis and practice of basketball skills for prospective teachers. Includes playing and teaching strategies and progressions. Intended for PE majors/minors. 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 MILSC 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 for Teachers.* Skills, techniques and rules of track and field events. Includes progressions and organizational strategies for teachers. 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 1.* Fundamental skills of tennis including forehand and backhand drives and service. Basic rules, strategy, and methods. 1 q.h.

523. *Tennis 2.* Theory and practice of intermediate-to-advanced tennis skills and play. Prereq.: PE 522 or intermediate skill level. 1 q.h.

580. *Tennis 3.* Theory and practice of advanced skills, strategy and play. Prereq.: Tennis 2 or consent of instructor. 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.

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.

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.

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. Intended for students with physical disability. Prereq.: Medical referral from physician. 3 q.h.

630. *Lifeguard Training.* Water rescue, preventive lifeguarding techniques, emergency procedures, etc. Red Cross certificate granted upon satisfactory completion of all requirements. Prereq.: 500 yd. continuous swim and deep water dive. 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.

Lecture-Laboratory Classes

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.: PE 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.: PE 632. 1 q.h.

650. *Techniques of Officiating Soccer.* Analysis and interpretation of rules; theory and practice of officiating soccer. Prereq.: PE 501. 2 q.h.

651. *Techniques of Officiating Basketball.* Analysis and interpretation of rules; theory and practice of officiating basketball. Prereq.: PE 503. 2 q.h.

653. *Techniques of Officiating Football.* Analysis and interpretation of rules; theory and practice of officiating football. Prereq.: PE 505. 2 q.h.

655. *Techniques of Officiating Track and Field.* Analysis and interpretation of rules; theory and practice of officiating track and field. Prereq.: PE 506. 2 q.h.

656. *Techniques of Officiating Volleyball.* Analysis and interpretation of rules; theory and practice of officiating volleyball. Prereq.: PE 502. 2 q.h.

658. *Techniques of Officiating Gymnastics.* Analysis and interpretation of rules and skills; theory and practice of judging gymnastics. Prereq.: PE 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.: PE 504. 2 q.h.

660. *Techniques of Officiating Field Hockey.* Analysis and interpretation of rules; theory and practice of officiating field hockey. Prereq.: PE 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 PE 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.

698. *Survey of Dance.* The role of dance in culture and history, tracing the evolution of various folk, social and concert forms. Structural and stylistic elements important for the appreciation of movement and dance will be examined. 4 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.

714. *Fitness Management Skills.* Intermediate and advanced fitness testing, exercise prescription, exercise analysis, technical and administrative skills for fitness centers. Practical experience in exercise leadership and management skills. This course will require 6 hours per week of laboratory experience. May be repeated for a maximum of six quarter hours. Prereq.: PE 618. 2 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.: PE 622 and third-quarter sophomore standing. 3 q.h.

750. *Principles of Coaching.* The scientific, psychosocial, and management aspects of coaching. Includes ethics and legal responsibilities, pesonnel management, community relations, conditioning, and other related topics. Prereq.: 10 quarter hours of activity credits, or junior standing and consent of the instructor. 3 q.h.

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

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

753. *Coaching of Football.* Theory, methods, techniques, and organization of coaching football. Prereq.: PE 750. 2 q.h.

754. *Coaching of Track and Field.* Theory, methods, techniques, and organization of coaching track and field. Prereq.: PE 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.: PE 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.: PE 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.: PE 768. 3 q.h.

765. *Athletic Training 1.* Practical and theoretical aspects of the prevention of athletic injuries. Topics include supplies, taping and wrapping, techniques of conditioning, protective equipment and environmental risks. One hour lecture and 2 hours lab per week. Prereq.: Biol. 551 and 552, PE 589 and HLTH 601. 2 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.: Upper division status in the HPE Department, PE 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.: PE 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. Six hours lab. per week. Prereq.: PE 767. 3 q.h.

770. *Physical Activity and Aging.* Designed for students who will be working with older adults in exercise-physical activity programs. Emphasis placed upon the physical aspects of aging, physical limitations, modification in programs, and the role of physical activity in the senior population. 15 hours of field work per quarter. Prereq.: PE 589. 3 q.h.

780. *Methods of Teaching Dance.* Rhythm and movement fundamentals; methods and materials of teaching folk, square, and social dance. Prereq.: Upper division status in the HPE Department and PE 545. 2 q.h.

785. *Teaching of Modern Dance.* Methods and materials of teaching modern dance. Prereq.: PE 541. 2 q.h.

795. *Kinesiology and Applied Anatomy.* Muscular structure and function in relation to physical movement; analysis of fundamental movements. Prereq: BIOL 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.: PE 618, 795 and senior standing. 15 q.h.

851. *History and Philosophy of Physical Education and Sport.* A survey of major historical developments and philosophical issues in physical education and sport from ancient times to the present. Prereq.: Junior standing in PE. 3 q.h.

852. *Psychosocial Aspects of Physical Education and Sport.* A survey of major psychosocial principles, developments and concerns as they relate to the participant in physical activity and sport. Prereq.: Junior standing in PE. 3 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.: Junior standing in PE. 4 q.h.

860. *Tests and Measurements.* The various tests in the field of physical education, including uses and interpretation of elementary statistical techniques. Three hours lecture and two hours laboratory per week. Prereq.: Senior standing in PE. 4 q.h.

865. *Athletic Training 2.* Advanced techniques of athletic training with emphasis on evaluation, treatment and rehabilitation of athletic injuries. Topics include application of therapeutic modalities, reconditioning programs and the role of the athletic trainer in sports medicine. Two hours lecture and two hours lab per week. Prereq.: PE 765. 3 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.: PE 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.: PE 795 or PE 722. 3 q.h.

896. *Physiology of Exercise.* Physiological bases and functions of the body in response to the stress of exercise. Three hours of lecture and two hours laboratory per week. Prereq.: BIOL 552 and PE 860. 4 q.h.

898. *Seminar: Physical Education.* Special and current problems in physical education. Prereq.: senior standing. 2 q.h.

HISTORY

Professors Beelen (Chair), Berger, Blue, Darling, Domonkos, Earnhart, Friedman, Huang, Jenkins, Kulchytsky, Roberts, Satre; Associate Professor Viehe; Assistant Professors Beyan and Kale.

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, 723, 725, 726, 732, 733, 734, 736, 737, 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, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 777, 778, 779, 780, 781, 782, 785, 790, 791, 792, 793, 794, 850, 851.

Group D — Select three courses from the following courses:

611, 661, 662, 663, 727, 728, 729, 740, 749, 750, 770, 771, 772, 776, 789, 796, 797, 799, 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.

511. *Introduction to World History 1.* Origins and growth of the major civilizations of the world from earliest times to about 1300. 4 q.h.

512. *Introduction to World History 2.* Development of the major civilizations of the world from about 1300 through 1800. 4 q.h.

513. *Introduction to World History 3.* Transformation of major civilizations of the modern world from 1800 to the present. 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.: ENGL 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 MILSC 601. 4 q.h.

605. *History of the United States 1.* 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 2.* 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 1.* The development of western culture from its earliest appearance in the Near East until 1715. 4 q.h.

655H. *History of Western Civilization 1.* An honors course in Western Civilization to 1715 with emphasis on analysis of historical developments. Prereq.: high ACT or SAT verbal scores and/or A or B in high school World History, and/or recommendation of instructor in History 512, 513, or 656H. 4 q.h.

656. *History of Western Civilization 2.* The development of western culture from 1715 to the present. HIST 655 is not a prerequisite. 4 q.h.

656H. *History of Western Civilization 2.* An honors course in Western Civilization from 1715 to present with emphasis on analysis of historical developments. Prereq.: high ACT or SAT verbal scores and/or A or B in high school World History, and/or recommendation of instructor in History 511, 512 or 655H. 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 ancient 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 1, 2.* 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 1, 2.* 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 605 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 1.* 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 2.* 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.

734. *History of Organized Crime in the United States.* The history of organized crime emphasizes the organization of the criminal underworld, the ethnic, racial, and religious composition of criminal groups and the impact of organized crime on prostitution, gambling, prohibition and drugs. Prereq.: HIST 605 or 606. 4 q.h.

736. *History of American Cities.* City politics, social change, ethnic and racial issues, industrialization and city planning during the nineteenth and twentieth centuries. Other issues such as the provision of city services, the rivalry between cities, and the development of the federal-urban relationship are addressed. Prereq.: HIST 605 or 606. 4 q.h.

737. *Public History.* This course applies historical methodology to contemporary policy problems from either the public or the private sector. Topics include public policy, social policy, environmental problems and historical preservation. Prereq.: HIST 605 or 606 or consent of instructor. 4 q.h.

738, 739. *The South in American History 1, 2.* 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 513, 606 or 662. 4 q.h.

741, 742. *Diplomatic History of the United States 1, 2.* 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.

749. *History of African-United States Relations.* Survey of African-U.S. relations from the transatlantic slave trade to the present with emphasis on the 20th century. Prereq.: HIST 663 or consent of instructor. 4 q.h.

750. *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 or consent of instructor. 4 q.h.

752. *History of Greece.* Aegean civilization from the third millennium to 275 B.C. Prereq.: HIST 511. 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 511. 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 511. 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 511. 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 512. 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 512. 4 q.h.

760. *The Making of Modern Europe, 1648-1789.* The history of Europe from the Peace of Westphalia (1648) to the outbreak of the French Revolution in 1789. The emphasis is on France under Louis XIV and Louis XV, Old Regime society, and the intellectual creativity of the Eighteenth-Century Enlightenment. The course also focuses on the widening confrontation between science and religion, the growth of Europe's overseas empires, and the emergence of the modern nation-state. Prereq.: HIST 512. 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 512. 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 513. 4 q.h.

763. *Modern France, 1815-1914.* The history of France from the fall of Napoleon to the outbreak of World War I. Emphasizes the unique pace of nineteenth-century economic and social development, the ideologies of royalism, liberalism, and socialism, and the political instability which gave rise to the revolutionary crises of 1830, 1848, and 1871. Prereq.: HIST 513. 4 q.h.

764. *Contemporary France, 1914-present.* The history of France from the outbreak of World War I to the present. Examines the relative decline of France in the twentieth century with special emphasis on the

impact of the two World Wars, the social and political crisis of the 1930s, France's postwar revival, the student riots of 1968, and the changes which have transformed French politics and society in the 1980s. Prereq.: HIST 513. 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 513. 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 513. 4 q.h.

767. *Europe From World War 1 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 513. 4 q.h.

768, 769. *History of Germany 1, 2.* 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 513. 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 1, 2.* 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 512 for 777; 513 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 513 or consent of instructor. 4 q.h.

780, 781. *History of Eastern Europe 1, 2.* 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 512 for 780; 513 for 781. 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 512 or 513 or consent of instructor. 4 q.h.

785. *History of Modern Italy, 1815-present.* A survey of Italian history from the Risorgimento to the present. Emphasis will be placed on the reasons for the late emergence of Italian nationhood, the rise of Italian nationalism, unification, the weakness of Italian democracy, the rise of Fascism, and the political instability Italians have experienced since 1945. Prereq.: HIST 513. 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 511 and 513. 4 q.h.

790. *English History 1.* 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 511 or 512. 4 q.h.

791. *English History 2.* 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 513. 4 q.h.

792, 793. *The British Empire and Commonwealth 1, 2.* 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 513. 4+4 q.h.

794. *The First World War.* An examination of the origins of the war, the social, economic, intellectual and political repercussions, and the technical and military developments. Prereq.: HIST 513. 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 or 511. 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 or 511. 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 or 513. 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.

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.

Italian

See Foreign Languages.

JOURNALISM

Professor Brothers (Chair); Associate Professors Alderman and Martindale (Program Director); Assistant Professor Mullen; English faculty.

The University offers a journalism minor; a Professional Writing and Editing major with a concentration in journalism; an Individualized Curriculum Program major that combines journalism with non-writing skills such as graphic design, desktop publishing or photography; a 30-hour program leading to certification in journalism for secondary school teaching; or a 14-hour program that satisfies the journalism distribution for teaching certification in communications on the secondary level. All five programs include practical experience with the University's student newspaper, *The Jambar.*

Lower-Division Courses

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.: ENGL 551. Listed also as ENGL 622. 4 q.h.

626. *American Journalism.* The development of newspaper and magazine journalism in America, journalism as a literary tradition, the contributions of important journalists, and the role of the press in American society. Prereq.: ENGL 551. Same as ENGL 626. 4 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.: JOURN 622. Listed also as ENGL 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, and editorial style are included. Prereq.: JOURN 622. Listed also as ENGL 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: JOURN 622. Listed also as ENGL 721L. 3 q.h.

723. *Make-up and Design.* The practice of copy editing, headline writing, layout and design, photo editing, and caption writing. Prereq.: JOURN 622. Same as ENGL 723. 4 q.h.

820. *Advising Student Publications.* A study of the role and responsibilities of the publication advisor in high school and college. Topics 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.: JOURN 622 or permission of department chair. Enrollment limited to students seeking certification to teach Journalism. Listed also as ENGL 820. 4 q.h.

824. *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. Prereq.: JOURN 622. Same as ENGL 824. 4 q.h.

825. *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. Prereq.: JOURN 622 or any 600-level English literature course. Same as ENGL 825.
4 q.h.

LABOR RELATIONS

See *Economics.*

LATIN

See Foreign Languages.

MATHEMATICAL AND COMPUTER SCIENCES

Mathematics

Professors Altinger, Barger, Brown, Buoni, Burden, Dillon, Faires, Klein (Chair), Knauf, Kozarich, Mavrigian, Rodabaugh, Santos; Associate Professors Biles, Kent, Piotrowski, Poggione, Rodfong, Subramanian; Assistant Professors Cleary, Goldthwait, Mattingly, Mullins, Pollack, Ritchey, Schueller, 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 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, 825, 827, 828, 838, 841, 842, 843, 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, Geology, Physics, Psychology, or one Engineering specialty (from Chemical, Civil, Electrical, Industrial, Materials, 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.

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 seeking secondary certification in Mathematics must complete MATH 730 or 732.

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 chair 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: MATH 743, 841, 843, 845. MATH 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.

Actuarial Science. Students with a major in mathematics can elect to concentrate in actuarial science by taking the following courses: MATH 760, 841, 842, 843 and 845. Any student may obtain counseling in actuarial science from the Department of Mathematical & Computer Sciences.

Mathematics Minors. Recommended Mathematics courses for students who minor in Mathematics are as follows:

For scientific applications: MATH 571, 572, 673; and two or more of 674, 705, 725, 743, 841, 760, 861.

For business applications: MATH 642, 714, and calculus (550 or 571-572); electives to complete 21 q.h.

For mathematical theory: MATH 571, 572, 673, 725 and one sequence 751-752 or 721-722.

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. *Intensive 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 MATH 508. Credit will not be given for both 508 and 510 nor for both 508 and 509. Grading will be CR/NC. MATH 509 is the prerequisite for MATH 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 MATH 508 or MATH 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 MATH 508 or 510 and one unit of high school geometry or MATH 511. 5 q.h.

513. *Intensive Intermediate Algebra.* A faster paced version of MATH 512. This course is intended primarily for students of Engineering Technology. Credit will not be given for both MATH 512 and 513. Prereq.: One unit of high school algebra or MATH 508 or 510 and one unit of high school geometry or MATH 511. 4 q.h.

515, 516. *Mathematics for Elementary Teachers 1, 2.* 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.: MATH 511 and 512 or equivalent for 515. 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.: MATH 512 or equivalent. 4 q.h.

523. *Survey of Mathematics.* Mathematics course for non-science majors emphasizing some of the basic ideas in mathematics. The stress is on concepts rather than on manipulatory skills. Prereq.: MATH 512 or equivalent. 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 MATH 520. 4 q.h.

550. *Calculus for Social, Managerial, and Life Sciences 1.* 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.: MATH 512 or equivalent. 5 q.h.

570, 670, 770. *Calculus for Engineering Technology 1, 2, 3.* 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 adapted for those who require applied topics in mathematics. It is not applicable toward the Mathematics major. Prereq.: MATH 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 1, 2, 3, 4.* 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 MATH 525 is required for MATH 571. 571 is required for 572; 572 for 673; and 673 for 674. The 525 prerequisite may be waived by the Mathematics Department Chair. 5+4+5+4 q.h.

571H, 572H, 673H, 674H. *Calculus 1, 2, 3, 4 Honors.* A sequence of honors courses in analytical geometry and calculus with more emphasis on rigor than the MATH 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 1, 2, 3.* 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 chair is required for MATH 580H. 580H or CSCI 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.: MATH 516 or permission of instructor. 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.: MATH 617 or permission of instructor. 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.: MATH 511 and 512 or equivalent. 5 q.h.

Upper Division Courses

705, 706. *Differential Equations 1, 2.* Introduction to theory and solution of ordinary differential equations with applications; partial differential equations; Fourier series; boundary value problems; Laplace transform; vector analysis. Prereq.: MATH 673 for 705, MATH 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.: MATH 512 or equivalent. 5 q.h.

721, 722. *Abstract Algebra 1, 2.* Algebra of sets, relations and functions; elementary group theory; rings, domains; and supportive material from number theory. Prereq.: 725 for 721, 721 for 722. 3+3 q.h.

725. *Matrix Theory and Linear Algebra.* Matrices; matrix operations; linear transformations; applications. Prereq.: MATH 673. 4 q.h.

730. *Foundations of Geometry.* The development of Euclidean and Non-Euclidean geometries from postulate systems. Prereq.: MATH 673. 4 q.h.

743, 841. *Mathematical Statistics 1, 2.* 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.: MATH 673 is required for 743 and MATH 674 and 743 are required for 841. 4+4 q.h.

750. *History of Mathematics.* A survey of the historical development of mathematics. Prereq.: MATH 673. 4 q.h.

751, 752. *Intermediate Real Analysis 1, 2.* 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.: MATH 673 for 751 and MATH 751 for 752. 3+3 q.h.

760. *Numerical Analysis 1.* The theory and techniques of numerical computation. The solution of a single equation, interpolation methods, numerical differentiation and integration, direct methods for solving linear systems. Prereq.: MATH 725 and CSCI 610 or permission of 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.: MATH 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.: MATH 770 and ENTEC 505, or equivalent. 4 q.h.

795. *Topics in Mathematics.* The study of a mathematical topic or the development of a special area of mathematics. May be repeated. Prereq.: Permission of instructor and department chair. 2-5 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.: MATH 714 or equivalent, or permission of instructor. 4 q.h.

825. *Linear Algebra 2.* A continuation of MATH 725 including abstract vector spaces and linear transformations, eigenvalues and canonical forms, and selected applications. Prereq.: MATH 725 and 722. 4 q.h.

827. *Abstract Algebra 3.* A continuation of 722 with special emphasis on fields. Additional topics in pure or applied algebra. Prereq.: MATH 722 and 725. 4 q.h.

828. *Number Theory.* A study of congruences, Diophantine equations, quadratic residues, special number theory functions, and selected applications. Prereq.: MATH 722 and MATH 725. 4 q.h.

830. *Projective Geometry.* A study of projective planes using both synthetic and analytical methods; axiomatic foundations; connection to Euclidean geometry. Prereq.: MATH 725 and 721. 4 q.h.

838. *Graph Theory and Algorithms.* Basic concepts in graph theory including application to discrete optimization, emphasis on graph algorithms. Prereq.: MATH 725 and either MATH 721 or CSCI 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.: MATH 743. 4 q.h.

843. *Theory of Probability* . An introduction to the mathematical foundation of probability theory including the study of discrete and continuous distributions. Other topics selected from limit theorems, generating functions, stochastic processes, applications. Prereq.: MATH 743 or permission of instructor. 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.: MATH 725 and 743 or permission 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.: PHIL 619 or MATH 721 or permission of instructor. 4 q.h.

861. *Numerical Analysis 2.* Numerical methods of initial-value problems, eigenvalue problems, iterative methods for linear and nonlinear systems of equations, and methods involving least squares, orthogonal polynomials, and fast Fourier transforms. Prereq.: MATH 674 and 760 or permission of instructor. 4 q.h.

872. *Intermediate Real Analysis 3.* A continuation of 752 with special emphasis on uniform convergence. Additional topics in the theory of functions of one or several variables. Prereq.: MATH 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.: MATH 674 and four quarter hours of mathematics at 700- or 800-course level, or permission 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.: MATH 722 and 752. 4 q.h.

890. *Mathematics Seminar.* Report and discussion of each student's in-depth study on a specific topic. Prereq.: Permission 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.: Permission of instructor and department chair. 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 MATH 722 or 752. 2 q.h.

Computer Science

Professors Buoni, Burden, Klein and Santos; Associate Professors Biles, Demen and, Subramanian; Assistant Professors Cleary, Mattingly, Mullins and Schueller.

The computer science program leads to the degree of Bachelor of Science or Bachelor of Science in Education.* 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. At most, one of Computer Science 875, 885, 886 may be selected as a major elective for the B.S.

. 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.

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.* An overview of the development and operation of the modern stored-program computer and its impact on society, including an introduction to microcomputers, application software (in particular, word processing, spreadsheet and data base packages), and the use of an interactive programming language. Prereq.: MATH 511 and 512 or equivalent. 4 q.h.

560. *BASIC Programming.* An introduction to computer programming on microcomputers. A structured version of BASIC will be used. Topics will include array processing and input/output. Not applicable to the Computer Science major. Prereq.: MATH 512 or equivalent. 4 q.h.

610. *Computer Programming 1.* An introduction to problem solving methods and algorithm 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; and programming experience or CSCI 560. 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 CSCI 610 for those who desire instruction in use of terminals. Concurrent CSCI 610. 1 q.h.

615. *Computer Programming 2.* 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.: CSCI 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.: CSCI 615 or equivalent, and MATH 572. 4 q.h.

650. *Language Topics.* Intensive language courses with emphasis on writing efficient programs in a particular programming language. Each language topic is open only to students without previous credit in that particular language. The language topic and special prerequisites will be announced in advance. Prereq.: Permission of instructor. 2 q.h.

651. *Introduction to COBOL.* The study of divisions in COBOL, table handling and file management. Prereq.: CSCI 610 or ACCTG 610 or equivalent.2 q.h.

652. *Introduction to FORTRAN.* An intensive introduction to FORTRAN. Topics include arrays, subroutines, and files. Prereq.: CSCI 610 or mainframe programming experience in a high-level language. 2 q.h.

670. *Introduction to Microcomputers.* An in-depth introduction to disk operating systems including the study of application software packages such as word processors, spreadsheets and data managers. Not open to students with credit in CSCI 705. Prereq.: CSCI 610 or permission of instructor. 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 chair 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.: CSCI 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.: CSCI 610 or equivalent, and MATH 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.: CSCI 705. 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.: CSCI 620 and 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.: CSCI 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.: CSCI 705 and 710. 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.: CSCI 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.: CSCI 705. 4 q.h.

805 *Systems Programming.* Study of the various aspects of systems programming including assemblers, loaders, linkage editors and macro processors. Prereq.: CSCI 705. 4 q.h.

806. *Operating Systems.* Study of the various components of operating systems including kernels and monitors, concurrency and parallel processing, processor management, storage management, device management, I/O processing and file management. Prereq.: CSCI 805 or permission 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.: CSCI 805 or permission of instructor. 4 q.h.

810. *Computer Graphics.* An introduction to the algorithms of computer graphics. Topics include two and three dimensional representation techniques, clipping and windowing, hidden line and surface removal, and curve smoothing. Prereq.: CSCI 620, MATH 674 and 760 or permission of instructor. 4 q.h.

814. *Computer Architecture.* A continuation of the study of the logic basis and design of digital computing systems begun in CSCI 740. Emphasis on the architecture of processors, memory, I/O devices and interfaces. Prereq.: CSCI 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.: CSCI 740. 4 q.h.

820. *Simulation.* Methods for modeling discrete-event systems by algorithmic approaches using simulation languages. Prereq.: CSCI 620 and one of MATH 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.: CSCI 705 and 710, and MATH 725. 4 q.h.

840. *Theory of Finite Automata.* The structural and behavioral aspects of finite automata. Prereq.: CSCI 710 and MATH 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.: CSCI 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.: CSCI 705 and 750. 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.: CSCI 705 and 710. 4 q.h.

875. *Computer Assisted Instruction (CAI).* Introduction to CAI components: questioning episodes, formal answer processing, types of responses, types of trials, analysis of algorithms, and a description of authoring languages. Prereq.: CSCI 705 or permission of instructor. 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.: CSCI 740 and 780. 4 q.h.

885. *Evaluation of Educational Software and Hardware 1.* A critical analysis of educational software in various academic disciplines and grade levels. The use of evaluative forms and the study of existing review criteria. Analysis and evaluation of hardware alternatives, peripheral devices, networking, and hardware expansions in an educational setting. Prereq.: CSCI 705 or permission of instructor. 5 q.h.

886. *Evaluation of Educational Software and Hardware 2.* A continuation of the analysis and evaluation of educational software and hardware begun in CSCI 885. The emphasis in this course will be on equipment used in grades K - 6. Prereq.: CSCI 885. 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.

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.

MILITARY SCIENCE

This program is offered under a cross-enrollment agreement with the University of Akron. Instructors from the ROTC detachment at the University of Akron will teach the courses with adequate enrollment at Youngstown State University.

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 and incur no military obligation.*

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.

Advance Course Cadets attend a six week camp during the summer between their MS III and MS VI (junior and senior) years. In this camp students put into practice the leadership and tactical skills they have acquired in the classroom. Cadets are paid for camp attendance.

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 individual's 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. All commissionees incur a service obligation of eight years with service being either full time active duty or part time in the reserves. The mix of active and reserve duty is determined by the needs of the Army, the cadets performance and the type of contract the cadet signed (scholarship or non-scholarship, guaranteed reserve or simultaneous membership).

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 ROTC Military Science (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. One hour of lecture/discussion per week and a weekly Leadership Laboratory. 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. One hour of lecture/discussion per week and a weekly Leadership Laboratory. 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.

600L. *Leadership Lab.* Practical exercise periods that allow development and application of military skills

and essential leadership characteristics. One hour laboratory per week. Must be taken concurrently with MILSC 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 HIST 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 MILSC 600L. 2 q.h.

603. *Comparative Analysis of U.S. and other Land Forces.* A selective examination of small unit training, tactics, weapons, and organization of the U.S. Army and other Land Forces. Two hours lecture/discussion and a one day (weekend) training exercise required. Must be taken concurrently with MILSC 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.

605. *Low Intensity Conflict.* An introductory examination of the various aspects of Low Intensity Conflict to include counter-terrorism, foreign internal defense, counter-insurgency, political warfare and peace-keeping operations. Two hours lecture/discussion per week. Must be taken concurrently with MILSC 600L. 2 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 chair. 3 q.h.

702, 703. *Advanced Leadership and Management 1, 2.* 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 or herself 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 MILSC 702 is permission of department chair; the prerequisite for MILSC 703 is MILSC 702 and permission of department chair. 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 chair. 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 chair. 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 chair. 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 chair. 1 q.h.

725. *Individual Study.* The individual study of specific problem or review of the literature relating to a specific military problem. May be repeated with a different problem for a maximum of 4 hours. Prereq.: 6 hours of Military Science and consent of the instructor. 1-2 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 responsibilities 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.: MILSC 703 and permission of department chair. 3 q.h.

802, 803. *Seminar in Leadership and Management 1, 2.* 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 or herself 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 MILSC 802 is MILSC 703 and permission of department chair; the prerequisite for MILSC 803 is MILSC 802 and permission of department chair. 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, MILSC 600L, MILSC 700L and MILSC 800L.

PEACE AND CONFLICT STUDIES

The University does not offer a major in Peace and Conflict Studies, but a student may minor in Peace and Conflict Studies with the advice and approval of the chair of the department the student is majoring in. The following is a list of approved recommended courses.

History 500. *Introduction to World History.* 4 q.h.

Religious Studies 617. *Introduction to Eastern Religions.* 4 q.h.

Geography 626. *World Geography.* 4 q.h.

English 633. *Peace and War in Literature.* Prereq.: ENGL 551. 4 q.h.

Political Science 660. *Elements of International Relations.* Prereq.: POLIT 601 or SOCSC 511. 4 q.h.

Psychology 704. *Conflict Resolution.* Prereq.: PSYCH 700 or consent of instructor. 4 q.h.

Sociology 708. *Political Sociology.* Prereq.: SOCIO 600. 4 q.h.

The interdisciplinary minor studies conflict and conflict resolution, and promotes global awareness.

PHILOSOPHY AND RELIGIOUS STUDIES

Professors Dale, Eminhizer, Minogue, Shipka (Chair); Associate Professor Bache; Assistant Professors Browne, Smith, Tessier, Waller and Wan-Tatah.

Philosophy

A major in philosophy is available for students who plan to enter the field of philosophy, law, professional or medical ethics, the ministry, or other fields requiring a liberal arts background.

The major consists of 45 quarter hours, including PHIL 600, 619, 700, 702, either 701 or 812; 711; and either 820 or 821.

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.

530. *Critical Thinking.* An examination of the logical skills needed to evaluate arguments in real-life practical situations. Topics include the uses of language and the impact of the mass media on thinking; strategies and procedures for identifying arguments; evaluation of arguments with emphasis on informal fallacies; and strategies and guidelines for writing argumentative essays. 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. 4 q.h.

625. *Introduction to Professional Ethics.* An examination of the ideals and virtues central to professionalism; study of selected codes of professional ethics and their roots in classical ethical traditions; and analysis of selected ethical issues and problems in a variety of professions. 4 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.: PHIL 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.: PHIL 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.: PHIL 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.: PHIL 619. 4 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.: PHIL 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.: PHIL 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.: PHIL 600 or junior or senior standing. 4 q.h.

712. *Philosophy of Religion.* The philosophical investigation of religious questions such as existence and nature of the divine, the problem of evil, death and immortality, religion and science, and religious experience. Prereq.: 4 hours in philosophy or religious studies and Junior standing. 4 q.h.

714. *Philosophy of Mind.* Study of the traditional mind/body problem in philosophy: investigation of philosophical theories of intentionality, mental representation and causation, the contrast of minds and machines, and the relation of philosophy to psychology. Prereq.: PHIL 600 or junior 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.: PHIL 600 or junior or senior standing. 4 q.h.

730. *Metaphysics.* An examination of the major metaphysical issues in Western philosophy: problems of freedom and determinism, idealism versus materialism, personal identity, space-time problems, concepts of Being and Reality and other representative issues. Prereq.: PHIL 600 or junior standing. 4 q.h.

740. *Philosophy in Africa.* Study of major African world views: An exploration of problems involved in establishing Afro-centric ethical and religious belief systems through writings of African philosophers. Prereq.: Any 600-level course in Philosophy or Religious Studies or Junior standing. 4 q.h.

749. *Philosophy of History.* A developmental inquiry into the views of history held by Greek, Roman, Christian and modern scientific historians. Prereq.: HIST 655 or 656, or permission of instructor. 4 q.h.

800. *Theories of Knowledge.* The epistemological problem; position of the skeptic, pragmatist, empiricist, idealist, moderate realist, existentialist, and phenomenologist. Prereq.: PHIL 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.: PHIL 600 or junior or senior standing. 4 q.h.

808. *Political Philosophy.* Analysis of the philosophical presuppositions of selected political theories. Prereq.: 4 hours of philosophy or religious studies, or consent of instructor and junior 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.: PHIL 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.: PHIL 600 or junior or senior standing. 4 q.h.

812. *20th Century Philosophy.* A survey of the philosophical scene in the early and mid-20th century: the pragmatism of Peirce, James, and Dewey; the analytic schools, from Moore and Russell to early Wittgenstein and the logical positivists; later conventionalism and ordinary language philosophy; and the various continental movements, including modern phenomenology and hermeneutics. Prereq.: PHIL 600 or junior standing. 4 q.h.

813. *Philosophy of Human Nature.* The various conceptions of human nature 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.: PHIL 600 or junior standing. 4 q.h.

814. *Philosophy of Language.* An introduction to modern philosophical investigation of such topics as semantics and language analysis, the functions of language, modes of meaning, and the relation of linguistic structures to metaphysics. Prereq.: PHIL 600 or junior 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.: PHIL 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.: PHIL 600 and eight quarter hours of upper division philosophy courses or approval of the department chair. 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.: PHIL 600 and eight quarter hours of upper division philosophy courses or approval of the department chair. 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. Prereq.: PHIL 600 and eight quarter hours of upper division philosophy courses or approval of the department chair. 1-4 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.: PHIL 711 or 808 or senior standing in criminal justice. 4 q.h.

825. *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 SOCIO 745 or PSYCH 780 or admission to NEOUCOM-YSU program. 4 q.h.

827. *Environmental Ethics.* Application of ethical theories in the evaluation of human interaction with the natural environment: selected cases addressing rights and duties in regard to other species and future generations, principles and ideals guiding industrial utilization of natural resources, responsibilities of environmental activism in prescribed social and political philosophy, and the relation of philosophy to ecology. Prereq.: Four hours of philosophy and junior standing or consent of instructor. 4 q.h.

828. *Engineering Ethics.* An examination of ethical problems in the major fields of engineering and an explanation of the methodology needed to address them; an analysis of the rights and duties of engineers in their relations to clients, employers, the public, and the engineering profession. Prereq.: PHIL 530, 600, 619 or 625 and junior standing or consent of instructor. 4 q.h.

829. *Ethical Issues in Business.* A study of ethical dilemmas in the business world. Focus on rights and duties of business executives, stockholders and employees, as well as their relations with consumers, clients, consultants, government officials, and the public; emphasis on case studies. Prereq.: Four hours of philosophy and junior standing or consent of instructor. 4 q.h.

860. *Mathematical Logic.* Identical with MATH 860. 4 q.h.

