



WCC ARCHIVES

Subject File

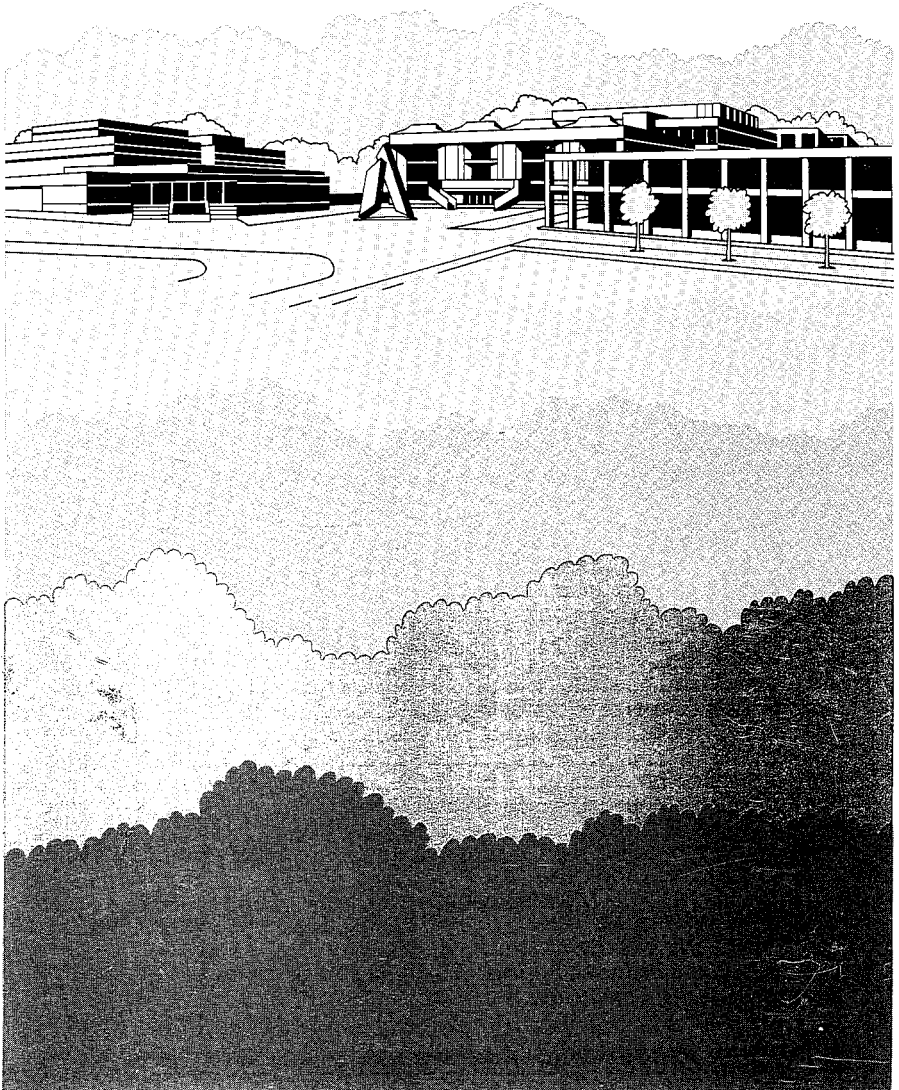
*College Catalog*

Washtenaw Community College

# 1989-90 CATALOG

Volume 17

Number 1



# CAMPUS TELEPHONE/OFFICE DIRECTORY

Admissions .....	SC 223.....	973-3543
Adult Resources Center.....	SC 221.....	973-3528
Alumni Association.....	SC 207.....	973-3631
Apprenticeship and Trade Related Programs .....	TI 115.....	973-3533
Bookstore (Ulrich's).....	SC 142.....	973-3594
Business and Industry Center.....	Landau.....	668-6400
Career Development.....	SC 227.....	973-3558
Cashier.....	SC 221.....	973-3485
Children's Center.....	FEB.....	973-3538
Community Organizations & Business .....	Landau.....	668-6400
Continuing Education Services.....	LA 200.....	973-3710
Counseling Office.....	SC 227.....	973-3464
Dean of Business.....		
Dean of Continuing Education/Community Services .....	LA 200.....	973-3710
Dean of Health/Public Services.....	OE 102U.....	973-3474
Dean of Humanities/Social Sciences .....	LA 100.....	973-3356
Dean of Learning Resources.....	SC 325.....	973-3379
Dean of Math/Natural Sciences.....	LA 102.....	
Dean of Technology.....	OE 102F.....	973-3441
Dental Clinic.....	LA 325.....	973-3337
Eastern Regional Center.....	1625 Holmes Rd, Ypsilanti.....	487-5650
Extension Programs.....	LA 230.....	973-3408
Financial Aid.....	SC 221.....	973-3524
Industrial Extension Centers.....	Landau.....	668-6534
Information Center.....	SC 225.....	973-3622
Job Training School.....	127 N. Washington, Ypsilanti.....	485-8811
Learning Resource Center.....	SC 3rd floor.....	973-3429
Lost and Found .....	SC 225.....	973-3502
Math Lab.....	LA 320.....	973-3392
Placement Services .....	SC 227.....	973-3558
Public Service Training Program.....	OE 131.....	973-3323
Reading Lab.....	SC 301.....	973-3301
Registration.....	SC 227.....	973-3548
Security.....	SC 225.....	973-3502
Student Activities.....	SC 221.....	973-3528
Student Records.....	SC 227.....	973-3548
<b>Switchboard (General Information).....</b>	<b>SC 225.....</b>	<b>973-3300</b>
Telecourse Hotline.....		973-3671
Testing Center.....	LA 108.....	973-3634
Veteran Certification.....	SC 227A.....	973-3545
Vice President for Instruction and Student Services.....	SC 234.....	973-3488
Western Regional Center.....	134 Middle St., Chelsea.....	475-5935
Writing Center.....	SC 315.....	973-3647

## Building Abbreviations

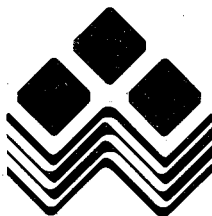
AC -- Activities Building	OE -- Occupational Education Building
FE -- Family Education Building	SC -- Student Center Building
LA -- Liberal Arts/Sciences Building	TI -- Technical and Industrial Building
Landau - 5340 Plymouth Road, Ann Arbor	

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**Washtenaw  
Community  
College**

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**1989-90 Catalog**



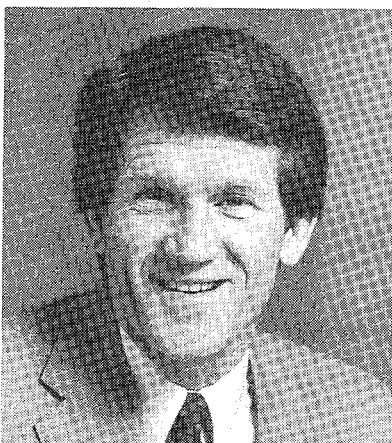
**For Tomorrow,  
Start Today...**

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## GREETINGS FROM PRESIDENT GUNDER MYRAN



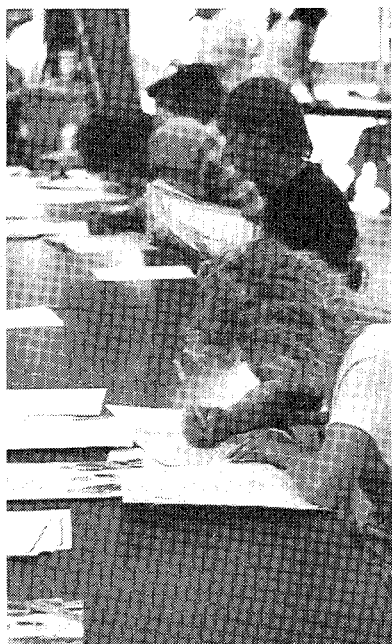
Excellent teaching is the heart of Washtenaw Community College. All staff members -- faculty, administrators, clerical staff, and custodial/maintenance staff -- are dedicated to the achievement of student and community success through excellent teaching and outstanding service. As we celebrate the 25th anniversary of our college, we recognize the accomplishments of those who have given shape to the College's teaching mission since its establishment in 1965. Through their dedication, a community college has been created for the citizens of the Washtenaw County area which is comprehensive, community-based, student-oriented. Staff members and citizens together have created a caring, responsive, high quality college which is a vital educational resource for the communities it serves.

Ernest Boyer, a foremost American educator, has said that it is in the authentic blending of memory and vision that the College finds its pulse.

Even as we celebrate WCC's past, we look ahead to the year 2000 and beyond. It is my vision that, during the decade of the 1990's, WCC will build on the foundation created in the past to create vibrant learning communities both within the College itself and throughout its service area. There will be a sense of community -- of partnership -- among faculty and students, groups of students coming together from diverse backgrounds, and various staff groups. Learning communities will also involve many of the community groups with which WCC collaborates to achieve student and community success. Examples of external learning communities will include WCC's collaboration with area colleges and universities to assure successful university transfer of WCC graduates, cooperation with area public schools to provide for successful articulation to the community college, and coalitions with business, labor, and government groups to assure a highly trained workforce for the decade of the 1990's.

The focus of these learning communities will be the content, methodology, and outcomes of teaching. The center of conversations about teaching and learning will be the success of our students whether their goals are career preparation or advancement, job retraining, university transfer, or personal enrichment. We will be "democracy's college" in the Washtenaw County area. Through our emphasis on excellent teaching and the building of learning communities, we will empower persons from all walks of life to achieve their career and life goals through education.

*Gunder A Myran*



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This document is for informational purposes only and is not to be construed as a binding offer or contract between WCC and the student. This document was prepared on July 1, 1989 and is subject to change without notice. This Catalog is intended to be used with the Time Schedule, published each term, which provides more recent information on program requirements; courses; and College and Academic policies and procedures.

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## **ACCREDITATIONS**

Approved by the  
STATE DEPARTMENT OF EDUCATION  
STATE OF MICHIGAN

Fully Accredited Member of the  
NORTH CENTRAL ASSOCIATION OF  
COLLEGES AND SECONDARY SCHOOLS

Correctional Science Program Certified by  
MICHIGAN CORRECTIONAL OFFICERS TRAINING COUNCIL

Dental Assisting Program Approved by  
COUNCIL ON DENTAL EDUCATION,  
AMERICAN DENTAL ASSOCIATION

Law Enforcement Basic/Preservice Program Approved by  
MICHIGAN LAW ENFORCEMENT OFFICERS  
TRAINING COUNCIL

Nursing - Associate Degree Program Approved by  
MICHIGAN DEPARTMENT OF LICENSING AND REGULATION  
Board of Nursing

Nursing - Practical Nursing Program Approved by  
MICHIGAN DEPARTMENT OF LICENSING AND REGULATION  
Board of Nursing

Radiography Program Accredited by  
COMMITTEE ON ALLIED HEALTH,  
COUNCIL OF MEDICAL EDUCATION,  
AMERICAN MEDICAL ASSOCIATION

Respiratory Therapy Program Accredited by  
COMMITTEE ON ALLIED HEALTH,  
COUNCIL ON MEDICAL EDUCATION  
AMERICAN MEDICAL ASSOCIATION

An Affirmative Action/Equal Opportunity Institution

Students can view the accreditation documentation by contacting  
the Dean of Enrollment and Student Services



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# 1989-90 Academic Calendar

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## Fall Semester 1989

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September 6	Classes Begin
November 23- 26	Thanksgiving Recess
November 27	Classes Resume
December 20	Fall Classes End

## Winter Semester 1990

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January 4	Classes Begin
January 15	M.L. King Holiday (no classes)
March 4-11	Spring Recess
March 12	Classes Resume
April 27	Winter Classes End

## Spring Session 1990

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April 30	Classes Begin
May 26-28	Memorial Day Recess
May 29	Classes Resume
June 15	Spring Classes End

## Summer Session 1990

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June 18	Classes Begin
June 30-July 2	Independence Day Recess
July 3	Classes Resume
August 3	Summer Classes End



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# STATEMENT OF VALUES AND MISSION

## Values of the College

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The following statements describe the basic values of Washtenaw Community College. The statements represent a convergence of the individual values of those on the staff and governing board of the College and the organizational values which are the foundation of our functioning as a college. These values guide the efforts of the College to serve our students and our communities. By working together on the basis of the highest values we hold and share as individuals, we create a teaching-learning environment which is satisfying and rewarding to our students, our communities, and ourselves.

**Teaching and Learning:** We believe that the teaching and learning process is at the core of the College's purpose and meaning. We exist as a college to offer students learning experiences which develop skills for employment, provide for continuation at a four-year college or university, facilitate lifelong intellectual, social, and emotional growth, and in other ways empower individuals to achieve career and life goals through education.

**Caring Concern For All People:** We believe that the functioning of the College should be characterized by a warm, caring concern for all individuals. We believe that all persons -- students, staff members, and all others associated with the College should be treated with dignity and respect.

**Accessibility:** We believe that all citizens who can benefit should have access to the College's programs and services. We believe that students should be enrolled in programs and courses in which they have the potential to be successful, and that the College should provide supportive and remedial services for those students who need them. We take a very optimistic and hopeful view with regard to the ability of individuals to overcome personal difficulties in order to achieve through education their career and life goals.

**Excellence:** We believe in fostering a learning environment in which students have both the opportunity and responsibility to be the best they can. We seek to create an environment which is supportive and yet creates high expectations for achievement. We are committed to excellence in the teaching-learning process, and believe excellence is measured by the quality and scope of the results of learning in terms of student knowledge, skills, attitudes, and feelings.

**Service to Community:** We believe that the College is an integral part of the communities in the area it serves. We believe the College has a responsibility to work with other community institutions and groups to assure that the educational needs of citizens are being met. We believe that the College has a special responsibility to serve the need of employers for technicians and other skilled employees and to support the economic development of the area. We feel a strong sense of financial stewardship as we utilize the funds provided to the College by area citizens.

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## The Mission of the College

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It is the mission of the College to provide an opportunity for individuals from all walks of life to pursue, through education, their career and life goals. The College has a special mission to enable individuals to prepare for careers and to advance in their careers. The College carries out its mission by offering the following programs and services:

**Occupational Education:** The College offers single course, one-year College Certificate and two-year Associate Degree programs intended to provide students with the knowledge and skills needed for employment and career development or which provide students with occupational courses which are part of a program to be continued at a four-year college or university.

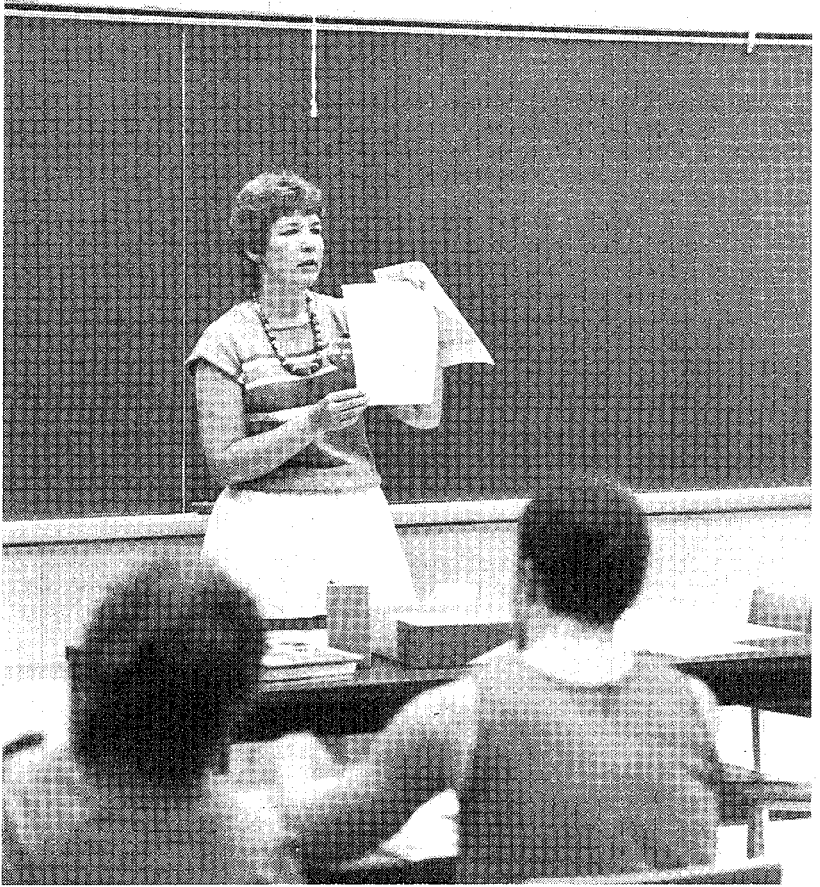
**General and Transfer Education:** The College offers courses in various academic disciplines which are transferable to four-year colleges and universities, general education courses which complement occupational education programs, and courses which enhance the personal growth of the student.

**Continuing Education and Community Services:** The College offers credit and noncredit courses and programs aimed at meeting the needs and interests of students who wish to attend the College during the evening and weekend hours, at off-campus extension centers, at local business and industrial sites, or through television instruction.

**Developmental Education:** The College offers courses for those who wish to strengthen their basic communication, mathematical, or study skills.

**Student Services:** The College offers such services as admission counseling, orientation, assistance in selecting College programs and courses, personal counseling, financial aid planning, career counseling, and job placement.

**Community Development:** The College engages in educational activities that enhance economic, cultural, intellectual, and social life of the community, and cooperates with area high schools, colleges and universities, community agencies, and other community groups to ensure that the College remains attuned to the area's educational needs.



# General Information

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## GENERAL INFORMATION

### History of Washtenaw Community College

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Washtenaw Community College (WCC) was created on January 15, 1965 when the citizens of Washtenaw County voted financial support for its establishment. A Board of Trustees was elected and a nation-wide search for administrators and faculty was initiated while a study to look for a permanent campus was begun.

During construction of the main campus which began in September 1966, the College held classes in temporary facilities in the Willow Run area of Ypsilanti Township. On September 12, 1966 1,200 students were enrolled in 30 different programs. The first classes were held in Willow Run in an old elementary school, a fire station, and a bowling alley. Students in automotive programs took courses in a one-time dairy distribution plant, while those in health programs were taught in the basement of a church in downtown Ann Arbor. In 1969, the permanent 235 acre campus opened with completion of the *Technical and Industrial* and the *Liberal Arts and Sciences Buildings*. Today, nearly 15,000 students are enrolled in credit courses and an additional 3,000 are enrolled in credit-free offerings each year.

### Types of Study

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There are many educational goals that may be obtained by attending WCC. Some students choose to attend classes for personal interest or to upgrade/obtain job skills. Other students choose to complete College Certificates or Associate Degrees; while still others earn credits for transfer to four-year institutions.

WCC also offers a variety of special courses and programs to meet the diverse needs of area citizens. Through the Business and Industry Center, programs include employee training and skills upgrading classes tailored for specific businesses and industries. The Job Training School offers training for the unemployed -- from counseling and skill assessment through actual training and job placement. The Technical Job Training Office offers coursework to fulfill apprenticeship requirements. In addition, the Continuing Education Services and Extension Programs Office offers credit, credit-free and televised class instruction.

### Current Facilities

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Today, the WCC main campus includes several buildings dedicated entirely to instructional activities: the *Activities Building*, the *Liberal Arts and Sciences Building*, the *Occupational Education Building*, and the *Technical and Industrial Building*. The *Student Center Building* houses a large Learning Resources Center and library, extensive student support services, a student cafeteria and dining room, College bookstore, and administrative offices. The College also has a child care facility for children of WCC students and staff, located in the *Family Education Building*.

Scheduled to be completed in mid-1990, the 75,000 square foot *Job Skills Education and Campus Events Building* will include classrooms; an auditorium; exhibition space; and instructional space for Art, Drama, Music, and Speech.

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## Regional Centers

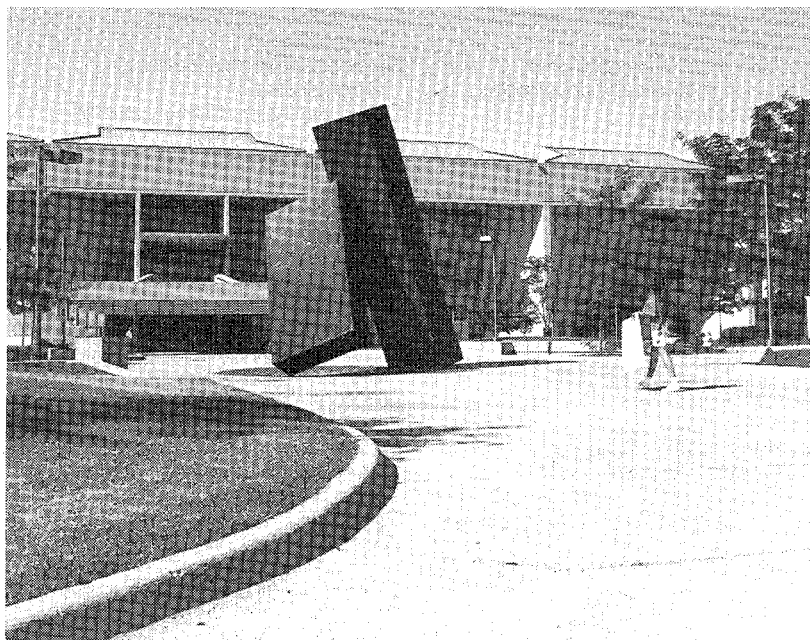
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In addition to the facilities and classes held on the main campus, classes are also offered in five regional centers. The **Central Region** encompasses the Ann Arbor area, with classes held at various locations in Ann Arbor including the Ann Arbor "Y" and Briarwood Mall. Classes are offered in the **Northern Region** at Brighton and Pinckney High Schools. Five class locations are offered in the **Western Region**: Chelsea Community Hospital, Chelsea High School, Dexter High School, the Pleasant Lake Technical Center in Manchester and the Western Regional Center in Downtown Chelsea. Saline High School is the location for classes in the **Southern Region**, and in the **Eastern Region**, classes are offered at the Eastern Regional Center on Holmes Road, Willow Run High School, the Ypsilanti Community Center Building and the Ypsilanti Parkridge Community Center.