Religious Studies

A major in Religious Studies is available for students who desire to prepare for a career in the ministry, counseling, religious education, social work or any field requiring a liberal arts background. The major consists of 45 quarter hours, no more than 8 of which can be taken at or below the 600-level. Majors must take RELIG 850 and *at least one* upper level course in **each** of the following areas: (1) History of Religion: 705, 706, 707, 708, 713, 720, 722, 724; (2) Methodologies in the Study of Religion: 751, 752, 756, 758, 816, 818, PHIL 712; (3) Biblical Studies: 731, 732, 733; (4) Non-Western Religions: 726, 814, PHIL 740, ANTHRO 815. **Remaining Hours:** It is assumed that the remaining hours will be selected in Religious Studies. In some cases, 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 the chair.

Lower Division Courses

501. *Contemporary Religion and Society.* A study of the essential components and characteristics of religion; the role religion plays in the life of the individual and contemporary society. Intended for first year students. 4 q.h.

601. *Introduction to World Religions.* A survey of the major world religions exploring their distinctive features and common threads. A study of their founders, systems of thought, symbols, and sacred literatures. 4 q.h.

605. *Myth, Symbol and Ritual.* An introduction to the nature and function of religious myth, symbol and ritual from a multi-cultural perspective. 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.

Upper Division Courses

705. *History of Ancient Christianity.* The development of Christianity from the fall of Jerusalem (70 C.E.) to the fall of Rome (410). Themes will include the evolution of church government, patristic theology, and church-state relations. Prereq.: Four hours of religious studies or philosophy, or HIST 655, or consent of instructor. 4 q.h.

706. *History of Medieval Christianity.* The development of Christianity from the fall of Rome (410 C.E.) to the Renaissance (1500). Themes will include scholastic theology, church government, monastic orders, the crusades, and church-state conflicts. Prereq.: Four hours of religious studies or philosophy, or HIST 655, or consent of instructor. 4 q.h.

707. *History of Modern Christianity.* The development of Christianity from the Renaissance (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.: Four hours of religious studies or philosophy, or HIST 655 or 656, or consent of instructor. 4 q.h.

708. *African-American Religion.* The development of African-American religion from the days of slavery to the present. Topics include black theology, contemporary religious expressions, and the role of religion in social change. Prereq.: Any 600-level Religious Studies course, or Black Studies 600 or 601, or consent of instructor. 4 q.h.

713. *Religion in America.* Religious pluralism; immigrant sources and American innovations; the role of religion in the development of the nation; the function of religion within the American social system; current social trends. Prereq.: HIST 605 and 606, or consent of instructor. 4 q.h.

720. *Islam.* The origin and development of Islam with attention to the Koran, the prophetic writings, and Islamic theology; topics include the Islamic world view, mysticism, sects, contemporary revivalist movements, and Black Muslims in America. Prereq.: Four hours of religious studies of philosophy, or consent of instructor. 4 q.h.

722. *Christianity.* The origin and development of Christianity; examination of the life and teachings of Jesus; Christian theology, liturgy and symbolism; discussion of divisions of contemporary Christianity. Prereq.: Four hours of religious studies or philosophy, or consent of instructor. 4 q.h.

724. *Judaism.* The origin and development of Judaism including the biblical legacy, the Talmud, medieval Judaic philosophy, mysticism, the symbolic and mythic structure of classical Judaism, and transformations of the classical tradition in modern times. Prereq.: Four hours of religious studies or philosophy, or consent of instructor. 4 q.h.

726. *Buddhism.* The origin and development of Buddhism from Theravada Buddhism to India to Zen Buddhism in Japan. Its systems of thought, institutions, and meditational practices. Prereq.: Four hours of philosophy or religious studies, 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.: Four hours in religious studies or philosophy, 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.: Four hours of philosophy or religious studies 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 C.E.) as seen through the letters of Paul supplemented by the Acts of the Apostles. Prereq.: Four hours of philosophy or religious studies or consent of instructor. 4 q.h.

751. *Liberation Theologies and Revolutionary Change.* The origin and development of Third World theologies in Africa, Latin America, and the Caribbean, and of Black and Hispanic theologies in America. The study of theology will be related to questions of underdevelopment, poverty and oppression. Prereq.: Four hours in religious studies or philosophy, or consent of instructor. 4 q.h.

752. *Feminist Theology and Spirituality.* A consideration of the history, development, and major theories of feminist theology, including the role of women in religions. Prereq.: Four hours in religious studies or philosophy, or consent of instructor. 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 PSYCH 601). Listed also as PSYCH 703. 4 q.h.

758. *Transpersonal Studies.* A critical study of contemporary developments in consciousness research including such topics as near-death episodes, reincarnation, nonordinary states of consciousness, and the implications of quantum theory. Prereq.: Four hours in religious studies or philosophy, or consent of instructor. 4 q.h.

814. *Mysticism and Meditation.* A critical exploration of the mystical traditions of Eastern and Western religions. Description and classification of meditative experiences; the stages of the mystical path; the resulting world view. Prereq.: Four hours at the 700-level in religious studies, or consent of instructor. 4 q.h.

816. *The Shaping of Modern Religious Thought.* A selective consideration of critical issues that have shaped modern religious thought including such topics as evolution, existentialism, and psychoanalysis. Prereq.: Four hours at the 700-level in religious studies or philosophy, or consent of instructor. 4 q.h.

818. *Contemporary Theological Figures.* A survey of contemporary theology and the formative influences in the lives of prominent theologians such as Barth, Rahner, Niebuhr, Cox, Cobb, Cone, Gutierrez, and Reuther. Prereq.: Four hours at the 700-level in religious studies or philosophy, or consent of instructor. 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.

870. *On-Site Studies in Religion.* An on-site investigation of the beliefs and practices of a particular religion or sect through readings, lectures, interviews, and travel to locations vital to its origin or development. Prereq.: Junior standing or consent of department chair. 2-12 q.h.

PHYSICAL EDUCATION

See *Health and Physical Education.*

PHYSICS AND ASTRONOMY

Professors Bishop, Cochran, Dalbec, Hanzely, McLennan, Mooney, Tabak, Young (Chair); 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.

500L. *Conceptual Physics Laboratory.* Experimental work designed to supplement PHYS 500. Two hours per week. Prereq. or concurrent: PHYS 500. 1 q.h.

501. *Fundamentals of Physics 1.* A study of the methods of analyzing motion of mechanical systems. The topics treated are kinematics, forces, energy and momentum, rotational kinematics, torque and angular momentum. Not recommended for mathematics, chemistry or physics majors or engineering students. Prereq.: MATH 512 and 520, or equivalent high school algebra and trigonometry. 4 q.h.

502. *Fundamentals of Physics 2.* A study of electricity and magnetism. The topics treated are electric charge, electric forces and fields, electric potential and potential energy, capacitance and resistance in direct current circuits, magnetic forces and fields, induced emf, inductance, alternating current circuits. Prereq.: PHYS 501 or equivalent. 3 q.h.

503. *Fundamentals of Physics 3.* A study of simple harmonic motion, wave motion, sound, light, and modern physics. This includes reflection, refraction, geometric optics as applied to lenses and mirrors, interference and diffraction. Modern physics is introduced through the study of the atom and the nucleus. Prereq.: PHYS 501 or equivalent. 3 q.h.

502L, 503L. *Fundamentals of Physics Laboratory 2, 3.* 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.

506. *Physics for the Health Sciences.* The basic laws of physics will be applied to various biological and physiological problems. Designed for majors in the allied health fields, e.g., Respiratory Care. Not applicable to the major in Physics or to the combined major in Physics & Astronomy. 4 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 1.* 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: MATH 571, high school physics, or PHYS 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.

601. *General Physics for Applied Medical Studies 1.* Kinematics and dynamics of translation and rotation; energy, momentum, equilibrium; elasticity and bulk properties of solids. This course is designed primarily for students enrolled in the NEOUCOM-YSU program, and for students enrolled in the pre-medical curricula. Prereq.: MATH 520, or equivalent high school trigonometry. Prereq. or concurrent: MATH 550 or 581H or 572. 4 q.h.

602. *General Physics for Applied Medical Studies 2.* Electricity and magnetism, fluids, heat and thermodynamics. This course is designed primarily for students enrolled in the NEOUCOM-YSU program, and for students enrolled in pre-medical curricula. Prereq.: PHYS 601. 4 q.h.

603. *General Physics for Applied Medical Studies 3.* Waves, sound, optics, atomic physics, quantum mechanics, nuclear structure and radiation. This course is designed primarily for students enrolled in the NEOUCOM-YSU program, and for students enrolled in pre-medical curricula. Prereq.: PHYS 602. 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 2.* Kinematics and dynamics of masses in rotation; wave phenomena; transmission, reflection, refraction, diffraction, and interference of sound and light. Prereq.: PHYS 510. Prereq. or concurrent: MATH 572. 4 q.h.

611. *General Physics 3.* A study of static electric and magnetic fields; direct current circuits; induced currents and electromagnetic forces; inductance and capacitance and their tra nient effects on direct current circuits. Prereq.: PHYS 610. Prereq. or concurrent: MATH 673. 4 q.h.

610L, 611L.* *General Physics Laboratory 2, 3.* 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.: PHYS 510, MATH 673, CSCI 600, or consent of the instructor. 4 q.h.

650. *Analytical Physics.* The course is designed for students who have completed PHYS 501, 502, 503 or PHYS 601, 602, 603 and who wish to continue with more advanced courses in Physics. It consists of those portions of PHYS 510, 610, and 611 which require extensive use of calculus. Prereq.: Completion of the PHYS 501, 502, 503 or the PHYS 601, 602, 603 sequence. Prereq. or concurrent: MATH 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 PHYS 510, 610, 611 (or PHYS 650) and MATH 674, or (B) consent of the department.

*Must be taken in sequence.

701, 702, 703.* *Intermediate Classical Mechanics 1, 2, 3.* 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.: PHYS 611 (or PHYS 650) and MATH 705. 3+3+3 q.h.

704, 705.* *Introduction to Modern Physics 1, 2.* Special relativity; quantum effects related to electromagnetic radiation and material particles; selected topics in atomic, nuclear, and solid-state physics. Prereq.: PHYS 611 (or PHYS 650) and MATH 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: PHYS 705. 1 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.: PHYS 611 (or PHYS 650) and MATH 674. 3 q.h.

710L. *Thermodynamics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Prereq. or concurrent: PHYS 710. 1 q.h.

722. *Physical Optics and Advanced Light.* Interference, diffraction, dispersion, polarization, coherence, molecular scattering and absorption of radiation. Prereq.: PHYS 611 (or PHYS 650) and MATH 674. 4 q.h.

722L. *Physical Optics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Concurrent: PHYS 722. 1 q.h.

730. *Electronic Instrumentation.* Theory of direct- and alternating-current circuits, solid state devices, electrical and electronic instrumentation. Prereq.: PHYS 611 (or PHYS 650) and MATH 705. 3 q.h.

730L. *Electronic Instrumentation Laboratory.* Laboratory work in alternating-current circuits, transistor and diode circuits, and electronic instrumentation. Six hours per week. Concurrent: PHYS 730. 2 q.h.

741, 742, 743.* *Electromagnetic Field Theory 1, 2, 3.* Electric field and potential, charge distribution, polarization of material media, magnetic field and the vector potential, magnetic moments and magnetic polarization of media, introduction to and application of Maxwell's equations. Prereq.: PHYS 611 or 650 and MATH 705. 3+3+3

*Must be taken in sequence.

750. *Mathematical Physics.* The mathematical techniques required in the study of classical, statistical, and quantum mechanics, and field theory. Prereq.: PHYS 611 (or PHYS 650) and MATH 705. 4 q.h.

805. *Undergraduate Physics Research.* Research conducted under the direction of a faculty member. May be repeated to a maximum of 6 q.h. Prereq.: PHYS 702, 705, 730, and senior standing. 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.: PHYS 702 and 705; MATH 706. 3 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.: PHYS 710 and MATH 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.: PHYS 810 and PHYS 815. 3 q.h.

822. *Electrodynamics.* Development of relativistic kinematics from the potential form of Maxwell's equations and of the connection between electrodynamics and quantum concepts. Application of tensor methods to electromagnetic theory with emphasis on physical interpretation. Prereq.: PHYS 742 and MATH 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.: PHYS 705, 705L and MATH 705. 3 q.h.

826L. *Nuclear Physics Laboratory.* Experimental work designed to supplement the corresponding lecture course. Three hours per week. Prereq. or concurrent: PHYS 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: PHYS 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: PHYS 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 chair.
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.

Suggested Curriculum for Majors With a Minor in Mathematics

FIRST YEAR

Courses	Cr. Hrs.
PHYS 510, 610, 610L, 611, 611L	14
MATH 571, 572, 673	14
CHEM 515, 516, 517*	12
Electives (See Note)	9
	49

SECOND YEAR

Courses	Cr. Hrs.
PHYS 704, 705, 705L	7
PHYS 710, 710L	4
MATH 674	4
MATH 705, 706	8
ENGL 550, 551	8
HLTH 590	3
Health Activity Courses	3
Foreign Language or Electives(See Note)	12
	49

THIRD YEAR

Courses	Cr. Hrs.
PHYS 701, 702, 703	9
PHYS 730, 730L, 731L, 732L	6
PHYS 741, 742	6
PHYS 750	4
Electives (See Note)	20
	45

FOURTH YEAR

Courses	Cr. Hrs.
PHYS 805	2
PHYS 810	4
PHYS 815	4
PHYS 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.

*Recommended.

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. 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

Professors Young (Supervisor), 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.

504L. *Astronomy Laboratory.* Telescope and planetarium laboratory work designed to supplement ASTRO 504. Two hours per week. Prereq. or concurrent: ASTRO 504. 1 q.h.

608. *Moon and Planets.* A detailed discussion of the moon and planets, with particular emphasis on the geology of the moon. Prereq.: ASTRO 504 or permission of the instructor. 4 q.h.

Upper Division Courses

700, 701, 702.* *Astrophysics 1, 2, 3.* 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.: PHYS 611 (or PHYS 650) and MATH 674. 3+3+3 q.h.

800, 801, 802.* *Observational Astronomy 1, 2, 3.* Observational techniques in astronomy. Photography, photoelectric photometry, photographic darkroom techniques, spectroscopy, methods of data reduction. Some nighttime observatory work included. Prereq.: PHYS 704. 3+3+3 q.h.

*Must be taken in sequence.

805. *Research in Astronomy.* Individual investigation performed with faculty guidance. Prereq.: ASTRO 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 (Chair), Esterly; Assistant Professors Lepak, Porter.

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 detailed examination of American political structure and process at the national level, with emphasis on the constitutional order and the electoral system. Prereq.: POLIT 550 or SOCSC 511. 4 q.h.

640. *Comparative Government.* A detailed examination, using the case study approach, of institutional structure, political processes, and public policy in selected foreign political systems. Prereq.: POLIT 550 or 601 or SOCSC 511. 4 q.h.

660. *International Relations.* A detailed examination of theoretical and practical issues in contemporary international politics, law, organization and economic relations. Prereq.: POLIT 550 or 601 or SOCSC 511. 4 q.h.

Upper Division Courses

700. *American Executive.* An examination of the role of the chief executive officer within the governmental framework. The offices of mayor and governor are treated, but primary emphasis is on critical evaluation of the American Presidency. Prereq.: POLIT 601. 4 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.: POLIT 601. 4 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.: POLIT 601. 4 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.: POLIT 702. 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.: POLIT 601. 4 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.: POLIT 601 or BLKST 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.: POLIT 601. 3 q.h.

712. *Political Behavior.* An introduction to the main theories and concepts of the field, including the use of quantitative analysis to measure and describe the causes of political behavior. Prereq.: POLIT 550 or 601, or SOCSC 511. 4 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.: POLIT 550 or 601, or SOCSC 511 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.: POLIT 601, or admission to NEOUCOM-YSU, or junior standing in a health field. 4 q.h.

718. *American Public Policy and Policy Analysis.* The formation, implementation and evaluation of contemporary American public policy. Prereq.: POLIT 601. 4 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.: POLIT 601. 4 q.h.

721. *Urban Government.* The structure and politics of urban government, with special attention to intergovernmental relationships. Prereq.: POLIT 601. 4 q.h.

722. *State and Local Government.* The political processes and institutions of state and local governments, with special attention to Ohio government. Prereq.: POLIT 601. 4 q.h.

740. *Comparative Politics.* The systematic study of the field of comparative politics, focusing on theories of comparative politics applicable to all political systems. Prereq.: POLIT 640. 4 q.h.

741. *Soviet Political System.* A study of governmental and party institutions, ideology, and political behavior in the Soviet Union. Prereq.: POLIT 640. 4 q.h.

742. *Politics and Economics of Developing Areas.* A systematic study of political and economic development in the "underdeveloped areas" of all the world. Prereq.: POLIT 640. 4 q.h.

744. *European Government and Politics.* A comparative study of governmental institutions and political behavior of selected Western European political systems. Prereq.: POLIT 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.: POLIT 640. 4 q.h.

751. *Latin American Governments and Politics.* A comparative study of governmental institutions and political behavior of the Latin American Region including South America, Central America and the Caribbean Basin. Prereq.: POLIT 640. 4 q.h.

752. *Government and Politics — Asia.* Prereq.: POLIT 640. 3 q.h.

760. *International Politics.* The principles underlying politics among nations and a study of their application to present international problems. Prereq.: POLIT 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.: POLIT 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.: POLIT 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.: POLIT 660. 4 q.h.

764. *International Organization.* A study of international organizations (including the United Nations) and regional organizations that foster political integration. Prereq.: POLIT 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.: POLIT 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.: POLIT 751 or consent of instructor. 4 q.h.

767. *Asian Foreign Affairs.* A study of the foreign policies of selected countries of Asia. Prereq.: POLIT 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, deterrence theory, technological developments in modern weaponry, and problems of arms control and disarmament. Prereq.: POLIT 660. 4 q.h.

785. *Political Thought 1.* 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 2.* 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 3.* 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.

788. *Political Thought 4.* Western political thought of the contemporary period. Among major figures treated: Arendt, Kelsen, Maritain, Marcuse, Popper, Rawls and Strauss. 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.

820. *Select Problems, Political Science Research Methodology.* A study of the use of various research methodologies used in political science. A research paper applying one of the methodologies to various topics is required. This course may be repeated once. Prereq.: POLIT 712 or 714 or 718, or permission 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 Eichenberger; Assistant Professors Gonzalez, Haushalter, and McKean.

Lower Division Courses

510. *Introduction to Social Science 1.* An approach to the study of human society by integrating the general viewpoints of the various social science disciplines, focusing on the nature of culture and society as well as the basic institutions and processes which form the bases for social interaction. 4 q.h.

511. *Introduction to Social Science 2.* A continuation of Social Science 1 with a focus on the political and economic subsystems of society as they have developed and are conditioned by the culture and society of which they are an integral part. Prereq.: SOCSC 510. 4 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 510, 511 and History 605, 606, the social studies major consists of courses 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 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 3.00 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. Students are advised to consult *The Official Guide to U.S. Law Schools,* a publication of the Law School Admissions Council and the Association of American Law Schools, copies of which are available for use in the offices of the Department of Political Science.

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.*

Professional Writing and Editing

Professor Brothers (Chair); Associate Professors Bowers, Martindale, and Nelson, and Assistant Professor Schramer (advisors).

A major in Professional Writing and Editing requires 89-90 hours, distributed as follows:

English Courses (28 hours) **Cr. Hrs.**

ENGL 690 4
LING 755 4
American Literary Studies 770, 780, 862, 864 or 871 4
British Literary Studies 860, 881, 882, 883, 884 or 886 4
British Literary Studies 887, 891, 892, 895 or 896 4
World Literature 610, 620, 631, 638, 710 or 738 4

Literature Elective (any course 600-level or above offered by the English department) 4

Professional Communication Core Courses (21 hrs)

ENGL 743 Technical Communication 4
ENGL 743L Text Processing 1
ENGL 744 Proposal and Report Writing 4
ENGL 749 Prof. and Technical Editing 4
ENGL 622 Basic Journalism 4
ENGL 723 Makeup and Design 4

Support Courses (19-20 hours)

Choose **7-8 hours** from:
ENGL 716 Feature Writing 4
ENGL 721L Journalism Workshop 3
ENGL 740 Advanced Writing 4
ENGL 746 or 747 Fiction or Poetry Writing Workshops 3
ENGL 898 Prof. Communication Internship 2-8

Choose **12 hours** from:
ENGL 745L Videotext Workshop 2
SPCH 550 Public Speaking 4
SPCH 657 Organizational Communication 1 4
SPCH 756 Interviewing 4
SPCH 857 Organizational Cultures 4
ART 502 Design 1 4
ART 623 Graphic Design 1 3
ART 624 Graphic Design 2 3
ART 625 Graphic Design 3 3
ART 780 Photography 1 4
CSCI 530 Computer Literacy 4
CSCI 630 Advanced BASIC 4
CSCI 670 Intro to Microcomp 2
MATH 714 Probability and Statistics (Prereq. high school Algebra 2 or Math 512) 5
MECH 500 Drawing Fundamentals 4
MECH 501 Engineering Drawing 3
PREL 710 Basic Public Relations 4
PREL 750 Public Relations Communication 4
ADVER 704 Principles of Advertising 5

Professional Area (21 hours)

Students seeking a major in Professional Writing and Editing must also take 21 hours in a professional area such as computer science, chemistry, engineering, journalism, graphics, or advertising/public relations. Courses and degrees in the College of Applied Science and Technology may also meet this requirement.

Students should choose a professional writing area early in their degree work since this preparation will provide the content for much of the writing in the professional communication courses or will provide ancillary professional writing expertise to be used in projects assigned. Each professional area sequence must be approved by an English department advisor working with the Professional Writing and Editing major.

In addition to the course requirements, students must successfully complete one extensive writing and/or editing project, to be approved and evaluated by an advisor of the Professional Writing and Editing program.

For course descriptions, see ENGLISH catalog listing or that of the appropriate department.

Psychology

Professors Gittis, Graf, S.N. Hotchkiss, Krishnan, Letchworth, Masaki, Morrison (Chair), Sweeney; Associate Professors Beckett, Ellyson, Fry, Haynes, Kestner, Small, White; Assistant Professors Gray, Quinby, Segreto, Stringer.

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.

Honors Program in Psychology: Requirements for admission are: (1) completion of a minimum of 45 q.h. at YSU with a minimum GPA of 3.4; (2) completion of PSYCH 560, 613, 614, and 615, preferably by the end of the sophomore year, with a minimum GPA of 3.46. Eligible students should consult an advisor for the application and further information.

BACHELOR OF ARTS — PSYCHOLOGY

48 Hours:

A. 560 (General); 613 & 614 (Statistics I & II); 615 (Intro. to Experimental).

B. An additional 30 hours in courses applicable to the psychology major, excluding 720, 770, 790, 785, 845 and 891.

At least one course must be taken from each category from at least four of the five categories below. (Students may take as many courses from within a category as they desire): (1) Clinical Personality: PSYCH 702, 802, 840. (2) Learning/ Motivation: PSYCH 734, 761, 800, 833, 860. (3) Development: 755, 756, 757. (4) Social/Industrial: PSYCH 700, 712, 704. (5) Experimental/Psychological: PSYCH 760, 762, 763, 810 & 810L, 828.

C. The remaining 3 hours in coursework may be taken in any course applicable to the major — 48 q.h.'s.

BACHELOR OF SCIENCE — PSYCHOLOGY

60 Hours:

A. 560, 613, 614 (Statistical Methods 1 & 2), 615, 724. 19 q.h.

B. Six of the following courses: PSYCH 734, 760, 761, 762, 763, 765, 800, 802, 810, 810L, 828, 833, 840, 860. 24 q.h.

C. Remaining courses from any applicable to major. 17 q.h.

D. MATH 550 and CSCI 530.

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/Sociology 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.

Lower Division Courses

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 their way of perceiving, understanding, and coping with their 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 PSYCH 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 1.* 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 PSYCH 560. 3 q.h.

614. *Statistical Methods in Psychology 2.* 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 PSYCH 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 PSYCH 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.: PSYCH 560. 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 BIOL 692, HLTH 692, and SOCIO 692. Prereq.: HPE 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 SOCIO 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 chair.* 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 chair.* 4 q.h.

704. *Conflict Resolution.* Social psychological research and theory concerned with the definition, escalation, maintenance, and de-escalation of social conflict. Topics to be addressed include integrative bargaining, mediation, coalition formation, distributive and procedural justice, and conflict gaming literature. Prereq.: PSYCH 700 or consent of instructor. 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.

711. *Applied Principles of Industrial Psychology.* Selected topics, concepts, and principles of Industrial/Organizational Psychology as applied to the engineer in the workplace. Prereq.: PSYCH 560. 4 q.h.

712. *Industrial Psychology.* Principles of psychology applied to business and industry with emphasis upon personnel selection and placement, performance evaluation, training, leadership, job satisfaction and work motivation, organizational development and work stress. Prereq.: PSYCH 613 (or equivalent of PSYCH 613 plus PSYCH 560) and junior standing. (F,S) 4 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 chair. Prereq.: PSYCH 560. 1-4 q.h.

724. *Statistical Methods in Psychology 3.* 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 614. (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.

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.

748. *Stress: Theoretical and Clinical Models.* Stress theories, concepts and models including theoretical and empirical research on the role of stress in physical and mental illnesses. Prereq.: PSYCH 700 or 702, or permission of the instructor. 4 q.h.

755. *Developmental Psychology 1 (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.

755H. *Developmental Psychology I (Child)-Honors.* A rigorous study of human development from conception to puberty, requiring extensive library research and written reports. Stresses the influence of family dynamics on the development of personality and the impact of experience in shaping behavior, as well as discussing the influence of innate predisposition. Especially recommended for psychology majors and nontraditional students experienced with children. Prereq.: Sophomore standing, PSYCH 560, and eligibility for University honors program; or consent of the instructor. 4 q.h.

756. *Developmental Psychology 2 (Adolescent).* A study of human development from puberty to adulthood. Prereq.: PSYCH 560. 4 q.h.

757. *Developmental Psychology 3 (Adult).* A study of human development from adulthood through old age. Prereq.: PSYCH 560. 4 q.h.

760. *Perception.* Theories and experimental evidence on how environmental, physiological, and personal factors influence the reception, organization, and interpretation of sensory input. Prereq.: PSYCH 615. 4 q.h.

761. *Cognition.* Experimental methods, research findings, and current theories concerned with human cognitive processes. The information-processing approach, focusing on how information is transformed, stored, manipulated, and retrieved will be emphasized. Topics include attention, pattern recognition and categorization, memory, and language. Prereq.: PSYCH 615. 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.

785H. *Honors Seminar in Psychology.* Study of selected topics within psychology relevant to the honors program. Prereq.: Admission to the Psychology Honors Program. 1 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. 4 q.h.

805. *Interviewing Techniques.* The basic purposes, and problems of interviewing, including practicum and review. Prereq.: 20 hours of psychology or consent of instructor. (SP) (*) 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 chair.* Prereq.: senior standing and PSYCH 712 or consent of instructor. (SP) 4 q.h.

810. *Psychophysiology and Behavioral Medicine.* An introduction to the relationship between the psychological and physiological bases of behavior. Response systems, such as cardiovascular, respiratory, and gastrointestinal, are covered as well as application of principles, theories, and research to health-related behaviors. Prereq.: 12 hours in psychology or permission of instructor. Concurrent: PSYCH 810L. 4 q.h.

810L. *Psychophysiology and Behavioral Medicine Laboratory.* Measurement and research techniques in basic and applied psychophysiology. Three hours laboratory-discussion. Concurrent: PSYCH 810. 1 q.h.

828. *Physiological Psychology.* The structural-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. (SP) 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. (W) 3 q.h.

840. *Psychological Measurement.* Theories and principles of test construction, and an overview of psychological tests and questionnaires used in mental health, educational, and vocational settings. Prereq.: PSYCH 613 and senior standing or permission of instructor. 4 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.

855. *Infant Development.* A detailed study of the processes influencing infant development, from behavior genetics to environmental factors; a review of current research on physical, perceptual and cognitive development. Prereq.: PSYCH 755. 4 q.h.

860. *Motivation.* Classical and contemporary theories of motivation. Overview of a body of research and theory on the interactive role biological, learned and cognitive components in motivation of human behavior, including emotion, need for achievement, affiliation and power. Prereq.: PSYCH 615. 4 q.h.

870. *Environmental 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 PSYCH 560, 613, and 700 or consent of instructor. (W) 4 q.h.

891H. *Honors Thesis.* The student will write a research paper (experimental or theoretical) on a topic approved by an honors thesis advisor and honors committee. May be repeated for a maximum of 6 q.h. Prereq.: Admission to the Psychology Honors Program. 1-4 q.h.

RELIGIOUS STUDIES

See Philosophy and Religious Studies.

RUSSIAN

See Foreign Languages.

SOCIAL SCIENCE

See *Political Science.*

SOCIOLOGY, ANTHROPOLOGY, AND SOCIAL WORK

Professors DiGiulio, Dobbert, Fry, Kiriazis, White; Associate Professors Cooper, Gartland (Chair), Gilmartin-Zena, Slivinske; Assistant Professors Mosca, Shutes, Weaver.

The Department of Sociology, Anthropology, and Social Work offers majors or minors in all three of its areas including a major in Nursing Home Administration and 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 SOCIO 701, 751, and 760, in addition to 31 q.h. of sociology courses.

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.: ENGL 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.: SOCIO 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 CRJUS 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.: SOCIO 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.: SOCIO 500. 5 q.h.

701. *Social Statistics 1.* Measurement and interpretation of social data by the use of descriptive techniques. Prereq.: SOCIO 500 or ANTHRO 602. Listed also as CRJUS 710. 4 q.h.

702. *Social Statistics 2.* Continuation of Sociology 701. The methods of probability theory as a basis for statistical inference, hypothesis testing, correlation, chi-square and variance analysis. Prereq.: SOCIO 701. Listed also as CRJUS 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.: SOCIO 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.: SOCIO 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.: SOCIO 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.: SOCIO 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.: SOCIO 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.: SOCIO 500. 4 q.h.

735. *Juvenile Delinquency.* Social and psychological factors underlying delinquency; the juvenile court and probation; treatment and preventive measures. Prereq.: SOCIO 500. Listed also as CRJUS 735. 4 q.h.

740. *Complex Organization.* Structures and processes of large-scale organizations: leadership, control techniques, tensions, bureaucratic pathologies, organizational change. Prereq.: SOCIO 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.: SOCIO 600. 4 q.h.

742. *Small Group Processes.* A study of small group behavior; influence, attitudes, and values of social microsystems. Prereq.: SOCIO 500. 4 q.h.

743. *Social Stratification.* A comparative analysis of social stratification systems with a major emphasis on modern Western societies. Prereq.: SOCIO 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.: SOCIO 500. 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.: SOCIO 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.: SOCIO 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.: SOCIO 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.: SOCIO 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.: SOCIO 600. 4 q.h.

758. *Industrial Gerontology.* Social aspects of the work-occupational system of the aged as it relates to the use of human resources, support programs, and the social distribution of resources. Prereq.: SOCIO 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.: SOCIO 600 or ANTHRO 602. 5 q.h.

761. *Modern Sociological Theory.* Analysis of key schools of present-day sociological theory. Prereq.: SOCIO 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.: SOCIO 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 ECON 787. Prereq.: Junior standing. 4 q.h.

789. *Human Beings and the Technological Society.* An interdisciplinary critical examination of humankind 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 CHEGR 789 and BIOL 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 humans, prehistory, 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.* Language structure as an instrument in human behavior and social institutions. Prereq.: ENGL 551 or equivalent, and ANTHR 602 or equivalent. Identical with ENGL 750. 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. 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 *homosapiens.* 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. Four hours of lecture plus two hours of laboratory per week. Prereq.: ANTHR 712 or permission of instructor. 4 q.h.

782. *Physical Anthropology 1: 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 BIOL 507, or 508, or 551. 4 q.h.

783. *Physical Anthropology 2: Human Variation.* The distribution of the human species 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 BIOL 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 Arctic 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.: ANTHR 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 a minimum of 68 quarter hours of professional foundation courses. In lieu of a minor, 37 quarter hours of support courses must also be completed. Majors must take SCWK 620, 622, 641, 642, 644, 718, 722, 736, 737, 820, 822, 825 (14 q.h.), 826 (2-4 q.h.); SOCIO 751; and one elective; plus the following support courses: SOCIO 500, 700, 701; ANTHRO 602, 783; BIOL 505; POLIT 601, 720; and PSYCH 560.

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

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.: SOCIO 500. 4 q.h.

622. *Social Work Processes.* Addresses the full range of communication skills in systems of all sizes for professional social work practice. Includes principles of effective communication, functions and purposes of communication and the roles of social workers. Arranged volunteer experience required. Four hours lecture and four hours of field. Prereq.: SOCWK 620. 4 q.h.

641. *American Social Welfare.* Overview of the history and evolution of social welfare programs and services in America. Emphasis on the identification and interrelationship of social values and structures, political factors, and economic conditions on resource allocation, including meeting the needs of special populations. Prereq.: SOCWK 620. 4 q.h.

642. *Human Behavior and the Social Environment for Social Workers 1.* A general social systems approach as a conceptual framework to the understanding of culture and society, communities, organizations, groups, families, and individuals as they develop over the life span. Application of theory and research to social work. Prereq.: BIOL 505, SOCWK 620, and PSYCH 560. 4 q.h.

644. *Human Behavior and the Social Environment for Social Workers 2.* Continued application of theory and social research to life span development with emphasis on issues of race, gender, and sexual preference. Prereq.: SOCWK 642. 4 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 BIOL 692, HLTH 692, and PSYCH 692. Prereq.: HPE 590. Does not count toward University general requirements. 4 q.h.

695. *Applied Social Work.* A practicum in human services agencies or health centers. Seven hours of experience required for every quarter hour, in addition to a one hour seminar every week. May be repeated for a maximum of eight quarter hours. Prereq.: at least 15 q.h. of social work courses. 1-4 q.h.

Upper Division Courses

718. *Human Behavior and the Social Environment for Social Workers 3.* The ecological model as applied to client systems of all sizes. Biological, psycho-social and cultural perspectives are integrated for application to practice. Prereq.: SOCWK 644 and ANTHR 783. 4 q.h.

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.: SCWK 620, or admission to the NEOUCOM-YSU program. 3 q.h.

722. *Social Work Methods 1.* Overview of problem solving strategies with client systems of varying sizes using the systems perspective. Generalist practice methods and skills are emphasized including exploration and data gathering, differential assessment and planning, goal setting, client-system contracting, inter viewing, skills, intervention strategies, and evaluation and termination. Practice issues with women and minorities are also studied. Prereq.: SOCWK 644. 4 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.: BLKST 600 or SOCIO 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.: BLKST 600 or SOCIO 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.: SOCWK 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.: SOCWK 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.: SCWK 620. 3 q.h.

736. *Social Work Methods 2.* In depth analysis of problem solving strategies and skills in working with individuals. Theory and research relating to practice will be examined. Social work purpose, functions, and values are addressed from the systems perspective. Prereq.: SOCWK 722. 4 q.h.

737. *Social Work Methods 3.* In depth analysis of problem solving strategies and skills in working with families and small groups. Theory and research relating to practice will be examined. Social Work purpose, function, and values are addressed from the systems perspective. Prereq.: SOCWK 736. 4 q.h.

820. *Social Policy.* Review of the programs, structure, and functions of social services including historical development and social, political, and economic issues. Application of scientific method to analyze and develop social work policies designed to achieve social work goals and purposes. Prereq.: SOCWK 641 and two required policy courses. 4 q.h.

822. *Social Work Methods 4.* In depth analysis of problem solving strategies and skills in working with organizations and communities. Theory and research relating to practice will be examined. Social work purpose, functions, and values are addressed from the systems perspective. Prereq.: SOCWK 737. 4 q.h.

825. *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: SCWK 826. Prereq.: Completion of all courses for Social Work major. 7 - 14 q.h.

826. *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: SCWK 825. Prereq.: Completion of all courses for Social Work major. 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.: SCWK 737. 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.: SCWK 737. 4 q.h.

SPANISH

See Foreign Languages.

WOMEN'S STUDIES

Pat Gilmartin (Coordinator), Sociology, Anthropology and Social Work; Brothers, Brown-Clark, Budge, Elias, Gergits, Gittis, W. Jenkins, A. Krishnan, Leck, Linkon, S. Russo, Segreto, Sexton, Schramer, Shillington, Stephan, Stringer, Tessier and Tingley.

The University offers a minor in Women's Studies with the advice and approval of the chair of the department the student is majoring in and by completing 21 hours in the following courses, with at least two 700-800 level courses in at least two departments and at least three 500-600 level courses in at least two departments. The University also has a Women's Resource Center, Danna Bozick coordinator, located in Dana Hall that encourages drop-in visits and supports programming on women's issues. Also located in Dana Hall is a lounge for non-traditional students.

Lower-Division Courses

English 617. *Women in Literature.*Prereq.: ENGL 551. 4 q.h.

English 632. *Representations of Woman in Western Culture.* Prereq.: ENGL 551. 4 q.h

Latin 660. *Women in the Ancient World.* 4 q.h.

Psychology 620. *Women: A Psychological Study.* Prereq.: PSYCH 560. 4 q.h.

Sociology 640. *Women in Society.* Prereq.: SOCIO 500. 4 q.h.

Upper-Division Courses

History 726. *History of Women in the United States.* Prereq.: HIST 590, 605 or 606. 4 q.h.

Philosophy 704. *Woman: A Philosophical Study.* Prereq.: PHIL 600 or junior or senior standing. 4 q.h.

Religious Studies 752. *Feminist Theology and Spirituality.* Prereq.: Any 600 level course in Philosophy or Religious Studies or Junior standing. 4 q.h.

The student may select one of the following special topics courses **when offered with the appropriate focus** to complete the 21 hours for a minor.

Art 790. *Special Topics in Studio Art.* Prereq.: ART 503 and/or ART 504 or consent of instructor. 2-4 q.h.

Black Studies 701. *Black Studies Colloquium 2.* Prereq: BLKST 601 or consent of the instructor. 4 q.h.

English 890. *Seminar in Literary Study.* Prereq.: 12 hours in upper-division literature courses. 4 q.h.

Foundations of Education 875. *Seminar in Foundations of Education.* 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.

Physical Education 888. *Selected Topics in Physical Education.* Prereq.: senior standing or consent of instructor. 1-4 q.h.

Physical Education 894. *Workshop in Physical Education/Athletics.* Prereq.: HPE 750, 768 or consent of instructor. 1-4 q.h.

Philosophy 820. *Seminar: Contemporary Philosophical Problems.* Prereq.: PHIL 600 and 8 q.h. of upper-division philosophy or approval of department chair. 1-4 q.h.

Psychology 850. *Seminar.* Prereq.: senior major in psychology or consent of instructor. 3 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.

Sociology 898. *Select Problems in Sociology and Anthropology.* Prereq.: departmental major in senior year. 1-5 q.h.

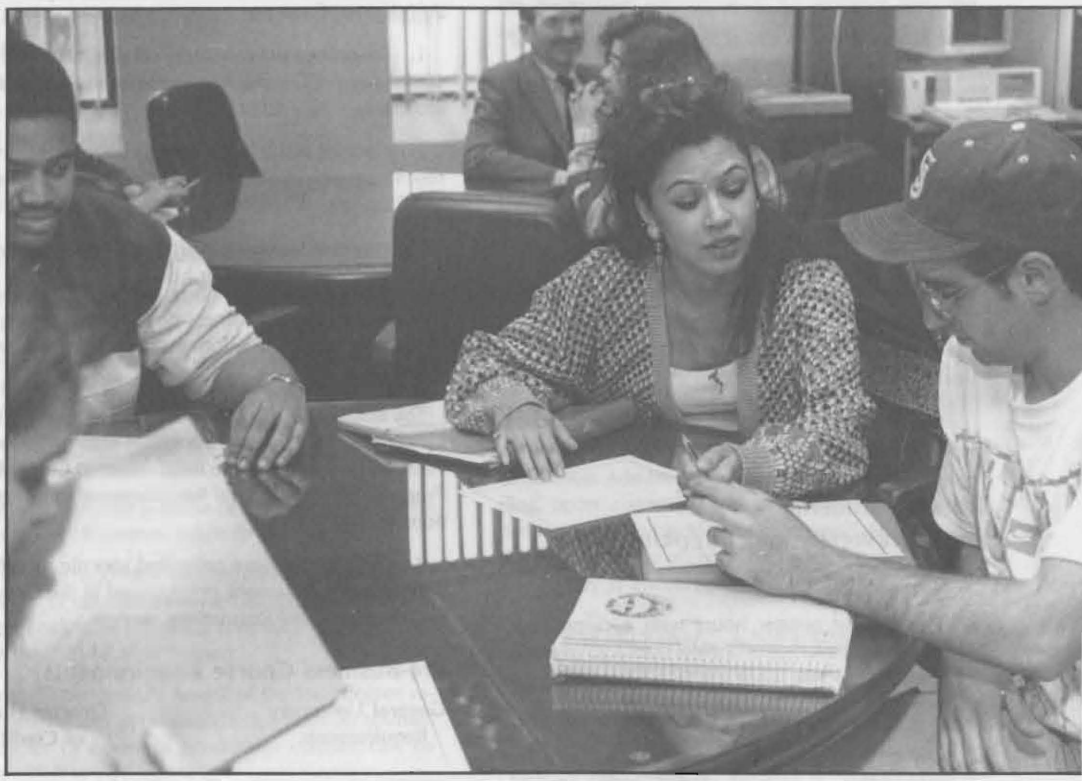
Speech 740. *Special Topics in Speech Communication.* Prereq.: SPCH 530 or 540 or junior standing with permission of the instructor. 4 q.h.

ZOOLOGY

See *Biological Sciences*

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

James Cicarelli, Dean



The mission of the Williamson School is to provide its students with a career-oriented, liberal education that will prepare them for professionally active lives, both here and abroad. The Williamson School of Business Administration is a member of the American Assembly of Collegiate Schools of Business and offers curricula in business and accounting that are patterned after the guidelines set by this organization. The School has programs leading to the Bachelor of Science in Business Administration degree from the departments of Accounting and Finance, Management, and Marketing.

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. The moral and ethical components of business as a profession are stressed throughout each program.

Specific majors are offered in Accounting, Advertising Art in conjunction with the Art Department, Advertising and Public Relations, Fashion Retailing in conjunction with the Home Economics Department, Finance, General Administration, Industrial Management, Industrial Marketing, Management (Behavioral and Management Information Systems Tracks), Marketing Management, Public Administration, Retail Marketing and Shopping Center Management.

The School is also home of the Monus Professor of Entrepreneurship, established to promote entrepreneurial studies.

REQUIREMENTS FOR PRE-BUSINESS ADMISSION

New Freshman Applicants

(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 in Algebra 2.

Transfer Students (Intra-University and Inter-University) Pre-Business

(A) Twenty-four quarter hours with a cumulative grade point average of not less than 2.25 (waived if ACT composite is 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 in Algebra 2.

Requirements for Admission to Upper Division Status with a declared Business Major

Admission to Upper Division Status is not automatic, Pre-Business students must apply with their Academic Advisor for Upper Division Status upon completion of the following requirements:

(A) Ninety-six quarter hours with a minimum cumulative grade point average of 2.25.

(B) ENGL 550, ENGL 551, and all WSBA lower division tool courses (ACCTG 605, ACCTG 606, ACCTG 610, ECON 520, ECON 621, ECON 622, ECON 624, ECON 705, MATH 550, MATH 642, and MGT 604) with a minimum grade of C.

(C) Core course permits will not be issued without Upper Division Status.

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.

Pre-Business Course Requirements

General University Requirements		Quarter Hours of Credit
English	550, 551	8
Speech	652	4
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
SBA Lower Division Tool Courses*		
Accounting	601, 605, 606,	14
Economics	520, 621, 622, 624, 705	18
Mathematics	550, 642	10
Management	604	4

*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.

Upper Division Course Requirements

Core Courses*		
Finance	720	4
Management	725, 750, 789, 850, 855**	19
Marketing	703	5

Major Requirements and electives, see major.
Non-Business electives, quarter hours vary according to major.

Courses for the major must exclude all courses used to satisfy general university, WSBA tool, and WSBA core requirements.

Major requirements (a grade of "C" or better must be made in all courses taken in the major).

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).

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 majors in Advertising Art, Advertising and Public Relations, and the interdisciplinary requirements for Fashion Retailing are described in the Marketing Department listings. The combined majors in General Administration and in Public Administration are described in the Management Department listings.

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*WSBA upper division core courses: each must be completed with a grade of "C" or better.

**Management 855 is not required for Accounting Majors.

REQUIREMENTS FOR THE MINOR

A suggested business minor (Business Foundations) for non-business students would include ACCTG 605 and 606, FIN 720, MGT 604 and 725, MKTG 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.

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 prerequisites 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, Nunthirapakorn, Parsegian, Petrych, Ross, Tackett (Chair), Volpe, Zetts; Associate Professors Claypool, Grim, Heal, Savage, Shaffer; Assistant Professors Borgia, Chen.

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

601. *Microcomputer Applications in Business.* The study and use of selected microcomputer applications in business. Topics will include spreadsheets, database, and word processing. Prereq.: Sophomore standing. 4 q.h.

605. *Elementary Accounting 1.* Study of the accounting cycle and introduction to generally accepted accounting principles for business entities with emphasis on proprietorships and corporations. Coverage of basic acounting systems and financial statements for service and merchandising organizations. Prereq.: Sophomore standing. 5 q.h.

606. *Elementary Accounting 2.* Further study of basic accounting concepts and principles. Emphasis on accounting for partnerships and corporate accounting for stock, bond, and investment transactions. Includes financial statement analytical techniques useful in making various business decisions. Introduction to accounting for manufacturing operations. Prereq.: "C" or better in ACCTG/MGT/MKTG 601 or CIS 500 and ACCTG 605. 5 q.h.

Upper Division Courses

703, 704, 705. *Intermediate Accounting 1, 2, 3.* 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 ACCTG 703 is a "C" or better in ACCTG 606. Prereq. for ACCTG 704 and 705 is a "C". or better in ACCTG 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 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.: MGT 511 or ACCTG 605. 3 q.h.

709. *Accounting Information Systems.* A study of systems analysis, design, and implementation within the context of an accounting information system. Topics will include a treatment of the business computing environment, security and control of information, the accounting information system as a component of the management information system, and a decision support and expert systems. Prereq.: "C" or better in ACCTG 601, 703, and 704 or 705. 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 ACCTG 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 ACCTG 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 on taxation principles in current use by state and local government units located throughout the United States. Case law is studied and some representative tax returns are prepared. Prereq.: "C" or better in ACCTG 606. 4 q.h.

745. *Accounting for Engineers.* Fundamentals of financial and cost accounting as applied to engineering. Prereq.: INEGR 724. 4 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 ACCTG 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 ACCTG 704, 705, 709 and 711. 4 q.h.

809. *Advanced Auditing.* The application of quantitative methods to the solution of auditing problems; an examination of currently debated topics in auditing praxis. Prereq.: ACCTG 808. 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 ACCTG 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 ACCTG 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 ACCTG 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

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.: ACCTG 606. 4 q.h.

724. *Credit Management.* The nature, uses, and general functions of credit, 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 commercial, bank, and foreign credit risks; analysis of financial statements for credit purposes; control of accounts receivable in relation to sales and working capital; and the control of credits and collections are evolved. Prereq.: FIN 720. 4 q.h.

725. *Real Estate Investment.* Topics covered include real property ownership, real estate markets, valuation methods, financing methods and management of real estate investments. Prereq.: FIN 720. 4 q.h.

726. *Risk Management.* The fundamental nature of risk and insurance. Property and liability insurance and other loss-bearing techniques are examined along with the proper use of life insurance in personal and business planning. Prereq.: FIN 720. 4 q.h.

730. *Investment Analysis and Management.* Studies the nature and investment merits of corporate bonds, preferred stocks, common stocks and investment companies from the viewpoint of the individual investor. Principles of portfolio management for individual investors are analyzed. Prereq.: "C" or better in FIN 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.: FIN 720. 4 q.h.

838. *International Financial Management.* The techniques of corporate financial management applied to firms doing business in more than one country and/or with assets denominated in more than one national currency. Techniques for managing foreign exchange and political risks as applied to capital budgeting, capital structure, and working capital decisions are discussed. Prereq.: FIN 720. 4 q.h.

841. *Seminar in Investments and Security Markets.* An examination of the literature on efficient capital markets with implications for security selection and portfolio management. Prereq.: "C" or better in FIN 730. 4 q.h.

850. *Finance Internship.* This course provides students with the opportunity to combine theoretical concepts with business experience. Internships are available in banking, securities brokerage, insurance, real estate and corporate finance. Prereq.: GPA of 2.75, 12 hrs. of Finance. 1-4 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 MGT 870 and MKTG 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.: MGT 870 or permission of the instructor. Crosslisted with MGT 871 and MKTG 871. 4 q.h.

MANAGEMENT

Professors Arlow, Guzell, Hovey, Karpak, Kasuganti, Katz, Krishnan, McMahon, Psenicka (Chair); Associate Professors Daly, Granito, Rakestraw, Sellaro, Wolanin; Assistant Professor Dastoli.

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) Public Administration, and (IV) 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 47 hours; Industrial Management major consists of 51 hours; combined major (Accounting and Finance, Management and Marketing) in General Administration is 47 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

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.

601. *Microcomputer Applications in Business.* The study and use of selected microcomputer applications in business. Topics will include spreadsheets, database, and word processing. Prereq.: Sophomore standing. 4 q.h.

604. *Legal Environment of Business 1.* 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.: ECON 622. 4 q.h.

714. *Legal Environment of Business 2.* 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 students to conduct selection interviews. Prereq.: MGT 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.: MGT 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.: ACCTG 601. 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.: ENGL 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, ACCTG 601 and ECON 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, MGT 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.: MGT 725. 4 q.h.

765. *Structured Programming.* Structured programming and design techniques are applied to business problems using systems analysis tools such as a data flow diagram, data dictionary, and structured chart. Topics include techniques for data editing, validity checking, control totals,and table-handling. Prereq.: MGT/ACCTG/MKTG 601. 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 1.* 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.: MGT 725 and ECON 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.: MGT 789. 4 q.h.

804. *Human Resource Management 1.* 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.: MGT 725 and 750. 4 q.h.

805. *Human Resource Management 2.* 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.: MGT 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. 3 q.h.

816. *Problems in Transportation.* Problem study of selected areas in transportation to meet the needs of students having a professional interest in the field. The interstate commerce act is also reviewed for current changes. Prereq.: MGT 705. 3 q.h.

820. *Operations Management 2.* Study of areas pertaining to the production control function such as inventory control, forecasting, aggregate planning, and scheduling. Prereq.: MGT 789. 4 q.h.

825. *Microcomputers in Business.* The analyses of business microcomputer applications with emphasis on the design of personal decision support systems. Prereq.: ACCTG 601 and MGT 761. 4 q.h.

830. *Management Science 2.* 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.

835. *Systems Analysis.* An overview of the management information systems associated with decision making, integrating areas such as general accounting, marketing, production, and materials management. Emphasis is on analysis of organization systems, and systems modeling using data base information systems. Prereq.: MGT 761. 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.: MGT 725, 750, MKTG 703, FIN 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.: MGT 789. 3 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.: MGT 725 and 750. 3 q.h.

865. *Database Management Systems.* Design and management of organizational data resources. Database issues studied include design, definition, creation, documentation update, maintenance, revision, selection, acquisition, and use. The implementations of the hierarchical, network, and relational models will be discussed with emphasis on business applications. Prereq.: MGT 765. 4 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.: MGT 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 FIN 870 and MKTG 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.: MGT 870 or permission of the instructor. Crosslisted with FIN 871 and MKTG 871. 4 q.h.

875. *Decision Support/Expert Systems.* Fundamental techniques, construction, and use of decision support systems, expert systems, and management support systems are introduced. Prereq.: MGT/ACCTG/MKTG 601 and junior standing. 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.: MGT 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 chair. 1-4 q.h.

MARKETING

Professors Deiderick (Chair), Decker, Mamula, Mathews, Reid, Roussos, Stoll; Associate Professors Davis, Lang, Sekeres, Warren, Wilkinson; Assistant Professor Burns; Instructor Thomas.

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.

Fashion Retailing students complete a block of interdisciplinary courses as well as general and professional courses for their specific degrees which are offered through the departments of Marketing and Home Economics.

Marketing majors are offered in Industrial Marketing, Retail Marketing, Marketing Management and Shopping Center Management.

The curriculum for a major in Fashion Retailing is 67 hours; Industrial Marketing is 45 hours; Marketing Management consists of 45 hours; Retail Marketing is 47 hours; and Shopping Center Management is 50 hours.

A minor in Marketing consists of 21-24 quarter hours.

CURRICULA

Industrial, Retail, Marketing Management and Shopping Center Management majors must take the department core requirements and the courses listed in their respective majors. Fashion Retailing majors must take the interdisciplinary courses listed under the 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 INDUSTRIAL, RETAIL,MARKETING MANAGEMENT AND SHOPPING CENTER MANAGEMENT MAJORS)

Marketing 625, 709, 715, 720, 726, 815, 825

FASHION RETAILING MAJOR (186 Hours for the Degree)

Interdisciplinary requirements:

Marketing 525, 625, 635, 709, 731, 733, 809, 815, or 825

Advertising 704

Home Economics 705, 730, 764, 780 or Marketing 848, Home Economics 835 or Marketing 850, Home Economics 888

INDUSTRIAL MARKETING MAJOR (186 Hours for the Degree)

Advertising 704

Marketing 843 and Upper Division Electives

MARKETING MANAGEMENT MAJOR (186 Hours for the Degree)

Advertising 704

Marketing 847 and Upper Division Electives

RETAIL MARKETING MAJOR (186 Hours for the Degree)

Advertising 704, 705

Marketing 713, 731 or 733

SHOPPING CENTER MANAGEMENT MAJOR (186 Hours for the Degree)

Marketing 755, 757, 850, 865, 875

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; career opportunities, current problems, challenges and strategies created by constant changes in retailing products which make up the near environment. Identical with HOMEC 525. 2 q.h.

601. *Microcomputer Applications.* The study and use of selected microcomputer applications in business. Topics will include spreadsheets, database, and word processing. Prereq.: Sophomore standing. 4 q.h.

625. *Personal Selling.* Study of the selling process, focusing on the importance of the selling function to an organization, prospecting and planning for the sale, determining customers' needs and buying motives, sales presentations, handling objections, closing and following up on the sale. 4 q.h.

635. *Fashion Experience.* A practical view of the fashion industry through lecture, library research, interviewswith fashion industry professionals, and field trips. Two hours of lecture and three hours laboratory. Prereq.: HOMEC 525, MKTG 625. Identical with HOMEC 635. 3 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.: MKTG 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.: MKTG 703. 4 q.h.

715. *Sales Force Management.* Cases, problems, simulations, and lectures are used to sharpen knowledge and analytical skills relevant to salesforce management activities at all levels. Particular emphasis is placed on market opportunity analysis and sales force performance evaluation. Prereq.: MKTG 625 and 703 or consent of instructor. 4 q.h.

720. *Industrial Marketing.* Characteristics of manufacturers' goods, channels of distribution, functions of intermediates, 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.: MKTG 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.: MKTG 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.

755. *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.: MKTG 703. 4 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.: MKTG 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 in making managerial decisions are analyzed. Prereq.: MKTG 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 and theoretical concepts are explored. Review of research problems, approaches and trends in industrial retailing, wholesaling, trade association, advertising, publishing and consulting firms. Prereq.: MKTG 703 and ECON 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.: MKTG 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.: MKTG 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.: MKTG 709 or 720. 4 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.: MKTG 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.: MKTG 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.: ECON 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.: MKTG 703. 4 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.: MKTG 703. 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 FIN 870 and MGT 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.: MGT 870 or permission of the instructor. Crosslisted with FIN 871 and MGT 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.: MKTG 755, or 757, or 865. 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 65 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, 811, 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 502, 503, 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.: ENGL 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.: ADVER 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.: ADVER 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.: ADVER 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 principle sources of data used in the advertising industry. Prereq.: ADVER 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.: ADVER 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.: ADVER 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.: ADVER 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.: ADVER 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 is available to students in advertising under the direction of University faculty members, 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.: ADVER 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.: ENGL 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.: PREL 710 and ENGL 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.: PREL 710 and 750. 4 q.h.

850. *Public Relations Internship.* Practical business experience is available to students in advertising under the direction of University faculty members ,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.: PREL 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

Richard A. McEwing, Assistant 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 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 six departments: Foundations of Education; Elementary Education and Reading; Educational Administration; Counseling; Secondary Education; and Special Education. It cooperates with the College of Arts and Sciences, 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.

In the School of Education, professional courses are offered leading to teacher certification and to the Bachelor of Science in Education degree.

Prospective teachers may also be certified on receiving degrees earned in the College of Arts and Sciences, College of Fine and Performing Arts, 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.

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 the teaching field 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.

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 (1-8)
   (If studying for El. Cert. Only)
2. Elementary — Kindergarten (K-8)
   (If Studying for El. and Kindergarten)
3. Secondary (7-12)
   (Use the Word "Secondary" Followed by the Teaching Field Major. Thus: Secondary — English or Secondary — Math., Etc.)
4. Special Subject (Teaching Field; K-12 — Special Certificate)

5. Special Education (K-12)
   (For those seeking a certificate in Special Education* only)
6. Special Education — Elementary Education (For those seeking both certificates, Special Education* and in Elementary Education)
7. Special Education — Secondary Education (For those seeking both certificates, Special Education and Secondary Education)

Requirements for Admission to Upper Division Status

Neither admission to the University nor enrollment in the School of Education guarantees 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. Upper division status admission grants permission to enroll in the upper division education courses through a class permit system.

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 FOUND 501 and SPCH 654
3. A 2.50 cumulative grade point average
4. Completion of ENGL 550 and 551 with at least a "B" average; or ENGL 601 with a "C" or better
5. Completion of FOUND 710 with a grade of "C" or better
6. Completion of pre-professional skill tests in mathematics, reading and writing (PPST) or NTE general knowledge section
7. Completion of hearing screening examinations
8. Completion of the career goal statement and the Ohio "good moral character" statement
9. Approval from advisor and/or department chair

Competence in written and spoken English is required for each candidate in order to qualify for upper division status in the School of Education.

FOUND 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.

*Special Education certification areas currently include DH, MH, SBH, and SLD. However, these designations are not included in the legal majors list.

FOUND 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. Access to FOUND 710 is by permit only, a GPA of 2.50 and completion of 75 q.h.

> 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.

An undergraduate transfer student may be admitted to the School of Education if in good standing in an NCATE approved teacher education program at the previous school.

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 should seek advisement in the School of Education. To qualify for a student teaching assignment the student must have: 1) senior status; 2) an overall G.P.A. of at least 2.50; 3) completed prescribed prerequisites for student teaching and 4) 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. Student teaching is a full time eleven 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, elementary, secondary and special 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. **In addition, each candidate for certification must pass the State of Ohio prescribed licensing examination(s) prior to receiving YSU's recommendation for certification.**

Some detailed information pertaining to certification is as follows:

1. The candidate for the elementary certificate may also be certified in kindergarten or reading on completion of the appropriate course sequence. Certification in an area of Special Education is also possible, but will require additional time.
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 available are visual art, health education, drama/theatre, computer science, modern languages, music and physical education.
4. Teaching certificates are processed by the certification secretary in the School of Education. The applications are distributed at a designated Student Teaching Seminar.
5. Students seeking certification in other states should apprise themselves of information from that state.

Post Baccalaureate Alternative Certification

Post-baccalaureate students desiring Youngstown State University's recommendation for certification in Ohio and any other state must be admitted to the university and advised in the same manner as undergraduate students. They must meet the standard set of requirements for admission and upper division status in the School of Education. In addition, they must satisfy the general education, teaching field, and professional education requirements comparable to the undergraduate program. Post-baccalaureate students may use approved, documented program equivalency to satisfy appropriate parts of the certification program.

Post-baccalaureate students seeking initial high school certification NOT desiring Youngstown State University's recommendation and who are part of a **State-approved Internship Certificate Program** of an Ohio public board of education may take courses from the School of Education to satisfy the requirements. The School of Education and the intern's school district will determine the specific courses. Twenty-seven quarter hours of course work will be required, none of which can be met by program equivalency or previous class work. The internship begins with 9 quarter hours in the summer, followed by one to two internship years during which the remaining courses are taken. Successful internship completion leads to recommendation for high school certification by the school system's superintendent and is good in Ohio only.

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. A passing score on the specialty exam of the State of Ohio for the second teaching field is required prior to YSU's recommendation for the second teaching field.

Advisement

All prospective teachers are advised by the academic advisors in the School of Education. Secondary students are also advised in the 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 the Assistant Dean.

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 Curricula

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, Tribble; Associate Professors Beary (Chair), Kim; Assistant Professors Bailey, Feist-Willis, Ginnetti, O'Rourke, Shillington; Instructors Gibson, Milkovich.

The Department of Elementary Education and Reading offers the four-year elementary teacher certification program, approved by the Ohio State Department of Education.

All undergraduate elementary 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.

Teacher Education Centers. Prior to student teaching all students must complete a TEC (Teacher Education Center) experience. A TEC, conducted in local schools, is defined as University faculty presenting theory and supervising the teaching lessons connected with ELED 713, 714, 715, 813. Prerequisites: ELED 705; MATH 515, 516, 617; HIST 605 or 606; 12 q.h. of science; ELED 812; ENGL 651. This program requires students to spend the entire day at the school site for ten weeks.

Applications are due two quarters prior to participation and may be obtained from the Elementary Education and Reading Department.

CERTIFICATION PROGRAMS IN ELEMENTARY EDUCATION

An undergraduate student seeking certification in elementary education must complete a specified series of general courses in addition to the upper division (professional education) courses. Both components are designed to meet state certification standards.

I. Curriculum in Elementary Education

A. General Requirements

Courses	Cr. Hrs.
FOUND 501 Introduction to Education	4
ENGL 550 Composition 1	4
ENGL 551 Composition 2	4
ENGL Literature Elective	4
ENGL 651 Introduction to Language	4
ENGL 708 Children's Literature	4
SPCH 654 Speech Communication in the Clsrm.	4
SPCH 705 Speech Problems of Children	3
MUSIC 621 Music Literature and Appreciation	4
MUSIC 721 Music Ed. for Elementary Teachers	4
ART 662 Art Appreciation for Clsrm. Teachers and ART 762 Art Strategies for Classroom Teachers	4
Three of the five sciences:	
BIOL 505 Biology and the Modern World **or** BIOL 506 Principles of Biology 1	4
CHEM 500 Chemistry in Modern Living **or** CHEM 501 Survey of Chemistry 1	4
GEOL 505 Physical Geology	4
PHYS 500 Physics and Man **or** PHYS 501 Fundamentals of Physics 1	4
GEOG 503 Introduction to Physical Geology	4
MATH 515 Math for Elementary Teachers 1	5
MATH 516 Math for Elementary Teachers 2	4
MATH 617 Algebra for Elementary Teachers	5
PSYCH 560 General Psychology	4
PSYCH 755 Developmental Psychology 1 (Child)	4
GEOG 640 Human Geography	4
HIST 605 History of the United States 1 or HIST 606 History of the United States 2	4
HLTH 590 Health Education	3
PE 622 Motor Skill Anal. for Elem. Tchrs.	1
HPE Activities (Elective)	2
HLTH 721 Health Ed. in the Elem. Grades	3
PE 722 Phys. Ed. in the Elem. Grades	3

B. Professional Education Requirements

Courses	Cr. Hrs.
FOUND 702 Instructional Media (See Foundations of Education)	2
ELED 705 Professional Laboratory Experiences: Elementary	3
FOUND 708 Education and Society. The School as an Interactive Institution	4
FOUND 710 Educational Measurement and Guidance	4
ELED 713 Teaching of Mathematics	4
ELED 714 Teaching of Social Sciences in the Elementary School	4
ELED 715 Teaching of Science in the Elementary School	4
COUNS 761 Human Relations and Guidance Skills for Teachers	3
SPED 730 Exceptional Learners in the Regular Classroom	2
ELED 812 Language Arts 1	4
ELED 813 Language Arts 2	3
ELED 881 Corrective Techniques in Reading	4
ELED 841A Elementary Education Seminar	2+2
ELED 841 Supervised Student Teaching: Elementary	12+12

Lower Division Courses

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. Prereq.: PSYCH 755, ENGL 551. 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 the equivalent of one full school day each week. Minimum time must be at least six hours weekly. 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 must precede the basic methods courses. Required of all elementary candidates. Grading will be CR/NC. 3 q.h.

705K. *Professional Lab Experience: Kindergarten.* Observational and participatory experiences in actual kindergarten situations under the direction of regular school teachers and administrative personnel. Students work as teacher aides in assigned schools for the equivalent of one full school day each week. In addition, one hour of campus conference is required weekly. Required of all candidates seeking Kindergarten validation. Grading is CR/NC. Course shall precede or be taken concurrently with ELED 630, 830, 831, and/or 832. 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. Prereq.: MATH 515, 516, 617. 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. Prereq.: HIST 605 or 606. 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. Prereq.: Twelve quarter hours of science. 4 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.: COUNS 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. Prereq.: ELED 705. 4 q.h.

811. *Supervised Student Teaching: Pre-Kindergarten.* Student teaching consists of a ten-week assignment in a preschool. Grading will be CR/NC. Prereq.: Senior status and approval of department chair, HE 663, 664, 771, 866, ELED 630, SPED 731. 1-12 q.h.

811A. *Pre-Kindergarten Seminar.* A seminar intended to give student teachers a better understanding of the basic elements of pre-kindergarten education and one's own role on a professional education team. Grading will be CR/NC. Must be taken concurrently with ELED 811. 1-2 q.h.

812. *Language Arts 1.* The principles and methods of teaching reading in the elementary school with emphasis on diagnostic/prescriptive teaching. 4 q.h.

813. *Language Arts 2.* Teaching oral and written communication through consideration of listening, speaking, handwriting, spelling, creative and formal writing in the elementary school. Prereq.: ENGL 651. 3 q.h.

814. *Language Arts 3.* An advanced course in unconventional teaching strategies with emphasis on nontextbook approaches. May include field experiences. Prereq.: ELED 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. Prereq.: ELED 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.: ELED 713. 3 q.h.

824. *Techniques of Teaching K-12.* Enables the pro spective special subject K-12 teacher to learn instructional planning, strategy implementation, performance and achievement evaluation, and appropriate classroom management skills for use in elementary and middle school settings. Identical with SEDUC 824. Prereq:SEDUC 700 and 704. 706 and 706L recommended. 4 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 2.* The second in a series of three courses designed to prepare the student for teaching children, pre-school and K-3. Preparation of a workable environment for the young child with emphasis on his or her physical, mental and social characteristics. 3 q.h.

832. *Early Childhood Education: Part 3.* 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: Elementary.* Student teaching consists of a twenty week assignment in a kindergarten and/or elementary and/or middle school. May be repeated up to twenty-four hours. Grading will be CR/NC. Prereq.: Completion of the TEC requirement, senior status and approval of the Chair. 1-24 q.h.

841A. *Elementary Education Seminar.* A seminar intended to give student teachers a better understanding of the basic elements of teaching, and to help develop an understanding of one's own role on a professional education team. Grading is CR/NC. Prereq.: Completion of the TEC requirements, senior status and approval of the Chair of the Elementary Education and Reading Department. Must be taken concurrently with ELED 841. 1-4 q.h.

859. *Prekindergarten Teaching Methods and Materials.*Methods and techniques used to implement the prekindergarten curriculum with emphasis on communication and creative arts, social, emotional and physical development and concept formation. Required for prekindergarten validation of other teaching certificates. Prereq.: HOMEC 731 or equivalent. Identical with HOMEC 859. 4 q.h.