## Profile of Washtenaw Community College

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WCC schedules courses on a semester calendar, and had approximately 9,500 students enroll for the Fall 1988 semester. The College employs 160 full-time faculty and more than 300 part-time faculty throughout the academic year. Programs of study cover 67 areas in Business, Health and Public Services, Humanities and Social Sciences, Math and Natural Sciences, and Technology. More than 60% of the students enrolled at WCC pursue a degree while others take courses for personal interest or to upgrade/obtain job skills. Each year, College Certificates and Associate Degrees are awarded by the College to nearly 600 students.



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## Programs of Study

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### Degree\* and Certificate + Programs

#### Business:

Accounting\*  
Business Computer Programming\*  
Business Management\*  
Business Marketing\*  
Business Sales +  
Clerical/Typing +  
Computer Systems Operations +  
Culinary Arts Technology\*  
Food Production Specialty +  
Hotel-Restaurant Management  
Technology\*  
Information Processing Specialty\*  
Medical Secretarial\*  
Secretarial Technology\*  
Small Business Computer Systems\*

#### Health and Public Services:

Child Care\*  
Correctional Science + \*  
Criminal Justice\*  
Criminal Justice -- Law Enforcement  
Certification (Police Academy)\*  
Dental Assisting + \*  
Dental Office Management\*  
Diagnostic Medical Sonography  
(Ultrasound) +  
Fire Protection\*  
Nursing LPN +  
Nursing ADN\*  
Pharmacy Technology +  
Radiography\*  
Respiratory Therapy\*

#### Humanities/Social Sciences:

Liberal Arts-Transfer Program\*

#### Math/Natural Sciences:

Computer Science -- Transfer  
Program\*  
Pre-Engineering Science --  
Transfer Program\*  
Pre-Engineering Science -- Chemical  
and Materials Engineering Option --  
Transfer Program\*  
Liberal Arts - Transfer Program \*

#### Technology:

Architectural Drafting\*  
Architectural Drafting Detailing +  
Automotive Body Repair +  
Automotive Body Service\*  
Automotive Mechanics +  
Automotive Service Technology\*  
Automotive Spray Painting +  
Computer Aided Drafting (CAD) --  
Electronic\*  
Computer Aided Drafting --  
Mechanical\*  
Digital Equipment Technology\*  
Drafting Detailing +  
Electro-Mechanical Technology\*  
Electronic Control Systems  
Technology\*  
Fluid Power Technology\*  
Graphic Design Technology\*  
Hydraulic Assembly +  
Industrial Drafting Technology\*  
Journeyman Industrial\*  
Mechanical-Engineering  
Technology\*  
Numerical Control Machine  
Operations +  
Computer Aided Manufacturing  
Technology (CAM)\*  
Photographic Assisting +  
Photographic Technology\*  
Photographic Technology --  
Marketing Option\*  
Refrigeration and Air Conditioning\*  
Robotic Technology\*  
Statistical Process Control --  
Management Option\*  
Statistical Process Control --  
Electronics Option\*  
Statistical Process Control --  
Specialty Option\*  
Statistical Process Control -- Science  
and Engineering Option\*  
Technical Illustration\*  
Telecommunication Technology\*  
Toolroom Machine Operation\*  
Welding Technology\*  
Welding Maintenance Mechanics\*



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## **Public Service Training and Police Academy**

The WCC Public Service Training Program provides in-service training courses for employees of public service agencies such as law enforcement, corrections, security and fire protection. Courses are developed to meet specific needs of the agencies. The courses may range from one-day seminars to full semester programs. Approval by the appropriate professional certification group is sought for all courses offered.

Students who complete Police Academy training receive Law Enforcement Certification. Students who complete Criminal Justice program requirements in addition to the Academy are eligible for an Associate Degree in Criminal Justice -- Law Enforcement Certification.

## **Technical Job Training**

WCC representatives are available to assist in the development of apprenticeship and other employee training programs. Trade-related instruction can be provided for most apprenticeable trades with a College representative working directly with the employer and employee to meet the requirements. Assistance is also provided, when requested, to coordinate activities with registering agencies such as the Department of Labor Bureau of Apprenticeship and Training. The Trade-Related Instruction program is approved by both the Bureau of Apprenticeship and Training and the Michigan State Department of Education.







# Admissions

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# ADMISSIONS

WCC is open to all individuals who can benefit from its instructional and service programs. The focus is on the individual's growth and development toward academic, career and personal goals. The College seeks to create an admissions process which assists applicants in learning about WCC programs as they relate to the individual's academic, career, and personal goals, thereby facilitating the best student and program match.

WCC does not discriminate on the basis of race, gender, color, religion, national origin, age, handicap, height, weight, marital status or veteran status in provision of its educational or employment opportunities.

## General Admission Policy

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WCC serves a wide and diverse population through its "Open Door" admissions policy. Any person who has graduated from high school or passed the GED examination or is 18 years of age or older may be admitted. Students 18 years or older who are not high school graduates may be admitted to specific classes, but are required to meet with a counselor or advisor before enrolling to ensure best class placement. Students under 18 years of age may be admitted with the written recommendation of their high school principal or counselor and the approval of a parent or guardian unless they possess an "emancipated" legal status giving them full adult legal rights and responsibilities.

Admission to the College does not guarantee admission to programs which have specific program entry requirements.

Students should not regard enrollment out of reach because of financial need. It is the policy of the College to assist with meeting college expenses to the fullest possible extent consistent with federal, state, and college financial assistance regulations.

## Program Admission Priorities

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All potential students, regardless of residency, are invited to apply to the College. Admission to the College does not guarantee admission to all programs. In those few cases where enrollment in a particular program is oversubscribed, the following priorities apply to those meeting individual program entry requirements:

- Priority 1: Legal residents of Washtenaw Community College district.
- Priority 2: Legal residents of counties adjacent to the College district.
- Priority 3: Legal residents of all counties of the State of Michigan other than those included in Priority 2.
- Priority 4: Persons whose legal residence is outside the State of Michigan, but within the United States.
- Priority 5: Persons whose residence is a foreign country.

In those instances where enrollment demands for a particular program at one of the above priority levels exceeds the capacity, the date of application to the program serves as the determining factor on which students receive program admission. This provision applies to the date that the Admissions Office receives the application from the student.

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## **Admission Procedures**

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### **New Student Admission**

All new students are required to complete an admissions application and pay the one-time, non-refundable application fee. New students, regardless of experience or educational background, are urged to meet with a counselor or advisor to learn about opportunities the College can provide. Individual assessment for appropriate course/program planning and selection is required for all new students.

### **Former Student Re-admission**

Former students who have not registered for classes at the College for one full semester (Spring and Summer session excluded) must reactivate their files at the Admissions Office by filling out a new application form. Students reactivating their files are encouraged to see a counselor or advisor prior to registering for classes. Individual assessment also may be recommended.

### **High School Student Admission**

High school students may enroll in classes for college credit or for units to be counted toward the high school diploma for a maximum of six credit hours. Application for admission must be supported by a letter from the high school principal or counselor forwarded to the College Admissions Office. Students under 18 years of age must also have the written approval of their parent or guardian unless they possess an "emancipated" legal status.

### **Guest Students From Other Colleges**

Students of other colleges and universities may attend WCC on a guest student status. This status is secured through completion of a Michigan uniform undergraduate guest application and payment of the application fee. This application can be obtained from the home institution and should be sent to the WCC Admissions Office.

### **Transfer Student Admission**

Transfer students from other colleges are to follow the same procedure as new students. Those wishing to transfer credit from an accredited college or university may do so by requesting that an official transcript be sent to the Admissions Office for evaluation. The coursework is evaluated and students are notified of the transfer credit that will be accepted toward program requirements at WCC.

### **International or Foreign Student Admission**

The College welcomes qualified non-immigrant students including those who are government and agency sponsored.

#### **1. Washtenaw Community College F-1 Students**

Those with F-1 Student Visas must attend full-time (12 credits each semester) to comply with immigration requirements. Tuition is assessed at the out-country rate. International students must meet the following requirements in addition to the general admission criteria:

- a) Complete a notarized financial statement or affidavit of support reflecting students' ability to meet all tuition, fees, and living expenses while attending WCC.

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- b) Forward original certified transcripts (in English) of all previous high school and post-secondary work to the Admissions Office.
  - c) Forward proof of English language proficiency shown by a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) or 75% on the Michigan Language Test to the Admissions Office.
  - d) Complete an interview with a Student Services staff person.
  - e) Verify visa status with the Admissions Office.
2. F-1 Guest Students (from other colleges)
- International students admitted and enrolled at other U.S. colleges may take courses at WCC on a part-time basis. The following criteria apply:
- a) Guest status students may be admitted only after all counseling, advising, and any financial arrangements are completed by the "home" institution.
  - b) International guest students must provide written documentation attesting to their acceptable student status at another U.S. college.
  - c) No WCC certification of attendance is made other than transcript of record.
  - d) International guest students are assessed the out-country tuition.

### **Emeritus Student Admission**

Individuals who are at least 60 years of age and who reside within the College district may participate in the educational and cultural programs without tuition costs. These students follow the general admissions criteria of the College.

### **Health Career Students -- Special Admission Requirements**

Applicants to the Health Career programs (e.g. Nursing, Dental Assisting, Diagnostic Medical Sonography, Pharmacy Technology, Radiography, and Respiratory Therapy) must meet specific admission requirements. Generally these are:

1. Compliance with published application deadline for each program.
2. Graduation from high school or G.E.D.
3. Completion of specific required high school and/or college level courses required for acceptance. Courses must be completed with a grade of "C" or better.
4. Qualification on certain diagnostic reading, comprehensive and/or computational tests as required for each program.
5. Completion of the program-specific application materials.

## **Residency**

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### **Aspects of Residency**

- A. Students whose families move out of the College district or out of Michigan during the time they are students may retain their current residency status as long as they are continuously enrolled in successive fall and winter semesters.
- B. In-district students do not lose residency by marrying an out-district or out-state resident during the time they are continuously enrolled at the College for successive fall and winter semesters.

- C. The residency of minors (under 18) shall follow that of their parents or legal guardian. Students under 18 may qualify as in-district residents regardless of their parents' residence if they can provide sufficient evidence that they are independently supporting themselves.
- D. The residency of any person, other than a parent or legal guardian, who may furnish funds for payment of College fees, shall in no way affect the residency of the student.
- E. Students who move into the district and work full-time for 30 days immediately prior to enrollment qualify for in-district rates for that semester. Appropriate documentation should substantiate that the person worked full-time for 30 or more days prior to enrollment and must be supplied at the **beginning** of each semester. Spouse and dependents also qualify for in-district rates. After working full-time for 60 days for out-district students (or six months for out-state students), the residency status can be changed by supplying proof of full-time employment and legal residence.
- F. Students who live outside the district and are employed full-time by an in-district company may pay in-district tuition rates at the time of registration by providing appropriate documentation of their employment from their sponsoring company at the **beginning** of each semester. Such documentation should substantiate that the student was employed full-time for 30 or more days prior to enrollment. However, spouse and dependents do not qualify for in-district rates. If such students attend the College without documentation from their company or industry, tuition rates are determined by their legal residency.
- G. Those who are transferred to the county by their employer or the military must present appropriate documentation to qualify for immediate in-district tuition.
- H. Veterans whose induction address was within the College district who return to the College within six months after discharge are considered in-district students.
- I. To officially change residency status, it is required that evidence of residency and, in some cases, full-time employment be submitted to the Admissions Office. **Any residency change after the eighth day of classes is effective the next semester in attendance.**

### Residency Classifications

#### *In-District Students are:*

- Independent applicants who have resided for:
- Applicants who live with and whose spouse has resided for:
- Applicants who live with and are dependent on parents or a legal guardian who has resided in the WCC District for a minimum of:

60 days immediately prior to enrollment if previous residency was within Michigan.  
or  
6 months immediately prior to enrollment if previous residency was outside of Michigan.

*Out-District Students* are applicants who do not meet the requirements of an in-district student, but who have been legal residents of the State of Michigan for at least six months.

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*Out-State Students* are applicants who do not meet the requirements for an in-district or an out-district resident.

*Out-of-Country Students* are applicants who are on a visa or whose permanent address is out of the country. Students on visas pay out-state/country tuition except those who may qualify for in-district tuition through their employers.

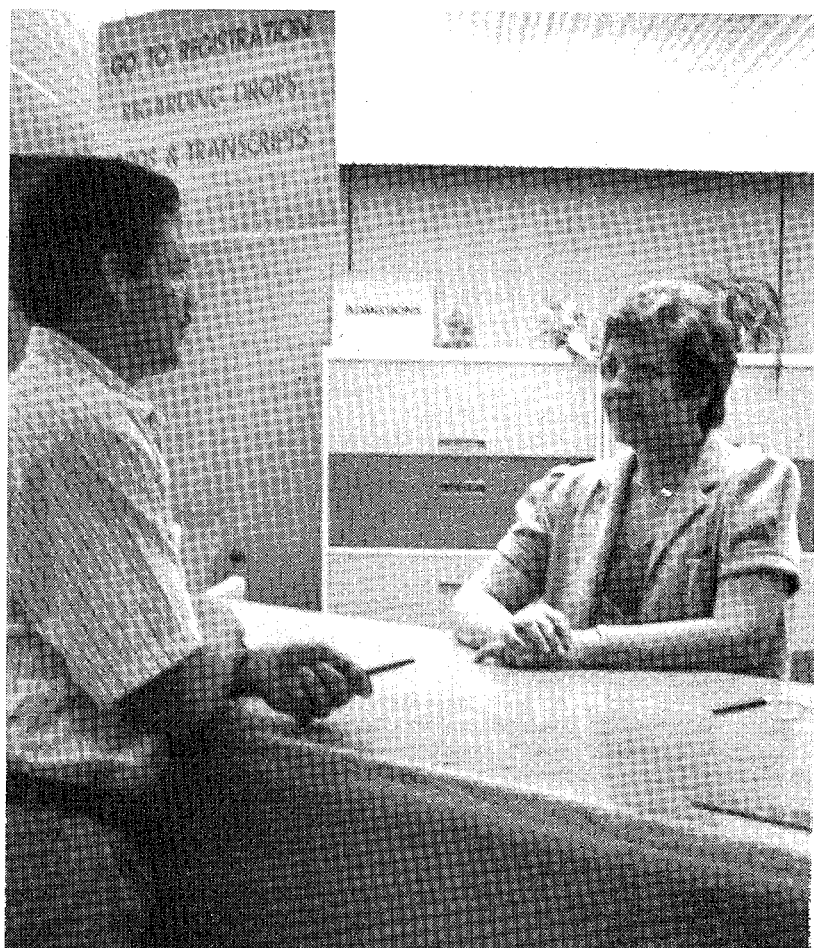
## **Student Orientation and Program Planning**

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Orientation/assessment sessions are scheduled prior to each semester for new students. During this *required* session, students have their English and Math skills assessed and counselors and advisors assist students in selecting and scheduling courses. These orientation sessions are scheduled at a variety of times to accommodate the busy schedules of prospective students. Exemptions from orientation include:

- Students who have previously earned college degrees, or those who have earned twenty or more college credits with a minimum GPA of 2.0.
- Handicapped or learning disabled students who would not have the capacity to undertake the test format.
- Students only taking enrichment courses, initial skills courses, or other courses not requiring a substantial level of basic skills proficiency.





# Student Records

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# STUDENT RECORDS

## Registration

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Each semester the College publishes a class schedule which includes detailed information on the courses available, registration procedures and dates, add/drop periods, and the refund schedule. Registration is official only when all fees have been paid.

No person is allowed to attend a class unless he/she has enrolled in and paid for that class. Students are withheld from registering if they have failed to meet their financial responsibilities to the College or in certain situations as a result of disciplinary action. Any student registration restriction ("hold") must be cleared with the office issuing it before registration may be completed. Students having difficulty meeting their financial obligations should contact the Financial Aid Office.

Students enrolling in more than 18 credits in the fall or winter semesters (or more than six credits in the Spring or Summer sessions) must submit a Course Overload Approval Form, signed by a counselor or advisor, at the time of registering for courses; forms are available from the Counseling Office.

## Adding and Dropping Courses

During the official add and drop period a student may add or drop a class or change a section without an instructor's approval. After the official drop and add period, students must have an instructor's signature for adding classes or changing sections. Students are encouraged to discuss changes, drops and adds with their instructors or counselors. An added course is accepted on a space available basis during the official drop and add period. Students should retain copies of any transaction until final grades or refunds are received.

A student is not registered in a class until the Add Card has been accepted in the Student Records Office and the appropriate fees paid.

Students adding courses must present the validated copy of the Add Card to the instructor as evidence of registration.

Drops are only accepted in the Student Records Office up to the date (approximately two weeks before the end of the term) published in the class schedule for each semester. After this date, students must obtain approval of the instructor to drop. A student is not officially dropped from the class until the Drop card is accepted in the Student Records Office.

## Changing Sections

Students changing from one section to another of the same course must complete the process in the Student Records Office. Students are added on a space available basis and instructor approval is required after the Drop/Add period.

## Repeating a Course

Whenever a course is repeated on a credit basis, the last grade and credits earned replace the previous grade in computing grade-point averages. However, all entries remain a part of the permanent academic record. Final grades are issued at the end of each semester and mailed to students' home addresses.

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### **Auditing a Course**

Students who wish to audit a course must register and pay for that course following the established registration procedures. Students do not receive credit for the course, however, the course is included on the transcript with a grade of 'V'.

### **College Withdrawal**

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Students who withdraw from the College during the semester must initiate the withdrawal procedure in the Student Records Office.

In case of official voluntary withdrawal from the College, grades are assigned according to the grading policy; and semester tuition and fees are subject to the refund policy shown under the *Financial Information* section of this catalog.

**Students who leave the College during a semester without obtaining an official withdrawal may be reported as having failed all courses.** The withdrawal procedure does not take place automatically for students who leave the campus due to personal or family illness but must be initiated by writing the Student Records Office. *Students who leave the College without withdrawing properly or who withdraw after the refund period forfeit any tuition or deposits paid to the College and are liable for any deferred tuition payments.*

### **Dismissal from College**

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In the case of serious breaches of acceptable conduct, a student may be dismissed from the College with due process according to the Student Conduct Policy.

### **Transcripts**

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A permanent record of all courses, credits and grades earned by each student is kept in the Student Records Office. Copies of transcripts are available to students upon their written request and payment of a small fee. Associate Degrees and/or College Certificates earned at WCC are indicated on transcripts.

### **Veteran Certification**

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All veterans receiving educational benefits must see a counselor or advisor before registering; any drops or changes made by veteran students are to be reported to the Veteran Certification Office immediately.

### **New Students**

Veterans and other eligible dependents receiving educational benefits under Chapters 30, 32, 34, 35 and 106, Title 38 U.S.C. who have never used their V.A. educational benefits and would like to make application for benefits should report to the Veteran Certification Office after registering for classes. Students should bring certified copies of DD-214, marriage license and birth certificates of dependent children, if applicable.

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### **Transfer Students**

Students who have previously received V.A. educational benefits at another school must complete V.A. Form 1995 (Change of Place of Training) and submit it with a copy of their paid registration receipt to the Veteran Certification Office. DD-214 and transcripts from colleges or universities where the student has completed previous training must accompany the application.

### **Previously Enrolled Veterans**

Students must turn in a completed certification card after registering for classes every semester to insure the continuance of their benefits.

### **Credit for Formal Service School Experience**

Credit is granted for formal service school training as recommended by The American Council on Education, through its Commission on Accreditation of Service School Experiences. For complete information contact the Admissions Office.

### **Standards for Receiving Education Benefits**

In compliance with the Department of Veteran Benefits, Circular 22-80-38, the College has developed standards of progress. Each Veteran student must conform to these standards to be eligible for V.A. Educational Benefit Certification. Each Veteran student must read, sign, and return the original copy of these standards to the Veteran Certification Office at each enrollment.



# Financial Information

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# FINANCIAL INFORMATION

## Tuition\*

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Residents of the College District .....	\$31.00 per credit hour
Non-Resident/In-State.....	\$48.00 per credit hour
Non-Resident/Out-State.....	\$62.00 per credit hour

## Fees\*

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Application Fee.....	\$10.00
Late Registration Fee.....	\$5.00
Transcript Fee.....	\$1.00
Books and Supplies .....	**

- \* The College reserves the right to change tuition and fees without advance notice.
- \*\* Students may be required to purchase certain individual supplies and materials. These are available at the Bookstore on the first floor of the College's Student Center Building. Books and supplies average \$100 per semester, but may range from \$50 to \$300 or more.

## Refunds

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**All refunds must be initiated by the student, including cancelled classes and all residency changes.** If classes are officially dropped students are eligible for a refund of fees as follows:

*Courses lasting 12 or more weeks:*

- 100% refund if an official drop is filed prior to or during the add/drop period (first five days) in the semester.
- 75% refund if an official drop is filed during the next five days of the semester.
- 50% refund if an official drop is filed after the tenth day and before the twentieth day of the semester.
- No refunds are issued for drops filed after the twentieth day of the semester.

*Courses lasting 7 - 11 weeks:*

- 100% refund if an official drop is filed prior to or during the add/drop period (first three days) of the semester.
- 75% refund if an official drop is filed during the 4th or 5th day of the semester.
- 50% refund if an official drop is filed during the second week of the semester.
- No refunds are issued for drops filed after the second week of the semester.

*Courses lasting less than 7 weeks:*

- Refunds for these courses are on a prorated basis, as determined by the Director of Student Records.

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Students dropping and adding after the official drop-add period (100% refund) must pay the "difference" if they wish to add classes (classes added are charged at full tuition rate even though classes dropped may only refund 50%-75%, depending on the withdrawal date). There is no "difference" charge for drops and adds from cancelled classes, or an instructor adjustment of students' schedules.

In the case of complete withdrawal prior to the beginning of the semester or during the 100% refund period, the student may claim 100% refund less a processing fee of \$10.

Upon written approval of the Director of Student Records, a full refund of all tuition may be given upon official withdrawal at any time during the first two thirds of the semester, in the following circumstances:

1. Induction of the student into the U.S. Armed Forces.
2. Death of a spouse, child, parent or legal guardian of a student.
3. Death of a student.
4. Verifiable error on the part of the College.
5. Verifiable incapacity, illness, or injury which prevents the student from returning to school for the remainder of the semester.

No refund is made if withdrawal occurs after two thirds of the semester has transpired, regardless of circumstances. No refund shall be given for any other fees (i.e., application or late registration).

## **Financial Aid**

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WCC provides financial assistance to students in the form of scholarships, work-study employment, and loans. Several programs have also been developed to provide financial support to honor students and are awarded on the basis of student achievement or merit.

### **Types**

There are four major types of aid available:

*Scholarships* - awarded on the basis of achievement and do not need to be repaid.

*Grants* - awarded on the basis of need and do not need to be repaid

*Employment* - awarded on the basis of need and requires work for paid wages. Usually referred to as College Work Study.

*Loans* - awarded on the basis of need and must be repaid once students leave college or do not continue in college on at least a half-time basis.

Sources of Financial Aid include Washtenaw Community College, the WCC Foundation, the State of Michigan, and the United States Federal Government.

### **Assessment of Need**

Once students' financial aid files are complete, the Financial Aid Office reviews the information in light of individual circumstances. After determining the "expected family contribution," the staff then subtracts that amount from the "cost to attend Washtenaw Community College." The difference is the student's financial aid need.

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## Application

In order to perform a needs analysis, students must complete the following forms:

1. *WCC Financial Aid Application* - Complete and return in order to receive other applications.
2. *Financial Aid Form* - Complete and mail to the College Scholarship Services. They process it and return it to WCC.
3. *Pell Grant Application* - This is a separate part of the Financial Aid form. It is also mailed by the student to the College Scholarship Service. Results are sent directly to the student. The "Student Eligibility Report" (SER) received by the student must be returned to the WCC Financial Aid office for final processing.
4. *Parental Affidavit of Non-Support* - Must be completed if claiming self-supporting status.
5. *Statements of Financial Aid History* - Must be completed if financial assistance has been received from other institutions.
6. Additional documentation of student resources or status of family resources, such as IRS 1040 statements, may be required for evaluation of aid application.

Upon receipt of all applications and additional necessary information, applications are evaluated and a written notice of the action taken is sent to the student. Financial aid awards are made in June and July, prior to the beginning of the fall semester. Students who wish maximum consideration for financial aid should have all applications in the Financial Aid office by the following dates:

**Fall Semester:**

**June 1**

**Winter Semester:**

**November 1**

**Spring-Summer Semester:**

**February 1**

Applications received after the above deadline dates are processed only as funding allows.

## Academic Progress Criteria for Financial Aid

The academic progress criteria of the Financial Aid office requires that all students receiving aid maintain at least a 2.0 grade point average and earn at least six credit hours per semester. Students failing to meet this minimum requirement are placed on probation and allowed one additional semester to meet this requirement. Failure to complete at least six credit hours with at least a 2.0 grade point average during the probationary semester results in termination of all financial aid. Students who have had financial aid terminated may still continue to register and attend classes using their own funds for payment. Students may re-apply for financial aid.

## Financial Aid Refund Policy

If a student withdraws from school during the College refund period and the student has received Title IV Federal Financial Aid monies, the following procedure is implemented. The refund is applied to the programs which have paid the tuition in the following order if tuition was paid from more than one Title IV source: 1) SEOG, 2) GSL, 3) Pell.

All refunds for students on financial aid follow the policies and procedures detailed in *Student Financial Information - Refunds* section.



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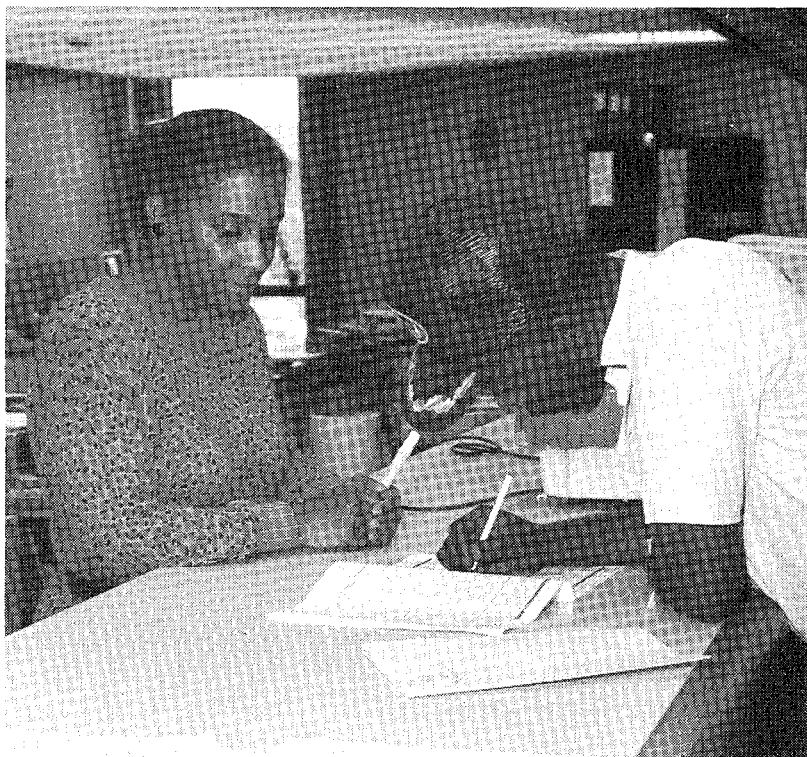
## Distribution

Most students who have been awarded and approved for Financial Aid prior to the start of a semester have their tuition paid at the time they register and receive a check for books on the first day of class. The book check is for the remainder of their Financial Aid. Students who are approved after the start of a semester have their account credited and receive a check for the balance of their award within two-weeks. The following funds are disbursed in this manner:

- |          |                           |
|----------|---------------------------|
| 1. Pell  | 4. MEOG                   |
| 2. SEOG  | 5. Trustee Awards         |
| 3. MAPTG | 6. Many Scholarship Funds |

Stafford Loans, SLS, and PLUS Loans are distributed to students as they are received from the lending institution. Students are notified by mail that the check has arrived. There are three options available to students regarding the distribution of the monies:

1. Students may endorse the loan check at the Cashier's Window; WCC deposits the check, pays tuition from the loan and issues students a check for the balance of the loan.
2. Students may pay tuition from their own funds and pick up the entire amount of the loan check on or after the first day of class.
3. If a student does not owe the College any monies, WCC endorses the check and gives it to the student.







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# Student Support Services

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# STUDENT SUPPORT SERVICES

## Adult Resource Center

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This special drop-in center offers support to adults entering or re-entering school; making course, program and career decisions; or desiring personal counseling. The staff is especially sensitive to the concerns and needs of female, minority, and single parent students. Through the Center, the Department of Education offers tuition monies for students who meet certain qualifications such as re-entry into the labor market for homemakers required to work because of dissolution of marriage, up-grading of skills for the current labor market, and/or entry of women into careers traditionally held by men or by men into careers held by women.

The Adult Resource Center has information on qualifications for financial assistance. Assistance may also be available for books, tools, transportation and child care.

The Center is located on the second floor of the Student Center Building. Hours of operation for each semester are posted at the Information Center.

## Alumni Association

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The College stays in contact with former students through the Alumni Association. All former students are eligible to join.

## Bookstore

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Books, instructional aids, equipment, materials, and supplies are readily accessible for students and staff. Costs are kept to a minimum based on the College goal of service to students. The WCC Bookstore is located on the lower level of the Student Center Building and is open daily. The WCC Bookstore accepts VISA and MASTERCARD and personal checks with identification.

## Career Development

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The Career and Counseling Library, located on the second floor of the Student Center Building, is easily accessible with day and evening hours. Counselors are available to assist students make career changes or career decisions. Individual career counseling and interest inventories are available as well as other tests. The Career and Counseling Library contains books, magazines, newspapers and other materials on careers, colleges, employers, and job hunting. In addition, a microcomputer is available for persons who want to use a computer program to assess career interests, college majors, occupational values and skills.

The Career and Counseling Library maintains a list of job openings and offers information on job-hunting techniques and employers. Job openings are posted on bulletin boards in the LA, SC, TI and OE Buildings. Resume writing assistance is also available. For more information see the *Student Support Services - Placement Services* section.

In addition to testing and counseling, classes and a special workbook are available to help individuals with their career plans. Interested persons

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should enroll in Student Development 102 (Career Planning). A three-credit career planning seminar (Student Development 100) is also taught each fall and winter semester. All credit classes in career planning are found in the catalog and time schedule under the heading, "Student Development."

## **Children's Center**

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WCC provides a licensed child care facility in the Family Education Building for children of WCC students, staff and faculty. The Center offers a comprehensive child development program which emphasizes the emotional, social, intellectual and physical development of the young child. The staff is fully trained in early childhood education and development. Special care is also offered by senior aides and foster grandparents. Practicum students in the Child Care Worker program provide additional new experiences for children. Check with the Children's Center for details on age limitations, enrollment, attendance requirements, fees, hours of operation, meals, or other information.

## **Counseling**

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Counseling services are located on the second floor of the Student Center Building. Hours of operation for each semester are posted at the Information Center.

### **Academic**

Counselors are available to facilitate the development of academic plans. Counselors assist students with planning schedules, meeting program requirements, placement in the appropriate level of courses, and transferring to four-year colleges and universities; as well as referrals to other support services.

Students intending to transfer to a four-year college or university should contact the Counseling Office for information regarding current Transfer Agreements between WCC and other area institutions (e.g., Eastern Michigan University, Cleary College). In addition, Program Advisors are available to counsel students interested in a specific Program of Study. Faculty members also are committed to helping students successfully pursue a planned course of study; students are encouraged to confer with their instructors. Students transferring to four-year institutions within the State of Michigan should contact a WCC counselor regarding WCC's participation in the Michigan Association of Collegiate Registrars and Admission Officers (MACRAO) Agreement.

### **Career**

Counselors are available to help students make career changes and career decisions. For more specific information see the *Student Support Services - Career Development* section.

### **Personal**

The counseling and social work staff also work with students experiencing personal or emotional problems, providing referrals to the appropriate agency or service in the community for specialized assistance as necessary.

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## Placement Service

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The College maintains a placement service which provides employment listings for students and graduates who are seeking part-time or full-time employment on campus or in the community. Interested students should contact the Student Records Office.

## Special Needs Program

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The Special Needs Office provides services to differently abled, economically disadvantaged, limited English speaking and refugee students. These services include tutors, interpreters for the deaf, readers for the blind, and other assistance to help students successfully complete their programs. For additional information on eligibility for services contact the Counseling or Special Needs Office.

## Student Activities

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The Student Advisory Council (SAC) consists of 45 to 50 student members who represent all the various constituencies of WCC students. Membership is voluntary and the SAC has responsibility for the following areas: 1) Student Governance: participation in the College-wide governance structure and responsibility for development of the SAC's bylaws and recommendations; 2) Student Activities: the planning and implementation of events such as dances, food drives, and concerts; 3) Communication: the generation of all internal and external SAC communications and public relations activities; and 4) Budget: maintenance of SAC budget records, advisement of the Steering Committee on budget requests, and recommendation to the College of annual budget needs for student activities.

Many groups and clubs are active on campus. Students participate in these organizations to meet other students with similar interests, to develop leadership skills, and to have fun. Currently active groups and clubs include:

The Cultural Awareness Group	Student Democratic Organization
Circle K Club	Student Republican Organization
The Black Student Union	Muslim Student Association
The Chess Club	The Electronics Club
Alcoholics Anonymous	The Forensic Club
Delta Epsilon Chi	The Women's Support Club
Brothers and Sisters in Christ	Michigan Kite Flyers Club
Hearts Alone Euchre Club	

Students are involved in two major campus publications: Northern Spies is a yearly publication that includes poetry, short stories, essays, plays and journal selections written by former and current WCC students through the English/Writing program; Time Out, designed specifically for students, includes dedicated space for news items and stories written by students.

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## **Tutorial Services**

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*See Learning Support Resources - Tutorial Program section*

## **Women's Resources**

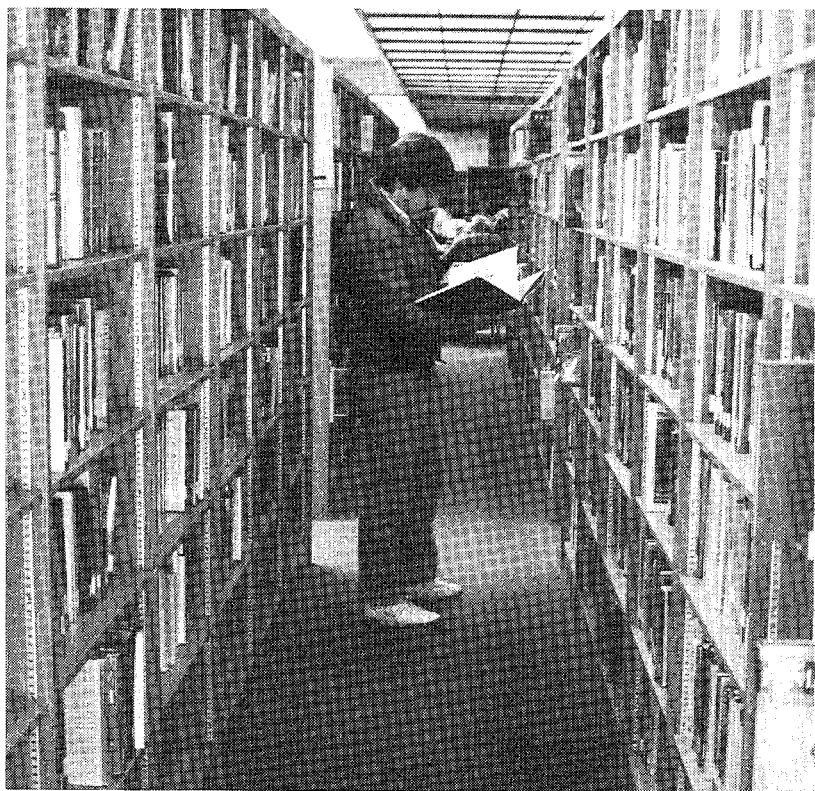
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*See Student Support Services - Adult Resource Center section*









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# Learning Support Resources

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# LEARNING SUPPORT RESOURCES

## Learning Resource Center

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The Learning Resource Center (LRC) is located on the third floor of the Student Center Building. The LRC is an integral part of the total WCC learning environment and offers library, audiovisual and computing services to students and faculty.

The LRC is an active participant in the instructional and research programs of the College. It seeks to instruct students in the effective and efficient use of the library, and also encourages students to develop the habit of self-education so that books and other library materials may contribute to their intellectual development in future years.

To this end, the LRC provides the use of more than 63,000 books, 555 magazines and 20 newspapers. Micro-publications, career materials, corporate annual reports, and pamphlet collections are also available. A growing collection of media software such as audio and video tapes, films, recordings, slides, video discs and microcomputer programs is used on equipment in the LRC or in College classrooms.

Librarians and faculty members select the best of retrospective and current materials to respond to students' curricular needs and to provide accurate, up-to-date information and varying viewpoints on subjects and issues. To help students use the LRC, the librarians provide group instruction and assist in independent study activities. Students may request to join a library instruction class if their instructor has not scheduled a session.

Librarians provide faculty a full range of reference services, including electronic delivery of information from many off site informational databases. The Professional Collection, a small collection of books and ERIC documents on higher education topics, is developed and maintained for faculty use. The LRC actively participates in OCLC and other interlibrary loan programs to provide other libraries' resources to faculty and students.

WCC identification cards function as library cards. Photocopy services and equipment for printing microforms are available.

The LRC is open during weekday, evening and weekend hours as posted each semester.

### Instructional Media

The Instructional Media (IM) area of the Learning Resource Center maintains instructional hardware and software for classroom use on campus and at regional sites. In addition, a variety of production techniques are used to accommodate College requests concerning signs, transparencies, slides, audio tapes and video programs. IM prepares non-broadcast, educational videotapes that support classroom instruction. IM also provides off air taping and teleconferencing services to faculty and staff.

The IM and LRC support the telecourse instructional program by providing tapes of the telecourses which may be viewed in the Center.

The LRC facility includes small seminar rooms, traditional study tables, informal lounge seating, and carrels specially equipped for the use of tapes, slides, and other audiovisual materials. The College Archives, documents and records of WCC history, are also located in the LRC.

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## Computer Labs

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A microcomputer lab housing more than 25 microcomputers for use by students is located in the Learning Resource Center. Microcomputer lab staff provide assistance to users in the operation of hardware and software. A collection of computer software is cataloged and available for use in the lab. Software supporting instruction is housed in the Reserve collection and is located, with the cataloged software, at the circulation counter in the LRC. The microcomputer lab is open for operation during regular LRC hours.

There are also specialized computer labs for use by particular units in several locations on campus. At the present time these include:

- LA 116 - Office Specialties and Business Units
- TI 134 - Computer Instruction Unit
- OE 164 - Drafting Unit
- OE 124 - Graphic Design Technology Unit
- TI 114 - Industrial Technology Unit
- SC 313 - English Unit

In addition, TI 136 is maintained as an open lab for students who have been given a user code by their instructor. This room contains IBM compatible microcomputers and UNISYS terminals for use in various kinds of coursework.

## English as a Second Language (ESL)

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The College provides opportunities for non-native speakers to participate in its activities and course offerings. Special English-as-a-Second-Language (ESL) courses are designed for students whose native language is other than English. ESL courses prepare students to enter college academic courses or vocational programs. For specific information, contact the Office of International Student Advising.

## Math Lab

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The Math Lab provides services to improve students' mathematical skills in a non-threatening environment. Many of the self-paced mathematics classes meet in this Lab (MTH 039, 090, 097A, 097B, 163, 165, 169A, 169B and 177). Placement tests, designed to guide students into the proper level course for their needs and abilities, are administered and evaluated. Information regarding courses, procedures, policies, schedules and program requirements is readily available. Some faculty members have their self-paced mathematics students utilize the Lab's available microcomputers as an alternative learning method.

## Reading Lab

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The Reading Lab is a learning area where students may improve their reading skills. Students enrolled in Reading classes are encouraged to use this facility regularly during the semester. Questions related to reading skills may be answered by calling the Reading Lab Office.

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## Testing Center

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The Testing Center is a facility used for giving tests for the convenience of students. It is intended to reduce the stress of test-taking and to provide flexibility so that unusual types of tests, including TV courses, make-up tests, and self-paced instruction, can more easily be accomplished. The Testing Center is open Monday through Saturday.

## Tutorial Program

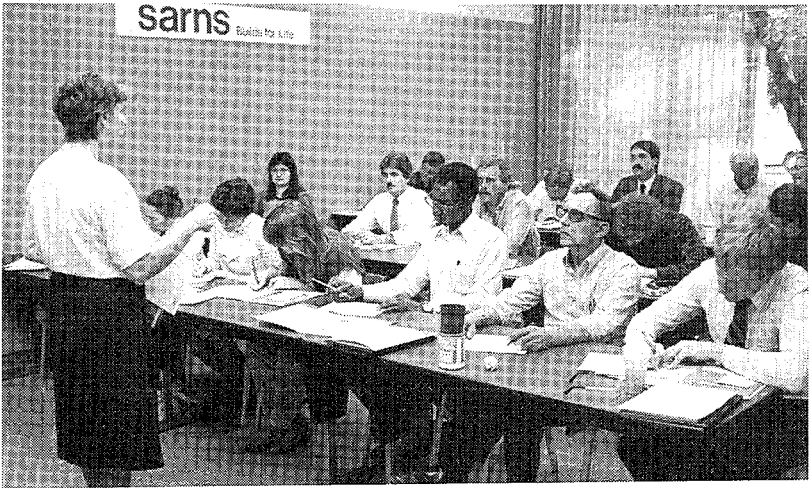
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The College offers an extensive program in Peer Tutoring. Students in need of a tutor may complete a request form in the Counseling office. Students who wish to apply for tutoring positions should also contact the Counseling office.

## Writing Lab

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The Writing Lab provides services for students enrolled in English 050, 091, 100, and 111. Writing Lab personnel also assist students in completing writing assignments for any course at the College. Students can work with Lab staff on any aspect of a writing project, from deciding on a topic, writing a thesis and organizing ideas, to reviewing a rough draft or proofreading a final copy. Check a copy of Writing Lab News, available in the Lab, for hours of operation.



# Continuing Education and Community Services

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## **CONTINUING EDUCATION AND COMMUNITY SERVICES**

The Continuing Education Department extends the resources, facilities and services of the College to the community through many innovative practices and programs developed by the offices of Continuing Education and Extension Programs (CEEP), Business Development and Professional Services (BDPS), and the Job Training School (JTS). Programs and services including educational partnerships with public schools and local employers, programs for senior citizens, televised instruction, and courses held in Regional Centers have been developed by the CE/CS offices to meet the needs and interests of the community.