860. *Practice in Early Childhood Education.* A culminating practicum designed to provide clinical experience with pre-school children. Students will have the opportunity to implement theory into practice with an emphasis on language and motor development. Prereq.: ELED 830, 831, 832. 4 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. Also listed as SPED 874 and SEDUC 874. Prereq.: ELED 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. Also listed as ELED 878 and SEDUC 878. Prereq.: ELED 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. Prereq.: ELED 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.: ELED 812. 3 q.h.

883. *Secondary School Reading.* The teaching of reading in the secondary school. Survey of methods, materials, and programs. Required for Secondary Reading Endorsement. Prereq: SEDUC 700 and 704. 4 qh.

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.: ELED 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.: ELED 705. 1-4 q.h.

ELEMENTARY EDUCATION CURRICULUM

An undergraduate student seeking certification in the Elementary Education must complete a specified series of general education courses in addition to the upper division (professional education) courses designed to meet state certification standards.

Possible Areas of Concentration for Elementary Education

All students majoring in Elementary Education are required to complete an Area of Concentration.

Students have two options:

Option A: Complete a minimum of 30 q.h. of approved courses within a recognized, content teaching field. Students who are most interested in middle school teaching are encouraged to take this option

Option B: Complete a designated cluster of a minimum of 30 q.h. of approved course work in Natural Science, Social Science, Humanities/Language Arts, Humanities/ Fine Arts or Mathematics. Students who are most interested in primary school teaching are encouraged to take this option.

Because of the wide range of choices available in this component, students should seek assistance from the academic advisors in the Office of the Assistant Dean of Education.

Endorsements and Validations

An existing elementary certificate may be endorsed to allow the individual to teach additional subjects. There is one teaching area described below offered as endorsements.

Reading (Grades K-12). Minimum of 19 q.h. consisting of ELED 812, 881, 882, 883 and 884.

An existing elementary certificate may be validated to allow the individual to teach other grade levels. There is one teaching area described below offered as a valadation.

Kindergarten. A total of 30 q.h. to include ELED 705K, 830, 831, 832, 841, 841A and 860. Certified teachers should see the certification office.

Gifted and Talented validation program is available at the Graduate level .

FOUNDATIONS OF EDUCATION

Professors Baldino (Chair), Haims, Kirschner, Leck, Pascale and Swan; Associate Professors Tokar and Van Galen; Assistant Professors deBlois and Pusch.

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.

510A. *Intermediate College Reading and Study Skills.* Reading and study skills–emphasis on study skills development (notetaking, reading the text, time management, test-taking, etc.), on the development of critical reading skills, and on the development of reading speed. Practice is given in developing these skills on college level texts. Open to students on the basis of English Placement Test results. Grading for FOUND 510A is A, B, C/NC. 4 q.h.

510B. *Introduction to College Reading.* Reading and study skills–emphasis primarily on basic vocabulary and literal comprehension development. Extensive practice and application of main idea skills to college level texts. Open to students on the basis of English Placement Test results. Grading for FOUND 510B is A, B, C/NC. 4 q.h.

570. *Advanced Critical Reading, Thinking and Study Skills.* Designed to assist students to refine systematic critical reading, thinking and study skills, and to assist in the transition to a university setting. Prereq.: FOUND 510A or satisfactory English Placement Test results. 4 q.h.

710. *Educational Measurement and Guidance.* Construction, administration, scoring, and interpreting of objective examinations; selection and administration of standardized tests and scales, and their use in vocational and educational guidance. Required of all candidates for teaching certificates. 4 q.h.

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 FOUND 708, 872, 873, 875, 876, 877, 879, 889 or 899.

702. *Instructional Media.* Instructional modules for the development 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.

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, DiRusso, and Richards (Chair); Associate Professor Gill-Wigal; Assistant Professors Convery, Levitsky, and Martinek.

The department offers work toward the M.S. in Education degree with specialization in various pupil personnel services, school counseling and community counseling. Students may qualify for state certification in school counseling.A complete listing of program options and course descriptions is presented in the YSU Graduate School Catalog.

The Counseling 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 on the application of human relations principles. Consideration is also given to amelioration and prevention of behavior problems. Prereq.: ELED 705. 3 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, human resources, 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.

862. *Principles of Interaction With Special Needs Students.* Principles and methods of interaction with students, parents and other professionals in behalf of students with special needs. A team approach and the use of community resources will be emphasized. Prereq.: SPED 864. Also listed as SPED 862. 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.: SPED 874, 878 or permission of instructor. 4 q.h.

EDUCATIONAL ADMINISTRATION

Professors Beebe (Chair), Douglass and Hill, vacant, vacant.

For course listings, please see the 1991-92 Graduate Bulletin.

SECONDARY EDUCATION

Professors Boggess, Douglass, Glasser, Hill, Longmuir, McCracken, Philipp and Sample; Associate Professors Funk, Hoover (Chair), McNierney, Phillips and Salvner; Assistant Professors Elias and Liptak.

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 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 chair 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 in meetings on campus. FOUND 501 and 708, SEDUC 704, 706L 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:

SEDUC 700 Foundations of Reading — must be taken concurrently with SEDUC 704; not required of English or Comp. Comm. majors.

SEDUC 704 Professional Lab — must be taken concurrently with SEDUC 700. Prerequisite for SEDUC 706.

FOUND 702 Instructional Media — must be taken prior to or concurrently with SEDUC 706; not required of Home Ec. majors.

SEDUC 706 Principles of High School Teaching — must be taken concurrently with SEDUC 706L.

SEDUC 706L Principles of High School Teaching Lab — must be taken concurrently with SEDUC 706; not required of P.E. majors.

FOUND 708 Education and Society — must be taken before SEDUC 800G.

FOUND 710 Educational Measurement and Guidance — required for admittance to the upper division sequence.

SPED 730 Exceptional Children in the Regular Classroom — may be taken at any point in the sequence; not required of special education majors.

SEDUC 800 Special Methods — (B, D, E, G, M, P, S) location in sequence depends on program area. Refer to upper division course description on page 214 of this catalog.

SEDUC 842 Student Teaching — normally taken at end of sequence. SEDUC 700, 704, 706, 706L and 800, FOUND 702, 708 and 710.

TEACHING FIELDS

All prospective Secondary Education students are advised to read carefully the sections relative to requirements for Admission to Upper Division Status, for Student Teaching, and for Certification which begin on the first page of the School of Education entry in this catalog.

YSU recommends that students complete courses of study which a) lead to qualification in more than one teaching field and/or b) train the student in teaching fields projected to be available in the job market at the time of certification. See an academic advisor in the School of Education or the coordinator in Career Services for information which may enhance your "saleability."

Students pursuing teaching field certificates usually receive content area advisement within the major department. Read carefully the section on advisement in the School of Education.

Grades 7-12 Single Subject Teaching Fields

Biological Science (Major for Secondary Teaching, Grades 7-12). Minimum of 53 q.h. to include BIOL 506, 507, 508, 700, 701, 765, 770, 780, 790, 790L, and electives selected from BIOL 661, 702, 721, 762, 771, 775, 792, 804, 804L and 808. Also required are CHEM 515, 516 and 517; Special Methods SEDUC 800G.

Bookkeeping and Basic Business (Major for Secondary Teaching, Grades 7-12). Minimum of 47 q.h. to include BET 513, 706, 720, BUTEC 500, 540, 580, 581, 582, 680, ECON 520, 621, and HOMEC 780. Also required are Special Methods SEDUC 800B and 800D. (All Business Education students must pass proficiency exams in the teaching field before being approved for student teaching.)

Chemistry (Major for Secondary Teaching, Grades 7-12). Minimum of 49 q.h. to include CHEM 515, 516, 517, 603, 604, 719, 720, 721, 739, 740, 741 and 729. Also required is Special Methods, SEDUC 800G.

Computer Science (Major for Secondary Teaching, Grades 7-12). Minimum of 63-64 q.h. to include CSCI 610, 615, 620, 705, 710, 740, 770, 780, 805, 875, 885, MATH 571, 572, 673, and one of the following two MATH 714, and 743. Also required is Special Methods SEDUC 800G.

Drama/Theatre (Major for Secondary Teaching, Grades 7-12). Minimum of 52 q.h. to include SPCH 561, 661, 668, 761, 762, 765; three of the following four: SPCH 860, 861, 891, 892, electives in theatre, and selection from one of the following two blocks: SPCH 791, 863, 864, 865, 866 or SPCH 763, 769, 792, 866, 867. Also required is Special Methods SEDUC 800G.

Earth Science (Major for Secondary Teaching, Grades 7-12). Minimum of 70 q.h. to include GEOL 505, 506, 602, 604, 607, 701, 705, Astro. 504, 608, CHEM 515, GEOG 630 and electives selected from GEOL 702, 703, 704, 706, 801, 802, 811, 812 with additional electives selected from BIOL 506, 507, 508, CHEM 516, GEOG 603, GEOL 707, MATH 714, PHYS 501, 502, 503, 502L, 503L. Also required is Special Methods SEDUC 800G.

Economics (Major for Secondary Teaching, Grades 7-12). Minimum of 52 q.h. to include ECON 520, 621, 622, 701, 624, 705, 709, 710, 712, HIST 714, ECON 802, 811 and one of the following: ECON 824, 825, 850, 853. Also required is Special Methods SEDUC 800S.

English (Major for Secondary Teaching, Grades 7-12). Minimum of 48 q.h. to include ENGL 690, 709, 741, 755, 890; one of the following: ENGL 618, 770, 780, 862, 864, 871; one of the following: ENGL 860, 881, 882, 883, 884, 886; one of the following: ENGL 887, 891, 892, 895, 896; one additional course from the following: ENGL 860, 881, 882, 883, 884, 886, 887, 891, 892, 895, 896; one of the following: ENGL 610, 620, 631, 638, 710, 738; one of the following: ENGL 622, 743, 746, 747, 749, 750, 757, 758, 859. Also required is Special Methods SEDUC 800E.

General Science (for Secondary Teaching Grades 7-12). This is not a major, but may be taken to add a second teaching field. Minimum of 45-48 q.h. to include BIOL 506, 507, 508, CHEM 515, 516, 517, GEOL 505, 506, 607; one of the following two options: OPTION A - PHYS 501, 502 or OPTION B - PHYS 510, 610, and electives. Astronomy is recommended. Also required is Special Methods SEDUC 800G.

Geography (Major for Secondary Teaching, Grades 7-12). Minimum of 52 q.h. to include GEOG 503, 640, 650, 660, 750U, 813; one of GEOG 820, 821, 822; at least two courses must be selected from each of the three following groups: Group A - GEOG 603, 630, 730, 737, 820, 830, Group B - GEOG 661, 722, 726, 732, 740, 741, 821, 822, and Group C - GEOG 626, 750A, 750C, 750H, 750N, 750W, 850. Also required is Special Methods SEDUC 800S.

Health (for Secondary Teaching, Grades 7-12). This is not a major, but may be taken to add a second teaching field. Minimum of 45 q.h. to include HLTH 596, 601, 604, 680, 691, 606L, 693, 731, 791, 892. BIOL 551, 552 and related Health Electives. Also required is Special Methods SEDUC 800G or HLTH 794.

History (Major for Secondary Teaching, Grades 7-12) Minimum of 56 q.h. to include HIST 511, 512, 513, 605, 606; three of the following: HIST 601, 630, 701, 702, 704, 706, 708, 710, 712, 713, 714, 717, 718, 720, 721, 723, 725, 726, 732, 733, 734, 736, 738, 739, 740, 741, 743, 744, 747, 748, 762, 801; three of the following: HIST 699, 752, 753, 754, 755, 758, 759, 761, 762, 765, 766, 767, 768, 769, 777, 778, 779, 780, 782, 790, 791, 792, 850, 851; three of the following: HIST 611, 661, 662, 663, 727, 728, 729, 770, 771, 772, 776, 789, 796, 797, 799, and 860. Also required is Special Methods SEDUC 800S.

Home Economics (Major for Secondary Teaching, Grades 7-12). Minimum of 63 q.h. to include HOMEC 506, 508, 550, 551, 601, 604, 652, 705, 706, 731, 763, 764, 780, 850, 852. ECON 510, BIOL 604, and PSYCH 755. Also required is HOMEC 771, 799, and 800.

Journalism (for Secondary Teaching, Grades 7-12). This is not a major, but may be taken to add a second teaching field. Minimum of 46 q.h. to include JOURN 622, 626, 716, 717, 723, ENGL 741, JOURN 820, 824; one of the following two: ENGL 651, ENGL 755; one of the following: SPCH 580, ENGL 743; and the following course twice: JOURN 721.

Latin (for Secondary Teaching, Grades 7-12). Minimum of 48 q.h. to include LATIN 601, 602, 707, 708, 709, 717, 718, 719, 727, 804, 809, 811, 812. Also required are Special Methods SEDUC 800G. Students who have had an extensive high school preparation may elect to receive the 8 credits for LATIN 601 and 602 by examination. Successful completion of the appropriate competency tests will be required in this case, before the students complete any subsequent courses.

Mathematics (Major for Secondary Teaching, Grades 7-12). Minimum of 54 q.h. to include MATH 571, 572, 673, 674, 721, 722, 725, 743, 751, 752; one of the following two: MATH 730, 830; the following computer science course CSCI 610. Also required are Math electives at the 700 - 800 level except those not applicable toward the Math major and Special Methods SEDUC 800M.

Physical Education (for Secondary Teaching, Grades 7-12). This is not a major, but may be taken to add a second teaching field. Minimum of 47 q.h. to include PE 506, 589, 595, 601, 604, 661, 670, 765, 766, 767, 768, 780, 795, 850, BIOL 551, 552. One of the following: PE 500, 501, 505; one of the following: PE 502, 503, 504; one of the following: PE 516, 517, 518; one of the following: 511, 519, 522; one of the following: 540, 545, 570, 572; one of the following: 537, 548, 555, 557.

Physics (Major for Secondary Teaching, Grades 7-12). Minimum of 45 q.h. to include PHYS 510, 610, 610L, 611, 611L, 704, 705, 705L and 24 q.h. of electives in Physics. Also required are CHEM 515, 516 and Special Methods SEDUC 800G. The following mathematics courses are prerequisites or concurrent for Physics majors: MATH 571, 572, 673, 674 and 705.

Political Science (Major for Secondary Teaching, Grades 7-12). Minimum of 46 q.h. to include POLIT 601, 640, 660, 702, 704, 721, 722, and upper division POLIT electives. Also required is Special Methods SEDUC 800S.

Psychology/Sociology (for Secondary Teaching, Grades 7-12). This is not a major, but may be taken to add a second teaching field. Minimum of 49 to 50 q.h. to include PSYCH 560, 700, 702, 709, Socio. 500, 600, 751, 700, 711, ANTHR 602; one of the following two: PSYCH 755 or 756; one of the following two pairs: SOCIO 701 and 702 or PSYCH 613 and 614. One of the following two: PSYCH 615 or 704. Also required is Special Methods SEDUC 800S.

Speech/Communication (Major for Secondary Teaching, Grades 7-12). Minimum of 50 q.h. to include SPCH 530, 581, 603, 606, 640, 653, 656, 670, 698, 750, 754, 801 and six q.h. from the following 4 courses: SPCH 615, 740, 758, and 898. Also required is Special Methods SEDUC 800C.

Stenography and Typing/Keyboarding (Major for Secondary Teaching, Grades 7-12). Minimum of 46 q.h. to include BET 506, 510, 521, 522, 620, 513, 615, 640, 641, 630, 704, 720, 810, 830, and 831. Also required is Special Methods SEDUC 800P. (All Business Education students must pass proficiency exams in the teaching field before being approved for student teaching.)

Visual Arts (Major for Secondary Teaching, Grades 7-12). Minimum of 45-46 q.h. to include ART 501, 502, 503, 504, 521, 522, 523, 716, 725, 730; one of

the following three: ART 611, 721, 820; one of the following three: ART 606, 623, 780; one of the following: ART 770, 771 and an Art elective. Also required are ART 762, 763, and 801.

Grades 7-12 Comprehensive Teaching Fields

Comprehensive Business Education (Major for Secondary Teaching, Grades 7-12). Minimum of 91-97 q.h. to include BET 506, 510, 513, 523, 615, 620, 640, 641, 704, 710, 740, 810, 820, 706, 720, BUTEC 500, 560, 540, 580, 581, 582, 680, ECON 520, 621, HOMEC 780 and one of the following option areas as approved by the advisor (Area C. BET 630, 830, 831; Area D. BET 642, 643; Area E. BUTEC 530, 541, 644; Area F. CIS 607, 608, 613). Also required are Special Methods SEDUC 800B, 800D, and 800P. All Business Education majors must pass proficiency exams in the teaching field before being approved for student teaching.

Comprehensive Communications (Major for Secondary Teaching, Grades 7-12). Minimum of 110-111 q.h. to include ENGL 690, 709, 890; two of the following: ENGL 618, 770, 780, 862, 864, 871; one of the following: ENGL 860, 881, 882, 883, 884, 886; one of the following: ENGL 887, 891, 892, 895, 896; one of the following: ENGL 610, 620, 631, 638, 710, 738; SPCH 530, 653, 661, 670, 750, 754, 762, 801; JOURN 622, 626, 716, 723, 741, 721L, 820; one of the following two: ENGL 651, 755; and ELED 812, 881, 882, 883. (To complete Endorsement in Reading, the student would need to take ELED 884 in addition to these hours). Completion of this major will qualify for the teaching fields of English, Speech, and Journalism. To qualify for the Reading endorsement students need to complete additional work as noted. Also required is one of the following three Special Methods SEDUC 800E, 800C or 800G.

Comprehensive Science (Major for Secondary Teaching, Grades 7-12). Minimum of 93 q.h. to include BIOL 506, 507, 508, 765, 780, 790, 790L, CHEM 515, 516, 517, 603, 604, 719, 720, GEOG 630, GEOL 505, 602, 615, ASTRO 504, PHYS 608 and one of the following two physics sequences (a. PHYS 501, 502, 502L, 503, 503L, 650; b. PHYS 510, 610, 610L, 611, 611L). Completion of this major will qualify the student for the teaching fields of Biology, Chemistry, Physics, and General Science. The teaching field of Earth Science may be obtained by completing GEOL 815 and two of the following four: GEOL 513, 514, 608 or 714. Also required is Special Methods SEDUC 800G.

Comprehensive Social Studies (Major for Secondary Teaching, Grades 7-12). Minimum of 90 q.h. to include HIST 605, 606; one of the following: HIST 511, 512, 513; one of the following: HIST 611, 661, 662, 663, 14 q.h. in History Upper Division Electives and one of the following two options: OPTION A - student completed the above requirements in History and a minimum of 30 q.h. in each of two disciplines out of four defined below:

1. ECON 520, 621, 622, ECON Upper Division Electives;
2. GEOG 626, 640, 650, GEOG Upper Division Electives;
3. POLIT 601, 640, 660, 704, 722, POLIT Upper Division Electives;
4. SOCIO 500, 600, 700, 707, ANTHRO 602, 711, SOCIO Upper Division Electives;

or OPTION B- student completes above requirements in History and a minimum of 30 q.h. in one of the four disciplines defined above and 30 q.h. well distributed across the remaining three disciplines. (Students choosing option B will qualify for only two 9-12 teaching fields.) Also required is Special Methods SEDUC 800S.

Grades K-12 Special Teaching Fields

Computer Science (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include CSCI 610, 615, 620, 705, 710, 740, 770, 780, 805, 875, 885, 886, MATH 571, 572, 673, 714. Also required are Special Methods SEDUC 800G and ELED 824.

Drama/Theatre (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include SPCH 561, 661, 668, 760, 761, 762, 765, 868, 895; three of the following four: SPCH 860, 861, 891, 892; 12 q.h. in Theatre electives; one of the following two blocks (a. SPCH 791, 863, 864, 865, 866 or b. SPCH 763, 769, 792, 866, 867); and ENGL 708. Also required are Special Methods SEDUC 800G and ELED 824.

Health Education (Major for Special Certificate, Grades K-12). Minimum of 64 q.h. to include HLTH 596, 601, 604, 606L, 680, 690, 691, 693, 721, 731, 790, 791, 794, 892, 899, PSYCH 755, 756, BIOL 551, 552, 560, CHEM 502, HOMEC 551. Also required is HLTH 794.

French (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include FRNCH 501, 502, 503, 601, 602, 615, 655, 675, 705, 706, 710, 755, 771, 772; one of the following two: 740, 750, and two electives in 800-level French courses. Also required are Special Methods SEDUC 800G and ELED 824. If a student has had previous French preparation in high school, he/she may elect to receive the credits for 501, 502, 503 by examination. Successful completion of the appropriate competency test will be required in this case, before the student completes 601. Students who have had extensive high school preparation may elect to receive the 8 credits for FRNCH 601, 602 by examination. Successful completion of the appropriate competency tests will be required in this case, before students complete any subsequent course.

German (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include GERMN 501, 502, 503, 601, 602, 610, 615, 618, 620, 730, 750, 751, 755, Hist. 768, 769; and two of the following five: GERMN

860, 861, 874, 875, 885. Also required are Special Methods SEDUC 800G and ELED 824. If a student has had previous German preparation in high school, he/she may elect to receive the credits for GERMN 501, 502, 503 by examination. Successful completion of the appropriate competency test will be required in this case, before the student completes 601. Students who have had extensive high school preparation may elect to receive the 8 credits for GERMN 601 and 602 by examination. Successful completion of the appropriate competency tests will be required in this case, before students complete any subsequent course.

Italian (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include ITALN 501, 502, 503, 601, 602, 640, 708, 709, 720, 721, 730, 731, and four of the following five: ITALN 801, 802, 830, 840, and 885. Also required are Special Methods SEDUC 800G and ELED 824. If a student has had previous Italian preparation in high school, he/she may elect to receive the credits for ITALN 501, 502, 503 by examination. Successful completion of the appropriate competency test will be required in this case, before the student completes 601. Students who have had extensive high school preparation may elect to receive the 8 credits for ITALN 601 and 602 by examination. Successful completion of the appropriate competency tests will be required in this case, before students complete any subsequent course.

Russian (Major for Special Certificate, Grades K-12). Minimum of 68 q.h. to include RUSSN 501, 502, 503, 601, 602. Twenty q.h. from the following ten: 604, 615, 640, 700, 765, 770, 800, 808, 809, 885; Twenty eight q.h. of the following areas: may also include courses from the above 1) Advanced Russian Language, 2) Russian and Soviet Literature, 3) Russian and Soviet History and Culture and three of the following twelve courses: RUSSN 620, 660, 715, HIST 777, 778, 779, POLIT 640, 741, 762, ENGL 750, ANTHR 753, and ECON 802. Also required are Special Methods SEDUC 800G and ELED 824. If a student has had previous Russian preparation in high school, he/she may elect to receive the credits for 501-503 by examination. Successful completion of the appropriate competency test will be required in this case, before the student completes 601. Students who have had extensive high school preparation may elect to receive the 8 credits for RUSSN 601 and 602 by examination. Successful completion of the appropriate competency tests will be required in this case, before students complete any subsequent course.

Spanish (Major for Special Certificate, Grades K-12). Minimim of 68 q.h. to include SPAN 655, 705, 706, 718, 719, 725, 726, 750, 751 and at least one 800-level elective included in remaining 12 q.h. The following courses are strongly recommended: SPAN 615, 655. Students with two years high school Spanish are advised to begin at SPAN 601; three years Spanish to begin at SPAN 602; four years Spanish to begin at SPAN 615. Also required are SEDUC 800G and ELED 824.

Music (Major for Special Certificate, Grades K-12). Minimum of 97 q.h. to include MUSIC 511, 518, 519, 530, 531, 532, 630, 631, 632, 715, 750, 770, 771, 772; one of the following two: MUSIC 716, 717; and one of the following emphasis areas: Voice, Instrumental, Piano, or Organ. Also required are MUSIC 815 and 823.

Physical Education (Special Certificate, Grades K-12). Minimum of 69-71 q.h. to include PE 595, 601, 661, 670, 680, 750, 766, 767, 768, 780, 791, 795, 850, 855, 860, 895, 896, 897, BIOL 551, 552, PE 545, 550, 551; one of the following two: PE 524, 528; one of the following eleven: PE 506, 510, 511, 512-513, 520-521, 522-523, 525, 540; one of the following four: PE 530, 531, 630, 631; four of the following six: PE 500, 501, 502, 503, 504, 505; one of the following nine: PE 508, 514-515, 519/527, 526, 555, 561, 564; and two of the following three: PE 516, 517, 518. Also required are PE 768, 767, 860.

Visual Art (Major for Special Certificate, Grades K-12). Minimum of 72 q.h. to include ART 500, 501, 502, 503, 504, 521, 522, 523, 600, 601, 602, 606, 611, 612, 623, 604, 725, 730, 770, 780, 723, 822, 814, 815. Also required are ART 662, 762, 763 and 801.

Vocational Education

Vocational Education. Students pursuing vocational certificates should see an advisor in the appropriate department in the College of Applied Science and Technology as well as a School of Education academic advisor.

Business Education (Vocational). Minimum of 95-101 q.h. to include BET 506, 510, 513, 522, 615, 620, 640, 641, 704, 710, 740, 810, 820, 706, 720, BUTEC 500, 560, 540, 580, 581, 582, 680, ECON 520, 621, HOMEC 780 and one of the following option areas as approved by the advisor; Area C: Stenography, Area D: Information Processing, Area E: Sales, Area F: Computer Information Systems. Also required are Special Methods SEDUC 800B, 800D, and 800P. All Comprehensive Business Education majors desiring vocational certification must complete SEDUC 826 and BET 826.

Home Economics-Consumer Homemaking Education (Vocational). Minimum of 73 q.h. to include HOMEC 506, 508, 550, 551, 601, 618, 631, 652, 705, 706, 731, 763, 764, 780, 850, 852, ECON 510, BIOL 604, HOMEC 692, PSYCH 755, and HOMEC 853. Also required is HOMEC 771, 799, 800.

Home Economics-Job Training-Child Care Services (Vocational). Minimum of 73 q.h. to include HOMEC 512, 531, 550, 631, 632, 706, 663, 664, 731, 850, BUTEC 500, MATH 506, MUSIC 722, HPE 590, HPE 623, ELED 630, PSYCH 755, HOMEC 835; one of the following two: HOMEC 551, 672; one of the following two: HOMEC 763, 764; one of the following two: HOMEC 780, 852. Also required are HOMEC 799 and 890.

Home Economics-Job Training-Food Services (Vocational). Minimum of 72 q.h. to include HOMEC 550, 551, 601, 609, 610, 611, 611L, 626, 628, 652, 731, 751, 751L, 763, 810, 850, BUTEC 500, MATH 506, BIOL 604, HOMEC 835; one of the following: HOMEC 780, 852. Also required are HOMEC 799, and 890.

Home Economics-Job Training-Fabric Services (Vocational). Minimum of 73 q.h. to include HOMEC 506, 508, 525, 543, 550, 604, 635, 702, 703, 705, 731, 763, 764, 850, 875, BUTEC 500, MATH 506, ART 502, Art Elective-History or Appreciation. HOMEC 835, one of the following: HOMEC 780, 852; one of the following two: HOMEC 730, or 888. Also required are HOMEC 799 and 890.

Home Economics-Job Training-Community and Home Services (Vocational). Minimum of 73 q.h. to include HOMEC 550, 551, 601, 611, 611L, 632, 652, 705, 706, 731, 763, 780, 830, 850, 852, 875, BUTEC 500, MATH 506, BIOL 604, PSYCH 755, and HOMEC 835. Also required are HOMEC 799 and 890.

Home Economics-Job Training-Multi-Area Cooperative (Vocational). Minimum of 76 q.h. to include HOMEC 506, 508, 512, 550, 551, 601, 609, 652, 705, 706, 731, 763, 764, 780, 850, 852, BUTEC 500, MATH 506, BIOL 604, PSYCH 755, and HOMEC 835. Also required HOMEC 799 and 890.

Endorsements

An existing secondary certificate may be endorsed to allow the individual to teach additional subjects. This is usually achieved by completing a second teaching field as outlined in one of the above listings. In addition, there are two teaching areas described below offered only as endorsements.

Typewriting/Keyboarding (Endorsement only, Grades 7-12). Minimum of 11 q.h. to include BET 521, BET 522, BET 615, BET 620, and BET 810. (All Business Education students must pass proficiency exams in the teaching field before being approved for student teaching.)

Reading (Grades K-12). Minimum of 19 q.h. to consist of ELED 812, 881, 882, 883 and 884.

Validations

Gifted and Talented validation program is available at the Graduate level.

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: FOUND 501, 702, 708, 710, SEDUC 700, 704, 706, 706L, 800, 842 or equivalent[1], SPED 730, (46 q.h.), PSYCH 560, 709 (8 q.h.), ENGL 550, 551 (8 q.h.), SPCH 654 (4 q.h.),

Humanities[2] (8-18 q.h.), Science and Mathematics[3], (12-22 q.h.), Social Studies[4]* (16-22 q.h.), HPE 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 ELED 883 instead. Prereq.: Must be taken concurrent with SEDUC 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

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[1]Equivalents in student teaching course and variability of quarter hours to satisfy certification areas are: SEDUC 843- Supervised Student Teaching: Visual Art, Gr. K-12; SEDUC 845- Supervised Teaching: Health, Gr. K-12; SEDUC 846- Supervised Student Teaching: Physical Ed., Gr. K-12; SEDUC 827- Supervised Student Teaching: Modern Language, Gr. K-12; SEDUC 837- Supervised Student Teaching: Computer Science, Gr. K-12; SEDUC 838- Supervised Student Teaching: Drama/Theatre, Gr. K-12; SEDUC 844- Supervised Student Teaching: Music, 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.

[2]Humanities. The candidate must have completed 8 q.h. in any of the following: literature courses in English or Humanities (600-level or above), course work 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.

[3]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.

[4]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.

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 SEDUC 706. Required of all regular high school and special teaching certificate candidates. Grading is CR/NC. Prereq.: Admission to upper division status in 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. Analysis of classroom behavior. Secondary school curriculum. Taken concurrently with SEDUC 706L. Prereq.: SEDUC 704. 4 q.h.

706L. *Principles of High School Teaching Lab.* A 90-hour set of clinical experiences in classroom teaching, including on-campus activities such as microteaching, reflective teaching, peer teaching, simulation, role playing, tutoring, and protocols as well as field activities in local secondary schools. Must be taken concurrently with SEDUC 706. Prereq.: SEDUC 704. (Not required of P.E. majors). 3 q.h.

800B. *Techniques of Teaching Basic Business Subjects.* Includes demonstration and practice of up-to-date techniques. Prereq.: Junior standing, HOMEC 780, BET 706, ECON 621. 2 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; SEDUC 706. 3 q.h.

800D. *Techniques of Teaching Accounting and Data Processing.* Includes demonstration and practice of up-to-date techniques. Prereq.: Junior standing, BET 710, ACCTG 606. 2 q.h.

800E. *Special Methods-English.* A study of the problems involved in the teaching of English. Observation of teaching in the secondary schools, reports, and term paper may be required. This course is prerequisite to SEDUC 842, Student Teaching. Prereq.: SEDUC 704 and senior standing. 3 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 main interest. Observation of teaching in secondary schools, reports, and term paper may be required. This course is prerequisite to SEDUC 842, Student Teaching. Prereq.: FOUND 702, 708, 710, SEDUC 704, 706, 706L. 3 q.h.

800M. *Special Methods-Mathematics.* A study of the problems involved in the teaching of mathematics. Observation of teaching in the secondary schools, reports, and term paper may be required. This course is prerequisite to SEDUC 842, Student Teaching. Prereq.: FOUND 702, 708 and 710, SEDUC 704. 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.

800S. *Special Methods-Social Studies.* A study of the problems involved in the teaching of secondary social studies. Observation of teaching in secondary schools, reports, and term paper may be required. Prereq.: SEDUC 704 and senior standing. 3 q.h.

824. *Techniques of Teaching K-12.* Enables the prospective special subject K-12 teacher to learn instructional planning, strategy implementation, performance and achievement evaluation, and appropriate classroom management skills for use in elementary and middle school settings. Identical with ELED 824. Prereq.: SEDUC 700 and 704. 706 and 706L recommended. 4 q.h.

826. *Teaching Intensive and Cooperative Business Education.* Organization, administration, implementation, and evaluation of Intensive and Cooperative Business Education programs at the secondary and adult education levels. Selection, instruction, curriculum, and placement of vocational students. Same as BET 826. Prereq.: SEDUC 706 and 706L. 4 q.h.

827. *Supervised Student Teaching: Language (K-12).* Prereq.: SEDUC 700, 704, 706, 706L, 800, FOUND 702, 708, 710 or the equivalent method course(s) in the subject field; senior status and the approval of the Chair of the Department of Foreign Languages. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

837. *Supervised Student Teaching: Computer Science (K-12).* Prereq.: SEDUC 700, 704, 706, 706L, 800, FOUND 702, 708, 710, or the equivalent method course(s) in the subject field; senior status and the approval of the Chair of the Department of Mathematics & Computer Science. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

838. *Supervised Student Teaching: Drama/Theatre (K-12).* Prereq.: SEDUC 700, 704, 706, 706L, 800, FOUND 702, 708, 710, or the equivalent method course(s) in the subject field; senior status and the approval of the Chair of the Department of Speech Communication and Theatre. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

842. *Supervised Student Teaching: High School.* Prereq.: Senior status and completion of SEDUC 700, 704, 706, 706L, 800, FOUND 702, 708, 710 or the equivalent methods course in the subject field; a grade of at least B in two-thirds of the minimum subject field requirements and professional education courses for certification with no subject field course grade in the

minimum requirements below C; and the approval of the chair of the department of the student's major. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

843. *Supervised Student Teaching: Visual Art, Grades K-12.* Prereq.: SEDUC 700, 704, 706, 706L, FOUND 702, 708, 710, ART 724, 760, 767, and 768, senior status and approval of the chair of the Art Department. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

844. *Supervised Student Teaching: Music, Grades K-12.* Prereq.: SEDUC 700, 704, 706, 706L, FOUND 702, 708, 710, MUSIC 511, 715, 716/717, 815, and 823; senior status and approval of the director, Dana School of Music. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

845. *Supervised Student Teaching: Health, Grades K-12.* Prereq.: SEDUC 700, 704, 706, 706L, FOUND 702, 708, 710 (or HPE 860); HPE 680, 701, 721, 794, and 892; senior status and approval of the chair of the HPE Department. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

846. *Supervised Student Teaching: Physical Education, Grades K-12.* Prereq.: SEDUC 700, 704, 706, FOUND 702, 708; HPE 680, 750, 766, 767, 768, 780, 795, and 860; senior status and approval of the chair of the HPE Department. Grading will be CR/NC. See requirements for Student Teaching under School of Education. 1-15 q.h.