Lifelong educational opportunities are made readily available to the general public through a wide variety of workshops and short courses offered each semester. These activities allow individuals or groups to explore options ranging from new career ideas to the development of personal skills for their professional or community activities. Continuing Education Units (CEUs) are offered for some non-credit programs, courses, or workshops as a measurement of completion.

### **Instructional Outreach Services**

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#### **All Communities Program**

To strengthen and streamline the College's outreach activities, regional offices are being established in five regional areas. These offices will provide a consistent WCC presence in the outlying areas and facilitate program delivery to residents in local communities in a coordinated manner. The five regions include the Eastern Region (Ypsilanti, Willow Run), the Southern Region (Saline and surrounding areas), the Western Region (Chelsea, Dexter, Manchester and surrounding areas), the Northern Region (Brighton, Pinckney and surrounding areas) and the Central Region (the Ann Arbor area, including local public schools, Ann Arbor "Y" and Briarwood Mall). Both credit and credit-free college courses, as well as workshops and seminars are available at these community extension sites at convenient times. Students may register on campus during regular registration hours. Additional registration times are available at the extension sites.

#### **Business and Industry Center**

The Business-Industry Center focuses on the planning and coordination of the College's job related programs initiated to serve students from initial admission to final job placement. The Center provides both basic and advanced technical education relating to the numerous occupational programs now offered. Developed according to the needs and objectives of client groups, customized training programs range from half-day workshops to semester-length courses and associate degree programs spanning several years. Courses are taught on campus and at business and industry locations.

#### **Industrial Extension Centers**

Customized, company-specific training, as well as the traditional college credit courses are all part of the College's effort to provide businesses and their employees with educational opportunities. Courses are arranged with

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local employers and held on-site at the plant or business locations or on campus. Students may register through normal registration procedures or at times arranged at the plant or business site.

### **Telecourses**

The College offers credit courses on television to be viewed at home. Telecourses are aired over public television stations and area cable network stations. Registration for telecourses is completed in the same manner as all other academic credit classes. Students enrolled in telecourses are required to attend an on-campus orientation session/first class meeting. This meeting covers information on how to contact faculty, assignments, testing requirements, textbook and study guide information. There are also periodic on-campus meetings arranged with instructors. Further information is available by calling the *Telecourse Hotline*.

## **Service to Targeted Populations**

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### **Community Organizations and Businesses**

Small or large businesses, professional and community organizations and individual entrepreneurs also benefit from the resources and facilities of WCC. Customized, company/organization specific training, semester-long courses, and shorter seminars and workshops are designed and provided on-the-business-site or on campus. Credit or credit-free training, licensing or certification programs may be tailored to meet community and business needs.

### **Emeritus Program**

Special opportunities are provided by WCC for county residents who are at least 60 years of age. At various retirement facilities and nutrition sites throughout Washtenaw County, credit and credit-free courses, workshops and seminars are provided with tuition waived. Registration is conducted on site.

### **Job Training School**

Established to meet two specific purposes, the WCC Job Training School assists new and existing businesses with locating and training qualified employees and provides unemployed or about to be unemployed residents with training to increase and/or update their skills leading to gainful employment. Training for employees is designed and tailored to meet employer specifications.

### **Women's Studies and Resources**

In order to meet the changing educational and occupational needs of the increasing numbers of adult women students, several WCC units have cooperated with Continuing Education/Community Services to offer a variety of courses, workshops, seminars and special events. These offerings are designed to assist women in achieving success in all phases of their lives – educationally, professionally and personally. Students may register for credit course offerings by following the Registration procedures. Non-credit offerings are handled by Continuing Education Services.

See also the *Student Support Services - Adult Resource Center* section.

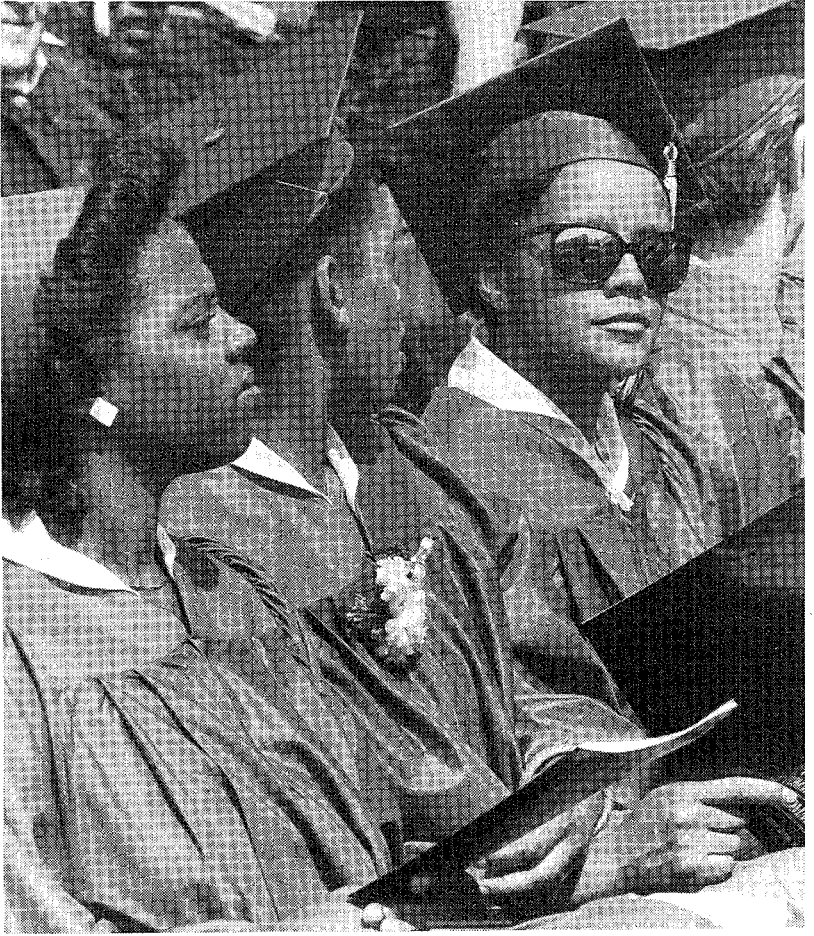
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## **Continuing Education Units (CEU's)**

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The Continuing Education Unit (CEU) is a measure of the amount of organized study a person has completed and provides an orderly format for the recognition and quantification of non-credit learning experiences entered into by the part-time adult student. A CEU is officially defined as: ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction. CEU's are a nationally recognized recording device for substantive non-credit learning experiences and are an appropriate measure of in-service education and training. Normally, courses for which CEU's are awarded are not eligible for college credit.





# Academic Policies

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# ACADEMIC POLICIES

## Academic Honors

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The *Dean's Honor Roll* honors all students in the College completing 12 or more credits during the fall or winter semesters with a minimum 3.5 grade point average.

Graduation *Honors* are awarded to students earning a minimum 3.5 cumulative grade point average at the time of graduation; *High Honors* are awarded to students earning a minimum 3.8 cumulative grade point average at the time of graduation. *Honors* or *High Honors* is indicated on students' transcripts, the commencement program, and press releases.

## Attendance

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Students are expected to attend all sessions of the classes for which they registered. Regular class attendance is necessary for maximum success in college. In the event of excessive absence or tardiness, individual instructors determine if the quality of students' work has been adversely affected. Students are responsible for all material covered during their absence. **No person is allowed to attend a class unless officially enrolled on a credit or non-credit basis with the appropriate fees paid.**

## Cancellation of Classes

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The College may cancel course offerings due to low enrollment, lack of instructor, or any other reason deemed viable by the Instructional Vice President. Every effort is made to accommodate students into alternate sections. Information regarding the current status of course offerings is available at the Student Records office.

## Course Load

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*Full-time Student*.....One who enrolls in twelve or more credit hours per semester (six or more credit hours for spring or summer sessions).

*Part-time Student*....One who enrolls in less than twelve credit hours per semester (five or less credit hours for spring or summer sessions).

*Half-time Student*....A part-time student enrolled in at least six credit hours per semester (at least three credit hours for spring or summer sessions).

Students enrolling in *more than 18 credit hours* in the fall or winter semesters (or more than six credits in the spring or summer sessions) must submit a Course Overload Approval form, signed by a counselor or advisor, when registering for courses; forms are available from the Counseling Office.

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## **Credit-Granting Policies**

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### **College Level Examination Program (CLEP)**

A maximum of three semester credits may be granted for the successful completion of each of the five general examinations of CLEP. A score in the 60th percentile or higher is required for each of the general examinations. General examinations are available in Social Sciences and History, Natural Sciences, Humanities, Mathematics, and English. Students who have earned 30 or more credits are not eligible to take any of the general examinations. Students who have earned six or more credits in any one of the general examination subject areas are not eligible to take the general examination in that area.

Subject examinations exist in the general areas of composition, literature, history, social sciences, science, mathematics, and business. In general, a maximum of three semester credits may be granted for each college approved subject examination for scores of 50 or higher. The Admissions Office has CLEP brochures which contain a complete list of available examinations. Some general and subject examinations also require the successful completion of an essay examination or laboratory demonstration.

### **Continuing Education Units (CEU's)**

Normally, courses for which CEU's are awarded are not eligible for college credit. However, under special circumstances CEU's may be evaluated for college credit as "non-traditional credits."

### **Correspondence Courses**

Only correspondence courses from accredited colleges and universities are acceptable.

### **Credit by Examination**

Students who appear to have proficiency for a course may, upon recommendation of a full time instructor, and with the approval of the appropriate instructional coordinator, take a course examination for credit. The maximum number of credits earned by examination that may apply toward a degree may not exceed 30. Credit is granted and posted on the transcript with a grade of 'P' (pass). Credit earned by examination may not apply toward satisfying the minimum 15 credits in residence required for graduation. Each student is responsible for arranging to complete the various examinations and for requesting the official score reports be sent directly to the Admissions Office. Credit by examinations do not count as part of a student's credit load for any given semester nor are they computed into the grade point average. Students are allowed to attempt only one credit by examination per course.

### **Military Training and Schools**

College credit for military training is generally awarded as "non-traditional credit."

Students must submit an inservice training record and DD 214, unless still on active military duty, for an evaluation of service school training. Students must show the exact title of the course, location of the course, and length of the course in weeks. Credit may be granted based on the recommendations found in A Guide to the Evaluation of Educational Experiences in Armed Services. If a course is not listed, no credit is granted. In the case a course is relevant to a student's occupational degree objective,

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a decision as to acceptance and applicability of credit is made by the program advisor and appropriate Dean. Other courses may be acceptable as elective credit.

An exception to the above are accredited military schools (e.g., The Community College of the Air Force); credit for courses from accredited schools follows the policies set forth under the category *Transfer Credit from Other Colleges and Universities*.

### **Non-College Certificates**

All non-college certificates must be dated and indicate total hours. A program and/or course outline is required before an evaluation is completed. Decision as to acceptability is made by the program advisor and appropriate Dean.

### **Non-Traditional Credits**

Students with background experiences/certifications obtained through military service, on-the-job training, nursing or apprenticeships, for example, may have this prior learning evaluated for college credit. Students may pick up a *Non-Traditional Credit Evaluation* form from the Admissions Office to begin the process, which also includes contacting the appropriate faculty member(s) in the student's enrolled program area. Courses granting CEU's are not normally eligible for college credit.

Students must submit all official documents and specific information on the length, content, and other pertinent documentation before an evaluation is completed. Normally, a maximum of 20 credits may be accepted in this category (with the exception of students with backgrounds in Nursing or apprenticeship training). Credit earned from non-traditional sources will not be awarded until the student has been fully admitted to the College and registered for courses. Credit earned from non-traditional sources may not apply toward satisfying the minimum 15 credits in residence required for graduation.

### **Proprietary Schools**

Only credits from proprietary schools accredited by a business, technical or private accreditation association are acceptable. Students must provide course descriptions or catalogs along with an official transcript.

### **Public School Articulations**

Articulation agreements exist between WCC and over 11 public school districts. The purpose of the articulation agreements is to coordinate curriculum to eliminate duplication, cover omissions, and to make for a smooth transition from high school to the community college. The College will grant credit to articulated students for identified task competencies achieved in secondary programs. Credit earned from public school articulations will not be awarded until the student has earned six or more credit hours at WCC. Students should check with the WCC Admissions Office or their high school guidance counselor for more detailed information.

### **Transfer Credit from Other Colleges and Universities**

Applicants must submit an official transcript from all colleges previously attended. The accreditation of the institution and the listing published in the American Association of Collegiate Registrars and Admissions Officers Transfer Credit Practices of Designated Educational Institutions governs the acceptance of transfer credit.

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Credit may be granted for courses in which a grade of 'C' or better earned at any of the institutions with a general (AG) or provisional (AP) rating. Credit is not accepted from schools that have an 'N' or 'NP' rating. If the school is not listed, refer to the section of this catalog titled *Non Traditional Credits*. A maximum of 45 transfer credits may be accepted toward any Associate Degree; a maximum of 21 transfer credits may be accepted toward any College Certificate.

### USAFI/DANTES

Credit is granted for college level courses by self-study, group study, class instruction, examination, or correspondence. WCC accepts credit by American Council of Education recommendations only.

## Declaring Educational Intent

In order to assist students with the development and achievement of their educational plan, students are asked to declare their primary educational goal and type of study upon application to the College. This information is verified and updated during each subsequent registration period.

## Grading Scale

Grade		Grade Points Per Credit Hour
A	-- Superior	4
B	-- Excellent	3
C	-- Average	2
D	-- Below Average	1
F	-- Failure	0
S*	-- Satisfactory	0
U*	-- Unsatisfactory	0
I**	-- Incomplete; Credit Withheld	0
W	-- Withdrawal	0
DF**	-- Deferred	0
N	-- Non-Attendance	0
V****	-- Visitor or auditor	0

\* *Satisfactory 'S' or Unsatisfactory 'U':* 'S' and 'U' grades are given for courses numbered 051 and below or certain short courses.

\*\* *Incomplete Grade 'I' - Credit Withheld:* This grade may be given if students have not completed all course requirements as determined by the instructor. This grade remains on students' permanent academic record until the course requirements are met. Course requirements must be completed within one year of receiving the 'I' grade. After one year, students who wish to receive credit must re-enroll and pay for the class. The 'I' grade is not considered as a deficiency and is not figured into credits attempted.

\*\*\* *Deferred Grade 'DF' - Credit Withheld:* In certain designated courses students may be unable to complete the required work until the following semester. If, in the opinion of the instructor, students are making normal progress, the 'DF' may be assigned. Students must re-enroll in the course and complete the required work the following semester (spring and summer session excluded) or the grade automatically becomes a 'W'.

\*\*\*\* *Class Visitor 'V' - No Credit:* Students may enroll in credit courses on a non-credit basis, with the approval of a counselor or advisor. Such credits as the course normally carries are included as part of the total credit load and tuition assessed accordingly. Change from Visitor to Credit or Credit to Visitor status is not permissible after the close of the Add period. Credit may not be earned in courses taken as a Visitor.

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## Grade-Point Average (GPA)

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Grade points measure the achievement of students for the number of credit hours attempted. Grade points are determined by multiplying the grade points per credit hour by the credit hour value of the course attempted. The cumulative grade-point average is the total number of grade points earned divided by the total number of credit hours attempted. It includes the number of credit hours of 'F' even though no grade points are allowed for this grade.

## Graduation

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### Requirements

#### *ASSOCIATE DEGREE Requirements:*

1. Completion of a minimum of 60 credit hours (15 credits must be earned at WCC), including the specific course requirements in the selected program (see the *Program Requirements* section below). Certain programs may require more than the minimum of 60 credit hours. Credits in courses numbered 051 and below do not count toward graduation.
2. Completion of three credit hours of English (091, 100, 107, 111 or 122).
3. Completion of three credit hours of Political Science (108, 112 or 150).
4. A minimum earned cumulative grade-point average at WCC of 2.0.
5. Completion and filing of an **Application for Graduation form** at the time of registration for the final semester. This form is available in the Student Records Office.

NOTE: A second Associate Degree in an additional program area may be earned by the completion of at least 15 additional credit hours, including all specific course requirements in the selected program.

#### *COLLEGE CERTIFICATE Requirements:*

1. Completion of a minimum of 30 credit hours (15 credits must be earned at WCC), including the specific course requirements in the selected program (see the *Program Requirements* section below). Certain programs may require more than the minimum of 30 credit hours. Credits in courses numbered 051 or below do not count toward graduation.
2. Completion of three credit hours in speech (CMT 101 or CMT 131) or three credit hours in English (ENG 091 or above).
3. A minimum earned cumulative grade-point average at WCC of 2.0.
4. Completion and filing of an **Application for Graduation form** at the time of registration for the final semester. This form is available from the Student Records Office.

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## **Commencement**

Commencement ceremonies for all WCC graduates are held in June. The conferring of Associate Degrees, College Certificates, and the giving of honors highlight the commencement exercises. Students receiving Associate Degrees or College Certificates are expected to participate in the commencement. A hold will be applied to the graduation of students who have overdue indebtedness or other obligations to the College.

## **Guarantee of Student Success Policy**

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WCC is committed to assuring that all its degree graduates demonstrate the knowledge and performance skills that are specified in their program major. This assurance extends beyond the students' graduation at WCC to include their performance in the occupational area they studied or in successfully transferring into a similar or compatible major at a four-year college or university. Contact the Dean of Enrollment and Student Services for further details and/or a copy of the full policy.

## **Program Requirements**

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In meeting program requirements, students may select either those requirements that were in effect the year in which they initially enrolled at WCC or those in effect the year they complete the program.

Graduation requirements may be completed during any semester or session.

## **Course Substitutions**

Courses required in a program of study may be substituted by other courses only with the approval of the program advisor and the division Dean, in consultation with the Director of Student Records. A *Course Substitution* form must be filed with the Student Records Office.

## **Waiver of Program Requirement**

Under extenuating circumstances, a course required in a program of study may be waived; all waivers must be approved by the program advisor, the division Dean, and the Vice President for Instruction and Student Services. A *Waiver of Program Requirements* form must be filed with the Director of Student Records.

## **Release of Student Information Policy**

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It is the purpose of the Board of Trustees Policy on Release of Student Information to assure students' access to their educational records and to protect their rights to privacy by limiting the transferability of their records without their consent. It is the further purpose of this policy to comply with the Family Educational Rights and Privacy Act (FERPA) of 1974, as amended. A copy of the complete policy may be obtained from the Student Records Office.

Education records are maintained in various offices of Washtenaw Community College, 4800 E. Huron River Drive, Ann Arbor, Michigan. Refer to the entire policy for types of and custodians of records.

No one shall have access to, nor will the College disclose, any information from a student's educational records without the written consent of

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the student except to WCC personnel performing an assigned College activity and those designated by federal law.

Although it is the practice of the College not to release information without the informed consent of the student, at its discretion, the College may provide directory information in accordance with the provisions of FERPA to include: student name, address, telephone number, semesters of attendance, full-time/part-time status, degree(s) awarded, major field(s), and date(s) of graduation.

Students may have directory information withheld by filing, within two weeks of the first day of the academic semester or session, a petition for exemption with the Student Records Office. WCC assumes that failure to specifically request the withholding of categories of directory information indicates individual approval for disclosure. Requests for the withholding of directory information are only valid for the current academic year.

Students wishing to review their educational records must file a written request with the custodian of the records listing the item or items of interest. Records covered by FERPA will be made available for inspection within thirty days of the request.

The law provides students with the right to inspect and review information in their educational records, to challenge the content of their educational records, to have a hearing if the outcome of the challenge is unsatisfactory, and to submit explanatory statements for inclusion in their file if they feel the decision of the hearing panel to be unacceptable.

Students who believe that the adjudication of their challenge was unfair, or not in keeping with the provisions of FERPA, may request in writing assistance from the President of WCC. Further, students who believe their rights have been abridged may file complaints with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202, concerning the alleged failure of WCC to comply with the Act. Revisions and clarifications of College policies are published as experience with the law warrants.

## **Student Appeal Procedure**

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Students having concerns/problems of an instructional nature (grades, classroom assignments, etc.) should first confer with the instructor involved in an effort to resolve the issue informally. Issues that are unresolved at the informal stage are referred by the student (verbally or in writing) to the respective division Dean, who will attempt to mediate a resolution to the problem. Issues unresolved by the Dean may also be referred to the Dean of Enrollment and Student Services, who will continue to mediate a resolution. If the problem is still unresolved, the student may initiate a final appeal to the Vice President for Instruction and Student Services.

## **Student Assessment Policy**

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WCC is committed to maximizing success for each student. The College is committed to an open access, student-oriented learning atmosphere in which each student has the opportunity to acquire basic literacy skills. While WCC's open door policy provides students with immediate acceptance into the College, the assessment interview for new students provides information that helps the College match student skill levels with the right courses. Some health-related programs have an additional screening process. – see the



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*Admissions* section of this catalog. This interview process may include reviewing past educational work experiences as well as current life and educational goals and/or testing.

## **Student Classifications**

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- Freshman/First Year Student* .....One who has completed fewer than 28 credit hours.
- Sophomore/Second Year Student*....One who has completed 28 or more credit hours but has not received an Associate Degree or has not qualified for upper division classification in a four-year college or university.







# Campus Information

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## **CAMPUS INFORMATION**

### **Alcoholic Beverages on Campus**

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Students, employees, and visitors of WCC are expected to observe all federal, state, and local regulations governing the use and possession of alcoholic beverages while on College property, and at College-sponsored events while any minor is present. All students, employees, and visitors are specifically forbidden to use or possess alcoholic beverages or to be under the influence of same while on College property.

### **Dental Clinic**

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The College has a complete, modern dental clinic which is open to students, faculty and staff. Treatment is provided by University of Michigan dental students under the supervision of a licensed dentist. Contact the Dental Clinic for current information regarding services provided, hours of operation and fees.

### **Emergency College Closing**

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Occasionally extreme weather conditions or other unforeseen events necessitate closing the College either before or after classes have begun for the day. In such cases, a pre-recorded message will be available at the College switchboard giving details of the College closing and reopening. Local radio stations will also announce College closing information.

### **Emergency Notification of Students**

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If an emergency call for a student is received by the Office of Campus Security, the Office will contact the Student Records Office for the class schedule of the student to be notified. If the Security guard is unable to locate/notify the student, the caller requesting notification will be informed. No other information concerning the student or his/her schedule will be released to the caller.

### **Food Services**

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Food service is available on the first floor of the Student Center Building in the cafeteria and vending machine area. During the fall and winter semesters, the Artists' Gallery dining room is also open for lunch. Students staffing the kitchen and dining room earn credit in the Hospitality Management program.

### **Information Center**

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The College Information Center, located on the second floor of the Student Center Building, is available to assist individuals who have questions or concerns. Many printed materials about the College, including program brochures, are available at the Center. The Center can also direct individuals to specific areas/individuals, provide AATA bus schedule information or offer other assistance.

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## **Lost and Found**

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The Lost and Found is located in the the Office of Campus Security. Any person finding lost property on campus should call or deliver it to the Security Office. Persons losing property on College premises should contact the Security Office with a description and approximate value of the item. A police report will be made by the Office of Campus Security if requested.

## **Medical Emergency Procedures**

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In the event of a medical emergency, the College switchboard operator should be notified. The operator will then notify Campus Security, the Emergency Medical Technician or other appropriate personnel.

## **Parking**

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Parking is provided on campus for general, handicapped, visitor, vendor and service vehicles. Parking is prohibited in the following areas: bus stops, fire lanes, main travel lanes, sidewalks, handicapped spaces without a permit, restricted parking spaces without a permit, marked crosswalks, building entrances and exits, and outside marked parking spaces. Parking regulations on campus are covered by township ordinance and violations will be issued. See back cover for parking areas map.

## **Security Services**

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The Office of Campus Security is designed to ensure the safety and security of the College community. This includes nighttime "escort services" for students who would like accompaniment to their cars. The Security Office is located in SC 146 near the loading dock and has a security guard on duty twenty-four hours a day.

Five emergency telephones are available on campus. These telephones are connected directly to the Security Office and will ring when the receiver is picked up. Locations are:

- Lobby of the Occupational Education Building
- Southeast corridor in the Occupational Education Building
- Third floor of the Liberal Arts and Science Building
- Adjacent to Lot C near the Family Education Building
- Lot A Annex near the connecting road

## **Smoking**

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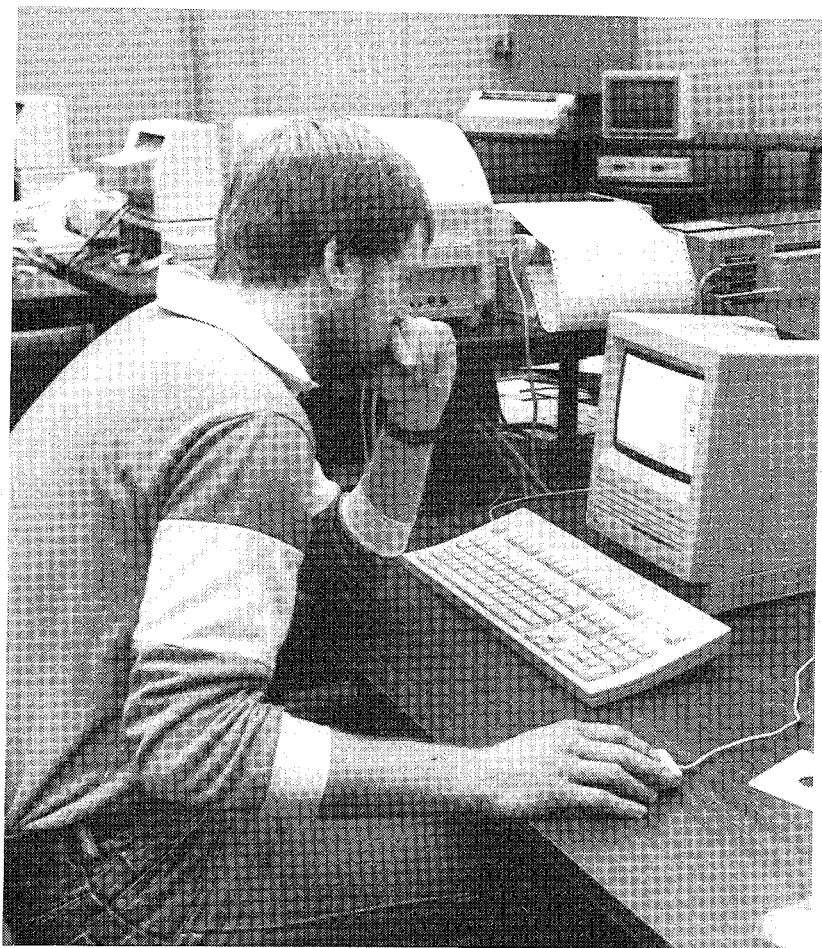
Smoking is prohibited in all WCC buildings except in designated areas.

## **Theft, Vandalism Reporting**

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Incidents of theft or vandalism should be reported to the Office of Campus Security where staff will assist in filling out appropriate reports. The Security Office will also assist the Washtenaw County Sheriff's Department in establishing the facts surrounding an incident and to determine preventive measures.





# Program Listings

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## Division of Business Programs



# BUSINESS AND ACCOUNTING

## Accounting

Associate Degree Program: Code 121

This Associate Degree program provides career training as an accounting technician. Accounting technicians perform routine duties such as those assigned to beginning accountants. For example, they verify additions; check audits, postings and vouchers; analyze accounts, and prepare financial statements. Performance of these tasks is usually under direct supervision. Objectives of the accounting program are to develop knowledge, skills and insights into the area of accounting and its relationship to the total business system and to develop techniques essential to the performance of the basic accounting supportive functions of business and industry. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	ACC 111	Principles of Accounting.....	3
1	BMG 140	Introduction to Business.....	3
2	CIS 111	Computer Concepts.....	3
2	CIS 112	Computer Functions.....	3
1	MTH 163	Business Mathematics or	
	MTH 181	Mathematical Analysis or	
		Higher Mathematics Elective.....	3-4
			15-16
<b>Second Semester</b>			
2	ACC 122	Principles of Accounting.....	3
3	ACC 131	Computerized Accounting.....	3
4	CMT 101	Fundamentals of Speaking.....	3
2	ENG 111	Composition I.....	4
6	PLS	Political Science Requirement (108, 112, or 150)...	3
			16
<b>Third Semester</b>			
3	ACC 213	Intermediate Accounting.....	3
5	BMG 111	Business Law.....	3
7	BMG 230	Supervisory Management.....	3
4	EC 211	Principles of Economics.....	3
3	ENG 122	Composition II.....	3
			15

#### Fourth Semester

4	ACC 225	Managerial Cost Accounting.....	3
6	BMG 200	Human Relations in Business and Industry.....	3
5	BMG 207	Business Communications.....	3
7	BMG 220	Principles of Finance.....	3
5	EC 222	Principles of Economics.....	3
7	*	Business Elective.....	3
			<b>18</b>

**Total Credit Hours for Program: 64**

#### \*Recommended Electives

ACC 200	Tax Preparation.....	3
BMG 122	Business Law.....	3
BMG 299	Internship-Externship.....	3-6
Any CIS course above CIS 112		

## Business Management

**Associate Degree Program: Code 141**

Business Management, an Associate Degree program, provides career training in general management. It also prepares current non-managerial employees for management level responsibility in their existing job concentrations. The program provides students with knowledge and skills essential for leadership in business operations, supervision and other fundamental requirements of business administration and management. Such skills as planning, decision making, problem recognition and solution, and human resources management are discussed. Students acquire managerial skills from the study of management theory: its concepts and practices. Business communications, computer familiarization, marketing, accounting, and business law are all part of the Business Management program.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
3	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting.....	3
1	BMG 140	Introduction to Business.....	3
2	BMG 160	Principles of Sales.....	3
1	ENG 111	Composition I.....	4
1	MTH 163	Business Mathematics or	
		Higher Mathematics Elective.....	3
			<b>16</b>
<b>Second Semester</b>			
4	ACC 092	Fundamentals of Accounting or	
	ACC 122	Principles of Accounting.....	3
3	BMG 111	Business Law I.....	3
2	BMG 208	Principles of Management.....	3
4	CIS 100	Introduction to Computers or	
	CIS 111	Computer Concepts.....	3
3	CMT 101	Fundamentals of Speaking.....	3
2	ENG 122	Composition II.....	3
			<b>18</b>

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**Third Semester**

5	BMG 150	Labor-Management Relations.....	3
4	BMG 207	Business Communication .....	3
5	EC 211	Principles of Economics.....	3
6	PLS	Political Science Requirement (108, 112 or 150)....	3
7	*	Business Elective .....	2-3
			14-15

**Fourth Semester**

5	BMG 200	Human Relations in Business and Industry.....	3
6	BMG 240	Human Resources Management.....	3
7	BMG 250	Principles of Marketing .....	3
7	BMG 220	Principles of Finance .....	3
6	EC 222	Principles of Economics.....	3
			15

**Total Credit Hours for Program: 63-64****\*Recommended Electives**

ACC 225	Managerial Cost Accounting.....	3
BMG 122	Business Law II.....	3
BMG 230	Supervisory Management.....	3
BMG 235	Women in Management.....	3
BMG 255	Marketing and Management Career Development.....	2
BMG 299	Internship-Externship.....	2-6

## Business Marketing

### Associate Degree Program: Code 142

Business Marketing, an Associate Degree program, prepares students for career opportunities in the field of marketing. These positions may be in any one of the marketing activities that involves the moving of products and services from producer to consumer, including the concepts and methods marketers use to identify and solve marketing problems and identify business opportunities through target market, product, price, distribution and promotion strategies. The program emphasizes such skills as sales technique, advertising concepts, sales management, human relations, market research, customer contact, product placement, administrative and record management. Business communications, computer familiarization, management and accounting are also stressed in this program.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
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**First Semester**

1	BMG 140	Introduction to Business.....	3
1	BMG 160	Principles of Sales .....	3
2	CMT 101	Fundamentals of Speaking .....	3
3	ENG 111	Composition I .....	4
1	MTH 163	Business Mathematics or Higher Mathematics Elective.....	3
			16

### Second Semester

3	BMG 111	Business Law I.....	3
3	BMG 250	Principles of Marketing.....	3
2	CIS 111	Computer Concepts.....	3
2	CIS 112	Computer Functions.....	3
4	ENG 122	Composition II.....	3
			15

### Third Semester

4	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting.....	3
5	BMG 150	Labor Management Relations.....	3
5	BMG 200	Human Relations in Business and Industry.....	3
4	BMG 208	Principles of Management.....	3
6	EC 211	Principles of Economics.....	3
			15

### Fourth Semester

5	ACC 092	Fundamentals of Accounting or	
	ACC 122	Principles of Accounting.....	3
6	BMG 207	Business Communications.....	3
6	BMG 270	Advertising Principles.....	3
7	EC 222	Principles of Economics.....	3
7	PLS	Political Science Requirement (108, 112 or 150)....	3
7	*	Business Elective.....	2-3
			17-18

**Total Credit Hours for Program: 63-64**

### \*Recommended Electives

BMG 122	Business Law.....	3
BMG 225	Public Relations.....	3
BMG 230	Supervisory Management.....	3
BMG 235	Women in Management.....	3
BMG 255	Marketing & Management Career Development.....	2
BMG 299	Internship-Externship.....	2-6



## Business Sales

### College Certificate Program: Code 143

This College Certificate program offers a wide range of beginning career opportunities primarily in the field of sales. The program provides marketing skills in sales presentation, negotiation and customer service. Additional areas of concentration include display preparation, inventory analysis and basic market research.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	BMG 140	Introduction to Business.....	3
3	CMT 101	Fundamentals of Speaking.....	3
2	ENG 100	Communication Skills <b>or</b>	
	ENG 111	Composition I.....	4
1	MTH 163	Business Mathematics <b>or</b>	
		Mathematics Elective.....	3
4	PSY 100	Introductory Psychology.....	3
			16
<b>Second Semester</b>			
2	ACC 091	Fundamentals of Accounting <b>or</b>	
	ACC 111	Principles of Accounting.....	3
5	BMG 111	Business Law.....	3
3	BMG 160	Principles of Sales.....	3
5	BMG 200	Human Relations in Business and Industry.....	3
4	BMG 250	Principles of Marketing.....	3
6	*	Business Elective.....	2-3
			17-18

**Total Credit Hours for program: 33-34**

**\*Recommended Electives**

BMG 255 Marketing & Management Career Development.....	2
BMG 270 Advertising Principles.....	3
BMG 299 Internship-Externship.....	2-3
CIS 100 Introduction to Computers.....	3

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# COMPUTER INSTRUCTION

## Business Computer Programming

Associate Degree Program: Code 133

This Associate Degree program is intended to prepare students for entry-level or trainee computer programmer positions. Graduates work in an applications environment to support general, administrative and organizational information processing functions of industry, commerce, business and government service. Graduates are trained to work with a systems analyst in the programming environment usually found in medium to large establishments.

Full-Time Sequence*	Course Title	Credit Hours
<b>First Semester (Fall)</b>		
ACC 111	Principles of Accounting.....	3
CIS 111	Computer Concepts.....	3
CIS 112	Computer Functions.....	3
ENG 100	Communication Skills.....	4
MTH 169	Intermediate Algebra.....	4
		<u>17</u>
<b>Second Semester (Winter)</b>		
ACC 122	Principles of Accounting.....	3
CIS 115	Programming Logic.....	3
CIS 130	Pascal for Business and Industry.....	4
ENG 107	Technical Communications.....	3
MTH 160	Basic Statistics.....	4
		<u>17</u>
<b>Spring Half-Semester</b>		
BMG 200	Human Relations in Business and Industry.....	3
CMT 101	Fundamentals of Speech.....	3
		<u>6</u>
<b>Third Semester (Fall)</b>		
CIS 170	COBOL I.....	4
CIS 286	Operating Systems.....	4
CIS 288	Systems Analysis and Design.....	3
**	Approved CIS Elective.....	3
		<u>14-15</u>

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**Fourth Semester (Winter)**

BMG 215	Small Business Management Operations .....	3
CIS 270	COBOL II.....	4
CIS 283	Large System Data Base .....	4
CIS 240	Career Practices Seminar.....	2
PLS 108	Government and Society.....	3
		<u>16</u>

**Total Credit Hours for Program: 70-71**

**\*\*Recommended CIS Electives**

CIS 135	PL/1 Programming.....	4
CIS 136	BASIC for Business and Industry.....	3
CIS 137	RPG.....	3
CIS 199	On-the-Job Training.....	3
CIS 284	Data Communications.....	3

\*An advisor or counselor can suggest a part-time sequence.

## Computer Systems Operations

### College Certificate Program: Code 135

This program is designed to develop skills and knowledge necessary to meet the demands of computer operations in today's data processing environment. Typical operator categories include RJE terminal operator, microcomputer operator, small computer operator or console computer operator. The program includes both classroom and laboratory work using both large and small microcomputers.

Part-Time Sequence*	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	CIS 111	Computer Concepts .....	3
1	CIS 112	Computer Functions.....	3
1	CIS 141	Computer Operations I.....	3
2	ENG 100	Communication Skills.....	4
2	MTH 163	Business Mathematics.....	3
			<u>16</u>



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**Second Semester (Winter)**

3	BMG 200	Human Relations in Business and Industry.....	3
4	CIS 286	Operating Systems.....	4
4	PLS 108	Government and Society.....	3
3	**	Two Approved CIS Electives.....	6
			<u>16</u>

**Total Credit Hours for Program: 32**

**\*\*Recommended Electives**

CIS 130	Pascal for Business and Industry.....	4
CIS 136	BASIC for Business and Industry.....	3
CIS 137	RPG.....	3
CIS 199	On-the-Job Training.....	3
CIS 240	Career Practices Seminar.....	2
EE 105	Introduction to Telecommunications.....	3
EE 137	Switching Logic.....	3

\*This is a suggested part-time sequence. See an advisor for modifications.

## Small Business Computer Systems

**Associate Degree Program: Code 134**

This is an Associate Degree program designed to meet the special needs of expanding microcomputer applications to business data processing. Students are exposed to microcomputer systems and several languages; they learn to analyze and design small business systems. This curriculum prepares students for employment as a programmer/operator for businesses using small systems.

Full Time Sequence	Course Title	Credit Hours
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**First Semester (Fall)**

ACC 111	Principles of Accounting.....	3
CIS 111	Computer Concepts.....	3
CIS 112	Computer Functions.....	3
ENG 100	Communication Skills.....	4
MTH 169	Intermediate Algebra.....	4
		<u>17</u>

**Second Semester (Winter)**

ACC 122	Principles of Accounting.....	3
CIS 115	Programming Logic.....	3
CIS 130	Pascal for Business and Industry.....	4
ENG 107	Technical Communications.....	3
MTH 160	Basic Statistics.....	4
		<u>17</u>

**Spring Half-Semester**

BMG 200	Human Relations in Business and Industry.....	3
CMT 101	Fundamentals of Speaking.....	3
		<u>6</u>

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### Third Semester (Fall)

CIS 230	Advanced Pascal for Business and Industry.....	4
CIS 240	Career Practices Seminar.....	2
CIS 275	C Programming Language.....	4
CIS 288	Systems Analysis and Design.....	3
**	Approved CIS Elective.....	3
		16

### Fourth Semester (Winter)

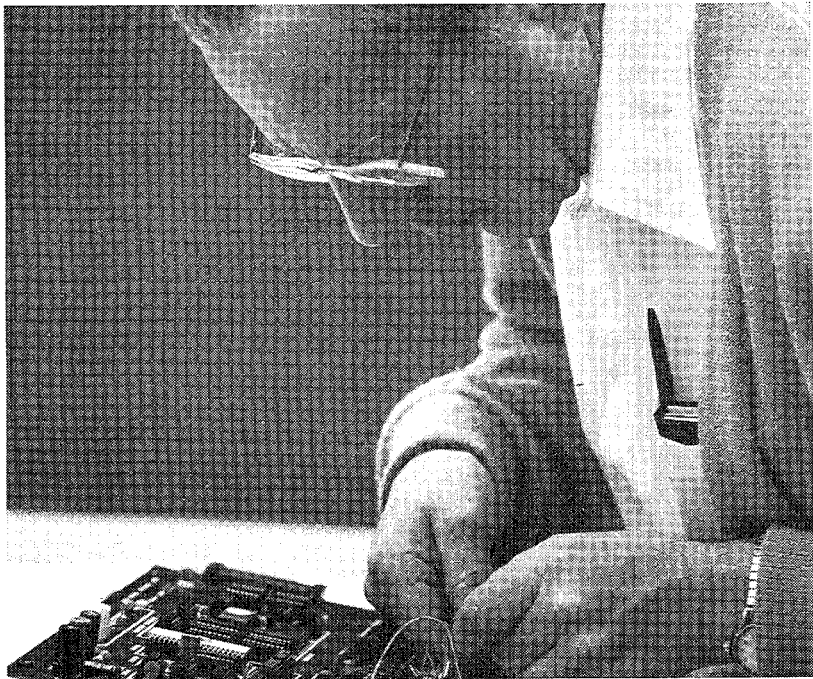
BMG 215	Small Business Management Operations.....	3
CIS 238	Assembler.....	3
CIS 282	Small System Data Base.....	3
**	Approved CIS Elective.....	3
PLS 108	Government and Society.....	3
		15

**Total Credit Hours for Program: 71**

### \*\*Recommended CIS Electives

CIS 136	BASIC for Business and Industry.....	3
CIS 199	On-the-Job Training.....	3
CIS 284	Data Communications.....	3
CIS 286	Operating Systems.....	4

\*A counselor or advisor can suggest a part-time sequence.



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# FOODS AND HOSPITALITY

## Culinary Arts Technology

Associate Degree Program: Code 117

Advisors: James Beaton, Don Garrett, Jill Beauchamp

This program provides career training as a culinary arts technician. This technician supervises and coordinates activities of workers engaged in preparing, cooking, and serving food, cleaning premises, and washing dishware. He/she also plans varied menus to insure that food is appetizing and nutritionally suitable; estimates daily or weekly needs and orders food supplies and equipment; keeps records of meals served and takes inventory of supplies and equipment. The technician may participate in preparing and cooking meals and/or may choose to assume responsibilities in the front of the house (supervising food service and dining room employees). This technician may also choose to enter the field of food and equipment wholesale and retail. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	CUL 100	Introduction to Hospitality Management.....	3
1	CUL 110	Sanitation and Hygiene .....	3
3	CUL 118	Principles of Nutrition.....	3
4	CUL 111	Elementary Food Preparation or	
4	CUL 150	Food Service Management.....	6
			15
<b>Second Semester (Winter)</b>			
5	CUL 111	Elementary Food Preparation or	
	CUL 150	Food Service Management or	
	CUL 222	Quantity Food Production .....	6
8	CUL 220	Organization and Management of Hospitality Systems .....	3
6	HRM 100	Hospitality Industry Accounting.....	3
2	PLS 108	Government and Society.....	3
			15
<b>Third Semester (Spring)</b>			
9	CUL 227	Advanced Culinary Techniques .....	6
10	CUL 228	Layout and Equipment .....	4
			10

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**Fourth Semester (Fall)**

12	ENG	English Requirement (100 or 111) .....	4
2	CUL 150	Food Service Management or	
5	CUL 222	Quantity Food Production .....	6
12	CIS 100	Introduction to Computers .....	3
	*	Elective (Choose 1).....	4
			<u>17</u>

**Fifth Semester (Winter)**

7	CUL 224	Principles of Cost Control.....	4
13	CUL 199	On-the-Job Training.....	3
11	*	Electives (Choose 2).....	7-8
			<u>14-15</u>

**Total Credit Hours for Program: 66-67****\*Recommended Electives**

CUL 210	Garde Manger.....	4
CUL 219	Elementary Baking.....	4
CUL 225	Advanced Baking and Pastry .....	4
CUL 250	Advanced Service Techniques.....	3
CUL 260	Catering and Banquets.....	3

## **Food Production Specialty**

### **College Certificate Program: Code 118**

**Advisors: James Beaton, Don Garrett, Jill Beauchamp**

This program provides training as a food production specialist. The specialist works in preparing foods for hotels, restaurants, and institutional establishments. Production includes sauteeing, roasting, broiling, baking, vegetable preparation and producing soups and sauces. The specialist is trained to perform all receiving, storage, and sanitation functions within the food service establishment.