856. *Diagnosis and Treatment of Reading Disability: Part 1.* Selection, administration, and scoring of various individual tests: techniques for evaluating the child with a reading disability. Prereq.: consent of instructor and COUNS 822 or SPED 833. 4 q.h.

857. *Diagnosis and Treatment of Reading Disabilities: Part 2.* 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.: SEDUC 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 ELED 874. Also listed as SPED 874. Prereq.: ELED 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 ELED 878. Also listed as SPED 878. Prereq.: SEDUC 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.: ELED 882, 883, SEDUC 856, 857 and consent of instructor. 4 q.h.

885. *Teaching Strategies 1.* 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 2* 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.: SEDUC 885. 3 q.h.

887. *Teaching Strategies 3.*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.: SEDUC 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 using 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

Professor Dunsing (Chair); Associate Professors Angle, Hoops, Nickelsburg and Schaiper; Assistant Professor Sweeney.

The Department of Special Education offers four teacher certification programs, approved by the Ohio State Department of Education.

The programs are Developmentally Handicapped (DH), Multiply Handicapped (MH), Severe Behavior Handicapped (SBH), and Specific Learning Disabled (SLD).

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 academic advisors in the School of Education, Room 1051.

Special Education Programs

YSU trains and certifies teachers of handicapped children in the following four categories:

Developmentally Handicapped (DH). These mildly retarded individuals are served in public school settings and need programs stressing basic academic, independent living, and vocational/occupational skills. Professional educators in this field are widely sought, and may function as teachers, consultants or supervisors.

Multiply Handicapped (MH). In Ohio, these individuals are served primarily by county mental retardation programs. The emphasis is on training in self-care, perceptual-motor, communication, socialization, and work study skills.

Severe Behavior Handicapped (SBH). These are individuals of normal ability who have severe adjustment problems which interfere with their ability to adapt to normal classroom routine. They may become disruptive or display other symptoms of emotional disturbance. Classroom structure and behavior management techniques must be rigorous and consistent. Professional educators in this field are in demand and may function as teachers, consultants or supervisors.

Specific Learning Disabled (SLD). Many children with average or higher intelligence cannot function within a normal educational setting because of severe learning 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 SLD tutors.

Special Teacher Education Program (STEP). All students seeking certification in an area of Special Education must complete STEP. The program is an intensive field-based experience conducted in cooperation with local elementary and secondary schools. STEP provides field experiences coordinated with professional methods courses. Instruction and supervision are provided by faculty from Special and Elementary Education. Students learn to observe, diagnose, prescribe for, and teach exceptional children individually and in small groups.

STEP is scheduled during the Fall and Spring Quarters and students are committed to an 8:00 a.m. to 3:00 p.m. schedule. Methods instruction takes place at the University and on-site teaching takes place in the public schools. Field experiences are carefully planned and closely supervised and evaluated daily to insure that students will develop needed competencies. The courses included in STEP are SPED 835, ELED 715, either SPED 852 (Fall) or SPED 853 (Spring) and SPED 854, for a total of 15 q.h. These provide specialized training in instructional and behavior management, and in methods of teaching science and either language arts or arithmatic. The emphasis is on individualized instruction adapted to the unique needs of each child.

Junior or senior students planning to take STEP must submit an application available in the office of the Department of Special Education. Applications for the Fall STEP are accepted beginning on the second Monday of the Winter Quarter. Application for the Spring STEP are accepted beginning the second Monday of the Fall Quarter.

Minimum prerequisites for STEP include SPED 802 and 863, as well as ELED 812 (for Fall STEP) or ELED 713 (for Spring STEP). It is best to take STEP one or two quarters prior to student teaching. Students are advised that the STEP experience is a full-time commitment. They should not plan any outside work during that period, nor will they be permitted to take any concurrent coursework.

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.: PSYCH 755. 4 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.: Admission to the School of Education. 4 q.h.

828. *Education of Children With Severe Behavioral Handicaps.* Advanced behavior management procedures are employed within an educational/clinical setting. Explores multidisciplinary theories, techniques and strategies. Included are rule setting, instructional

and home management, assessment, multilevel reinforcement, crisis prevention and intervention, and handling aggressive behaviors. To be taken with SPED 828L. Prereq. or concurrent: SPED 862. 3 q.h.

828L. *Education of Children with Severe Behavioral Handicaps Lab.* A sixty clock-hour clinical/field experience. Assessment of severe behavior disorders and developmment of intervention plans with children in local SBH units. Students are assigned to field sites 6-8 hours per week. To be taken concurrently with SPED 828. Prereq. or concurrent: SPED 862. 2 q.h.

829. *Supervised Student Teaching: Severe Behavior Handicapped Children.* To be taken concurrently with SPED 869. Prereq.: FOUND 702, 708, 710, ELED 705, 714, 715, 812 SPED 802, 828, 828L, 835, 852, 853; senior status and approval of the chair of the Special Education Department. Grading will be CR/NC. See requirements for student teaching under School of Education. 6-15 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 MSPR.* Curriculum planning, teaching methods, and instructional materials for moderately, severely, and profoundly retarded, or developmentally disabled. To be taken concurrently with SPED 834L. Prereq.: SPED 833. 4 q.h.

834L. *Practicum in Education and Training MSPR.* Application of assessment, habilitation, and rehabilitation techniques in an education and/or vocational setting. Includes alternative modes of communication and advanced behavior management strategies including aggressive client training. To be taken concurrently with SPED 834. Prereq: SPED 833. 2 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. Ten hours of classroom participation and observation are required. Prereq.: SPED 833. 4 q.h.

839. *Supervised Student Teaching: Multiply Handicapped Children.* To be taken concurrently with SPED 869. Prereq.: FOUND 702, 708, 710, SPED 802, 833, 834, 835, 836, 836L, 851, ELED 705, 715, senior status and approval of the chair of the Special Education Department. Grading will be CR/NC. See requirements for student teaching under School of Education. 6-15 q.h.

848. *Supervised Student Teaching: Developmentally Handicapped Children.* To be taken concurrently with SPED 869. Prereq.: FOUND 702, 708, 710, ELED 705, 714, 715, 812, SPED 802, 833, 835, 851, 852, 853, senior status and approval of the chair of the Special Education Department. Grading will be CR/NC. See requirements for student teaching under School of Education. 6-15 q.h.

849. *Supervised Student Teaching: Specific Learning Disabled Children.* To be taken concurrently with SPED 869. Prereq.: FOUND 702, 708, 710, ELED 705, 715, 812, SPED 802, 835, 852, 853, 863, 866, senior status and approval of the chair of the Special Education Department. Grading will be CR/NC. See requirements for student teaching under School of Education. 6-15 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.: SPED 833. 4 q.h.

852. *Language Arts Methods in Special Education.* Principles, practices, materials, and aids for teaching language arts in Special Education. Diagnostic and evaluation procedures; individual problems; techniques, curriculum units, guidance, planning; tutoring and participation. Prereq.: SPED 802, 863 and ELED 812. 4 q.h.

853. *Arithmetic Methods in Special Education.* Principles, practices, materials, and aids for teaching arithmetic in Special Education. Diagnostic and evaluation procedures; individualized instructional techniques; observation, tutoring, and participation. Prereq.: SPED 802, 863; ELED 713 or permission of instructor. 4 q.h.

854. *STEP Field Experience.* Field application of principles of organization and management of a special education classroom, part of 10-week STEP (Special Teacher Education Program). Activities include IEP development, academic evaluation and instruction, behavior management, building self-esteem and a positive social climate, collaboration and parent conferencing. Prereq.: Admission to the School of Education. 3 q.h.

855. *Career and Vocational Education for Handicapped Individuals.* Emphasis on lifelong career orientation and the development and implementation of K-12 prevocational/vocational curriculum. How to integrate practical experiences in the classroom, home and community. Prereq.: Admission to the School of Education. 4 q.h.

858. *Interview Concepts and Strategies in Early Childhood Special Education.* Review and analysis of the methods by which young children construct knowledge about their physical, social, and intellectual worlds. Study of patterns of normal and atypical development from birth through age eight, as well as the development of appropriate models for effective intervention. Prereq.: PSYCH 755. 3 q.h.

862. *Principles of Interaction With Special Needs Students.* Principles and methods of interaction with students, parents and other professionals in behalf of students with special needs. A team approach and the use of community resources will be emphasized. Prereq.: SPED 864. Also listed as COUNS 862. 3 q.h.

863. *Learning Disabilities.* Description, classification, development, and academic and social adjustment of children with learning disabilities. Relates the contribution of diverse disciplines to theory and practice. A developmental approach to motor, perceptual, cognitive, language, and social-emotional functioning within an educational context. Prereq.: Admission to the School of Education. 4 q.h.

864. *Communication and Consultation Skills in Special Education.* Designed to enable teachers of exceptional individuals to gain the cooperation and involvement of professionals, parents, and children. Students will assume the role of child advocate and explore methods of facilitating educational placements and programming designed to best meet handicapped children's unique needs. Prereq.: SPED 802 or permission of instructor. 4 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 Specific Learning Disabilities.* A variety of assessment procedures are explored for the purpose of placing SLD children and designing appropriate educational programs for them. Emphases are upon disorders of motor, perceptual, cognitive, and language functioning and learning styles. Prereq. or concurrent with SPED 863. 4 q.h.

867. *Practicum in Specific Learning Disabilities.* Diagnostic procedures are used to develop a comprehensive assessment of a child's current functioning. Emphases are upon those areas explored in SPED 866. An individualized education program (IEP) will be developed and partially implemented. Prereq.: SPED 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.: SPED 802, 833 or 863, or equivalent. May be repeated to maximum of accumulative total of 6 q.h. 1-6 q.h.

869. *Student Teaching Seminar - Special Education.* To be taken with student teaching. Reflective teaching techniques will be explored with emphasis on daily lessons and student teachers' interactions with children, teachers and administrators. Prereq.: Admission to student teaching in Special Education. 1 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 SEDUC 874. Also listed as ELED 874. Prereq.: ELED 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 SEDUC 878. Also listed as ELED 878. Prereq.: SPED 874. 4 q.h.

CERTIFICATION PROGRAMS IN SPECIAL EDUCATION

An undergraduate student seeking certification in special education (DH, MH, SBH, or SLD) must complete a specified series of general courses in addition to the upper division (professional education) courses. Both components are designed to meet state certification standards. Many students prefer to earn two (or more) certificates, i.e., either in special and elementary education or in two areas of special education (see section II A below).

I. Curriculum in Special Education

A. General Requirements

Courses	Cr. Hrs.
FOUND 501 Introduction to Education	4
ENGL 550 Composition 1	4
ENGL 551 Composition 2	4
ENGL Literature Elective	4
ENGL 651 Introduction to Language	4
ENGL 708 Children's Literature	4
SPCH 654 Speech Communication in the Classroom	4
SPCH 705 Speech Problems of Children	3
MUSIC 621 Music Literature and Appreciation	4
MUSIC 721 Music Education for Elementary Teachers	4
ART 662 Art Appreciation for Classroom Teachers	4
ART 762 Art Strategies for Classroom Teachers	3
BIOL 505 Biology and the Modern World or BIOL 506 Principles of Biology	4
CHEM 500 Chemistry in Modern Living or CHEM 501 Survey of Chemistry 1	4
PHYS SCI Elective	4
MATH 515 Mathematics for Elementary Teachers 1	5

MATH 516 Mathematics for Elementary Teachers 2 4
PSYCH 560 General Psychology 4
PSYCH 755 Developmental Psychology 1 (Child) 4
GEOG 640 Human Geography 4
HIST 605 History of the United States 1 or
HIST 606 History of the United States 2 4
HLTH 590 Health Education 3
PE 622 Motor Skill Analysis for the Elementary Teacher 1
HPE Activities (Elective) 2
HLTH 721 Health Education in the Elementary Grades 3
PE 722 Physical Education in Elementary Grades for the Classroom Teacher 3
PE 895 Adapted Physical Education 3

B. Professional Education Requirements

Courses	Cr. Hrs.
FOUND 702 Instructional Media	2
ELED 705 Professional Laboratory Experiences: Elementary	3
FOUND 708 Education and Society	4
FOUND 710 Educational Measurement and Guidance	4
ELED 713 Teaching of Mathematics	4
COUNS 761 Human Relations and Guidance Skills for Teachers	3
SPED 802 Education of Exceptional Children	4
ELED 812 Language Arts 1	4
ELED 813 Language Arts 2	3
SPED 855 Career and Vocational Education for Handicapped Individuals	4
SPED 863 Learning Disabilities	4
SPED 864 Communication and Consultation Skills in Special Education	4

Four of the following 5 courses must be completed in STEP (see text).

ELED 715 The Teaching of Science in the Elementary School (Fall, Spring)	4
SPED 835 Classroom Management for Exceptional Individuals (Fall, Spring)	4
SPED 852 Language Arts Methods in Special Education (Fall)	4
SPED 853 Arithmetic Methods in Special Education (Spring)	4
SPED 854 STEP Field Experience	3

C. Specialization Area Requirements

1. Developmentally Handicapped (DH)

Courses	Cr. Hrs.
ELED 714 The Teaching of Social Sciences in the Elementary School	4
SPED 833 Education of the Mentally Retarded	4
SPED 851 Social Studies and Social Skills for the Mentally Retarded	4
SPED 848 Supervised Student Teaching: Developmentally Handicapped Children	6-15
SPED 869 Student Teaching Seminar-Special Education	1

Total DH Program (sum of A, B, & C1): 187 q.h.

2. Multiply Handicapped (MH)

Courses	Cr. Hrs.
SPED 833 Education of Mentally Retarded	4
SPED 834 Education and Training of MSPR	4
SPED 834L Practicum in Education and Training MSPR	2
SPED 836 Education of Multiply-Handicapped Individuals	4
SPED 851 Social Studies and Social Skills for Mentally Retarded	4
SPED 839 Supervised Student Teaching: Multiply Handicapped Children	6-15
SPED 869 Student Teaching Seminar-Special Education	1

Total MH Program (sum of A, B & C2): 193 q.h.

3. Severe Behavior Handicapped (SBH)

Courses	Cr. Hrs.
PSYCH 702 Abnormal Psychology	4
ELED 714 The Teaching of Social Sciences in the Elementary School	4
SPED 828 Education of Children with Severe Behavioral Handicaps	3
SPED 828L Education of Children with Severe Behavioral Handicaps Lab	2
COUNS 862 Principles of Interaction with Special Needs Students	3
SPED 829 Supervised Student Teaching: Severe Behavior Handicapped Children	6-15
SPED 869 Student Teaching Seminar-Special Education	1

Total SBH Program (sum of A, B & C3): 191 q.h.

4. Specific Learning Disabled (SLD)

Courses	Cr. Hrs.
PSYCH 702 Abnormal Psychology	4
ELED 714 The Teaching of Social Science in Elementary Schools.	4
SPED 866 Clinical Teaching of Children with Specific Learning Disabilities	4
SPED 867 Practicum in Specific Learning Disabilities	4-6
SPED 849 Supervised Student Teaching: Specific Learning Disabled Children	6-15
SPED 869 Student Teaching Seminar-Special Education	1

Total SLD Program (sum of A, B & C4): 193 q.h.

II. Other Curriculum Options

A. Undergraduate

Students are encouraged to consider becoming certified in two areas, but must realize that additional time will be needed beyond the 186 q.h. required for graduation. The most likely options are given below. Please consult with your academic advisor.

1. DH plus MH certification — Will require some additonal coursework plus student teaching in both areas.

2. SBH plus SLD certification — Will require 9 or 10 q.h. of additional coursework plus student teaching in both areas.

3. SLD plus Elementary Certification — Will require an area of concentration, about nine q.h. of additional coursework plus student teaching in both areas. Ask for special guide sheets.

4. SLD plus Secondary Certification — Will require additional lower division coursework in addition to Special Education requirements, and student teaching in both areas.

B. Post-Graduate

There are four classes of post graduate (or graduate) students who may be admitted to certification programs in Special Education. In all cases, they must meet the criteria for admission to the School of Education (q.v.). Those having the fewest requirements are listed first.

1. Teachers certified in an area of Special Education usually may become certified in an additional area with relative ease. Student teaching is required.
2. Teachers certified in Elementary Education require additional coursework plus student teaching.
3. Teachers holding a Secondary or Special area certificate require all the above plus some coursework that elementary teachers will already have completed.
4. Students possessing a bachelor's degree but who are not certified to teach will need to complete basic School of Education admission and course requirements in addition to everything else listed above.

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.

Rigorous academic standards assure the needed groundwork for success and satisfaction in an engineering career.

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 and ENGL 550.

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 1 (MATH 571) or a higher math course.

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

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, ENGL 550 and either CHEM 515 or PHYS 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 chair 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.

DISQUALIFICATION: Prior to admission to a professional program, a student who earns two unsatisfactory grades (D, F, NC) in any required course will be disqualified from enrollment in engineering. A student who interrupts his/her enrollment must return as an "Undetermined Major" and will be subject to this rule even if he/she has been in a professional program previously.

COURSE ENROLLMENT

All 600-, 700-, or 800- level courses in engineering, except CIEGR 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.

BE GRADUATION POLICIES, WRSE

Each of the curricula have established a new minimum graduation requirement. With these new requirements it is necessary to interrupt students in jeopardy before they are irreparably deficient. In most cases, this results in restricted enrollment in required courses at the senior level. If the student reaches an irreparably deficient point in the senior year, further enrollment will be denied. In addition to the overall recalculated C average required by the University, an unrecalculated C average in the major is required. Also an unrecalculated C average in all Engineering courses is required in all majors except Industrial Engineering. The restrictions for deficient students are shown below.

Chemical Engineering

A student deficient prior to the senior year will be denied enrollment in CHEGR 887.

Civil Engineering

A student deficient in the Major prior to the senior year will be denied enrollment in CIEGR 837, 855, & 881.

Electrical Engineering

Enrollment may be denied in required courses if the student falls below the requirements.

Industrial Engineering

A student who is deficient will be denied enrollment in any 800-level course.

Materials Engineering

A student deficient in any of the three requirements will be denied enrollment in any 800 level course.

Mechanical Engineering

In order to enroll in MECH 805, 807, and 870, student must have no deficiency in any of the three requirements and must have a C or better in MECH 603 and MECH 641.

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)	12
Humanities (as specified by the department)	12
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 CURRICULA

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 ENGINEERING (Nuclear Minor)

Professors Ahmed, Jones, Singh (Chair), Slawecki, Szirmay, and Zager; Associate Professor Lim.

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, nuclear, 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, 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, tray dryer, double effect evaporator, computer-controlled distillation tower, gas absorption and liquid-liquid extraction columns, chemical reactors, crushers, grinders, and other solids processing equipment, electrostatic particle separator, centrifuges, 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, high performance liquid chromatograph, absorption and emission spectroscopes, x-ray flourescence analyzer 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

650. *Computer Methods in Chemical Engineering.* Application of computational software packages and spreadsheets to solve chemical engineering problems. Utilization of process simulation packages, such as HYSIM and FLOWTRAN. Real-time computing applications in laboratory automation. One lecture hour and three laboratory hours per week. Prereq.: INEGR 642. 2 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.: CHEGR 683. 3 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 PHYS 500. 3 q.h.

700. *Measurement Laboratory.* Computer application in real-time data acquisition and laboratory data processing. Measurements of physical and chemical properties. Oral presentations and preparation of technical reports. 3 hr. laboratory. Prereq.: CHEGR 600, ENGL 551, CHEGR 683. 1 q.h.

721. *Engineering Plastics.* Preparation, characterization, manufacture, properties and applications of commercial polymers. Prereq.: CHEGR 681 or 683, CHEM 721, or consent of instructor. 4 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, PHYS 610. 3 q.h.

745. *Corrosion Control Engineering.* Introduction to electochemical 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.: CHEGR 681 or 683. 4 q.h.

771, 772. *Chemical Engineering Thermodynamics 1, 2.* 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.: CHEGR 683 or CHEGR 681, MATH 673. 4+4 q.h.

785, 786. *Transport Phenomena 1 and 2.* 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.: CHEGR 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. Oral presentations and preparation of technical reports. 3 hrs. laboratory. Prereq.: CHEGR 785 and CHEGR 786, respectively. 1+1 q.h.

787. *Unit Operations 1.* 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.: CHEGR 786. 4 q.h.

788. *Unit Operations 2.* 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.: CHEGR 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. Oral presentations and preparation of technical reports. 3 hr. laboratory. Prereq.: CHEGR 787 and CHEGR 788, respectively. 1+1 q.h.

789. *Human Beings and the Technological Society.* An interdisciplinary critical examination of humankind 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 SOCIO 789 and BIOL 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 chair. 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.: CHEGR 786 or consent of instructor. 4 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.: CHEGR 726, or concurrent. 1 q.h.

820. *Industrial Pollution Control.* Types, sources and effect of industrial and hazardous waste; principles of industrial and hazardous waste control; discussion and design of biological, physical, and chemical treatment processes. Prereq.: MATH 674, CHEM 517 or CHEGR. 681. 4 q.h.

821. *Fundamentals of Polymer Science.* The survey of polymerzation mechanisms, polymer structure-property relationships, transport properties, flammability related plasticizers and solvents as well as design applications. Prereq.: CHEGR 721 or CHEM 824. 4 q.h.

822. *Reinforced Polymer Structures.* Survey of raw materials, manufacturing methods, and design of products utilizing reinforcing materials combined with an elastomer or polymer binder. Prereq.: CHEM 721, MATH 674, CIEGR 601 or consent of instructor. 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.: CHEGR 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.: CHEGR 726 or equivalent. 3 q.h.

835. *Introduction to Nuclear Fusion.* Fusion reactors; the kinetics of fusion reactions. Plasma confinement technology. Prereq.: CHEGR 726 or equivalent. 3 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.: CHEGR 787 and senior standing in Chemical Engineering or equivalent background. 4 q.h.

880, 881. *Chemical Reactor Design 1 and 2.* 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.: CHEGR 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.: CHEGR 786. 4 q.h.

882L. *Process Dynamics Laboratory.* Experimental studies in process dynamics and control. Treatment of experimental data with correlation and comparison with theory. Oral presentations and preparation of technical reports. Three hours of laboratory. Prereq.: CHEGR 882. 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, modeling of chemical engineering systems and formulation of ordinary and partial differential equations governing chemical engineering operations and their solutions by use of numerical and analytical techniques. Prereq.: CHEGR 786. 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.: CHEGR 726. 4 q.h.

887. *Process and Plant Design 1.* An examination of engineering economic analysis to include: cost estimation, profitability, optimum design, principles of fixed and operating costs, materials and site selection, and general and specialized design techniques. Prereq.: Senior standing in Engineering. 4 q.h.

888. *Process and Plant Design 2.* The application of chemical engineering and cost principles to the component design and selection of process equipment. Prereq.: CHEGR 788, 880, and 887. 4 q.h.

889. *Process and Plant Design 3.* The application of chemical engineering and cost principles to the design of chemical plants and processes including societal aesthetic, environmental, and safety considerations. Prereq.: CHEGR 888. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN CHEMICAL ENGINEERING

FIRST YEAR

Courses	Cr. Hrs.
ENGR 581	2
CHEM 515, 515L, 516, 516L, 517, 517L, General Chemistry	12
MATH 571, 572, 673 Calculus	14
ENGL 550, 551 Basic Composition	8
Health and Physical Education, Activities	2
Humanities/Social Science Elective	4
INEGRE 642 Engineering Computations	4
PHYS 510 General Physics	4
	50

Note: Students without background in mechanical drawing must enroll in MECH 500 Drawing Fundamentals.

SECOND YEAR

Courses	Cr. Hrs.
CHEM 719, 719L, 720, 720L, 721, 721L Organic Chemistry	12
CHEGR 682, 683, Prin. of Chem. Engineering	6
CHEGR 684 Stagewise Separation	3
MATH 674 Calculus	4
MATH 705 Differential Equations	4
PHYS 610, 611 General Physics	8
Health and Physical Education, Activity	1
Mathematics Elective	3
Humanities/Social Science Elective	4
Health and Physical Education, Health	3
CIEGR 601 Mechanics	4
	52

THIRD YEAR

Courses	Cr. Hrs.
CHEM 739, 739L, 740, 740L, 741, 741L Physical Chemistry	12
CHEGR 700L Measurement Laboratory	2
CHEGR 771, 772 Chem. Eng. Thermodynamics	8
CHEGR 785, 785L, 786, 786L Transport Phenomena	10
CHEGR 787 Unit Operations 1	4
MTEGR 606 Engineering Materials	4
Humanities/Social Science Electives	12
	52

FOURTH YEAR

Courses	Cr. Hrs.
CHEGR 787L Unit Operations Laboratory 1	1
CHEGR 788, 788L Unit Operations 2	5
CHEGR 880, 881, Chemical Reactor Design	6
CHEGR 882, 882L Process Dynamics	6
CHEGR 887, 888, 889 Plant and Process Design	12
ELEGR 714R Circuits and Electronics	4
CHEGR Electives	13
Humanities/Social Science Elective	4
	50

Chemical Engineering Electives

Courses	Cr. Hrs.
CHEGR 680 Design Techniques in Chemical Engineering	3
CHEGR 685 Corrosion Control Engineering	4
CHEGR 721 Engineering Plastics	3
CHEGR 726 Elementary Nuclear Reactor Engineering	3
CHEGR 789 Human Beings and the Technological Society	4
CHEGR 800 Special Topics	1-4
CHEGR 801-802-803 Chemical Engineering Projects	6
CHEGR 805 Principles of Bio-medical Engineering	4
CHEGR 811 Transport Phenomena 3	4
CHEGR 817 Management of Nuclear By-Products	1
CHEGR 820 Industrial Pollution Control	4
CHEGR 821 Polymer Science	3
CHEGR 822 Reinforced Polymer Structures	4
CHEGR 830 Introduction to Nuclear Reactors	3
CHEGR 831 Introduction to Nuclear Materials	3
CHEGR 835 Introduction to Nuclear Fusion	3
CHEGR 850 Industrial Processes	4
CHEGR 883 Mathematical Methods in Chemical Engineering	3
CHEGR 886 Nuclear Reactor Design	4

Note: 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 should consult the department chair 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.

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

Courses	Cr. Hrs.
CHEGR 726 Elementary Nuclear Reactor Engineering	3
CHEGR 830 Introduction to Nuclear Reactors or CHEGR 835 Introduction to Nuclear Fusion	3
CHEGR 886 Nuclear Reactor Design	4
	10

ELECTIVES

Courses	Cr. Hrs.
CHEGR 789 Human Beings and the Technological Society	4
CHEGR 811 Transport Phenomena 3	4
CHEGR 883 Mathematical Methods in Chemical Engineering	3
ELEGR 819R Plasma Dynamics	4
CHEGR 817 Management of Nuclear By-products	1
CHEGR 831 Introduction to Nuclear Materials	3
CHEGR 830 Introduction to Nuclear Reactors or CHEGR 835 Introduction to Nuclear Fusion	3
MECH 825 Heat Transfer 2	4
BIOL 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 2	4
MATH 760 Numerical Analysis	4
PHYS 704 Introduction to Modern Physics 1	3
PHYS 705 Introduction to Modern Physics 2	3
PHYS 705L Modern Physics Lab	1
PHYS 826 Elements of Nuclear Physics	3
PHYS 826L Nuclear Physics Lab	1

CIVIL ENGINEERING

Professors Bakos (Chair), Cernica, Khan, Ritter; Associate Professors Alam and Martin; Assistant Professor Husain.

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 1.* 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 2.* 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.: CIEGR 601. (W, SP) 4 q.h.

603. *Mechanics 3.* 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.: CIEGR 602. (F, SP) 4 q.h.

610. *Surveying 1.* 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 1 Laboratory.* Field surveying principles and techniques. Uses of transit and level are stressed. Three laboratory hours per week. Prereq.: Concurrently with CIEGR 610. (F) 1 q.h.

612. *Computer Methods in Civil Engineering.* Introduction to the application software packages STAAD-3, AUTOCAD, and LOTUS 1,2,3. Computer programs using mainframe subroutines will be developed for civil engineering applications. Use of MSDOS and VM/SP operating systems will also be covered. Two lecture hours and three laboratory hours per week. Prerequisite: INEGR 642; CIEGR 602 or concurrent. 3 q.h.

711. *Surveying 2.* A study involving the location, design, and construction of transportation systems, including route selection, horizontal and vertical alignment, earthwork calculations and layout. Prereq.: CIEGR 610. (SP) 3 q.h.

711L. *Surveying 2 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 CIEGR 711. (SP) 1 q.h.

712. *Construction Management.* Fundamentals of construction management: to include contracts, bonding, estimating, organization, finance; cost and productivity of equipment, material, and labor; and project planning and scheduling. Prereq.: CIEGR 612. 4 q.h.

716. *Fluid Mechanics.* A study of the laws of fluid mechanics and their application as applied to incompressible flow; properties of fluids; fluid statics; kinematics and kinetics of one dimensional flow; impulse-momentum; and viscous flow in pipes. Prereq.: CIEGR 602. (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 CIEGR 716, INEGR 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.: CIEGR 716. (SP) 4 q.h.

720. *Highway Engineering 1.* 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.: CIEGR 610. (F) 4 q.h.

736. *Environmental Engineering 1.* Causes and control of water, land, and air pollution; effects of pollution on health and aesthetics; environmental regulations and standards; introduction to water and wastewater treatment. Prereq.: CHEM 516, INEGR 642 or equivalent. 4 q.h.

749. *Structural Analysis 1.* 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.: CIEGR 603. (W) 4 q.h.

751. *Water Quality Analysis 1.* An introduction to physical, chemical, and biological measurements of water quality. Provides laboratory experience in the analysis of natural waters, drinking water, and wastewater. Emphasizes procedures for the collection and interpretation of data on related environmental problems. Two hour lecture and six hours laboratory per week. Identical to CHEM 751 and BIOL 751. Prereq.: CHEM 603. 4 q.h.

752. *Water Quality Analysis 2.* Advanced analytical techniques for evaluation of environmental problems. Topics include pollutant transport in natural waters, toxic contaminants in drinking water, and advanced

wastewater treatment. Experience with several modern laboratory instruments is provided. Two hours lecture and six hours lab per week. Identical to CHEM 752 and BIOL 752. Prereq.: CIEGR 751. 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.: CIEGR 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.: CIEGR 720, CIEGR 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.: CIEGR 749 or permission of instructor. 4 q.h.

837. *Environmental Engineering 2.* 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.: CIEGR 736 and an unrecalculated GPA of 2.0 or better for all CIEGR (major) courses. (W) 4 q.h.

849. *Structural Analysis 2.* 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.: CIEGR 749. (SP) 4 q.h.

855. *Structural Design 1.* 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.: CIEGR 749 and an unrecalculated GPA of 2.0 or better for all CIEGR (major) courses. (F) 4 q.h.

856. *Structural Design 2.* 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.: CIEGR 749. (W) 4 q.h.

857. *Structural Design 3.* 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.: CIEGR 855, CIEGR 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.: CIEGR 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.: CIEGR 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 chair. Two bound copies are required. The completed thesis must be accepted by both the thesis advisor and department chair. Prereq.: Senior standing in Civil Engineering. (F, W, SP) 2+2+2 q.h.

863. *Integrated Design Project.* Students will be required to complete a meaningful design experience that focuses attention on professional practice and is predicated on the accumulated background of curriculum components. Two hours of lecture and six hours of laboratory a week. Prereq.: CIEGR 882 or Senior Standing. 4 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.: CIEGR 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.: CIEGR 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.: CIEGR 849. 4 q.h.

881. *Soil Mechanics.* Properties of soil, classification, capillarity, permeability, stress and strain, consolidation and compressibility, seepage. Prereq.: GEOL 611, MATH 674, CIEGR 749 and an unrecalculated GPA of 2.0 or better for all CIEGR (major) courses. (F) 3 q.h.

881L. *Soil Mechanics Laboratory.* Typical soil testing procedures and physical testing of soil samples. Prereq.: Concurrently with CIEGR 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.: CIEGR 881, CIEGR 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.: CIEGR 610, CIEGR 717. 4 q.h.

884. *Solid and Hazardous Waste Management.* Sources, characteristics, and disposal options for municipal solid waste and potentially hazardous materials. Topics include potential environmental impacts and health effects, optimization of collection systems, recycling, energy recovery, design of land disposal sites, safety considerations, and clean-up of contaminated sites. Prereq.: At least one of the following: CIEGR 736, BIOL 780, CHEM 719, CHEGR 820, or GEOL 804. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH A MAJOR IN CIVIL ENGINEERING

FIRST YEAR*

Courses	Cr. Hrs.
ENGR 581 Intro to Engr	2
CIEGR 610 Surveying 1	4
CIEGR 610L Surveying 1 Lab	1
MATH 571 Calc 1	5
MATH 572 Calc 2	4
MATH 673 Calc 3	5
ENGL 550 Basic Comp 1	4
ENGL 551 Basic Comp 2	4
PHYS 510 Gen Physics 1	4
PHYS 610 Gen Physics 2	4
SOCSC Elec	4
SOCSC Elec	4
HLTH 590 Health Education	3
HPE Health Activity	1
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*Students deficient in high school Mechanical Drawing must take MECH 500.

SECOND YEAR

Courses	Cr. Hrs.
CIEGR 601 Mechanics 1	4
CIEGR 602 Mechanics 2	4
CIEGR 603 Mechanics 3	4
MATH 674 Calc 4 (P)	4
MATH 705 Diff Equa 1	4
INEGR 642 Engr Comp	4
MECH 641 Dynamics	4
CIEGR 612 Cpt Mtd for Civil Engrs	3
CHEM 515 Gen Chem 1	4
CHEM 516 Gen Chem 2	4
GEOL 611 Geol for Engineers	4
SOCSC Elec	4
SPCH 652 Bus & Prof Spch	3
HPE Activity	1
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THIRD YEAR

Courses	Cr. Hrs.
CIEGR 716 Fluid Mechanics	3
CIEGR 716L Fluid Mechanics Lab	1
CIEGR 720 Highway Engr	4
CIEGR 877 Systems Engr	4
CIEGR 749 Structural Anal 1	4
CIEGR 717 Hydraulic Engr	4
CIEGR 736 Environ Engr 1	4
ELEGR 714 Circuits & Elect	4
MECH 603 Thermodynamics 1	4
INEGR 724 Engr Economy	4
Basic Science Elec	4
HPE Activity	1
Selective Course I**	4
CHEGR 681 Industrial Stoichiometry	4
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FOURTH YEAR

Courses	Cr. Hrs.
CIEGR 855 Structural Design 1	4
CIEGR 881 Soil Mechanics	3
CIEGR 881L Soil Mechanics Lab	1
CIEGR 856 Structural Design 2	4
CIEGR 882 Soil & Foundation Engr.	4

**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.

CIEGR Engr Sci Elec** 4
Selective Course II* 4
CIEGR Design Elective** 4
CIEGR 863 Integrated Design Project 4
MATH Elec 4
PHIL 625 Introduction to Professional Ethics 4
HUMAN Elec 4
SOCSC Elec 4

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Selective Course I

Environmental	CIEGR 775
Structural	CIEGR 849
Transportation	CIEGR 711 & 711L

Selective Course II

Environmental	CIEGR 849
Structural	CIEGR 857
Transportation	CIEGR 820

NOTE: Only courses in the elective areas of the CIEGR curriculum may be taken on a credit/no credit basis with the exception of those elective courses taken within the CIEGR department.

Normal Day Offerings

FALL	WINTER	SPRING
601	601	602
603	602	603
610	716	612
610L	716L	711
716	749	711L
716L	775	717
720	837	820
855	856	736
877	882	849
881		857
881L		863

Normal Night Offerings

	FALL	WINTER	SPRING
91-92	601	602	603
	610	716	711
	610L	716L	711L
		749	
92-93	601	602	603
	881	716	
	881L	716L	
	855	856	
		882	
93-94	601	602	603
	720	716	711
	610	716L	711L
	610L		736
94-95	601	602	603
	877	716	612
		716L	717
			736

*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.

**CIEGR electives are selected from 700 and 800 level civil engineering courses with the written approval of the students's advisor. One CIEGR elective must be designated as an ABET design oriented course while the other must be designated in the engineering science area. 6 q.h. of CIEGR 860, 861, 862 may be taken in lieu of 8 q.h. of CIEGR electives with permission of a thesis advisor.

ELECTRICAL ENGINEERING

Professors Foulkes, Munro, Pansino (Chair), Rost, Siman, Skarote; Associate 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 Intel Microprocessor Development Systems with sufficient capability for complete design of both software and hardware for microprocessor-based systems. Both mainframe and PC computing is available.

Course Descriptions

601. *Basic Circuit Theory 1.* 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 2.* 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.: ELEGR 601. 3 q.h.

603. *Basic Circuit Theory 3.* 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.: ELEGR 602. 3 q.h.

611. *Instrumentation and Computation Laboratory 1.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using modern CAD software such as SPICE. Prereq. or concurrent: ELEGR 601 or equivalent. 1 q.h.

612. *Instrumentation and Computation Laboratory 2.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using modern CAD software such as SPICE. Prereq.: ELEGR 611, ENGL 551. 1 q.h.

613. *Instrumentation and Computation Laboratory 3.* Theory and applications of laboratory instruments. Laboratory experimentation. Digital computer techniques using modern CAD software such as SPICE. Prereq.: ELEGR 602, 612. 1 q.h.

702. *Fundamentals of Logic Circuit Design.* Introduction to digital design concepts: number systems, Boolean algebra, logic gates, and truth tables. Minimization and design of combinational circuits: maps, variable-entered mapping theory, and reduction techniques. Combinational arithmetic circuits, comparators, multiplexers, coders and decoders, and their practical applications. Prereq.: ELEGR 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 ELEGR 703L. Prereq.: ELEGR 603. 3 q.h.

703L. *Control Systems Laboratory.* Laboratory experiments and exercises designed to accompany ELEGR 703. Must be taken concurrently with ELEGR 703. Prereq.: ELEGR 613. 1 q.h.

704. *Electromagnetic Fields 1.* The study of Coulomb's law and electric field intensity, electric flux density, Gauss' Law and divergence, energy and potential, conductors, dielectrics and capacitance, the steady magnetic field. Must be taken concurrently with ELEGR 704L. Prereq.: ELEGR 603, ELEGR 613, PHYS 611, 611L, CIEGR 601, MECH 501 and INEGR 642. Prereq. or concurrent with MATH 706. 3 q.h.

704L. *Electromagnetic Fields Laboratory 1.* Laboratory experiments and exercises to demonstrate and verify theories by a variety of methods including graphical and numerical methods using digital computation. Three hours of laboratory per week. Must be taken concurrently with ELEGR 704. 1 q.h.

705. *Electromagnetic Fields 2.* The study of Poisson's and Leplace's equations, magnetic forces, magnetic materials, inductance, time-varying electric and magnetic fields and Maxwell's equations. Must be taken concurrently with ELEGR 705L. Prereq.: ELEGR 704 and ELEGR 704L. 3 q.h.

705L. *Electromagnetic Fields Laboratory 2.* Laboratory experiments and exercises to demonstrate and verify theories by a variety of methods including numerical methods with an emphasis on finite element analysis using digital computation. Three hours of laboratory per week. Must be taken concurrently with ELEGR 705. 1 q.h.

706. *Transmission and Microwave Principles.* The uniform plane wave, transmission lines, waveguides and resonators, antennas and radiation. Must be taken concurrently with ELEGR 706L. Prereq.: ELEGR 705 and ELEGR 705L. 3 q.h.

706L. *Transmission and Microwave Principles Laboratory.* Waveguide/transmission-line experiments and exercises to demonstrate and verify theories by a variety of methods including numerical methods with an emphasis on finite element analysis using digital computation. Research project and presentation. Three hours of laboratory per week. Must be taken concurrently with ELEGR 706. 1 q.h.

707, 708. *Electronic Circuit Analysis and Design 1, 2.* 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.: ELEGR 603. 3+3 q.h.

707L, 708L. *Electronic Circuit Laboratory 1, 2.* Laboratory experiments and exercises designed to accompany ELEGR 707 and 708. Should be taken concurrently with ELEGR 707 and 708, respectively. Prereq.: ELEGR 613. Prereq. or concurrent: ELEGR 707 for 707L, ELEGR 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.: ELEGR 708. 3 q.h.

709L. *Communication Systems Laboratory.* Laboratory experiments and exercises designed to accompany ELEGR 709. Must be taken concurrently with ELEGR 709. Prereq.: ELEGR 708L. 1 q.h.

710. *Electronic Circuit Design with Operational Amplifiers.* The ideal op amp; performance limitations of nonideal op amps. Large-signal, small-signal and dc amplifiers. Linear circuit applications, filter design. Frequency compensation and stability. Sensitivity and error analysis. Computer-aided design of op amp circuits. Prereq.: ELEGR 708, and INEGR 642. 3 q.h.

714. *Circuits and Electronics.* Basic circuit elements and laws: DC and AC circuit analysis, operational amplifiers, sinusoidal analysis, circuit and system concepts. Electronics: diodes, transistors, amplifiers, electronic circuits and applications. Prereq. or concurrent: MATH 674. 4 q.h.

715. *Electrical Devices.* Digital devices and applications: digital logic, devices, circuits, and systems. Electromagnetic devices: magnetics, transformers, circuit models. Electromechanical devices: transducers, generators, and motors. Prereq.: ELEGR 714. 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.: ELEGR 706, ELEGR 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.: ELEGR 702, ELEGR 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.: ELEGR 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.: ELEGR 706, MECH 641. 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.: ELEGR 708, PHYS 510, ELEGR 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.: ELEGR 706, MECH 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. Must be taken concurrently with ELEGR 823L. Prereq.: ELEGR 826, ELEGR 826L. 3 q.h.

823L. *Microprocessor Design and Applications Laboratory.* Laboratory exercises to provide the students with hands-on-experience in the area of microprocessor programming and interfacing. Must be taken concurrently with ELEGR 823. Three hours laboratory. 1 q.h.

824. *Advanced Microprocessor Design and Applications.* Designs and applications based upon different microprocessors will be studied using microprocessor development systems. Must be taken concurrently with ELEGR 824L. Prereq.: ELEGR 823. 3 q.h.

824L. *Advanced Microprocessor Design and Applications Laboratory.* Laboratory exercises in the area of microprocessor design and applications using microprocessor development systems. Three hours laboratory per week. Must be taken concurrently with ELEGR 824. Prereq.: ELEGR 823. 1 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 ELEGR 825L. Prereq.: ELEGR 702. 3 q.h.

825L. *Combinational and Sequential Circuits Laboratory.* Laboratory exercises to accompany ELEGR 825. Must be taken concurrently with ELEGR 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 ELEGR 826L. Prereq.: ELEGR 825 and 825L. 3 q.h.

826L. *Advanced Logic Circuits Laboratory.* Laboratory exercises to accompany ELEGR 826. Must be taken concurrently with ELEGR 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: ELEGR 845, or permission of Electrical Engineering chair. 4 q.h.

844, 845. *Electromagnetic Energy Conversion 1, 2.* 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 ELEGR 844L, ELEGR 845L, respectively. Prereq. or concurrent MECH 641. Prereq.: ELEGR 603, ELEGR 613, ELEGR 705. 3+3 q.h.

844L, 845L. *Electromagnetic Energy Conversion Laboratory 1 and 2.* Required experimental work designed to accompany the corresponding lecture courses. In addition to experiments for ELEGR 844L: Research project and presentation. Three hours lab each week. Must be taken concurrently with ELEGR 844, ELEGR 845, respectively. 1+1 q.h.

850. *Communications Systems 2.* 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.: ELEGR 808R. 4 q.h.

860. *Energy Radiation and Propagation.* Examination of dipole, loop aperture, reflector, lens, surface wave, traveling wave, and other antennas; array theory; radiation resistance, directivity, and input impedance. Investigation of theoretical and practical applications of fiber optics. Prereq: ELEGR 706. 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.: INEGR 642 and any two of ELEGR 703, 709, or 710. 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.: ELEGR 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.: ELEGR 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 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 1 and 2) 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 CURRICULA

FIRST YEAR

Courses	Cr. Hrs.
MATH 571, 572, 673 Calculus 1, 2, 3	14
CHEM 515, 516 General Chemistry 1, 2	8
MECH 501 Engineering Drawing	3
PHYS 510 General Physics 1	4
PHYS 610 General Physics 2	4
PHYS 610L General Physics 2 Laboratory	1
INEGR 642 Engineering Computations	4
ENGR 581	2
ENGL 550, 551 Basic Composition 1, 2	8
Humanities Elective	4
HPE Activities	1
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SECOND YEAR

Courses	Cr. Hrs.
MATH 674 Calculus 4	4
MATH 705, 706 Differential Equations 1, 2	8
CIEGR 601 Mechanics 1	4
MECH 603 Thermodynamics	4
MECH 641 Dynamics	4
MTEGR 606 Engineering Materials	4
PHYS 611 General Physics 3	4
PHYS 611L General Physics Laboratory	1
ELEGR 601, 602, 603 Basic Circuit Theory 1, 2, 3	9
ELEGR 611, 612, 613 Instrumentation and Computation Laboratories 1, 2, 3	3
PHIL 625 Introduction to Professional Ethics	4
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THIRD YEAR

Courses	Cr. Hrs.
ELEGR 701 Linear Network Synth. and Design	3
ELEGR 702 Fund. of Logic Circuit Design	3
ELEGR 703 Linear Control Systems	3
ELEGR 703L Control Systems Laboratory	1
ELEGR 704, 705, 706 Field Theory 1, 2, 3	9
ELEGR 704L, 705L, 706L, Field Theory Laboratory 1, 2, 3	3
ELEGR 707, 708 Electronic Circuit Analysis	6
ELEGR 707L, 708L Electronic Circuit Laboratory 1, 2	2
ELEGR 709 Communication Systems	3
ELEGR 709L Communication Systems Laboratory	1
Science Elective	4
Engineering Science Elective	3
ECON 520 Principles 1	4
PSYCH 560 General Psychology	4
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FOURTH YEAR

Courses	Cr. Hrs.
ELEGR 844, 845 Electromagnetic Energy Conversion 1, 2	6
ELEGR 844L, 845L, Electromagnetic Energy Conversion Laboratory 1, 2	2

ELEGR Electives 24
Engineering Science Elective 3
Social Studies Electives 8
HLTH 590 Health 3
HPE Activities 2

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Department Technical Electives

Courses	Cr. Hrs.
ELEGR 800 Special Topics	1-4
ELEGR 805R Quantum Electronics	4
ELEGR 807R Pulse, Digital and Switching Circuits	4
ELEGR 808R Electronic Circuits Signals and Systems	4
ELEGR 812R Molecular Engineering	4
ELEGR 816 Theory and Fabrication of Solid-State Devices	4
ELEGR 819R Plasma Dynamics	4
ELEGR 823 Microprocessor Design and Applications	4
ELEGR 825 Sequential Logic Circuits Analysis and Design	3
ELEGR 825L Combinational and Sequential Logic Circuits Laboratory	1
ELEGR 826 Advanced Logic Circuits Analysis and Design	3
ELEGR 826L Advanced Logic Circuits Laboratory	1
ELEGR 840 Electric Power Systems	4
ELEGR 850 Communication Systems 2	4
ELEGR 860 Energy Radiation and Propagation	4
ELEGR 879 Computer-Aided Design of Electrical Networks	4
ELEGR 880 Linear Control System Design	4
ELEGR 881 Modern Control System Design	4

INDUSTRIAL ENGINEERING

Professors Driscoll (Chair), and Sorokach; Associate Professor Mehri; Assistant Professor Cala.

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 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 accomplishments 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, human-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.

Industrial Engineering Laboratories

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 a word processing language.

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 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. The CAD laboratory includes over thirty IBM PC/XT CAD workstations, each with AutoCAD software for computer-aided drawing. The work stations are linked to the University's microcomputer network and to plotters and printers. The CAM laboratory includes a CNC lathe, a CNC milling machine, a conveyor system, two industrial robots and accessories.

Industrial Engineering Courses

620. *Engineering Statistics.* Fundamentals of modeling 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 743, INEGR 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.: INEGR 625. 4 q.h.

636. *Methods Engineering.* Techniques for analysis of task performance, the use of process charts and various methods of work simplification, human-machine relation analysis. Theory and practice of time study and other methods of measuring and establishing performance level and productivity. Prereq.: MATH 743. 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 INEGR 636. Three hours of laboratory per week. 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 PHYS 510. 4 q.h.

714, 715. *Industrial Engineering Design 1, 2.* The engineering design process and application of quantitative methods of decision making techniques in 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 specifications of the final solution. Prereq.: INEGR 642 and MATH 705 for INEGR 714; INEGR 714 for INEGR 715. 4+4 q.h.

724. *Engineering Economy.* The analysis and evaluation of factors that affect the economic success of engineering projects. Topics include basic accounting, interest, depreciation, cost classification, comparison of alternatives, make-buy decisions, and replacement models. Prereq.: 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, INEGR 642. Prereq. or concurrent with MTEGR 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 INEGR 725. Three hours of laboratory. Prereq.: MATH 705, INEGR 642. Prereq. or concurrent: MTEGR 606. 1 q.h.

727. *Industrial Engineering Analysis.* 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.: INEGR 642, INEGR 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.: INEGR 620. 4 q.h.

745. *Accounting for Engineers.* Fundamentals of financial and cost accounting as applied to engineering. Prereq.: INEGR 724. 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.

801. *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 705. 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.

815. *Production Planning and Control.* The application of the fundamentals and techniques of forecasting, aggregate planning, material requirement planning, scheduling, machine assignment and inventory to the design of production control systems. Prereq.: INEGR 620, INEGR 801. 4 q.h.

821-822. *Facilities Design.* The application of engineering techniques to the analysis, design, and justification of production facilities which may be product and/or service oriented. Equipment selection, process flow, material flow and material handling will be considered in the design of facilities. The system design

will involve field investigation, acquisition and analysis of data, use of computer-aided facilities planning and design software, preparation of drawings and writing a final report. Prereq.: INEGR 636 and INEGR 725. Prereq. or concurrent: INEGR 850 and 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.: INEGR 725. 4 q.h.

825. *Advanced Engineering Economy.* An extension of the topics in engineering economy. Analysis of rationale and norm of decision making, risk and uncertainty models, utility theory, measurement of productivity; and advanced project comparison methods. Prereq.: INEGR 724. 4 q.h.

830. *Human Factors Engineering.* Various aspects of human factors in the design of human-machine systems and environments. Study of human sensory, perceptual, mental, psychomotor, and other characteristics; techniques of measuring human capabilities, limitations, safety, comfort, and produc tivity. Prereq.: INEGR 620. 4 q.h.

840. *Reliability Engineering.* Introduction to reliability as a probabilistic concept, including: measurement, control, maintenance, repair and replacement, and life testing. Prereq.: MATH 705. 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 chair. Conferences scheduled as required. Prereq.: 150 hours of degree credit completed.2+2+2 q.h.

850. *Operations Research.* Formulation and solution of industrial engineering problems using operations research models. Topics covered include queueing models and the specialization of linear models to equipment replacement, project planning, assignment, and transshipment problems. Prereq.: INEGR 801. 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. or concurrent: INEGR 727. Prereq.: INEGR 801, INEGR 850. 4 q.h.

870. *Robotics.* Manipulator kinematics, robot dynamics and programming, sensors and machine vision, machine intelligence and robot planning. Prereq.: MATH 705. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN INDUSTRIAL ENGINEERING

FIRST YEAR

Courses	Cr. Hrs.
MATH 571, 572, 673 Calculus 1, 2, 3	14
PHYS General 1	4
ENGL Basic Composition 1, 2	8
SOCST Elective	4
MECH 501 Engineering Drawing	3
ENGR 581	2
HPE Activity	1
Chem. General 1, 2	8
HLTH 590	3
INEGR 642 Engineering Computations	4
	51

SECOND YEAR

Courses	Cr. Hrs.
MATH 674 Calculus 4	4
MATH 705 Differential Equations 1	4
MATH 743 Statistics	4
PHYS General 2, 3	8
CIEGR 601, 602 Mechanics 1, 2	8
MTEGR 606 Materials	4
INEGR 620 Engineering Statistics	4
INEGR 636 Methods Engineering	4
INEGR 636L Methods Engineering Lab	1
INEGR 724 Engineering Economy	4
SPCH 652 Business and Professional	3
HPE Activities	2
	50

THIRD YEAR

Courses	Cr. Hrs.
INEGR Elective*	4
INEGR 714, 715 Design 1, 2	8
INEGR 727 Analysis	4
INEGR 730 Quality Control	4
INEGR 725 Manufacturing Engineering	4
INEGR 725L Manufacturing Engineering Lab	1
ELEGR 714 Circuits and Electronics	4
INEGR 801 Linear Programming	4
MECH 641 Dynamics	4
SOCST Electives	8
HUMAN Elective	4
	49

FOURTH YEAR

Courses	Cr. Hrs.
Engineering Electives*	8
INEGR Electives*	8

*Engineering and Industrial Engineering electives must be selected with the consent of the student's departmental advisor.

INEGR 815 Production Planning 4
INEGR 821, 822 Facilities Design 1, 2 8
INEGR 850 Intro to Operations Research 4
INEGR 860 Operations Engineering 4
SCI Elective 4
SOCST Elective 4
HUMAN Elective 4

48

Materials Engineering Division

Professors Ahmed, Jones (Director), and McCoy.

Materials Engineering Division unifies the basic concepts and engineering principles of ceramic, metallurgical, and polymer engineering, and includes the study of composite and electronics materials. In the program, emphasis is placed on the relationships between materials structures and materials properties. Materials processing and their effects on materials structures are stressed. Materials studied include ferrous and non-ferrous metallics, ceramics and cermets, composites, polymers, and high tech electronic materials. The program prepares students for a wide range of industrial employment. Graduates of the program are employed by various industries including primary ferrous and non-ferrous metals producers, foundries, automobile and related industries, aircraft companies, electronic firms, petroleum and other major chemical companies, and nuclear-related companies. Students are also prepared for entrance to Graduate School for further studies.

Students from physical and biological sciences, mathematics, and other engineering disciplines may transfer to Materials Engineering at the beginning of the second year without loss of time or academic credit.

A graduate program leading to the Degree of Master of Science in Materials Science is available for students who wish to continue their graduate studies at YSU. This program is described in the Graduate School Bulletin.

The Materials Engineering laboratory facilities contain state-of-the-art equipment. Included are transmission and scanning electron microscopes. The SEM is equipped with a computer-controlled, energy dispersive x-ray analyzer unit. Atomic structures are studied by x-ray diffraction. A unique calorimetric laboratory is equipped to examine phase transformations in a wide range of materials. Modern metallographic and heat treatment laboratories complete the facilities.

601. *Introduction to Materials Science 1.* 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. Prereq.: CHEM 515 or consent of instructor. 4 q.h.

602. *Introduction to Materials Science 2.* 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. Prereq.: MTEGR 601 or consent of instructor. 4 q.h.

603. *Introduction to Materials Science 3.* 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. Prereq.: MTEGR 602 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 Materials Engineering. 4 q.h.

630, 631. *Materials Engineering Laboratory 1, 2.* Preparation, examination, and analysis of metallographic samples. Experiments on heat treatments of ferrous and non-ferrous alloys; thermal treatments of ceramic materials. Written and oral reports required. Two hours lecture and six hours laboratory. Prereq.: MTEGR 601. 4 + 4.

742. *Mechanical Behavior of Materials.* Discussion of elastic and plastic behaviors of materials including effects of temperature, strain rate, and state of stress. Evaluation of mechanical properties by tension, torsion, impact, and hardness tests. Yielding theories and use of Mohr's Circle applied to common deformation processes such as forging, rolling, extrusion and wire drawing. Written and oral reports required. Three hours lecture and three hours laboratory. Prereq.: MTEGR 603. 4 q.h.

751. *Polymer Materials.* Manufacture, structure, and properties of polymers. Emphasis on quantitative treatment of mechanical properties of polymers. Forming and shaping techniques included. Prereq.: MTEGR 603. 4 q.h.

752. *Ceramic Materials.* Atomic and crystalline structures, microstructures, and properties of ceramics and glasses. Emphasis on mechanical and physical properties including electric and magnetic characteristics. Prereq.: MTEGR 603. 4 q.h.

753. *Electronic Properties of Materials.* Theoretical aspects of solid state electronic, magnetic, and photonic materials. Processing and applications of solid state devices included. Prereq.: MTEGR 603. 4 q.h.

763. *Thermodynamics of Materials 1.* Principles of thermodynamics and their applications to materials, metallurgical systems, processes and alloys. Prereq.: MATH 674 and CHEGR 681. 4 q.h.

779. *Casting, Welding and Solidification.* General discussion of the engineering aspects of welding and solidification of ferrous and non-ferrous alloys. Prereq.: MTEGR 603. 4 q.h.

780. *Materials Processing.* Stoichiometric and thermodynamic principles applied to processing of materials. Production of steels, non-ferrous alloys, and ceramic materials included. Prereq.: CHEGR 681. 4 q.h.

781. *Powder Metallurgy.* Scope of powder metallurgy, production of powders, sintering powders, diffusion bonding, basic theories, application. Prereq.: MTEGR 603. 4 q.h.

782. *Phase Diagrams.* Discussion and interpretation of phase diagrams of multi-component systems. Prereq.: MTEGR 603. 4 q.h.

783. *Ferrous and Non-ferrous Alloys.* Basic scientific principles and theories applied to the design and heat treatment of alloys. Constitution, microstructure, heat treatment, phase distribution, and properties of ferrous and non-ferrous alloys. Prereq.: MTEGR 603. 4 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.: MTEGR 603. 4 q.h.

820, 821. *Principles of Extractive Metallurgy 1, 2.* 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.: CHEGR 681; INEGR 642 and MTEGR 780. 4+4 q.h.

855. *Composite Materials.* Structure and engineering properties of composite materials. Emphasis on numerical treatment of mechanical behavior. Case studies on design and manufacture of composite materials included. Prereq.: MTEGR 753. 4 q.h.

861. *X-ray Diffraction and Electron Microscopy.* Theories, principles, and application of x-ray diffraction and electron microscopy techniques for examining and analyzing engineering materials. Written and oral reports required. Three hours lecture and three hours laboratory. Prereq.: MTEGR 753. 4 q.h.

862. *Applied X-rays 2.* 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.: MTEGR 861. 3 q.h.

864. *Thermodynamics of Materials 2.* Applications of thermodynamics principles to materials systems theory of alloys. Prereq.: MTEGR 780. 4 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.: MTEGR 753. 4 q.h.

866. *Special Topics.* Special topics in materials engineering which are of current research interest. Course may be repeated once with a different topic. Prereq.: Junior standing in engineering or consent of instructor. 4 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. Analysis using the stereomicroscope, scanning electron microscope, and stereo-imaging will be covered in the laboratory section. Three hours lecture and three hours laboratory. Prereq.: Junior standing in engineering and MTEGR 741 or MTEGR 606. 4 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. Three hours lecture and three hours laboratory per week. Prereq.: Junior standing in engineering and MTEGR 603 or MTEGR 606. 4 q.h.

871. *Physical Metallurgy 4.* Discussion on theories of corrosion, age-hardening; gases in metals. Prereq.: MTEGR 753. 4 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.: MTEGR 753. 4 q.h.

887. *Metallurgical Design.* Application of design principles including the analysis of material property requirements for new or improved products. Selection techniques to find optimum cost effective materials and processes for various applications. Other topics included are manufacturing quality control procedures, product liability considerations and professional ethics. Prereq.: MTEGR 753. 4 q.h.

891-892-893. *Thesis 1, 2, 3.* 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 A MAJOR IN MATERIALS ENGINEERING

FIRST YEAR

Courses	Cr. Hrs.
ENGR 581	2
CHEM 515, 515L, 516, 516L, 517, 517L General Chemistry	12
MATH 571, 572, 673 Calculus	14
ENGL 550, 551 Basic Composition	8
Liberal Arts Elective	8
HPE Health	3
HPE Activity	2
	49

Note A: Students without background in Mechanical Drawing must enroll in MECH 500 Drawing Fundamentals.

SECOND YEAR

Courses	Cr. Hrs.
MTEGR 601, 602, 603 Introduction to Materials Science	12
MTEGR 630, 631 Materials Engineering Laboratory 1, 2	8
PHYS 510, 610, 610L, 611, 611L General Physics	14
MATH 674 Calculus	4
MATH 705 Differential Equations	4
CHEGR 681 Industrial Stoichiometry	4
INEGR 642 Engineering Computations	4
HPE, Activity	1
	51

THIRD YEAR

Courses	Cr. Hrs.
MTEGR 742 Mechanical Behavior of Materials	4
MTEGR 751 Polymer Materials	4
MTEGR 752 Ceramic Materials	4
MTEGR 753 Electronic Properties of Materials	4
MTEGR 780 Materials Processing	4
CIEGR 601, 602 Mechanics 1,2	8
CHEGR 771 Chemical Engineering Thermodynamics	4
CHEGR 786 Transport Phenomena	4
ELEGR 714R Circuits and Electronics	4
MECH 641 Dynamics	4
ECON 520	4
	48

FOURTH YEAR

Courses	Cr. Hrs.
MTEGR 855 Composite Materials	4
MTEGR 861 Applied X-rays	4
MTEGR 867 Fractography and Failure Analysis	4
MTEGR 887 Metallurgical Design	4
MTEGR Elective	4
MECH 751 Stress and Strain Analysis	4
Technical Electives	12
Liberal Arts Electives	12
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MECHANICAL ENGINEERING

Professors Arnett, D'Isa (Chair), McCoy, Suchora, Tarantine; Associate Professors Kim, Smith; Assistant Professors Kitchen, Kudav.

Mechanical engineering is the branch of the engineering profession that deals with the conversion and use 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.

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.

The Department of Mechanical Engineering maintains two 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 use the computer facilities in Harry Meshel Hall.

500. *Drawing Fundamentals.* Introduction to drafting instruments, blueprint reading, freehand sketching, orthographic projection, auxiliary and sectional views, conventions, pictorial drawing, and dimensioning. Intended for students who have not had at least one year of high school drawing or the equivalent in drafting experience. Not available for credit toward the Bachelor of Engineering Degree. Six hours combined lecture and laboratory each week. 4 q.h.

501. *Engineering Drawing.* Applications of orthographic projection, auxiliary and sectional views, pictorial drawing: fasteners, dimensioning: tolerances;

detail and assembly drawings. Introduction to computer graphics using commercially available software. Two hours lecture and three hours laboratory per week. Prereq.: MECH 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: MECH 501. 4 q.h.

603. *Thermodynamics 1.* 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 2.* Availability and irreversibility in thermodynamic processes and cycles; relations among thermodynamic properties. Mixtures and solutions; psychometry. Introduction to phase and chemical equilibrium. Prereq.: MECH 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.: CIEGR 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 INEGR 642. Prereq.: MECH 500. Prereq. or concurrent INERG 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: MECH 604. 1 q.h.

725. *Heat Transfer 1.* The fundamentals of heat transfer by conduction, convection, and radiation; investigations of combinations of these modes of heat transfer. Prereq.: MATH 705, MECH 603, CIEGR 716; Prereq. or concurrent: INEGR 642, MECH 604. 4 q.h.

726. *Thermal Fluid Applications.* Application of the principles of thermodynamics, fluid mechanics and heat transfer to design and evaluation of selection criteria of thermal fluid components. Components include those found in HVAC, pneumatic and hydraulic systems. Prereq.: MECH 725. 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.: MECH 641, MECH 680. 4 q.h.

751. *Stress and Strain Analysis 1.* 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, CIEGR 602; and CIEGR 603 or MTEGR 741. 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 MECH 762L. Prereq.: MECH 641 and MECH 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 MECH 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.: MECH 641; MATH 705; ELEGR 714; MECH 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.

808-809. *Mechanical Systems Design I, II.* Design of an engineering system utilizing expertise normally expected of new mechanical engineering graduates in an industry setting. Alternate designs are explored in the light of design methodology factors such as feasibility, reliability, liability, safety, cost, etc. Prereq. for MECH 808: MECH 725, MECH 742, MECH 751, MECH 781, INEGR 724, or consent of instructor. Prereq. for MECH 809: MECH 808; Prereq. or concurrent MECH 726, MECH 762. MECH 808 must be taken concurrently with MECH 808L. 4+4 q.h.

808L. *Mechanical System Design Laboratory.* Supplemental activities related to MECH 808, such as discussions and seminars on industry practices and standards, computer software applications, experimental verification, etc. Three hours laboratory per week. Must be taken concurrently with MECH 808. 1 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, MECH 725, INEGR 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.: MECH 604, MECH 725, Prereq. or concurrent MECH 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.: CIEGR 716 and MECH 725. 4 q.h.

825. *Heat Transfer 2.* A continuation of Heat Transfer 1 involving more advanced topics in conduction, convection, and radiation. Design problems solved analytically, numerically, and by computer methods. Prereq.: MATH 706, INEGR 642, and MECH 725. 4 q.h.

825L. *Heat Transfer 2 Laboratory.* Experiments involving conduction, convection, and radiation modes of heat transfer. Heat exchangers. Three hours of laboratory a week. Prereq.: MECH 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.: CIEGR 716 and 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.: MECH 830 & CIEGR 716L. 1 q.h.

843. *Kinetics of Machinery.* Three dimensional kinematics and dynamics of machinery. Dynamic analysis and design, and balancing of link and cam mechanical systems. Prereq.: MECH 742. 4 q.h.

850L. *Stress and Strain Analysis Laboratory.* Transmission and reflection photoelasticity. Static and dynamic strain gage applications including computer aided data acquisition. Three hours laboratory per week. Prereq.: MECH 751. 1 q.h.