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
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**First Semester (Fall)**

1	CUL 100	Introduction to Hospitality Management.....	3
1	CUL 110	Sanitation and Hygiene .....	3
4	CUL 111	Elementary Food Preparation .....	6
2	CUL 219	Elementary Baking.....	4
			<u>16</u>

**Second Semester (Winter)**

5	CUL 222	Quality Food Production .....	6
	CUL 210	Garde Mange or	
	CUL 225	Advanced Baking and Pastry .....	4
3	ENG 100	Communication Skills.....	4
			<u>14</u>

<b>Third Semester (Spring)</b>		
6	CUL 227	Advanced Culinary Techniques .....6

**Total Credit Hours for Program: 36**

## Hotel-Restaurant Management Technology

**Associate Degree Program: Code 119**

**Advisors: James Beaton, Don Garrett, Jill Beauchamp**

This program prepares students for supervisory and/or mid-management positions in the hospitality industry. Hotel Restaurant Managers are responsible for satisfying the guest as well as operating the establishment profitably. They direct the production and/or service in the kitchen, dining room and front office. Department managers work as a team to direct the flow of hospitality services within the hotel or restaurant.

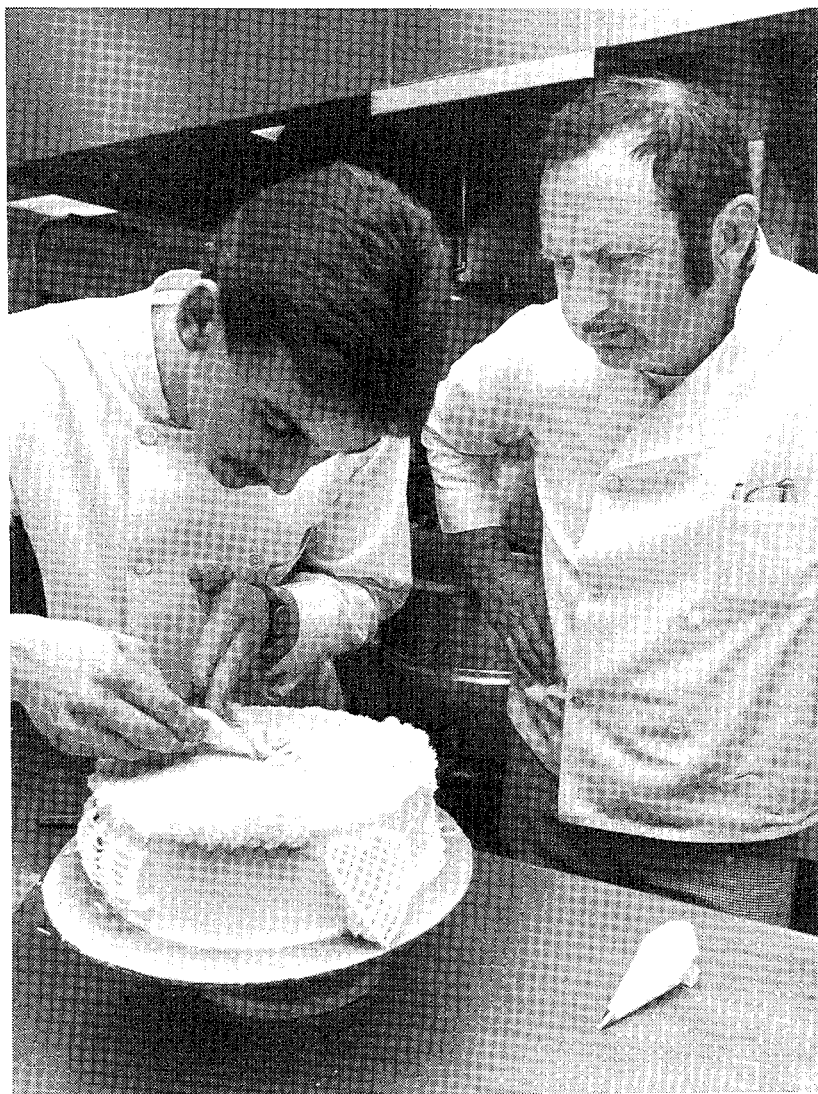
Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
10	CIS 100	Introduction to Computers .....	3
1	CUL 100	Introduction to Hospitality Management.....	3
2	CUL 110	Sanitation and Hygiene .....	3
4	CUL 111	Elementary Food Preparation or	
	CUL 150	Food Service Management.....	6
			15
<b>Second Semester (Winter)</b>			
5	CUL 111	Elementary Food Preparation or	
	CUL 150	Food Service Management or	
	CUL 222	Quantity Food Production .....	6
2	HRM 100	Hospitality Industry Accounting.....	3
3	HRM 104	Front Office Procedures .....	3
	HRM 222	Lodging Marketing and Promotion.....	3
			15
<b>Third Semester (Spring)</b>			
8	CUL 250	Advanced Service Technique .....	3
12	ENG	English Requirement (100 or 111) .....	4
			7
<b>Fourth Semester (Fall)</b>			
7	CUL 220	Organization and Management	
		of Hospitality Systems .....	3
7	CUL 150	Food Service Management or	
	CUL 222	Quantity Food Production .....	6
4	CUL 224	Principles of Cost Control.....	4
10	CUL 260	Catering and Banquets.....	3
			16

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**Fifth Semester (Winter)**

10	HRM 223	Practicum in Lodging Management.....	3
8	HRM 230	Hospitality Law.....	4
9	PLS 108	Government and Society.....	3
9	PSY 150	Industrial Psychology .....	3
			<b>13</b>

**Total Credit Hours for Program: 66**



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# OFFICE SPECIALTIES

## Clerical/Typing

College Certificate Program: Code 162

Advisors: Lynn Allison, Eleanor Charlton,  
Rosalyn Culver, Marie Juster

This program trains people to perform clerical duties of moderate difficulty. A clerk typist keyboards letters, reports, tabulations, and other material in which format and terms are generally clear and follow a standard pattern. He or she also files, sorts mail, answers the telephone, and performs other general office work for the modern automated office.

Full-Time Sequence*	Course Title	Credit Hours
<b>First Semester</b>		
CIS 100	Introduction to Computers .....	3
ENG 100	Communication Skills .....	4
MTH 163	Business Mathematics .....	3
OS 101	Beginning Typewriting or	
OS 102	Intermediate Typewriting .....	3
**	Business-Related Elective .....	2-3
		15-16
<b>Second Semester</b>		
OS 102	Intermediate Typewriting or	
OS 203	Advanced Typewriting .....	3
OS 107	Clerical Methods and Procedures .....	4
OS 130	Business Machines .....	3
OS 152	Information Processing Transcription Skills .....	3
OS 153	Information Processing Applications/Basic Practice .....	2
		15

**Total Credit Hours for Program: 30-31**

### \*\*Recommended Business-Related Electives

ACC 091	Fundamentals of Accounting or	
ACC 111	Principles of Accounting .....	3
BMG 200	Human Relations in Business and Industry .....	3
CMT 101	Fundamentals of Speaking .....	3
OS 131	Beginning Shorthand .....	4

Electives for Clerical/Typing program continued on next page

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Clerical/Typing program electives *continued*

OS 150	Office Proofreading.....	2
OS 151	Information Processing Principles.....	3
OS 154	Word Processing Applications - Wordstar 2000 .....	2
OS 155	Word Processing Applications - Microsoft Word.....	2
OS 156	Word Processing Applications - WordPerfect.....	2

See area advisor for other approved business electives.

If an elective is being substituted, a 100-level business course may be substituted for a 100-level course; a 200-level business course must be substituted for a 200-level course.

\*An advisor or counselor can suggest a part-time sequence.

## Information Processing Specialty

### Associate Degree Program: Code 164

This program gives individuals the advanced training they need to operate electronic typewriting and text-editing systems. The specialist generates documents quickly, efficiently, and economically using information-processing systems to store and revise information. Specialists must be able to think logically, organize, proofread, transcribe, and work with and supervise others.

<b>Full-Time</b>		<b>Credit</b>
<b>Sequence*</b>	<b>Course Title</b>	<b>Hours</b>

**First Semester**

CIS 100	Introduction to Computers.....	3
ENG 100	Communication Skills.....	4
MTH 163	Business Mathematics.....	3
OS 102	Intermediate Typewriting <b>or</b>	
OS 203	Advanced Typewriting*** .....	3
OS 151	Information Processing Principles.....	3
		16

**Second Semester**

ACC 091	Fundamentals of Accounting <b>or</b>	
ACC 111	Principles of Accounting.....	3
BMG 140	Introduction to Business.....	3
OS 152	Information Processing Transcription Skills .....	3
OS 153	Information Processing Applications/ Basic Practice .....	2
OS 154	Word Processing Applications - Wordstar 2000 <b>or</b>	
OS 155	Word Processing Applications - Microsoft Word <b>or</b>	
OS 156	Word Processing Applications - WordPerfect.....	2
OS 203	Advanced Typewriting <b>or</b>	
**	Business-Related Elective .....	3
		16



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### Third Semester

BMG 299	Internship/Externship or Business-Related Elective .....	3
OS 107	Clerical Methods and Procedures.....	4
OS 214	Information Processing Applications/Advanced Practice.....	3
PLS 108	Government and Society.....	3
		13

### Fourth Semester

BMG 200	Human Relations in Business and Industry.....	3
BMG 299	Internship/Externship or ** Business-Related Elective .....	3
CMT 101	Fundamentals of Speaking .....	3
OS 130	Business Machines.....	3
OS 225	Information Processing Systems and Procedures .....	3
OS 250	Office Systems and Procedures.....	4
		19

**Total Credit Hours for Program: 64**

### \*\*Recommended Business-Related Electives

ACC 092	Fundamentals of Accounting II or	
ACC 122	Principles of Accounting.....	3
BMG 111	Business Law I .....	3
BMG 230	Supervisory Management .....	3
CIS 105	Microcomputer Programming or	
CIS 111	Computer Concepts .....	2-3
OS 101	Beginning Shorthand .....	3
OS 131	Shorthand or	
OS 132	Intermediate Shorthand.....	3-4
OS 150	Office Proofreading.....	2
RDG 115	Medical Terminology .....	2

If an elective is being substituted, a 100-level business course may be substituted for a 100-level course; a 200-level business course must be substituted for a 200-level course.

\* An advisor or counselor can suggest a part-time sequence.

\*\*\* Typewriting and shorthand credit and contact hours are progressive in accordance with student progress and proficiency level. (See catalog course description.)

## Medical Secretarial

### Associate Degree Program: Code 165

This program provides students with skills for preparing, analyzing and retrieving health information. The medical office specialist may work in a doctor's or dentist's office, a clinic, a hospital, a pharmaceutical or insurance company, or a public health facility. In addition to the duties of secretary and receptionist, medical secretaries prepare medical charts and reports, bill patients, work with insurance companies, and may serve as office managers and carry out such technical duties as sterilizing instruments or taking temperatures.

Full-Time Sequence*	Course Title	Credit Hours
<b>First Semester</b>		
CIS 100	Introduction to Computers .....	3
ENG 100	Communication Skills .....	4
HS 113	Introduction to Medical Science.....	2
MTH 163	Business Mathematics.....	3
OS 101	Beginning Typewriting <b>or</b>	
OS 102	Intermediate Typewriting <b>or</b>	
OS 203	Advanced Typewriting*** .....	3
RDG 115	Medical Terminology.....	<u>2</u>
		17
<b>Second Semester</b>		
BIO 111	Anatomy and Physiology <b>or</b>	
BIO 102	Human Biology .....	4-5
OS 102	Intermediate Typewriting <b>or</b>	
OS 203	Advanced Typewriting*** <b>or</b>	
**	Business-Related Elective .....	3
OS 152	Information Processing Transcription Skills .....	3
OS 153	Information Processing Applications/ Basic Practice .....	2
OS 154	Word Processing Applications - Wordstar 2000 <b>or</b>	
OS 155	Word Processing Applications - Microsoft Word <b>or</b>	
OS 156	Word Processing Applications - WordPerfect.....	<u>2</u>
		14-15
<b>Third Semester</b>		
BMG 299	Internship/Externship <b>or</b>	
**	Business-Related Elective .....	3
OS 130	Business Machines.....	3
OS 107	Clerical Methods and Procedures.....	4
OS 210	Medical Transcription.....	3
PLS 108	Government and Society.....	<u>3</u>
		16

<b>Fourth Semester</b>		
BMG 200	Human Relations in Business and Industry.....	3
BMG 299	Internship/Externship or	
**	Business-Related Elective .....	3
CMT 101	Fundamentals of Speaking .....	3
HS 115	Medical Office and Laboratory Procedures (Clinical).....	3
OS 224	Information Processing for Medical Specialists.....	2
OS 223	Medical Office Procedures.....	3
		<u>17</u>

**Total Credit Hours for Program: 64-65**

**\*\*Recommended Business-Related Electives**

ACC 091	Fundamentals of Accounting or	
ACC 111	Principles of Accounting.....	3
OS 131	Shorthand or	
OS 132	Intermediate Shorthand.....	3-4
OS 150	Office Proofreading.....	2
OS 151	Information Processing Principles.....	3

If an elective is being substituted, a 100-level business course may be substituted for a 100-level course; a 200-level business course must be substituted for a 200-level course.

- \* An advisor or counselor can suggest a part-time sequence.
- \*\*\* Typewriting and shorthand credit and contact hours are progressive in accordance with student progress and proficiency level. (See catalog course description.)

## Secretarial Technology

**Associate Degree Program: Code 161**

**Advisors: Lynn Allison, Eleanor Charlton,  
Rosalyn Culver, Marie Juster**

This program prepares the technician for stenographic and secretarial positions and for advancement to positions such as executive secretary or administrative assistant. This program includes a study of office systems and procedures, courses in accounting, management, and general studies.

<b>Full-Time Sequence*</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester</b>		
BMG 140	Introduction to Business.....	3
ENG 100	Communication Skills.....	4
MTH 163	Business Mathematics.....	3
OS 102	Intermediate Typewriting *** .....	3
OS 131	Beginning Shorthand .....	4
		<u>17</u>

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### Second Semester

CIS 100	Introduction to Computers .....	3
OS 130	Business Machines.....	3
OS 132	Intermediate Shorthand.....	3
OS 203	Advanced Typewriting *** .....	3
PLS 108	Government and Society.....	3
		15

### Third Semester

ACC 091	Fundamentals of Accounting or	
ACC 111	Principles of Accounting.....	3
OS 107	Clerical Methods and Procedures.....	4
OS 152	Information Processing Transcription Skills .....	3
OS 153	Information Processing Applications/Basic Practice .....	2
OS 154	Word Processing Applications - Wordstar 2000 or	
OS 155	Word Processing Applications - Microsoft Word or	
OS 156	Word Processing Applications - WordPerfect.....	2
		14

### Fourth Semester

BMG 200	Human Relations in Business and Industry.....	3
BMG 299	Internship/Externship or	
**	Business-Related Electives.....	3
CMT 101	Fundamentals of Speaking .....	3
OS 214	Information Processing Applications/Advanced Practice.....	3
OS 250	Office Systems and Procedures.....	4
		16

### Total Credit Hours for Program: 62

#### \*\*Recommended Business-Related Electives

ACC 092	Fundamentals of Accounting or	
ACC 122	Principles of Accounting.....	3
BMG 111	Business Law .....	3
BMG 230	Supervisory Management .....	3
CIS 111	Computer Concepts .....	3
EC 211	Principles of Economics.....	3
OS 150	Office Proofreading.....	3
OS 151	Information Processing Principles.....	3

If an elective is being substituted, a 100-level business course may be substituted for a 100-level course; a 200-level business course must be substituted for a 200-level course.

\* An advisor or counselor can suggest a part-time sequence.

\*\*\* Typewriting credit and contact hours are progressive in accordance with student progress and proficiency level. (See catalog course description.)

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## Division of Health and Public Services Programs



# DENTAL AUXILIARY

Auxiliary Dental programs provide career training in dental assisting and dental office management. There are two types of dental assistants: the Certified Dental Assistant (C.D.A.) and the Registered Dental Assistant (R.D.A.). The C.D.A. assists in preparation and actively participates in all functions of dentistry, while the R.D.A. in the State of Michigan is qualified to perform some intra-oral functions normally performed by the dentist, such as temporary crown placement and removal, rubber dam placement and removal, and oral inspection. Both of the assistants are qualified to work in various areas such as private dental offices, dental schools, Armed Forces, dental insurance companies and many others. If an individual is not interested in full-time employment, dental assisting offers many opportunities for part-time work. *High employability.*

## Dental Assisting College Certificate Program: Code 311

Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>		
BIO 102	Human Biology *	4
DA 110	Introduction to Dental Assisting - First 7 weeks	3
DA 111	Dental Science - 14 weeks	4
DA 113	Dental Materials - Last 10 weeks	3
DA 114	Clinical Dental Assisting - Second 7 weeks	3
DA 120	Oral Diagnosis - 2nd 7 weeks	2
ENG 091	Writing Fundamentals * or	
ENG 100	Communication Skills *	4
		23
<b>Second Semester</b>		
DA 103	Dental Nutrition	2
DA 121A	Oral Diagnosis Practicum A	1
DA 122	Advanced Dental Science	4
DA 124	Advanced Clinical Dental Assisting - First 7 weeks	3
DA 125	Dental Roentgenology - First 10 weeks	2
DA 126	Dental Laboratory Procedures - First 10 weeks	4
OS 101	Beginning Typewriting **	3
		16-19

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### Third Semester

DA 121B	Oral Diagnosis Practicum B .....	1
DA 200	Clinical Practice.....	3
DA 201	Dental Specialties .....	3
DA 202	Advanced Clinical Practice .....	3
DA 212	Dental Office Procedures.....	4
DA 215	Advanced Dental Roentgenology .....	2
PSY 100	Introductory Psychology.....	3
		<b>19</b>

### Total Credit Hours for Certificate Program: 58-61

- \* It is recommended that students enroll in these courses prior to admission
- \*\* If one year of typing has been taken in high school or typing skill is 35 wpm the student is exempt from this course.

## Registered Dental Assisting

### Associate Degree Program: Code 312

This program requires the first, second, and third semesters of the Certified Dental Assisting Certificate Program and the following fourth semester courses:

### Fourth Semester

DA 224	Advanced Functions.....	3
MTH 090	Occupational Mathematics or	
MTH 165	Health Science Mathematics.....	3
PLS	Political Science Requirement (108 or 150).....	3
		<b>9</b>

A student must complete all fourth term courses to be a graduate of this accredited program in order to be a candidate for the Michigan State R.D.A. examination.

### Total Credit Hours for Degree Program: 67-70

## Dental Office Management

### Associate Degree Program: Code 313

This program requires the first, second, and third semesters of the Certified Dental Assisting Certificate Program and the following fourth semester courses:

### Fourth Semester

CIS 111	Computer Concepts .....	3
DA 222	Dental Practice Management Seminar .....	3
PLS	Political Science Requirement (108 or 150).....	3
		<b>9</b>

### Total Credit Hours for Degree Program: 67-70

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## NURSING

The Washtenaw Community College Nursing Program is a career mobility, ladder-concept program. It consists of a one-year College Certificate practical nurse program, and a two-year Associate Degree registered nurse program. The Associate Degree program is based on the practical nurse program. All new (basic) students complete the same first year of study (Level I). The decision to continue into Level II to complete the Associate Degree program is made by basic students at the beginning of the third semester. In addition, currently employed LPNs may enter the Associate Degree program at the beginning of Level II. Students are admitted in both the Fall and Winter Semesters.

This program has a special application procedure and limited enrollment. Priority is given to Washtenaw County residents; contact the Admissions Office for details. (Please note: high school chemistry and algebra or equivalent, with a grade of C or better, are required for admission to both levels of the nursing program.) Students admitted to the Nursing Program will be required to purchase special uniforms and supplies. In addition to general College rules, nursing students are required to adhere to rules and the Nursing Code of Ethics as published in the Nursing Program Student Handbook.

Nursing courses in the nursing program must be taken in sequence. Course requirements in non-nursing departments (marked with asterisks) may be taken before entrance to the program. A 'D' in any program course is considered unsatisfactory. A 2.0 average is required for graduation from the program.