852. *Stress and Strain Analysis 2.* Continuation of ME 751. Introduction to classical elasticity, inelastic behavior and high temperature creep. Emphasis is on design applications. Prereq.: MECH 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.: MECH 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.: CIEGR 603, MECH 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 MECH 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.: MECH 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 MECH 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.: MECH 641, CIEGR 602, ELEGR 714. 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.: MECH 725, 751, 781. Prereq. or concurrent: MECH 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, MECH 781. 4 q.h.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING WITH THE MAJOR IN MECHANICAL ENGINEERING

FIRST YEAR

Courses	Cr. Hrs.
MATH 571, 572, 673 Calculus 1, 2, 3	14
CHEM 515, 516 General Chemistry 1, 2	8
PHYS 510 General Physics 1	4
ENGL 550, 551 Basic Composition 1, 2	8
ENGR 581 Introduction to Engineering	2
MECH 501 Engineering Drawing	3
INEGR 642 Engineering Computations	4
HLTH 590 Health Education	3
HPE Activity	2
	48

SECOND YEAR

Courses	Cr. Hrs.
MATH 674 Calculus 4	4
MATH 705, 706 Differential Equations 1, 2	8
PHYS 610, 611 General Physics 2, 3	8
CIEGR 601, 602, 603 Mechanics 1, 2, 3	12
MECH 603, 604 Thermodynamics 1, 2	8
MECH 641 Dynamics	4
MECH 680 Engineering Computer Graphics	3
SPCH 651 Comm. for Business and the Profess.	3
HPE Activity	1
	51

THIRD YEAR

Courses	Cr. Hrs.
MTEGR 606 Engineering Materials	4
MECH 725 Heat Transfer 1	4
MECH 726 Thermal Fluid Applications	4
MECH 742 Kinematics of Machines	4
MECH 751 Stress and Strain Analysis I	4
MECH 762, 762L Machine Design 1, Lab	5
MECH 781 Dynamic Systems Analysis	4
CIEGR 716, 716L Fluid Mechanics, Lab	4
ELEGR 714, 715 Circuits and Electronics, Electrical Devices	8
INEGR 724 Engineering Economy	4
Elective (Social Studies)	4
	49

FOURTH YEAR

Courses	Cr. Hrs.
MECH 808, 809 Mechanical System Design I, II	8
MECH 808L Mechanical System Design Lab	1
MECH 830 Fluid Mechanics	4
Electives (Social Studies)	8
Electives (Humanities)	12
Electives (Mechanical Engineering)	15
Elective (Science)	4
	52
TOTAL	**200**

ELECTIVES

DEPARTMENTAL ELECTIVES

Courses	Cr. Hrs.
704L Applied Thermodynamics Laboratory	1
800 Special Topics	1-4
810 Introduction to Biomedical Engineering	4
811 Solar Engineering	4
815 Energy Conversion Systems	4
823 Refrigeration and Air Conditioning	4
825 Heat Transfer 2	4
825L Heat Transfer 2 Laboratory	1
830 Fluid Mechanics	4
830L Fluid Mechanics Laboratory	1
843 Kinetics of Machinery	4
850L Stress and Strain Analysis Laboratory	1
852 Stress and Strain Analysis 2	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 ten (10) of the Mechanical Engineering elective hours in either of two areas of specialization, as follows:

Heat and Fluid Flow:

MECH 825; one from MECH 811, MECH 815, and MECH 823; two from MECH 704L, MECH 825L, and 830L.

Rigid and Deformable Solids:

MECH 870; one from MECH 843, MECH 852, and MECH 872; two from MECH 850L, MECH 870L, and MECH 872L.

MECHANICAL ENGINEERING MINOR

The following courses are recommended for students seeking a minor in mechanical engineering:

MECH 501 - Engineering Drawing	3 q.h.
MECH 603 - Thermodynamics 1	4 q.h.
MECH 641 - Dynamics	4 q.h.
MECH 725 - Heat Transfer	4 q.h.
MECH 751 - Stress and Strain Analysis 1	4 q.h.
MECH 604 - Thermodynamics 2 or MECH 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 course 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

David Sweetkind, 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, organizational communication, 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. Individuals who do not necessarily wish to pursue a major should consider taking courses in art, music or speech communication to develop themselves personally and to compliment whatever major they do choose.

Another important objective of the College is to provide the University community maximum opportunity for experiencing 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.	B.A.
English 550, 551, Basic Composition 1, 2	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.

*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 CURRICULA

ART

Professors Babisch, Bright, Glasser, Lepore, Lucas, Maddick, Mitchell, Naberezny, Zona; Associate Professors Moseley, Russo, Walusis (Chair); Assistant Professors Kornbluth, Taylor, 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 to complete 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:

Courses		Cr. Hrs.
500	Introduction to the Visual Arts	1
501	Drawing 1	3
502	Design 1	4
503	Design 2	4
504	Design 3	3
521	Survey of Western Art 1* **	4
522	Survey of Western Art 2**	4
523	Survey of Western Art 3**	4
600	Theory of Art**	3
601	Drawing 2*	3
602	Expressive Drawing 1*	3
606	Painting 1	4
611	Woodblock/Mono Print *or*	
612	Silk Screen*	4
701	Life Drawing	3
705	Expressive Drawing 2	3
725	Ceramics 1 or 730 Sculpture 1*	3/4
	Upper Division Art History Electives*	9

In addition, specific courses for each concentration area are:

Painting

Courses		Cr. Hrs.
604	Watercolor Painting	3
703	Painting 2	5
803	Painting 3	5
804	Painting 4	5
805	Painting 5	5
790	Special Topics *or*	
800	Studio Problems (5 hrs. minimum in painting)	5
	Studio Art or Art History Electives	2/3

Sculpture

Courses		Cr. Hrs.
611	Woodblock and Mono Printing or	
721	Lithography	4
725	Ceramics 1	3
730	Sculpture 1	4
731	Sculpture 2	5
812	Sculpture 3	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: 521, 522, 523 must be completed before the end of the sophomore year, or additional art history credit will be required.

Printmaking

Courses		Cr. Hrs.
611	Woodblock and Mono Printing	4
612	Silk Screen	4
721	Lithography	4
722	Photo Silk Screen	5
734	Woodblock and Mono Printing 2 or	
735	Silk Screen 2 or	
821	Lithography 2 or	
824	Photo Silk Screen 2	4/5
780	Photography 1	4
790	Special Topics *or*	
800	Studio Problems (5 hrs. minimum in printmaking)	8/10
870	Advanced Printmaking	8

Graphic Design

Courses		Cr. Hrs.
550	Computer Graphics	4
612	Silk Screen	4
623	Graphic Design 1	3
624	Graphic Design 2	3
625	Graphic Design 3	3
727	Graphic Design 4	3
728	Graphic Design 5	3
729	Graphic Design 6	3
780	Photography 1	4
782	Photography 3	4
790	Special Topics/Studio Art	4
800	Studio Problems	3
842	Publication Design	4
	Studio Electives	2

Crafts

Courses		Cr. Hrs.
611	Woodblock and Mono Printing	3
623	Graphic Design 1	3
723	Weaving 1	3
725	Ceramics 1	3
726	Ceramics 2	3
762	Art Strategies for Classroom Teachers	3
769	Fiber Exploration	4
770	Jewelry 1	4
771	Jewelry 2	4
810	Ceramics 3	3
811	Ceramics 4	3
822	Puppetry and Stage Construction	3
823	Weaving 2	3
790	Special Topics *or*	
800	Studio Problems	3
	Studio Electives	7

Ceramics

Courses		Cr. Hrs.
611	Woodblock and Mono Printing or	
721	Lithography	4
725	Ceramics 1	3
726	Ceramics 2	3
730	Sculpture 1	4
810	Ceramics 3	3
811	Ceramics 4	10
790	Special Topics *or*	
800	Studio Problems	4
	Studio Electives	13

Photography

Courses		Cr. Hrs.
NOTE: 705 not required		
521	Survey of Western Art 1 or	
515	Survey of Non-Western Art*	4
581	Survey of American Mass Comm. (Dept. of Speech Communication and Theatre)	4
601	Drawing 1 or	
602	Expressive Drawing	3
612	Silk Screen	4
722	Photo Silk Screen	5
747	History of Still Photography to 1925	4
748	Still Photography 1925 to present	4
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)	3/4
814	Twentieth Century Art to 1925 or	
815	Twentieth Century Art from 1925	3
880	Photography 6	10

General Art

Courses		Cr. Hrs.
725	Ceramics 1	3
730	Sculpture 1	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

Courses		Cr. Hrs.
500	Introduction to the Visual Arts	1
521	Survey of Western Art 1	4
522	Survey of Western Art 2	4
523	Survey of Western Art 3	4
515	Survey of Non-Western Art	4
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

*Requirement varies; see specific area.

SEE GENERAL REQUIREMENTS AT THE BEGINNING OF THE SCHOOL OF EDUCATION SECTION.

Provisional Special Certificate in Art Education

REQUIRED COURSES: 500, 501, 502, 503, 504, 521, 522, 523, 600, 601, 602, 604, 606, 611 or 612, 623, 662, 725, 730, 762, 763, 770, 780, 801, 822 or 723, 814 or 815; 6 hrs. of Art History Electives. (ART 801 must be taken concurrently with EDUC 843).

Provisional High School Certificate in Art Education

REQUIRED COURSES: 500, 501, 502, 503, 504, 513, 514, 602, 611 or 721, 606 or 623, 770, 767, 716, 725, 730; 3 hrs. of Studio Electives. ART 763 (School Arts — Secondary) substitutes for EDUC 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 1.* 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.

502. *Design 1.* An investigation of the structural properties of two-dimensional shape for the beginning student. Four hours lab and two hours lecture.. 4 q.h.

503. *Design 2.* An exploration of fundamental color relationships as a basis for visual organization. Four hours lab and two hours lecture. 4 q.h.

*504. *Design 3.* Three-dimensional experiments with various materials. Use of the formal elements in three dimensional design. Eight hours lab per week. Prereq.: ART 503. 4 q.h.

515. *Survey of Non-Western Art.* Art in the Pre-Columbian Americas, Africa, Oceania and Oriental cultures. Includes architecture, painting and sculpture. 4 q.h.

517. *Introduction to Music and Art.* An introduction to and survey of the elements in musical and artistic genre and the influences on philosophy, religion, politics, etc. Particular examples will be drawn from various periods, styles, and movements within the historical framework of art and music. Materials for the course will include slides, field trips, recordings, performances, and lectures. Will not fulfill music literature requirement for the music major or art hisorty requirement for the art major. Cross listed with MUSIC 517. 4 q.h.

521. *Survey of Western Art 1.* Art in western cultures from pre-historic to late Roman (4th century AD). Includes architecture, painting, and sculpture. Introduces key concepts, methods, and vocabulary for the historical study of art. 4 q.h.

522. *Survey of Western Art 2.* Western art from Early Christian (3rd century AD) to late Gothic (15th century). Includes architecture, painting, sculpture, and the luxury arts. Introduces key concepts, methods, and vocabulary for the historical study of art. 4 q.h.

523. *Survey of Western Art 3.* Art in Europe and the United States from the early Renaissance (13th century AD) to the present. Includes architecture, painting, and sculpture. Introduces key concepts, methods, and vocabulary for the historical study of art. 4 q.h.

*550. *Computer Graphics for the Artist.* To provide a fundamental understanding of microcomputer hardware and software in a two-dimensional design context. Students will be expected to operate a computer and its peripheral devices to generate visual images. Eight hours lab per week. Prereq.: ART 503. 4 q.h.

600. *Theory of Art.* The theories and philosophical implications of form in the visual arts, with emphasis on contemporary thought. Prereq.: ART 521, 522 or 523. 3 q.h.

*601. *Drawing 2.* 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 per week. Prereq.: ART 501 and 502. 3 q.h.

*602. *Expressive Drawing 1.* An exploration of the expressive and organizational functions of the elements of drawing through varied media and techniques. Six hours lab per week. Prereq.: ART 503. 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 1.* Exploration of old and new techniques. The student is encouraged to see significantly

*Course requires art materials fee.

rather than imitatively, and to develop an explorative interest in techniques. Eight hours lab. Prereq.: ART 601 or 602. 4 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 per week. The student is advised to take ART 611. Prereq.: ART 503. 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.

*650. *Computer Graphics for the Artist 2.* An advanced application for the computer to visual composition with the addition of type forms to images. Students will solve various problems of hard copy processes via slide or animation production. Eight hours lab per week. Prereq.: ART 550. 4 q.h.

*662. *Art Appreciation for Classroom Teachers.* Focus on the visual arts as related to students majoring in education and the ways the visual arts can be taught to children. Emphasis on aesthetics, criticism, history and the creation of art. Four hours lecture and two hours of lab per week. 4 q.h.

Upper Division Courses

*701. *Life Drawing.* Students will develop sound compositon based upon accuracy of observation of the human figure. Understanding of proportion and the detailed study of skeletal and muscular systems will be addressed. Six hours of lab per week. Prereq.: 601 or 602. 3 q.h.

*703. *Painting 2.* Continuation of individual exploration of techniques and development of personal tendencies. Ten hours of lab. Prereq.: ART 606. 5 q.h.

*705. *Expressive Drawing 2.* Study in composition, space division, the plastic means. Six hours lab. Prereq.: ART 601 or 602. 3 q.h.

706. *Renaissance Art.* Italian painting, sculpture, and architecture from 1300 to 1575. Examines the work of Michelangelo, Leonardo da Vinci, and others in relation to the history and philosophy of the time. Prereq.: ART 523 or consent of the instructor. 4 q.h.

707. *Seventeenth and Eighteenth Century American Art.* Covering all aspects and media of painting, sculpture, architecture, and the decorative arts of the 17th and 18th centuries. Prereq.: ART 523 or consent of the instructor. 4 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. Prereq.: ART 523 or consent of the instructor. 4 q.h.

709, 710, 711. *History and Appreciation of Art and Music 1, 2, 3 (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.

713. *Nineteenth Century European Art.* European painting and sculpture of Neo-classicism, Romanticism, and Realism. Includes Impressionism and related movements. Art as part of social and political developments, and the foundations of modern formalism. Prereq.: ART 523 or consent of the instructor. 4 q.h.

714. *Ancient Art 1.* Art of the ancient Near East (Mesopotamia, Egypt, Aegean). Includes painting, sculpture, and architechture. Prereq.: ART 521 or consent of instructor. 4 q.h.

715. *Ancient Art 2.* Art of Ancient Greece and Rome. Includes painting, sculpture, and architecture. Prereq.: ART 521 or consent of the instructor. 4 q.h.

716, 717. *Interior Design 1, 2.* Study of furnishings, new designs, and textiles. Application of these and experiences from ART 503 to rooms and other interiors. Six hours of lab per week. Prereq.: ART 503. ART 716 is prerequisite to ART 717. 3+3 q.h.

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*Course requires art materials fee.

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 used in the field. Includes field trips to designer showrooms. Prereq.: ART 717. 3 q.h.

719. *Nineteeth Century American Art.* Covering all aspects and media of painting, sculpture, architecture and the decorative arts of the 19th century. Prereq.: ART 523 or consent of the instructor. 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). Six hours lab. Prereq.: ART 502 or 503 or permission of instructor. 3 q.h.

*725. *Ceramics 1.* Introduction to handbuilding methods, low-fire glaze application, pit-firing, and firing procedures. Six hours of lab per week. Prereq.: ART 504, 601. 3 q.h.

*726. *Ceramics 2.* 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 illustration as a visual communication vehicle in advertising, book design, newspaper editorial, magazine editorial, corporate and poster work. Emphasis is on the exploration of technique and creative process and the development of personal style. Illustrations are integrated into designed pieces. One hour of lecture, 5 hours of lab. Prereq.: ART 625. 3 q.h.

*729. *Graphic Design 6.* Three-dimensional graphic design and its application to packaging, point-of-purchase displays, environmental graphics, signage systems and exhibition design. Work will be executed in two or three dimensional formats. One hour of lecture, 5 hours of lab. Prereq.: ART 625. 3 q.h.

*730. *Sculpture 1.* Problems dealing with form in space. Experiments with wood, plaster, or stone techniques. Eight hours of lab per week. Prereq.: ART 504. (W) 4 q.h.

*731. *Sculpture 2.* Problems dealing with form in space. Experiments with metal techniques. Ten hours of lab per week. Prereq.: ART 730. (W) 5 q.h.

*734. *Woodblock & Mono Printing 2.* Continued experimentation with relief and monotype printmaking techniques. Eight hours of lab per week. Prereq.: ART 611. 4 q.h.

*735. *Silk Screen 2.* Continued experimentation using various silk screen techniques. Eight hours of lab per wek. Prereq.: ART 612. 4 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.: ART 523 or consent of the instructor. 4 q.h.

741. *Chinese and Japanese Art.* Art of China and Japan from the earliest periods to the present, in relation to the philosophies and religions of those countries. Prereq.: ART 515 or consent of the instructor. 4 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 BLKST 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 BLKST 744. Prereq.: BLKST 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 to 1925.* A lecture course in the history of still photography from its beginning to 1925, with emphasis on the evolution of photography as a fine art. Three hours of lecture and one hour of group museum experience per week. Prereq.: ART 523. 4 q.h.

748. *Still Photography 1925 to Present.* A lecture course in the history of still photography from 1925 to the present. Emphasis is placed on the evolution of photography as a fine art. Three hours of lecture and one hour of group museum experience per week. Prereq.: ART 523. 4 q.h.

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*Course requires art materials fee.

749. *History of Graphic Design.* A chronological survey of graphic design from ancient to modern times. An emphasis will be placed on specific designers who influenced the field as well as the relationship between visual communication and historical/cultural events. Prereq.: ART 523. 4 q.h.

751. *Early Christian and Byzantine Art.* Christian art from its origins to about 500 AD in the Latin West and to 1453 in the Greek East. Includes architecture, painting, sculpture, and the luxury arts. Stresses change in art as part of social and religious developments. Prereq.: ART 522 or consent of instructor. 4 q.h.

752. *Early Medieval Art.* Irish, English, and continental European art of the Migration period (Franks, Visigoths, etc.), Hiberno-Saxon, Carolingian, Anglo-Saxon, Viking, and Ottonian cultures (about 500 to 1100 AD). Includes jewelry, painting, sculpture, and architecture. Interaction between Celtic, Germanic, and Mediterranean cultures. Prereq.:ART 522 or consent of instructor. 4 q.h.

753. *Late Medieval Art.* Romanesque and Gothic architecture, painting, sculpture, and the luxury arts (about 1100 to 1500 AD). Examines the great cathedrals and other arts as aspects of pilgrimage and feudalism, reflecting new developments in Christianity. Prereq.: ART 522 or consent of instructor. 4 q.h.

*761. *Art Strategies for Preschool and Kindergarten Teachers.* Designed for the child-care major and Kindergarten validation program with emphasis on establishing attitudes and philosophies through classroom experiences. Two hours of lecture and four hours of laboratory per week. Prereq.: ART 662 or permission of instructor. 4 q.h.

*762. *Art Strategies for Classroom Teachers.* A study of the artistic needs of students from grades one through eight and the exploration of the creative process in relation to classroom experiences. Two hours of lecture and four hours of laboratory per week. Prereq.: ART 662. 3 q.h.

*763. *Strategies for Teaching Secondary School Art.* An exploration of the needs of students from grades nine through twelve and the methods used in providing creative art experiences. Two hours of lecture and four of laboratory per week. Prereq.: ART 762. 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 504. 4 q.h.

*770. *Jewelry 1.* 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 per week. Prereq.: ART 504. 4 q.h.

*771. *Jewelry 2.* The casting process used in the creation of jewelry. Eight hours of lab per week. Prereq.: ART 504. 4 q.h.

*775. *Calligraphy.* An in-depth study of the use of the pen to create various letterforms. Traditional lettering techniques are explored, as well as innovative and contemporary applications of hand-lettered typography. Six hours lab per week. Prereq.: ART 625. 3 q.h.

776. *Pastel Illustration.* Traditional and contemporary application of pastels to the art of illustration. Emphasis is placed on the development of a personal application of this media. Six hours lab per week. Prereq.: ART 601 or 602. 3 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 502 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 503 and/or ART 504, or consent of instructor. 2-4 q.h.

800. *Studio Problems.* Continued independent experiments in any two- or three-dimensional studio discipline. A portfolio or slides of the student's previous work in the elected area of study must be presented to the department chair no later than the fifth week of the previous quarter. A committee of art faculty

*Course requires art materials fee.

appointed by the chair will review the student's work and make its recommendation to the chair. 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 chair 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 3.* Concentration of individual investigation of imagery and technique. Ten hours of lab per week. Prereq.: ART 703. 5 q.h.

*804. *Painting 4.* A continuation of individual investigation of imagery and technique. Ten hours of lab per week. Prereq.: ART 803. 5 q.h.

*805. *Painting 5.* Painting 5. A continuation of individual investigation of imagery and technique. Ten hours of lab per week. Prereq.: ART 803. 5 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.

*810. *Ceramics 3.* 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 4.* 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 3.* 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.

*821. *Lithography 2.* Continued experimentation with print-making techniques from a flat stone or metal plate. Eight hours lab. Prereq.: ART 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. Prereq.: ART 762 or consent of instuctor. 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.

*824. *Photo Silk Screen 2.* Continued experimentation in various photo silk screen methods of printmaking. Ten hours lab. Prereq.: ART 722. 5 q.h.

840. *Graphic Design Internship.* An application of Graphic Design theory and practices within a professional work experience. Students are selected on the basis of preparation, portfolio, GPA and competitive interview. Enrollment is contingent upon the availability of internship positions. 20 hours of student time is expected weekly. Students must enroll for two consecutive quarters. Prereq.: ART 727 and permission of instructor. Course may be repeated for up to 6 q.h. 3 q.h.

*842. *Publication Design.* The coursework is based on the use of type and visual elements in publication format. Assignments in newspaper design, newsletters, magazines, direct mail, annual reports, specialty publications and book design. Will include a major project. 4 q.h.

850. *Seminar in Art History.* A seminar on problems in art history. Topics will be drawn from all periods and media. Prereq.: Senior standing or consent of instructor. May be repeated with different topics up to 12 q.h. 4 q.h.

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*Course requires art materials fee.

*860. *Advanced Computer Graphics*. Concentration on individual independent study in computer imagery. Encompasses both color systems and desktop publishing. Eight hours lab. Prereq.: ART 650. May be repeated for a maximum of 12 q.h. 4 q.h.

*870. *Advanced Printmaking*. Advanced methods in a selected printmaking discipline. Methods in a selected printmaking discipline. May be repeated for a maximum of eight hours of credit. Eight hours of lab per week. Prereq.: ART 734 or 735 or 821 or 824. 1-8 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.

885. *Photography Internship*. Application of photographic knowledge and skills in the professional work environment. Competitive admission to course based on preparation, portfolio, G.P.A., competitive interview, and the availability of positions. Ten contact hours per week. Prereq.: ART 784. May be repeated once. 3 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 chair. 1-9 q.h.

SPEECH COMMUNICATION AND THEATRE

Professors Castronovo, Henneman, Hugenberg, Hulsopple, Kougl, O'Neill, Robinson; Associate Professor Owens (Chair); Assistant Professors James, LaLumia; Instructors Butcher, Shanabarger, Zlotnick-Chevlen.

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 for speech communication or telecommunication studies requires 60 credit hours within the department. Speech Communication majors may emphasize general speech, organizational communication, 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.

MAJOR IN SPEECH COMMUNICATION

General Speech

The speech communication emphasis provides a unique liberal arts experience through its focus on the theoretical and practical study of the dynamic, complex process of human communication. Coursework is designed to foster critical thought about what happens when people try to communicate in different settings and to develop students' communication skills. This emphasis is a good foundation for any career that highlights interaction with people, whether in business or industry, public or social service, or the law.

A second goal in speech communication is to contribute to a liberal arts education. Studying the art of communication includes an understanding of and appreciation for communication as a process of critical thought.

Organizational Communication

The organizational communication emphasis provides students with theoretical and practical knowledge necessary to pursue careers and administrative positions in business, industry or government. The coursework recognizes communication as a critical process for organizational success and provides students with the understanding and skills necessary for career development or academic pursuits.

Another objective of the organizational communication sequence is to bridge the gap between the classroom and the workplace. Subsequently, students are required to apply classroom information and skills in actual organizations. Internship positions in organizations are available for outstanding students.

Theatre

The B.A. in Theatre emphasis provides a sound academic approach and extensive practical training in the techniques of theatre. Theatre students work with their instructors not only in the classroom but in a practical and/or laboratory setting on a highly 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.

MAJOR IN TELECOMMUNICATION STUDIES

An emphasis in the Telecommunication studies 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, as well as examine new communication media.

*Course requires art materials fee.

From a liberal arts perspective, the Telecommunication Studies 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 media organizations to students of superior academic achievement.

TEACHING CERTIFICATION

Students wishing to teach on the secondary level may seek either the Comprehensive Communication Certificate, Speech 7-12 Certificate, Drama/Theatre 7-12 Certificate or Drama/Theatre K-12 Certificate. These certificates may be completed as part of either a Bachelor of Arts degree, plus the education requirements, or the Bachelor of Science in Education degree. For the Speech and Comprehensive Communication Certificate the appropriate methods course is Speech 800C. For the Drama/Theatre Certificates the appropriate methods course is 800G. For further information about certification requirements in Education, see Administration and Secondary Education. Detailed curriculum guides are available in the Speech Office.

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 emphasizing non-musical theatre, the other musical theatre. Students electing this program will receive general and intensive academic and co-curricular training and experience in theatre integrating both performance (acting, dance, directing) and design (lighting, costume, scenic design) areas.

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 Tap and Jazz

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

Association for Organizational Communication

The Association for Organizational Communication was founded at Youngstown State University in 1988. The Association provides an environment which promotes networking with professional communicators in business, industry and government. The Association advocates professional networking as a means to enhance educational understanding, to explore career opportunities and to promote a public awareness of organizational communication.

The Association for Organizational Communication is open to all university students and fosters communication between YSU faculty, staff, students and professionals in the community.

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 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. To be taken within the first 45 hours of course work. 1 q.h.

525. *Building Communication Confidence.* Intensive work for students having difficulty with fundamental communication skills. In consultation with instructor, students set individual goals and perform practical exercises. Prereq.: Permission of the instructor. Not applicable to speech communication major. 4 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.

545. *Fundamentals of Communication.* Introduction to theories and techniques of preparing for, participating in and evaluating interpersonal, group and public communication. Application exercises included for student practice. 4 q.h.

550. *Public Speaking.* Designed to improve speech skills through the application of communication principles to varying audience situations. 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.

615. *Competitive Public Speaking 1.* 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. SPCH 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.

651. *Communication for Business and the Professions.* The principles and practices of speech communication in business, industrial and professional settings. Emphasis on presentational speaking. Two hours of lecture plus two hours of lab per week. 3 q.h.

652. *Business and Professional Speaking.* The principles of speech communication in business and professional settings. Emphasis on presentational speaking and group communication. 4 q.h.

653. *Small-Group Communication.* Small-group interaction and participation from a communication systems perspective. Includes an examination of group processes 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.

657. *Organizational Communication 1.* A general survey of traditional and interpretive approaches to organizational communication as well as career applications. Explores the relationship between communication and organizational effectiveness. Prereq.: 550 or 652 or Junior standing in Speech Communication. 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.: 12 quarter hours in Speech Communication or permission of instructor; and ENGL 551. 4 q.h.

Upper Division Courses

740. *Special Topics in Speech Communication.* An in-depth analysis of topics of relevance and interest in classical through contemporary speech communication. Prereq.: SPCH 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.: SPCH 530 or 640 or Junior standing in Speech Communication; acceptance of Individual Study Proposal Form by coordinating faculty member and department chair. 1-3 q.h.

750. *Advanced Public Speaking.* Advanced theoretical principles in the practice of public speaking and persuasive discourse. Prereq.: SPCH 550 or 654 or 652. 4 q.h.

754. *Argumentation.* Developing critical thinking through the systematic evaluation of theories, principles and practices of argumentation. Prereq.: SPCH 550 or 652 or 654 or ENGL 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.: ENGL 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.: SPCH 550 or 652 or Junior standing in Speech Communication. 4 q.h.

757. *Organizational Communication 2.* Examines the traditional structures and functions of communication in organizations emphasizing the interdependence of organizational goals and communication. Focuses on recognizing , understanding, assessing, and designing communication systems in organizations. Prereq.: SPCH 657; SPCH 653 recommended for students in Organizational Communication emphasis. 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.: SPCH 670. 4 q.h.

776. *Practicum in Organizational Communication.* A directed field experience in organizational settings requiring two hours per week in the field placement for each credit hour taken. Weekly meetings with the faculty supervisor are required. Repeatable up to eight hours, only four of which will be applied to the major. Prereq.: Permission of faculty supervisor and either SPCH 757 or SPCH 657 and 756. 1-4 q.h.

815. *Competitive Public Speaking 2.* 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. SPCH 815 may be taken up to 8 hours. Prereq.: SPCH 615 and permission of instructor. 2 q.h.

852. *Decision Making.* Analysis of communication variables influencing decision making in groups. Includes a survey of relevant literature, observation of decision making groups, and participation in decision making processes. Prereq.: SPCH 653. 4 q.h.

857. *Organizational Cultures.* The interpretive approach to organizational communication, utilizing culture as a dominant metaphor, emphasizing the relationship between organizational realities and communication behaviors. Prereq.: 698, 757; also 756 or permission of the instructor. 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.: SPCH 698 or equivalent research course and permission of instructor. 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. May be repeated for credit as long as a specific topic is not repeated. Prereq.: SPCH 757; or SPCH 657 and permission of instructor 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 GPA, courses taken, review and approval by a faculty committee and acceptance by a sponsoring organization. Application procedures should be completed by the end of the fifth week of classes prior to the quarter for which internship is sought. Weekly field workload: 3 q.h.—10-14 hours, 4 q.h.—15-20 hours; and one hour weekly meeting with coordinator and other interns. Repeatable for 2 quarters for a maximum of 8 q.h. Prereq. all students: upper division status, approval of faculty internship committee; organizational emphasis students, SPCH 757. 3-4 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.: SPCH 698 or ENGL 551 and permission of instructor. 4 q.h.

Speech Education

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.

654. *Speech Communication 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. Prereq.: EDUC 501. 4 q.h.

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 654 or permission of instructor. 3 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.

Electronic Media

Lower Division Courses

580. *Introduction to Telecommunication Studies.* A survey course designed to familiarize students with the principles and practices involved in radio and television broadcasting and other electronic mass media. 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 Electronic Media.* Designed for those who might need to use electronic media. This course explores ways of gain ing access to newscasts and other forms of programming. Prac tice in basic productions, media interviews and related skills. Not for Telecommunication Studies majors. 4 q.h.

682. *Scriptwriting for Electronic Media.* Fundamentals of telecommunication media writing with emphasis on the theory, analysis, and practices in the preparation of continuity, news, and documentaries. Prereq.: ENGL 550 and SPCH 580 with a C or better in both. 4 q.h.

683. *Media Operations and Performance.* An introduction to practices and procedures basic to media production facilities. The equivalent of three hours lecture plus two hours lab per week. Prereq.:ENGL 550 and SPCH 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.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

685, 686. *Studio Operations 1, 2.* 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 SPCH 685 is SPCH 682 and 683 with a grade of C or better in both; the prerequisite for SPCH 686 is SPCH 685 with a grade of C or better. 1+1 q.h.

Upper Division Courses

780. *Principles and Practices of Media Announcing.* A study of the announcer's role in electronic mass media. Students will examine theories, techniques, and major styles of media announcing. Three hours lecture, two or more hours of individualized lab per week. Prereq.: SPCH 682 and 683 with a grade of C or better in both. 4 q.h.

781. *Audio Production.* Study of the concepts of audio production, including student production of various types of programs. The equivalent of three hours lecture plus two hours lab per week. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

782. *Video Production.* Study of studio production elements such as equipment, lighting, scene design, graphics, and special effects. Includes the equivalent of three hours lecture plus two hours lab per week. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

783. *Telecommunication Regulation.* Responsibilities of electronic media communicators as prescribed by law and administrative agency policies, and court decisions. Analysis of the regulatory environment of broadcasters, common carriers, and cable. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

784. *Telecommunication Programming.* A study of contemporary broadcast and cable programming, including development, scheduling, and competitive

strategies. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

785. *Studio Operations 3.* Individual projects or assignments in planning, coordinating and assessing production and programming related to studio procedures. Repeatable for a maximum of 3 hours. Prereq.: SPCH 686 with a grade of C or better; acceptance of Project Proposal Form by coordinating faculty member and department chair. 1 q.h.

786. *Video Production 2.* 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.: SPCH 782. 4 q.h.

787. *Practicum in Telecommunication.* Individual study and practical application of communication principles to various telecommunication problems. Repeatable for a maximum of eight hours. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 2-4 q.h.

788. *Electronic Media Sales and Promotion.* An examination of the principles and practices of selling electronic media. Analysis of rating-based sales and promotion strategies, as well as relations with agencies and station representatives. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

789. *Electronic Media Interviewing.* A study and application of interviewing and reporting techniques, emphasizing the local news interview and public affairs reporting. Includes the equivalent of three hours lecture plus two hours of lab per week. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

881. *Telecommunication Management.* A study of the relationships of communication management with government, networks, ownership and other groups. Organization and procedures of typical units; common planning models. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

882. *Studio Operations Management 4.* Advanced individual projects or assignments in planning, coordinating and assessing production and programming related to studio procedures. Repeatable for a maximum of 6 hours. Prereq.: SPCH 785; acceptance of Project Proposal Form by coordinating faculty member and department chair. 2 q.h.

884. *Video Production Direction.* A study and application of the communication roles and skills associated with video directing. Emphasis on audience analysis. Includes the equivalent of three hours lecture and two hours lab per week. Prereq.: SPCH 782. 4 q.h.

885. *Developments in Telecommunication Media.* Study and application of uses of telecommunication media apart from commercial broadcasting. Study of new technologies and their potential. Prereq.: SPCH 682 and 683, with a grade of C or better in both. 4 q.h.

886. *Audience and Market Measurement.* Methods of collecting, analyzing and using information about media markets. Includes quantitative and non-quantitative techniques. Prereq.: SPCH 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. Prereq.: SPCH 682 and 683, with a 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 Telecommunications.* 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.: SPCH 682 and 683, with a grade of C or better in both. 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.

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 1.* 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 2.* Continuation of SPCH 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. *Tap and Jazz 1.* 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. This course may be applied as 2 q.h. credit toward the University HPE activity requirement. Identical with HPE 570. 2 q.h.

664. *Tap and Jazz 2.* Emphasizes basic tap combinations and routines. Continuation of SPCH 663. Prereq.: SPCH 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

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.: SPCH 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.: SPCH 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.: SPCH 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.: SPCH 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.: SPCH 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.: HPE 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.: SPCH 590 or ENGL 616. 4 q.h.

791. *Rehearsal and Performance 1.* 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 1.* 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 1.* 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.: SPCH 762 or consent of the instructor. 4 q.h.

861. *Drama 2.* 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.: SPCH 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.: SPCH 661 or ENGL 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.: SPCH 661 and 668. 4 q.h.