### **Level I Nursing Program - Practical Nursing Preparation**

**College Certificate Program: Code 360**

This is a one-year College Certificate program providing career preparation for the practical nursing licensure examination. Licensed practical nurses help care for the physically or mentally ill or infirm. Under the direction of physicians and registered nurses, they provide nursing care that requires technical knowledge but not the professional education of a registered nurse. *High employability.*



## Fall Admission

Course Number	Course Title	Credit Hours
<b>First Semester (Fall)</b>		
BIO 111	Anatomy and Physiology *	5
ENG	English Requirement (100 or 111) *	4
HS 117	Nutrition *	2
NUR 100	Nursing Fundamentals	5
NUR 110	Geriatric Nursing	1
NUR 111	Pharmacology I	1
NUR 118	Personal and Community Health	1
		19

### Second Semester (Winter)

NUR 122	Pharmacology II	2
NUR 125	Basic Medical-Surgical Nursing (7½ weeks, 23 hours practice per week)	6
NUR 126	Intermediate Medical-Surgical Nursing (7½ weeks, 23 hours practice per week)	6
PSY 100	Introductory Psychology *	3
		17

### Third Semester (Spring-Summer)

HS 147	Growth and Development *	3
NUR 133	Pharmacology III	2
NUR 135	Parent-Child Nursing (8 weeks, 18 hours practice per week)	6
NUR 145	Advanced Medical-Surgical Nursing (6 weeks, 23 hours practice per week)	5
		16

## Winter Admission

### First Semester (Winter)

BIO 111	Anatomy & Physiology *	5
ENG	English Requirement (100 or 111) *	4
HS 117	Nutrition *	2
NUR 100	Nursing Fundamentals	5
NUR 110	Geriatric Nursing	1
NUR 111	Pharmacology I	1
NUR 118	Personal and Community Health	1
		19

### Second Semester (Spring/Summer)

HS 147	Growth and Development *	3
NUR 122	Pharmacology II	2
NUR 125	Basic Medical-Surgical Nursing (7½ weeks, 23 hours practice per week)	6
NUR 135	Parent-Child Nursing (8 weeks, 18 hours practice per week)	6
		17

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**Third Semester (Fall)**

NUR 126	Intermediate Medical-Surgical Nursing (7½ weeks, 23 hours practice per week) .....	6
NUR 133	Pharmacology III.....	2
NUR 145	Advanced Medical-Surgical Nursing (6 weeks, 23 hours practice per week).....	5
PSY 100	Introductory Psychology * .....	3
		<hr/> 16

**Total Credit Hours for College Certificate Program: 52**

\* These courses may be taken before acceptance and/or entry into the nursing program.

## **Level II - Nursing Program - Registered Nursing Preparation**

**Associate Degree Program: Code 363**

This Associate Degree program provides preparation for the registered nursing licensure examination. Associate Degree Registered Nurses work in both hospitals and nursing homes. They care for people with many kinds of health problems, but they work primarily in acute care. This care involves complicated, technical equipment; it also takes a knowledgeable, skilled and kind person. Acute care nurses often have to make quick decisions. Alertness and energy are essential. *High employability.*

### **Fall Admission**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester (Fall)</b>		
BIO 237	Microbiology * .....	4
CEM 105	Fundamentals of Chemistry * .....	4
HS 220	Pathophysiology ** .....	4
NUR 200	Nursing Role Transition .....	4
		<hr/> 16
<b>Second Semester (Winter)</b>		
HS 244	Medical Ethics ** .....	2
NUR 235	Advanced Parent-Child Nursing (7½ weeks, 12 hours practice per week) .....	5
NUR 255	Mental Health Nursing (7½ weeks, 12 hours practice per week) .....	5
SOC 100	Principles of Sociology * .....	3
		<hr/> 15
<b>Third Half-Semester (Spring)</b>		
NUR 245	Complex Medical-Surgical Nursing (7½ weeks, 20 hours practice per week) .....	6
NUR 260	Nursing Management and Trends .....	2
PLS	Political Science Requirement (108, 112 or 150) * .....	3
		<hr/> 11

## Winter Admission

### First Semester (Winter)

BIO 237	Microbiology *	4
CEM 105	Fundamentals of Chemistry *	4
HS 220	Pathophysiology **	4
NUR 200	Nursing Role Transition	4
		16

### Second Half-Semester (Spring)

HS 244	Medical Ethics **	2
NUR 255	Mental Health Nursing (7½ weeks, 12 hours practice per week)	5
SOC 100	Principles of Sociology *	3
		10

### Third (Fall) Semester

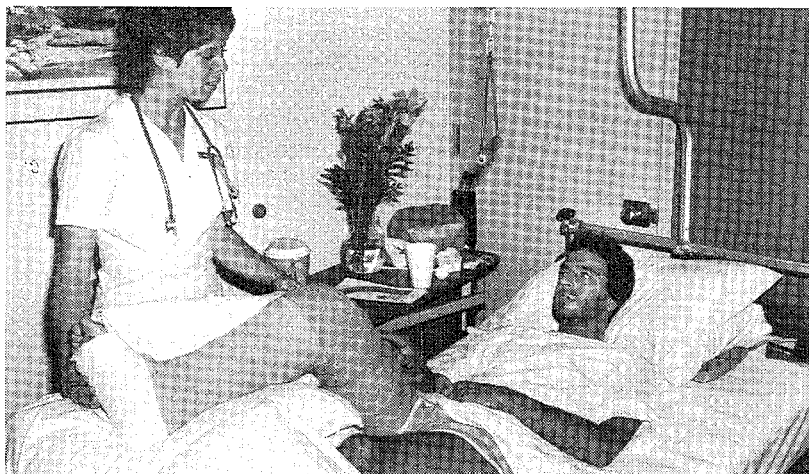
NUR 235	Advanced Parent-Child Nursing (7½ weeks, 12 hours practice per week)	5
NUR 245	Complex Medical-Surgical Nursing (7½ weeks, 20 hours practice per week)	6
NUR 260	Nursing Management and Trends	2
PLS	Political Science Requirement (108, 112 or 150) *	3
		16

**Total Credit Hours for Level II: 42**

**Total Credit Hours for Associate Degree Program [Level I (LPN) and Level II (RN)]: 94**

\* May be taken before acceptance and/or entry into the nursing program

\*\* Some medical or nursing experience is required to enroll in these courses



# PHARMACY TECHNOLOGY

## Pharmacy Technology

College Certificate Program: Code 371

The Pharmacy Technology program combines classroom instruction with lab work and clinical experience to prepare students for technician jobs. The pharmacy technician works under the supervision of registered pharmacists in hospitals, health care agencies and retail outlets such as drugstores. This program has special application procedures; high school chemistry and algebra are required for admission. Contact the Admissions Office or Counseling Office for details. A limited number of students are accepted each year. *Good employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
4	CIS 100	Introduction to Computers .....	3
4	MTH 165	Health Science Mathematics .....	3
3	OS 101	Beginning Typewriting * .....	(3)
1	PHT 100	Introduction to Hospital and Community Pharmacy .....	3
1	RDG 115	Medical Terminology .....	2
			11-14
<b>Second Semester (Winter)</b>			
2	PHT 101	Drug Products and Nomenclature .....	3
5	PHT 102	Drug Distribution Systems and Procedures.....	3
5	PHT 105	Preparation of Medications .....	2
			8
<b>Third Semester (Spring/Summer)</b>			
2	ENG	English Requirement (100 or 111) .....	4
6	PHT 198	Pharmacy Field Experience.....	8
			12

**Total Credit Hours for Program: 31-34**

\* If one year of typing has been taken in high school, or typing speed is 30 words per minute, the student is exempt from this course.

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## PUBLIC SERVICES

### Child Care

Associate Degree Program: Code 348

Advisors: Phillip A. Ludos, Patricia Travis

This program provides career training as a child-care worker. The child-care worker organizes and leads activity of pre-kindergarten children in nursery schools or in playrooms operated for patrons of such places as drop-in centers, hotels, educational institutions and day care centers; organizes and participates in games; reads to children; teaches simple painting, drawing, handiwork, songs and similar activities; directs children in eating, resting and toileting; helps children develop habits of caring for their own clothing, picking up and putting away toys and books; maintains discipline; may serve meals and refreshments to children and regulate rest periods; is involved in helping to meet needs of parents in child rearing. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	CCW 101	Child Development.....	3
1	CCW 105	Practicum I.....	3
1	CCW 108	Educational Experiences in Expressive Arts.....	3
2	CMT 101	Fundamentals of Speaking.....	3
2	ENG	English Requirement (100 or 111).....	4
			<u>16</u>
<b>Second Semester</b>			
2	CCW 103	Alternative Programs in Child Care.....	3
3	CCW 110	Social/Emotional Development.....	3
4	ENG 240	Children's Literature.....	3
4	PSY 200	Child Psychology.....	3
4	**	Elective.....	3
			<u>15</u>
<b>Third Semester</b>			
3	CCW 106	Practicum II.....	3
3	CCW 107	Educational Experiences in Science and Math.....	3
5	CCW 200	Staff/Parent Interpersonal Relations.....	3
5	PLS	Political Science Requirement (108 or 150).....	3
5	**	Elective.....	3
			<u>15</u>

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**Fourth Semester**

6	CCW 100	The Exceptional Child .....	3
6	CCW 114	Practicum III .....	4
6	CCW 111	Day Care Administration <b>or</b>	
	CCW 116	Seminar in Infant Care .....	3
7	CCW 117	Childhood Nutrition .....	2
7	CCW 121	First Aid for the Child Care Worker.....	2
			14

**Total Credit Hours for Program: 60**

**\*\*Recommended Electives** (Consult with advisor before selecting)

CCW 109	Language and Communication .....	3
EC 111	Consumer Economics.....	3
HST 150	Afro-American History.....	3
HUM 101	Introduction to Humanities I.....	3
MUS 183	Afromusicology.....	3
PSY 100	Introductory Psychology.....	3
SOC 100	Principles of Sociology.....	3
SOC 207	Social Problems.....	3

## Correctional Science

**Advisors: Phillip A. Ludos, Ruth Anne Walsh**

Five corrections courses are required by the State of Michigan for employment in a corrections facility. These courses are: Introduction to Corrections (COR 122), Correctional Institutions/Facilities (COR 132), Legal Issues in Corrections (COR 211), Client Relations in Corrections (COR 219) and The Correctional Client: Growth and Development (COR 228). Upon completion of the courses, students are prepared to take entry-level exams at both the county and state levels. Both a certificate and associate degree program are offered. Individuals employed in the correctional field are assisted in career advancement. Field trips to correctional facilities are included in the program. This program is certified by the Michigan Corrections Officers Training Council. *High employability.*

### Correctional Science College Certificate Program: Code 349

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	COR 122	Introduction to Corrections.....	3
1	COR 132	Correctional Institutions.....	3
3	ENG	English Requirement (100 or 108) .....	3-4
4	PSY 100	Introductory Psychology.....	3
4	SOC 100	Principles of Sociology.....	3
			15-16

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**Second Semester**

2	COR 211	Legal Issues in Corrections .....	3
2	COR 219	Client Relations in Corrections .....	3
3	COR 228	The Correctional Client: Growth and Development .....	3
5	PLS	Political Science Requirement (108 or 150) .....	3
5	**	Approved Elective .....	3
			15

**Total Credit Hours for College Certificate: 30-31**

**Correctional Science  
Associate Degree Program: Code 350**

This program requires the first and second semesters of the Correctional Science Certificate Program and the following third and fourth semester courses:

**Third Semester**

6	CJ 100	Introduction to Criminal Justice .....	3
8	CMT 101	Fundamentals of Speaking .....	3
6	PSY 209	Psychology of Adjustment .....	3
7	SOC 202	Criminology .....	3
7	SOC 250	Juvenile Delinquency or CJ 223 Juvenile Justice .....	3
			15

**Fourth Semester**

8	COR 218	Correctional Counseling .....	3
9	COR 227	Seminar in Corrections .....	3
10	PSY 257	Abnormal Psychology .....	3
9	SOC 207	Social Problems .....	3
	**	Approved Elective .....	3
			15

**Total Credit Hours for Associate Degree: 60-61**

**\*\*Recommended Electives (Consult with advisor before selecting)**

BMG 230	Supervisory Management .....	3
CIS 100	Introduction to Computers .....	3
COR 189	Study Problems .....	3-6
COR 199	On-The-Job Training .....	3-6
COR 218	Correctional Counseling .....	3
COR 227	Seminar in Corrections .....	3
HUM 101	Introduction to Humanities I .....	3
MTH 090	Occupational Math .....	3
MTH 160	Basic Statistics .....	4
PHL 101	Introduction to Philosophy .....	3
PSY 200	Child Psychology .....	3
PSY 207	Social Psychology .....	3
SOC 205	Racial and Ethnic Relations .....	3
SOC 207	Social Problems .....	3
SPN 111	First Year Spanish .....	4

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## Criminal Justice

**Associate Degree Program: Code 351**

**Advisors: Phillip A. Ludos, Ruth A. Walsh**

This program provides career training as a criminal justice technician. Upon completion of the program, students have the groundwork to further their studies toward a bachelor's degree in criminal justice. In addition, graduates may be employed in such fields as police work, probation and parole, and juvenile work. Studies involve a combination of sociological theory and pragmatic application which is required of all those in the criminal justice system. Law enforcement, police and community relations, psychology and other aspects of criminal law are also studied. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester</b>			
1	CJ 100	Introduction to Criminal Justice*	3
1	ENG	English Requirement (100, 107 or 111)	3-4
3	PLS	Political Science Requirement (108 or 150)	3
2	PSY 100	Introductory Psychology	3
3	SOC 100	Principles of Sociology	3
			15-16
<b>Second Semester</b>			
6	CJ 111	Police/Community Relations	3
5	CJ 122	Introduction to Corrections	3
4	PSY 209	Psychology of Adjustment	3
2	SOC 205	Racial and Ethnic Relations <b>or</b>	
	SOC 207	Social Problems	3
5	SOC 250	Juvenile Delinquency <b>or</b>	
	CJ 223	Juvenile Justice	3
			15
<b>Third Semester</b>			
7	CJ 208	Criminal Evidence and Procedure	3
7	CJ 224	Criminal Investigation	3
4	CMT 101	Fundamentals of Speaking	3
6	SOC 202	Criminology	3
	**	Elective	3
			15
<b>Fourth Semester</b>			
7	CJ 205	Applied Psychology for Police <b>or</b>	
	PSY 257	Abnormal Psychology	3
8	CJ 209	Criminal Law	3
7	CJ 210	Introduction to Criminalistics	3
8	CJ 225	Seminar in Criminal Justice	3
8	**	Elective	3-4
			15-16

**Total Credit Hours for Program: 60-62**

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**\*\*Recommended Electives** (Consult with advisor before selecting)

BMG 230	Supervisory Management .....	3
CIS 100	Introduction to Computers .....	3
CJ 199	On-the-Job Training.....	3
EC 111	Consumer Economics.....	3
FP 213	Fire Investigation and Arson.....	3
HUM 101	Introduction to Humanities I.....	3
MTH 090	Occupational Mathematics.....	3
MTH 160	Basic Statistics.....	4
PHL 101	Introduction to Philosophy.....	3
PSY 200	Child Psychology.....	3
PSY 207	Social Psychology.....	3
SPN 111	First Year Spanish.....	4

\* May be substituted by successful Police Academy training or background experience.

## Criminal Justice -- Law Enforcement Certification

Associate Degree Program: Code 352

**Advisors: Phillip A. Ludos, Ruth A. Walsh**

This program is designed for students who wish to become **certified** by the State of Michigan for employment in law enforcement. Students entering this program are required to complete the academic program **prior** to entering the police academy component of the program and should follow the course of study by semester **without** deviation. Admission to the police academy portion is based on passing reading, writing and physical activity examinations as well as fingerprinting and criminal history checks. Students who do not enter the academy may complete an associate degree in the Criminal Justice Technician Program, but will not be certified for employment. Students admitted to the Police Academy are required to purchase certain items such as gym clothes, khaki uniforms, textbooks and other supplies. In addition to the general code of conduct, academy students are required to adhere to additional rules of behavior and discipline.

Full-Time Sequence*	Course Title	Credit Hours
<b>First Semester (Winter)</b>		
CJ 100	Introduction to Criminal Justice.....	3
ENG	English Requirement (100, 107 or 111) .....	3-4
PLS	Political Science Requirement (108 or 150).....	3
PSY 100	Introductory Psychology.....	3
SOC 100	Principles of Sociology.....	3
		15-16
<b>Second Semester (Spring)</b>		
CJ 150	Criminal Justice Physical Conditioning.....	3
CMT 101	Fundamentals of Speaking .....	3
		6

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**Third Semester (Fall)**

CJ 111	Police/Community Relations .....	3
CJ 205	Applied Psychology for Police or	
PSY 257	Abnormal Psychology .....	3
CJ 223	Juvenile Justice or	
SOC 250	Juvenile Delinquency.....	3
PSY 209	Psychology of Adjustment.....	3
SOC 202	Criminology.....	3
		<u>15</u>

**Fourth Semester (Winter)**

CJ 122	Introduction to Corrections.....	3
CJ 209	Criminal Law .....	3
CJ 225	Seminar in Criminal Justice.....	3
	Elective (see advisor for approved course).....	3
		<u>12</u>

**Fifth Semester (Spring/Summer)**

CJ 221	Law Enforcement Training .....	16
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**Total Credit Hours for Program: 64-65**

\* An advisor can suggest a part time sequence.

## Fire Protection

**Associate Degree Program: Code 335****Advisor: Phillip A. Ludos**

This program provides career training as a fire protection technician. After completing the Fire Protection program, students will be familiar with the various aspects of fire protection and fire prevention. This includes studies of industrial and public buildings, homes and other properties. Factors such as water supplies and delivery are discussed. Students in this program may seek employment in both the public and private sectors involving fire protection training and other related areas. There is some training in the chemistry of combustibles. *Average employability.*

Full Time Sequence*	Course Title	Credit Hours
<b>First Semester</b>		
ENG	English Requirement (100, 107 or 111) .....	3-4
FP 100	Introduction to Fire Protection.....	3
FP 103	Flammable Hazardous Materials .....	3
FP 111	Hydraulics .....	3
PSY 100	Introductory Psychology.....	3
		<u>15-16</u>

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**Second Semester**

CIS 100	Introduction to Computers .....	3
FP 109	Incident Command.....	3
FP 112	Fire Company Supervision.....	3
FP 122	Fire Prevention Theory and Applications.....	3
PLS	Political Science Requirement (108 or 150).....	3
		<u>15</u>

**Third Semester**

FP 116	Building Construction for Fire Service .....	3
FP 209	Command and Control of Major Fires .....	3
FP 210	Introduction to Fire Administration.....	3
FP 213	Fire Investigation and Arson.....	3
**	Elective.....	3
		<u>15</u>

**Fourth Semester**

FP 099	Labor Relations in the Public Sector.....	3
FP 216	Legal Aspects of Fire Protection .....	3
FP 224	Protection Systems.....	3
FP 250	Fire Protection Training Methodology .....	3
**	Elective.....	3
		<u>15</u>

**Total Credit Hours for Program: 60-61****\*\*Recommended Electives**

FP 124	Fire Protection Systems I.....	3
SOC 100	Principles of Sociology.....	3

Non-traditional elective credit may be awarded for current certification from the following recognized fire and emergency courses:

Emergency Medical Technician.....	6
Emergency Rescue .....	2
Extrication .....	2
F.F.T.C. - 240 Hour Course.....	3
Fire Company Management .....	3
Fire Fighter First Responder.....	3
Fire Officer I (State Fire Course).....	3

\*An advisor can suggest a part-time sequence.

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# RADIOGRAPHY

## Radiography

### Associate Degree Program: Code 341

The Radiography program provides career training as a radiographer. This medical specialist is concerned with the proper operation of x-ray equipment and the preparation of patients for various types of diagnostic procedures. Upon the physician's request, the radiographer exposes x-ray films to produce radiographs of internal body parts. These radiographs may reveal evidence of disease, injury, or other significant medical information. The radiographer adjusts x-ray equipment to correct settings for each examination; positions the patient; determines proper voltage, current and desired exposure time for each radiograph; makes sure that equipment is in proper working order; works with the physician on procedures requiring radio-opaque mixtures which are administered to the patient so that internal organs may be clearly identified on exposed x-ray film; and may be required to operate mobile x-ray equipment at the patient's bedside or in the operating room. *High employability.*

#### Admission Criteria:

- 1) Application by January 15 to Admissions Office
- 2) High school graduation or G.E.D.
- 3) One year of high school biology or BIO 101 with a grade of 'C' or better
- 4) One year of high school algebra or MTH 097 with a grade of 'C' or better
- 5) One year of high school physics of PHY 105 or 110 with a grade of 'C' or better
- 6) Applicants are screened using the following criteria:
  - a) Completion of all pre-entry courses (Biology, Algebra and Physics) by January 1
  - b) Priority is given to Washtenaw County residents
  - c) Date of application to the program
  - d) The remaining applicants are alternates for admission and are granted priority for admission to the next class. Alternates must update their application by contacting the Admissions Office
- 7) Students must pass a physical examination taken at their expense not more than three months before entering the clinical training phase of the program
- 8) Students must maintain personal health coverage. Contact the Admissions Office or Counseling Office for details of application procedure. Limited number of students accepted each year. One entrance date -- SUMMER.