864. *Advanced Directing.* A study of specific theories, techniques, and various important styles in play directing. Prereq.: SPCH 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.: SPCH 791 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.: SPCH 566. 1-4 q.h.

867. *Projects in Production Design 2.* Independent study at the advanced level involving design and/or execution of scenery, lighting, or costumes for public performance. Prereq.: SPCH 792 and theatre faculty committee approval of proposed project. 1-3 q.h.

868. *Children's Theatre.* A study of the process of theatre production by and for elementary school children, including theory, objectives and methods. Prereq.: SPCH 762 or senior standing in Elementary Education with permission of the instructor. 4 q.h.

869. *Creative Dramatics.* Basic elements of playmaking, improvisation, story dramatization, pantomime, dialogue, and characterization. Experiences with area school children provided when possible. Intended for elementary education majors and drama certification. Prereq.: Junior standing with 12 hours of theatre courses (including 661 and 668) or Junior standing in Elementary Education with permission of instructor. 4 q.h.

891. *History of the Theatre 1.* 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 2.* 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.

895. *Arts in Education Internship: Theatre.* A practical application of drama/theatre in education theories and skills in a field-based laboratory experience in the schools. Students will submit project proposals geared either to the elementary or secondary level. Proposals must be approved by a theatre faculty committee. Repeatable for a maximum of 8 q.h. Prereq.: Commitee approval and SPCH 561, 661 and 762 or SPCH 661, 761 and 868. 1-4 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

Joseph Edwards, 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 five components: music education, music history, 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 8 recitals/convocations per quarter during their freshman and sophomore years (total 48).

The school has several major performing ensembles: Dana Chorale, the University Chorus, the Wind Ensemble, the Concert Band, the Marching Band, and the Dana College-Community 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, is 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 placement examinations in music theory and piano. 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 a 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. Deficiencies must be overcome prior to completing 90 quarter hours.
   B. Musical. An entrant lacking suitable proficiency must develop it 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. Curricula. Curricula leading to Music degrees require 203 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 CURRICULA

FACULTY

Professors Edwards (Director), Byo, Gould, L.M. Hopkins, R.E. Hopkins, Largent, Mayhall, Orr, Raridon, Sample, Slocum, Spiro, Starkey, Turk, Vogel; Associate Professors Funk, Gelfand, Harris, Leonardi, Parlink, Rollin; Assistant Professors Perkins, Rudnytsky, Umble, Wilcox; Instructors Brennis, Bruck, Crist, Kempf, Matsusaka, and Sexton.

PERFORMANCE

Acceptance into a performance area is contingent upon an audition. The student not qualifying for Music 501 or 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.

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. Assignment of students to teachers is 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. Recognizing that performing before an audience plays a vital role in musical development, the Dana School offers its students many opportunities to appear in public as a way to foster that development. Attendance at 48 recitals is mandatory in the first two years.

CONVOCATION. The director or assistant director of the School arranges weekly programs of lectures, student and faculty performances.

CONCERTO/ARIA CONCERT. An annual concert by the Dana Symphony Orchestra features student soloists chosen by competition.

DEGREE AND NON-DEGREE RECITALS. Each candidate for the degree Bachelor of Music must present a senior recital in partial fulfillment of the graduation requirements; performance majors must present a one-hour recital; music education majors must present a half-hour recital. Performance majors must also present a half-hour junior recital. Outstanding students may present non-degree recitals, subject to certain conditions (for particulars consult the coordinator of the Dana Concert Series). Planning for all these recitals should include selection of varied and balanced repertory, preparation of properly detailed copy for the printed program and program notes, and consideration of special aspects of performing, such as dress, stage deportment, and ways to attract an audience. A recital hearing will be held no later than 21 days prior to the projected recital date. During that time a student who plans to present a degree recital must be prepared to perform the recital program for faculty approval.

EXAMINATIONS. During examination week of each quarter performance faculty members convene to determine whether or not students may proceed to the next higher proficiency level (performance course number). Frequency of required examinations differs among the various performance areas (for specifics consult the syllabus of the performance area concerned). Transfer students are examined at the end of their first or second quarter of study, as established by the individual performance area. Students presenting an approved degree recital are granted a waiver of examination for the quarter of the recital. Students may be retain ed in the same proficiency level with a grade of C or lower or with a grade of PR. Students who fail to meet the standards of the examining faculty may be required to reduce the number of quarter hours' credit for which they register in subsequent quarters; or they may be required to withdraw completely from the course sequence.

Each applied area (keyboard, brass, etc.) may vary the above to meet certain needs. Consult with area coordinator for details.

Change in Credit Hours. Students may transfer from minor or major courses in accordance with the performance course equivalency table, subject to approval by the appropriate performance faculty.

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.: HARPS 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.: HARPS 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.: HARPS 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 Correlli, 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.: VIOLN 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. VIOLN 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.: VIOLN 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 octaves. Solos such as Capuzzi, *Concerto*; Eccles, *Sonata*; Correlli, *Sonata in D minor*; Rachmaninoff, *Vocalise*. Prereq.: SBASS 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.: SBASS 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.: SBASS 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.: GUITR 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.: GUITR 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.: GUITR 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 Jeanjean, Arabesque; Mozart, *Concerto (2nd Movement);* Weber, *Concertino;* Stocks, *a Wessex Pastoral;* Guilhand, *First Concertino;* Pierne, *Canzonetta*. Prereq.: entrance audition. 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 Concerto No 1;* Cavallini, *Adagio and Tarantella;* Marty, *First Fantasy;* Messager, *Solo de Concours;* Rabaud, *Solo de Concert*. Prereq.: CLAR 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;* Weber, *Concerto No. 2;* Mozart, *Concerto;* Lefebre, *Fantasy Caprice*. Junior recital. Prereq.: CLAR 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;* Osborne, *Rhapsody;*

Hindemith, *Concerto;* Widor, *Introduction and Allegro;* Jeanjean, *Scherzo Brillante;* Martinu, *Sonatina;* Nielsen, *Concerto.* Senior recital. Prereq.: CLAR 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.: BASSN 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.: BASSN 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.: BASSN 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.: SAX 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.: SAX 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.: SAX 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.: TRUMP 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.: TRUMP 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.: TRUMP 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.: FHORN 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.: FHORN 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.: FHORN 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.: TROMB 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.: TROMB 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.: TROMB 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.: BHORN 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.: BHORN 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.: BHORN 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.: PERC 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.: PERC 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.: PERC 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.: PERC 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.: PERC 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.: PERC 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.: PERC 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.: PERC 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.: PERC 706. 6 q.h.

805. *Recital.* The preparation of a Senior recital. For scales and arpeggios see level 705 with increased tempo. Prereq.: PERC 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.: PERC 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 20th Century Music.* A study of the various elements of 20th century compositions, including melody, harmony, rhythm, texture, and form. Prereq.: MUSIC 632 with a grade of C or better. 3 q.h.

831. *Counterpoint 1.* 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 2.* 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 1.* 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 2.* 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

510.* *Survey of Jazz.* (See Jazz 510.)

512.* *A Survey of Musical Theatre.* Identical to SPCH 512. Satisfies the University's area requirement in the humanities. 4 q.h.

517. *Introduction to Music and Art.* An introduction to and survey of the elements in musical and artistic genre and the influences on philosophy, religion, politics, etc. Particular examples will be drawn from various periods, styles, and movements within the historical framework of art and music. Materials for the course will include slides, field trips, recordings, performances, and lectures. Will not fulfill music literature requirement for the music major or art history requirement for the art major. Cross listed with ART 517. 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

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*MUSIC 510, 512, 522, 617, 618, 622, 709/710/711 may **not** replace a music history requirement for the music major.

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 772. 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.

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.* Develop basic skills necessary to lead an instrumental or choral ensemble. 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. 2 q.h.

716. *Instrumental Conducting Practicum.* A practical course in conducting instrumental ensembles for actual conducting experiences. Course is designed to provide student with experience in applying conducting techniques and concepts introduced in the Fundamentals of Conducting course. Prereq.: Fundamentals of Conducting 715. 2 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. 2 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. 4 q.h.

721. *Music Education for Elementary Teachers.* The development of an understanding of the theoretical aspects of music through discussion and demonstration of repertoire and techniques for teaching music in the elementary school. Prereq.: Upper Division status in the School of Education. 4 q.h.

722. *Music in Early Childhood.* Fundamental skills, repertoire, materials, and technics for teaching music to pre-school and kindergarten children. Prereq.: HOMEC 532. 4 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 using 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. *Vocal Pedagogy.* A comparative study of physiological and psychological approaches to voice instruction and their application to private and class instruction. Prereq.: MUSIC 603, 606, or 609. 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. 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. 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 1.* 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 2.* 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 1.* 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 2.* 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 1.* 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 2.* 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 2.* 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 3.* 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 3.* 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.

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.

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 1, 2, 3.* 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.: THERY 532 or consent of instructor. 3+3+3 q.h.

780, 781, 782. *Jazz Keyboard 1, 2, 3.* (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 instrumental and vocal groups, students are required to participate in ensembles as follows:

All vocal and instrumental majors must be in a major ensemble each quarter they are full-time students. The director of the School of Music may waive ensemble participation in exceptional cases, and during the student teaching quarter. There are two types of ensembles in the school of music — major ensembles and chamber ensembles. Major ensembles rehearse a total of four hours per week and chamber ensembles are scheduled for two hours. The major ensembles are:

Courses		Cr. Hrs.
002	*Dana Chorale*	1 q.h.
004	*University Chorus*	1 q.h.
005	*Concert Band*	1 q.h.
006	*Marching Band*	1 q.h.
007	*Wind Ensemble*	1 q.h.
008	*Symphony Orchestra*	1 q.h.

The chamber ensembles are:

009	*Percussion Ensemble*	1 q.h.
010	*String Ensemble*	1 q.h.
011	*Men's Chorus*	1 q.h.
012	*Opera Workshop*	1-3 q.h.
013	*Contemporary Ensemble*	1 q.h.
014	*Women's Chorus*	1 q.h.
015	*Collegium Musicum*	1 q.h.
016	*Woodwind Ensemble*	1 q.h.
017	*Brass Ensemble*	1 q.h.
018	*Horn Choir*	1 q.h.
019	*Trombone Ensemble*	1 q.h.
020	*Tuba Ensemble*	1 q.h.
021	*Brass Chamber Ensemble*	1 q.h.
022	*Trumpet Ensemble*	1 q.h.
023	*Jazz Ensemble*	1 q.h.
024	*Composer's Ensemble*	1 q.h.
026	*Chamber Orchestra*	1 q.h.
028	*Chamber Winds*	1 q.h.
029	*Guitar Ensemble*	1 q.h.

Ensemble courses are open to all students in the University who are qualified for them and any ensemble course may be repeated any number of quarters.

Three hours of marching band credit may be substituted for three hours of the general requirement in physical activity classes.

For students pursuing the Jazz emphasis curriculum, the Jazz Ensemble is considered the major ensemble. 023 Jazz Ensemble meets for three hours per week.

Opera workshop 012 culminates in the production of one or more operas. Credit is given in accordance with the amount of work to be undertaken by the student and ranges from one to three quarter hours.

Madrigal Singers 003 is a highly select ensemble which presents numerous concerts and rehearses three hours per week for 1 q.h. credit.

Courses		Cr. Hrs.
013	*Contemporary Ensemble*	1
014	*Women's Chorus*	1
015	*Collegium Musicum*	1
016	*Woodwind Ensemble*	1

Woodwind ensemble may include quartets, quintets, and various other combinations of instruments. 1 cr. hr. each.

Courses		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.

Courses		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:

Courses	Cr. Hrs.
Composition 550, 551	8
Social Studies Elective	16
HLTH 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:

Courses	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	2
Applied Minor 500A,B,C or completion of Keyboard 682	6

III. Requirements in addition to the above but unique to each program:

1. Piano

Courses	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	8

2. Organ

Courses	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	9

3. Instrumental

Courses	Cr. Hrs.
Major Ensemble	a minimum of 12
Theory elective	12
Chamber Ensemble	3
Pedagogy	2
Music History Elective	3
Electives	11

4. Voice

Courses	Cr. Hrs.
Major Ensemble	a minimum of 9
**Italian, French, German	24
Music History elective	3
Vocal Pedagogy	2
Music Theory Elective	6
Diction	3
Electives	3

I. General University requirements common to both composition concentrations.

Composition

Courses	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

*Voice is only 60.

**If the student has two units of high school French, German, or Italian, the corresponding course may be waived.

II. Music requirements common to both composition concentrations.

Courses	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.

1. Keyboard concentration

Courses	Cr. Hrs.
Piano 501—703	18
Secondary applied 501	2
Applied classes	10
Music electives	4

2. Non-keyboard concentration

Courses	Cr. Hrs.
Keyboard 580—682	6
Applied Music 501—701	14
Applied classes	10
Music electives	4

CURRICULUM FOR ACCOMPANYING DEGREE

I. General University Requirements

Courses	Cr. Hrs.
Composition 550, 551	8
HPE and Activities	6
Social Studies Elective	16
Science/Math (including Physics 608)	12
Humanities (see Music 770, 771, 772, Philosophy and Music History Elective)	19

II. Music Requirements

Courses	Cr. Hrs.
Keyboard 504 - 804	40
Secondary applied	4
Music Literature 518, 519	6
Theory 530 - 750	22
Theory electives	12
Music History 770, 771, 772	12
Music History 860 and 879	7
Music History Elective	6
Major Ensembles	3
Accompanying 590 - 695	9
Accompanying 887 - 892	6
Piano 600A - 800B	16
Conducting 715, 716 or 717	4
Electives	10

CURRICULUM FOR JAZZ DEGREES

I. General University requirements common to all jazz degrees:

Courses	Cr. Hrs.
Composition 550, 551	8
Social Studies elective	16
HPE 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:

Courses	Cr. Hrs.
Theory 530 — 750	22
Arranging 712,713,714	9
*Major Ensemble	a minimum of 15
Survey of Jazz 510	3
Music History 770, 771, 772	12
Conducting 715	2
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

Courses	Cr. Hrs.
Applied Instrument 504 — 806	48
Keyboard 580 — 682	6
Jazz Keyboard 780 — 782	3
Music Electives	5

2. Keyboard

Courses	Cr. Hrs.
Keyboard 504 — 806	48
Keyboard 590, 591, 592	3
Jazz Keyboard 780, 781, 782	3
Music Electives	8

CURRICULUM FOR MUSIC EDUCATION DEGREES

I. Minimum general University requirements common to all music education degrees:

Courses	Cr. Hrs.
Composition 550, 551	8
Science/Math (Including Physics 608)	12
HPE 590 and Activities	6
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:

Courses	Cr. Hrs.
Major Instrument or Voice (501 — 802)	22
Theory 530 — 750	22

*Jazz ensemble is the major ensemble for the jazz major. (Only 3 additional major ensemble hours are needed.)

Music History 770 — 772	12
Conducting 715, 716, or 717	4
Music Ed 511, 815, 823 and electives	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

Courses	Cr. Hrs.
Keyboard Musicianship 580 — 682	6
Major Ensemble	a minimum of 11
Applied Classes	6
Pedagogy	2
Chamber Ensemble	2
Music History elective	3

2. Voice

Courses	Cr. Hrs.
Keyboard Musicianship 580 — 682	6
Applied Classes	5
Vocal Pedagogy	2
Chamber Ensemble	3
Music History elective	3
Major Ensemble	a minimum of 9
Diction	2

3. Keyboard

Courses	Cr. Hrs.
*Secondary Applied 500 A,B,C	6
Keyboard Musicianship 590 — 592	3
Applied Classes	4
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

Courses	Cr. Hrs.
Education 501	4
Education 700	2
Education 702	2
Education 704	3
Education 706	4
Education 706L	3
Education 708	4
Education 710	4
Education 730	2
Education 844	15
Total Hours	43

*Organ major must take piano.

CURRICULUM FOR BACHELOR OF ARTS DEGREE

I. General University Requirements common to all performance degrees:

Courses	Cr. Hrs.
Composition 550, 551	8
Social Studies	20
HPE 590 and Activities	6
Math/Science	16
Humanities (See Music 770, 771, 772, Philosophy and Music History Elective)	19
Language	0 to 20
**Minor Field	21

II. Music Requirements:

Courses	Cr. Hrs.
Music Theory 530 — 750	22
Music History 770, 771, 772	12
Conducting 715	2
Music Literature 518, 519	6
Major Ensemble	6

III. Requirements in addition to the above but unique to each emphasis:

1. Music History

Courses	Cr. Hrs.
Applied Instrument or Voice 501-806	24
Music elective	15
Music History electives	15
Theory elective	6

2. Applied Music

Courses	Cr. Hrs.
Applied Instrument or Voice 501-806	42
Music History electives	3
Music Electives	9
Theory elective	6

3. Theory

Courses	Cr. Hrs.
Applied Instrument or Voice	24
Music electives	16
Music History electives	6
Theory elective	14

**The requirement for the minor are found in the section concerned with that college.

Performance Course Equivalency Table

Q.H.	Course Number		
0	500		
2	501	504	
4	502		
6	503	505	
8	601		
10	602	506	
12	603		
14	701	604	607
16	702		
18	703	605	
20	801		608
22	802	606	
24	803		
26	901	704	609
28	902		
30	903	705	
32			707
34		706	
36			
38		804	708
40			

Q.H.	Course Number		
42		(805)	
44		709	
46		806	
48			
50		904	807
52			
54		905	
56			808
58		906	
60			
62			809
64			
66			
68			907
70			
72			
74			908
76			
78			
80			909
82			
84			

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M.A., Pennsylvania State University, 1957

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M.S.P.H., University of North Carolina, 1955
Ph.D., University of North Carolina, 1960

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M.S., Benares Hindu University, 1951
M.S., University of California-Davis, 1958
Ph.D., University of California-Davis, 1962

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B.S. in Ed., Ohio State University, 1980
M.Ed., Kent State University, 1982

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B.S. in B.A., Ohio State University, 1980
M.B.A., Kent State University, 1981

FRED W. VIEHE
Associate Professor of History
B.A., Lewis and Clark College, 1971
M.A., University of California at Santa Barbara 1974
Ph.D., University of California at Santa Barbara 1983

L. ALLEN VIEHMEYER
Professor of Foreign Languages
B.S. in Ed., Western Illinois University, 1964
A.M., University of Illinois, 1967
Ph.D., University of Illinois, 1971

DONALD E. VOGEL
Professor of Music
B.M., Indiana University, 1953
M.M., Indiana University, 1956
Ed.D., Columbia University, 1966

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Professor of Accounting and Finance
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M.B.A., Central Michigan University, 1968
Ph.D., University of Pittsburgh, 1975

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Professor of Chemistry
Doctorandum, University of Graz, Austria, 1950
M.A., Columbia University, 1954
Ph.D., Columbia University, 1958

JOSEPH A. WALDRON
Professor of Criminal Justice
B.A., State University of New York at Buffalo, 1972
M.A., Ohio State University, 1973
Ph.D., Ohio State University, 1975

RICHARD L. WALKER
Assistant Professor of Health and Physical Education
B.A., East Carolina University, 1971
M.Ed., East Carolina University, 1972

BRUCE N. WALLER
Assistant Professor of Philosophy and Religious Studies
B.A., Louisiana Tech, 1968
M.A., University of North Carolina, 1975
Ph.D., University of North Carolina, 1979

MICHAEL J. WALUSIS
Associate Professor of Art
B.F.A., University of Notre Dame, 1964
M.F.A., Ohio State University, 1967

VICTOR WAN-TATAH
Assistant Professor of Philosophy and Religious Studies
M.T.S., Harvard Divinity School, 1979
Th.D., Harvard Divinity School, 1984

HOMER B. WARREN
Associate Professor of Marketing
B.S. in B.A., Youngstown State University, 1973
M.A., Youngstown State University, 1977
D.B.A., Kent State University, 1987

ROBERT WEAVER
Assistant Professor of Sociology, Anthropology, and Social Work
B.A., State University of New York, 1979
M.A., University of Connecticut, 1981
Ph.D., University of Connecticut, 1988

JOHN R. WHITE
Professor of Sociology, Anthropology, and Social Work
A.A., City College of San Francisco, 1961
B.A., San Francisco State College, 1963
M.A., University of Oregon, 1969
Ph.D., University of Oregon, 1974

NANCY A. WHITE
Associate Professor of Psychology
B.A., State University of New York, 1972
M.A., City University of New York, Queens College, 1975
Ph.D., University of Florida, 1985

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B.S. in Ed., Youngstown State University, 1962
M.S. in P.E., Springfield College, 1963
Ph.D., Ohio State University, 1970

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Assistant Professor of Music
Mus.B., Florida State University, 1973
Master of Music, Kent State University, 1986

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Professor of English
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Ph.D., State University of New York at Buffalo, 1970

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B.S., Louisiana Polytechnic Institute, 1965
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Ph.D., University of Alabama, 1972

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Ph.D., University of Illinois, 1982

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Associate Professor of Management
A.B., Westminster College, 1949
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B.A., State University of New York, 1983
M.B.A., Mississippi State University, 1984
Ph.D., Mississippi State University, 1990

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Professor Emeritus of Mathematical and Computer Sciences
Retired 1986

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Karl Washburn Dykema . . . . . English
Jay Rodkey . . . . . Accounting
George Milo Wilcox . . . . . Education

1960-1961

Mary Wagstaff Jones . . . . . Communication
Margarita Mills . . . . . Spanish
Eugene Dodd Scudder . . . . . Chemistry
Bernard James Yozwiak . . . . . Mathematics

1961-1962

Gus Mavrigian . . . . . Mathematics
Alvin Myerovich . . . . . Music
Edward Thomas Reilly . . . . Business Organization
Clair L. Worley . . . . . Biology

1962-1963

Pauline Esterhay Botty . . . . . Sociology
Frank Angelo D'Isa . . . . . Mechanical Engineering
Francis Kravec . . . . . Biology
Willard L. Webster . . . . . Biology

1963-1964

David Marion Behen . . . . . History
Irwin Cohen . . . . . Chemistry
Thaddeus Michael Dillon . . . . . Mathematics
George Henry Schoenhard . . . . . Education

1964-1965

Christine Rhoades Dykema . . . . . French
Anthony Michael Land . . . Philosophy and Religion
Victor Anthony Richley . . . . . Electrical Engineering
Myron James Wisler . . . . . Music

1965-1966

Thomas D.Y. Fok . . . . . Civil Engineering
Philip Jerome Hahn . . . . . Economics
Vera Jenkins . . . . . Accounting and Business
Theodore T. Macejko . . . . . Business Administration

1966-1967

Jack Donald Foster . . . . . Sociology
Jon Michael Maberenzny . . . . . Art
Paul C. Luginbill . . . . . Chemical Engineering
Lois M. Hopkins . . . . . Music

1967-1968

Catherine M. Bridgham . . . . . Chemistry
Frank M. Ellis . . . . . Physics
James W. Kiriazis . . . . . Sociology
Bernard J. Vojtko . . . . . Electrical Engineering

1968-1969

Ivis Boyer . . . . . Political Science
Marvin W. Chrisp . . . . . Education
Esther P. Niemi . . . . . Economics
William Petrych . . . . . Accounting

1969-1970

Leslie S. Domonkos . . . . . History
Joseph R. Lucas Philosophy and Religious Studies
Matthew Siman . . . . . Electrical Engineering
Paul D. Van Zandt . . . . . Biology

1970-1971

Margaret A. Braden . . . . . Education
Alfred L. Bright . . . . . Art

Raymond W. Hurd ..... Mathematics
Inally Mahadeviah ..... Chemistry

1971-1972

Frederick J. Blue ..... History
Frank A. Fortunato ..... Management
Thelma S. Miner ..... English
Duane Sample ..... Music

1972-1973

Dwight V. Beede ..... Biology
Ronald L. Gould ..... Music
Renee D. Linkhorn ..... Foreign Languages
Margaret I. Pfau ..... English

1973-1974

Barbara H. Brothers ..... English
E. Terry Deiderick ..... Marketing

1974-1975

Esotto Pellegrini ..... Music
James P. Rhonda ..... History

1975-1976

Larry E. Esterly ..... Political Science

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Frank A. D'Isa ..... Mechanical Engineering

1978-1979

Gilda M. Decapita ..... Nursing
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1979-1980

Barbara H. Brothers ..... English
Frank J. Seibold ..... Advertising and Public Relations
John H. Yemma ..... Allied Health

1980-1981

Thomas N. Dobbelstein ..... 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

1986-1987

Richard L. Burden .....Mathematics

1987-1988

Barbara H. Brothers .....English
Lawrence E. Cummings .....Criminal Justice

1988-1989

William O. Barsch .....Engineering Technology

1989-1990

Alfred W. Owens II .....Speech Communication and Theatre
L. Allen Viehmeyer .....Foreign Languages

1990-1991

Thomas A. Shipka .....Philosophy and Religious Studies

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COURSE AREA ABBREVIATIONS

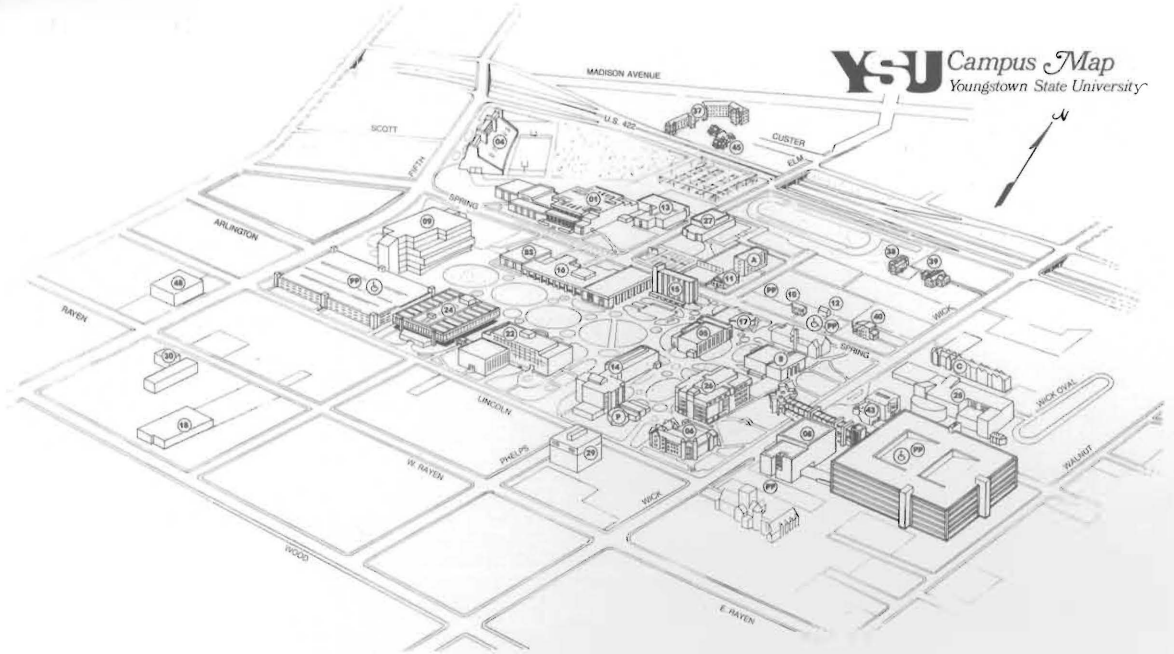
A&S ..... Arts and Sciences
ACCTG ..... Accounting
ADVER ..... Advertising & Public Relations
AHLTH ..... Allied Health
AMER ..... American Studies
ANTHR ..... Anthropology
ART ..... Art
ASTRO ..... Astronomy
BASSN ..... Bassoon
BET ..... Business Education & Technology
BHORN ..... Baritone Horn
BIOL ..... Biology
BLKST ..... Black Studies
BUTEC ..... Business Technology
CELLO ..... Cello
CHEGR ..... Chemical Engineering
CHEM ..... Chemistry
CIEGR ..... Civil Engineering
CIS ..... Computer Information Systems
CITEC ..... Civil Engineering Technology
CLAR ..... Clarinet
CLASS ..... Classical Studies
CMEGR ... Chemical & Metallurgical Engineering
COUNS ..... Counseling
CRJUS ..... Criminal Justice
CSCI ..... Computer Science
DDT ..... Drafting and Design Technology
DENHY ..... Dental Hygiene Technology
ECON ..... Economics
EDADM ..... Educational Administration
EDUC ..... Education
ELCTV ..... Elective
ELED ..... Elementary Education & Reading
ELEGR ..... Electrical Engineering
ELTEC ..... Electrical Engineering Technology
EMTEC ..... Emergency Medical Technology
ENGL ..... English
ENGR ..... Engineering
ENTEC ..... Engineering Technology
FHORN ..... French Horn
FIN ..... Finance
FLUTE ..... Flute
FN/LG ..... Foreign Language
FOUND ..... Foundations of Education
FRNCH ..... French
GEOG ..... Geography
GEOL ..... Geology
GERMN ..... German
GREEK ..... Greek
GUITR ..... Guitar
HARPS ..... Harpsichord
HIST ..... History
HLTH ..... Health Education
HOMEC ..... Home Economics
HPE ..... Health & Physical Education
HUMAN ..... Humanities
INEGR ..... Industrial Engineering
ITALN ..... Italian
JOURN ..... Journalism
LATIN ..... Latin
LING ..... Linguistics
LREL ..... Labor Relations
LSTEC ..... Labor Studies Technology
MATEC ..... Medical Assisting Technology
MATH ..... Math
MECH ..... Mechanical Engineering
METEC ..... Mechanical Engineering Technology
MGT ..... Management
MILSC ..... Military Science
MKTG ..... Marketing
MLTEC ..... Medical Laboratory Technology
MTEGR ..... Materials Engineering
MUSAC ..... Music - Applied Classes
MUSCO ..... Music - Conducting
MUSED ..... Music Education
MUSEN ..... Music - Ensembles
MUSHL ..... History & Literature of Music
MUSIC ..... Music
MUSTC ..... Theory & Composition of Music
NATSC ..... Natural Science
NURSG ..... Nursing
OBOE ..... Oboe
ORGAN ..... Organ
PE ..... Physical Education
PERC ..... Percussion
PHIL ..... Philosophy
PHYS ..... Physics
PIANO ..... Piano
POLIT ..... Political Science
PREFO ..... Pre-Forestry
PREL ..... Public Relations
PSYCH ..... Psychology
RELIG ..... Religious Studies
RTTEC ..... Respiratory Therapy Technology
RUSSN ..... Russian
SAX ..... Saxaphone
SBASS ..... String Bass
SCI ..... Science
SCWK ..... Social Work
SEDUC ..... Secondary Education
SECST ..... Secretarial Studies
SOCIO ..... Sociology
SOCSC ..... Social Science
SOCST ..... Social Studies
SPAN ..... Spanish
SPCH ..... Speech Communication & Theatre
SPED ..... Special Education
THERY ..... Theory
TROMB ..... Trombone
TRUMP ..... Trumpet
TUBA ..... Tuba
VIOLA ..... Viola
VIOLN ..... Violin

DEPARTMENTAL PHONE DIRECTORY

Accounting & Finance Dept., WH 602 3084
Administration & Secondary Education Dept., SE 1018 3261
Allied Health Dept,. CH 1074 3327
Applied Science & Technology, College of, CH 2064 3321
Art Dept., BH 4001 3627
Arts & Sciences, College of, DH 104 3409
Biological Sciences Dept., WB 4037 3601
Bursar's Office, JH 1008 3143
Business Administration, Warren P. Williamson, Jr., School of, WH 503 3064
Business Education & Technology Dept., CH 3077 3336
Chemical Engineering Dept., ESB 230 3020
Chemistry Dept., WB 5053 3663
Civil Engineering Dept., ESB 267 3027
Civil Engineering Technology, CH 3056 3287
Computer Technology, MH 328 3134
Counseling and Health Services, JH 3046 ...3056
Counseling Dept., SE 2063 3257
Criminal Justice Dept., CH 2087 3279
Dana School of Music, BH 3004 3636
Economics Dept., DH 319 3428
Education, School of, SE 1054 3215
Electrical Engineering Dept., ESB 275 3012
Elementary Education & Reading Dept., SE 1060 3251
Engineering, William Rayen School of, ESB 214 3009
Engineering Technology Dept., CET, D&D, EET, MET, CH 3056 3287
Engineering Technology Dept., CPT, MH 328 3134
English Dept., DH 202 3415
Fine & Performing Arts, College of, BH 3006 3625
Foreign Languages & Literatures Dept., DH 501 3461
Foundations of Education Dept., SE 1021 ...3223
Geography Dept., CH 2033 3317
Geology Dept., ESB 213 3612
Graduate School, JH 3001 3091
Health & Physical Education Dept., BC 307 3654
History Dept., DH 519 3452
Home Economics Dept., CH 3044 3344
Industrial Engineering Dept., ESB 238 3024
Management Dept., WH 649 3071
Marketing Dept., WH 534 3080
Materials Engineering Division, ESB 225 1735
Mathematical & Computer Sciences Dept., CH 1055 3302
Mechanical Engineering Dept., ESB 209 3016
Military Science Dept., SS 1112 3205
Nursing Dept., CH 2043 3293
Philosophy & Religious Studies Dept., DH 401 3448
Physics & Astronomy Dept., WB 2014 3616
Political Science & Social Science Dept., DH 302 3436
Psychology Dept., DH B34 3401
Registrar, Office of, JH 1013 3175
Sociology, Anthropology & Social Work Dept., DH 419 3442
Special Education Dept., SE 2025 3265
Speech Communication & Theatre Dept., BH 2000 3631

YSU Campus Map

Youngstown State University



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Campus Police Bldg. 12
Central Receiving/Warehouse 18
Central Services Bldg. 17
Central Utility Plant 27
Christman Dining Commons 45
Coffelt Hall 10
Cushwa Hall 24
Dana Hall 11
DeBartolo Hall 09
Engineering Science Bldg. 22
Fedor Hall 13
Grounds Bldg. 41
Grounds Office 30
Jones Hall 06
Kilcawley Center 16
Kilcawley Residence House 15
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