## FIRST YEAR

Course Number	Course Title	Credit Hours
<b>First Semester (Summer) -- 7 weeks</b>		
MTH 165	Health Science Math *.....	3
RAD 100	Introduction to Radiography.....	2
RAD 101	Methods of Patient Care.....	2
		7
<b>Second Semester (Fall) - 15 weeks</b>		
BIO 111	Anatomy and Physiology *.....	5
RAD 110	Clinical Education (second 7½ weeks).....	1
RAD 111	Fundamentals of Radiography (first 7½ weeks).....	2
RAD 112	Radiographic Positioning.....	2
RAD 113	Radiographic Processing (second 7½ weeks).....	2
RDG 115	Medical Terminology *.....	2
		14
<b>Third Semester (Winter) -- 15 weeks</b>		
ENG	English Requirement (100 or 111) *.....	4
RAD 120	Clinical Education.....	2
RAD 123	Radiographic Positioning II.....	2
RAD 124	Principles of Radiographic Exposure.....	3
RAD 125	Radiologic Procedures and Related Anatomy.....	3
RAD 127	Principles of Radiographic Exposure Laboratory.....	1
		15
<b>Fourth Half-Semester (Spring) -- 7 weeks</b>		
RAD 130	Clinical Education.....	2
RAD 135	Pathology for Radiographers.....	2
		4
<b>Fourth Half-Semester (Summer) -- 7 weeks</b>		
PLS	Political Science Requirement (108, 112, or 150) *.....	3
RAD 140	Clinical Education.....	2
		5

## SECOND YEAR

<b>Fifth Semester (Fall) -- 15 weeks</b>		
CIS	Elective *.....	3
PSY 100	Introductory Psychology *.....	3
RAD 215	Radiography of the Skull.....	2
RAD 217	Clinical Education.....	3
RAD 218	Radiation Biology (first 7½ weeks).....	2
RAD 219	Radiation Protection (second 7½ weeks).....	2
		15
<b>Sixth Semester (Winter) -- 15 weeks</b>		
PHY 143	Radiologic Physics.....	4
RAD 220	Management of Rad. Environment.....	2
RAD 225	Clinical Education.....	3
SOC	Sociology Requirement (100 or 201) *.....	3
		12

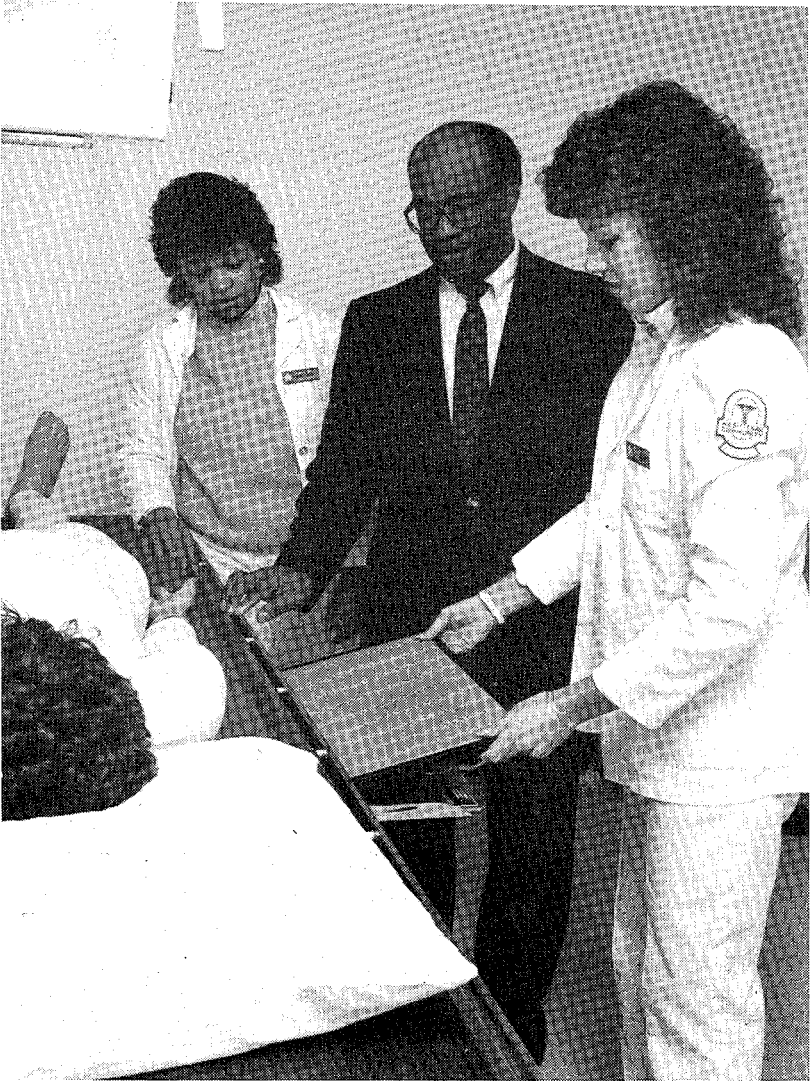
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**Seventh Semester (Spring) -- 7 weeks**

RAD 097	Registry Review.....	1
RAD 240	Clinical Education.....	2
		<u>3</u>

**Total Credit Hours for Program: 75**

\* These courses may be taken before acceptance and/or entry into the Radiography program.



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# RESPIRATORY THERAPY PROGRAM

## Respiratory Therapy

Associate Degree Program: Code 321

This Associate Degree (or technician transfer) program provides career training as a respiratory therapist. Respiratory therapists treat persons with respiratory problems. This treatment may range from giving temporary relief to patients with chronic asthma or emphysema to giving emergency care to victims of heart failure, stroke, drowning, or shock. They are among the first medical specialists called for emergency treatment of acute respiratory conditions arising from head injury or drug poisoning. They follow doctors' orders and use special equipment such as respirators and positive-pressure breathing machines to administer gas therapy, aerosol therapy, and other treatment involving respiration. They work mainly in hospital intensive care units with critically ill patients.

This program is conducted in cooperation with: St. Joseph Mercy Hospital, University Hospital, The University of Michigan Medical Center, Veterans Administration Hospital, Ann Arbor; Beyer Memorial Hospital, Ypsilanti; Annapolis Hospital, Wayne; Heritage Hospital, Wayne; and Children's Hospital of Michigan, Detroit.

Program has special application procedure. Contact admissions office for details. Only forty students accepted each year. *High employability.*

Course Number	Course Title	Credit Hours
<b>First Semester</b>		
BIO 111	Anatomy and Physiology.....	5
CEM 057	Introduction to Chemistry and	
CEM 058	Introduction to Chemistry Lab or	
CEM 105	Fundamentals of Chemistry .....	4
RTH 120	Introduction to Respiratory Therapy .....	3
RTH 121	Basic Equipment & Procedures .....	4
		16
<b>Second Semester</b>		
MTH 165	Health Science Math.....	3
RTH 198	General Clinical Practice I.....	3
RTH 106	Chemistry for Respiratory Therapists.....	3
RTH 148	Pharmacology for Respiratory Therapists .....	2
RDG 115	Medical Terminology .....	2
		13

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### Third Semester

RTH 122	Respiratory Physiology.....	3
RTH 123	Respiratory Pathophysiology.....	2
RTH 149	Pathology for Respiratory Therapists.....	3
RTH 199	General Clinical Practice II.....	3
RTH 213	Intensive Respiratory Care .....	4
		<u>15</u>

### Fourth Semester

RTH 200	Advanced Clinical Practice .....	4
RTH 212	Ventilators .....	3
RTH 214	Cardiodiagnostics.....	3
RTH 219	Pediatric Respiratory Therapy .....	3
RTH 222	Pulmonary Function Testing .....	2
PLS	Political Science Requirement (108, 112 or 150).....	3
		<u>18</u>

### Fifth Semester

BIO 147	Hospital Microbiology or	
BIO 237	Microbiology.....	1-4
PHY 131	Physics for Respiratory Therapists.....	3
RTH 201	Specialty Clinical Practice.....	2
RTH 202	Pediatric Clinical Practice .....	2
RTH 217	Seminar - Respiratory Therapy.....	2
RTH 221	Pulmonary Rehabilitation.....	1
ENG	English Requirement (100, 107, 111, or 122) .....	3-4
		<u>14-18</u>

**Total Credit Hours for Program: 76-80**



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## Division of Humanities and Social Sciences Programs



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**LIBERAL ARTS TRANSFER PROGRAM --  
Humanities/Social Sciences Option  
Associate Degree Program: Code 011**

This Liberal Arts program of study is designed to provide a broad base of skills and methods with which to acquire knowledge. The program is intended for students planning to transfer to a baccalaureate degree-granting institution. The program also provides for the intellectual, cultural, and personal development of individuals. Programs may differ slightly from college to college. Please check with a counselor for your specific college and program.

**Graduation Requirements:**

To complete the program of study in Liberal Arts leading to an Associate Degree, a student must:

1. Complete a minimum of 60 college credit hours (15 must be earned at WCC) covering the course and distribution requirements as detailed below.
2. Complete seven credit hours of English Composition (ENG 111 and 122).
3. Complete three credit hours of Political Science (PLS 108, 112, or 150).
4. Complete four credit hours of Mathematics (Mathematics 169 or higher).
5. Complete the following distribution options:  
Complete 12-15 credit hours in each of two discipline groupings for a total of 27 credit hours, as follows:
  - a. Humanities (12-15 credit hours):  
Disciplines: Art, Communications and Theatre, Dance, English, French, General Studies, German, Humanities, Music, Philosophy, Reading, or Spanish
  - b. Social Sciences (12-15 credit hours):  
Disciplines: Anthropology, Black Studies, Economics, Geography, History, Political Science, Psychology, or Sociology
6. Complete 19 credit hours of recommended transfer courses from the Humanities, Social Science, Math, and/or Natural Science discipline groupings.

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## Division of Math and Natural Sciences Programs



# COMPUTER SCIENCE TRANSFER PROGRAM

Associate Degree Program: Code 220

Students who complete this program are awarded an Associate Degree. Students planning to transfer to a four-year institution should check with that school to verify that the following courses will transfer.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	CPS 186	Introduction to Pascal Programming .....	4
4	ENG 111	Composition I .....	4
2	MTH 191	Calculus I .....	5
1	MTH 184	Discrete Mathematics I .....	4
			17
<b>Second Semester (Winter)</b>			
2	CPS 286	Advanced Pascal Programming.....	4
3	MTH 192	Calculus II .....	4
5	PHY 211	Analytical Physics I .....	5
3	PSY 100	Introductory Psychology.....	3
			16
<b>Third Semester (Fall)</b>			
6	CPS 294	Comparative Languages .....	4
4	MTH 293	Calculus III .....	4
6	PHY 222	Analytical Physics II .....	5
5	PLS	Political Science Requirement (PLS 108, 112 or 150) .....	3
			16
<b>Fourth Semester (Winter)</b>			
7	CPS 290	Program Design Methodologies .....	4
8	CPS 291	File Structures <b>or</b>	
	CPS 292	Assembler Language Programming.....	4
7		6 credits of approved electives in Humanities;	
8		English Composition (ENG 122) recommended..	6
			14

**Total Credit Hours for Program: 63**

NOTE: Students intending to transfer to the UofM College of Literature, Science and Arts must satisfy the UofM foreign language requirement.

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**LIBERAL ARTS TRANSFER PROGRAM --  
Math/Natural Sciences Option  
Associate Degree Program: Code 223**

This Liberal Arts Transfer program is designed to provide a broad base of skills and methods with which to acquire knowledge. The program is intended for students planning to transfer to a baccalaureate degree-granting institution. The program also provides for the intellectual, cultural, and personal development of individuals. Programs may differ slightly from college to college. Please check with a counselor for your specific college and program.

**Graduation Requirements:**

To complete the Program of Study in Liberal Arts leading to an Associate of Arts Degree, a student must:

1. Complete a minimum of 60 college credit hours (15 must be earned at WCC) covering the course and distribution requirements as detailed below.
2. Complete seven credit hours of English Composition (ENG 111 and 122).
3. Complete three credit hours of Political Science (PLS 108, 112, or 150).
4. Complete four credit hours of Mathematics (Mathematics 169 or above).
5. Complete the following distribution options:  
Complete 9-18 credit hours in each of two discipline groupings, for a total of 27 credit hours, as follows:
  - a. Math (9-18 credit hours):  
Discipline: Mathematics
  - b. Natural Sciences (9-18 credit hours)  
Disciplines: Astronomy, Biology, Chemistry, Geology, or Physics
6. Complete 19 credit hours of recommended transfer courses from the Humanities, Social Science, Math, and/or Natural Science discipline groupings.

# PRE-ENGINEERING PROGRAMS

Pre-Engineering Associate Degree programs are for students desiring a career in engineering. Graduates of the pre-engineering program qualify to transfer into the engineering programs at four-year colleges and universities and meet the minimum requirements for placement at the junior level. As the requirements vary slightly from one engineering field to another, two curricula have been developed for the program. Students should select Curriculum I or II depending on their field of interest. Further, it is important that students meet with a program advisor in order to clarify the options available.

## Curriculum I Pre-Engineering Science (All fields except Chemical Engineering and Materials Engineering)

Associate Degree Program: Code 221

Course Number	Course Title	Credit Hours
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### First Semester (Fall)

MTH 191 .....	Calculus I .....	5
CPS 187 .....	Introduction to FORTRAN Programming.....	4
ENG 111.....	Composition I .....	4
CEM 111 .....	General Chemistry I .....	4

First Semester Total: 17

### Second Semester (Winter)

MTH 192 .....	Calculus II .....	4
MTH 197 .....	Linear Algebra.....	4
CEM 122 .....	General Chemistry II .....	4

Government	{	PLS 108.....Government and Society	}	3
		PLS 112.....Intro. to American Government		
		PLS 150.....State and Local Gov. and Politics		

Elective <sup>1</sup>	{	ID 100.....Technical Drawing	}	3 or 4
		ENG 107 *.....Technical Communications		
		ENG 122.....Composition II		

Second Semester Total: 18-19

### Third Semester (Fall)

MTH 293 .....	Calculus III <sup>2</sup> .....	4						
PHY 211 .....	Analytical Physics I .....	5						
Elective	<table style="border: none; width: 100%;"> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">PSY 100 .....</td> <td style="padding-left: 5px;">Introductory Psychology</td> <td rowspan="3" style="border-left: 1px solid black; padding-left: 5px; vertical-align: middle;">} 3</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">EC 211 .....</td> <td style="padding-left: 5px;">Principles of Economics I</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">HST 101 .....</td> <td style="padding-left: 5px;">Western Civilization to 1500</td> </tr> </table>	PSY 100 .....	Introductory Psychology	} 3	EC 211 .....	Principles of Economics I	HST 101 .....	Western Civilization to 1500
PSY 100 .....	Introductory Psychology	} 3						
EC 211 .....	Principles of Economics I							
HST 101 .....	Western Civilization to 1500							
Elective	<table style="border: none; width: 100%;"> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">PHL 101 .....</td> <td style="padding-left: 5px;">Introduction to Philosophy</td> <td rowspan="3" style="border-left: 1px solid black; padding-left: 5px; vertical-align: middle;">} 3</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">ENG 213 *</td> <td style="padding-left: 5px;">World Literature I</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">ART 130 .....</td> <td style="padding-left: 5px;">Art Appreciation</td> </tr> </table>	PHL 101 .....	Introduction to Philosophy	} 3	ENG 213 *	World Literature I	ART 130 .....	Art Appreciation
PHL 101 .....	Introduction to Philosophy	} 3						
ENG 213 *	World Literature I							
ART 130 .....	Art Appreciation							

Third Semester Total: 15

### Fourth Semester (Winter)

MTH 295 .....	Differential Equations <sup>3</sup> .....	4								
PHY 222 .....	Analytical Physics II .....	5								
Elective	<table style="border: none; width: 100%;"> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">SOC 100 .....</td> <td style="padding-left: 5px;">Principles of Sociology</td> <td rowspan="3" style="border-left: 1px solid black; padding-left: 5px; vertical-align: middle;">} 3</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">EC 222 *</td> <td style="padding-left: 5px;">Principles of Economics II</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">HST 102 .....</td> <td style="padding-left: 5px;">Western Civilization from 1500</td> </tr> </table>	SOC 100 .....	Principles of Sociology	} 3	EC 222 *	Principles of Economics II	HST 102 .....	Western Civilization from 1500		
SOC 100 .....	Principles of Sociology	} 3								
EC 222 *	Principles of Economics II									
HST 102 .....	Western Civilization from 1500									
Elective	<table style="border: none; width: 100%;"> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">ENG 200 .....</td> <td style="padding-left: 5px;">Shakespeare</td> <td rowspan="4" style="border-left: 1px solid black; padding-left: 5px; vertical-align: middle;">} 3</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">ENG 224 *</td> <td style="padding-left: 5px;">World Literature II</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">HUM 101 .....</td> <td style="padding-left: 5px;">Introduction to Humanities I</td> </tr> <tr> <td style="border-left: 1px solid black; padding-left: 5px;">HUM 102 .....</td> <td style="padding-left: 5px;">Introduction to Humanities II</td> </tr> </table>	ENG 200 .....	Shakespeare	} 3	ENG 224 *	World Literature II	HUM 101 .....	Introduction to Humanities I	HUM 102 .....	Introduction to Humanities II
ENG 200 .....	Shakespeare	} 3								
ENG 224 *	World Literature II									
HUM 101 .....	Introduction to Humanities I									
HUM 102 .....	Introduction to Humanities II									

Fourth Semester Total: 15

**Total Credit Hours for Program: 65-66**

\* Recommended elective.

<sup>1</sup> Technical Drawing is required for Civil, Mechanical, and Naval Engineering at the University of Michigan. Some engineering schools may require Composition II.

<sup>2</sup> Required for Chemical, Civil, Materials, Mechanical and Environmental Science Engineering at the University of Michigan.

<sup>3</sup> It is recommended to take Differential Equations before Analytical Physics II. Therefore, students may want to take Calculus III, the prerequisite for Differential Equations, during the spring-summer semester following the second semester. Differential Equations would then be taken in the third semester.

## Curriculum II Pre-Engineering Science -- Chemical and Materials Engineering Option

Associate Degree Program: Code 222

Course Number	Course Title	Credit Hours
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### First Semester (Fall)

MTH 191 .....	Calculus I .....	5
CPS 187 .....	Introduction to FORTRAN Programming.....	4
ENG 111.....	Composition I .....	4
CEM 111 .....	General Chemistry I .....	4

First Semester Total: 17

### Second Semester (Winter)

MTH 192 .....	Calculus II .....	4
MTH 197 .....	Linear Algebra.....	4
CEM 122 .....	General Chemistry II .....	4
EC 211.....	Principles of Economics I.....	3

Government	PLS 108..... Government and Society PLS 112..... Intro to American Government PLS 150..... State and Local Gov. and Politics	3
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Second Semester Total: 18

### Third Semester (Fall)

MTH 293 .....	Calculus III <sup>5</sup> .....	4
PHY 211 .....	Analytical Physics I .....	5
CEM 211 .....	Organic Chemistry I.....	3

Elective	PHL 101..... Introduction to Philosophy ENG 213 *..... World Literature I ART 130 .....	3
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Third Semester Total: 15

### Fourth Semester (Winter)

MTH 295 .....	Differential Equations <sup>5</sup> .....	4
PHY 222 .....	Analytical Physics II .....	5
CEM 222 .....	Organic Chemistry II.....	5

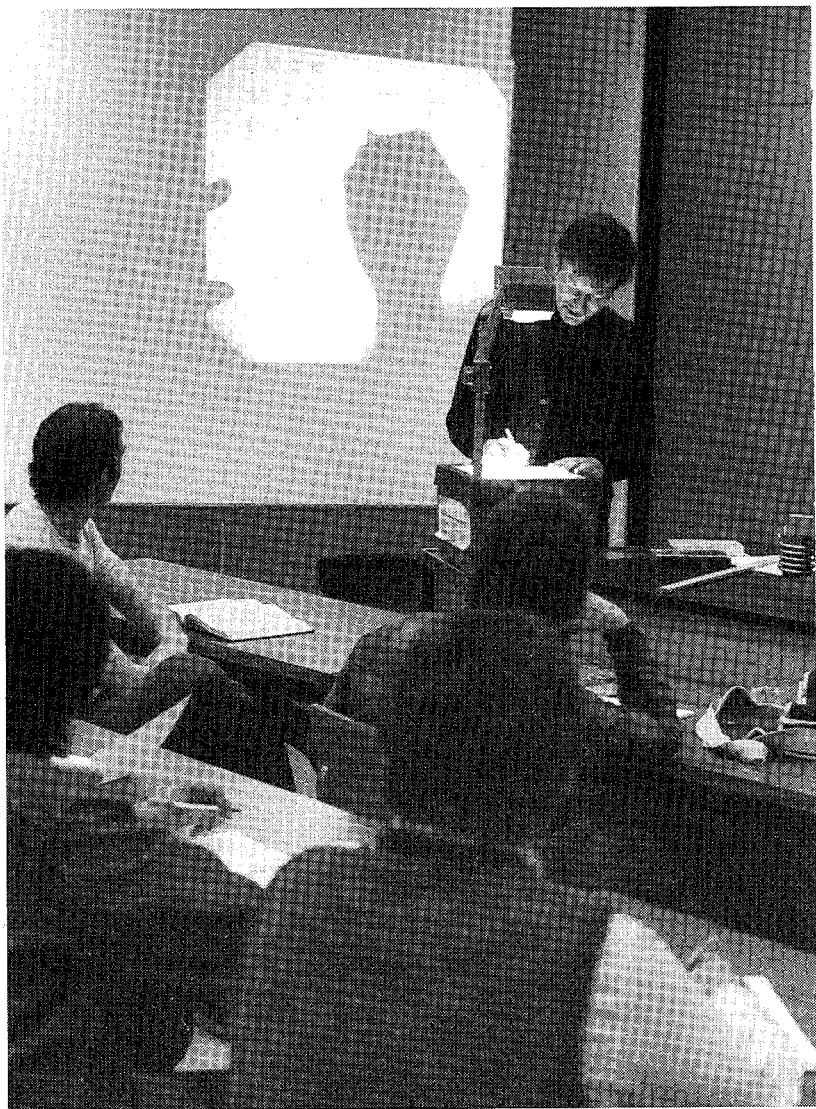
Elective	ENG 200..... Shakespeare ENG 224 *..... World Literature II HUM 101..... Introduction to Humanities I HUM 102..... Introduction to Humanities II	3
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Fourth Semester Total: 17

**Total Credit Hours for Program: 67**



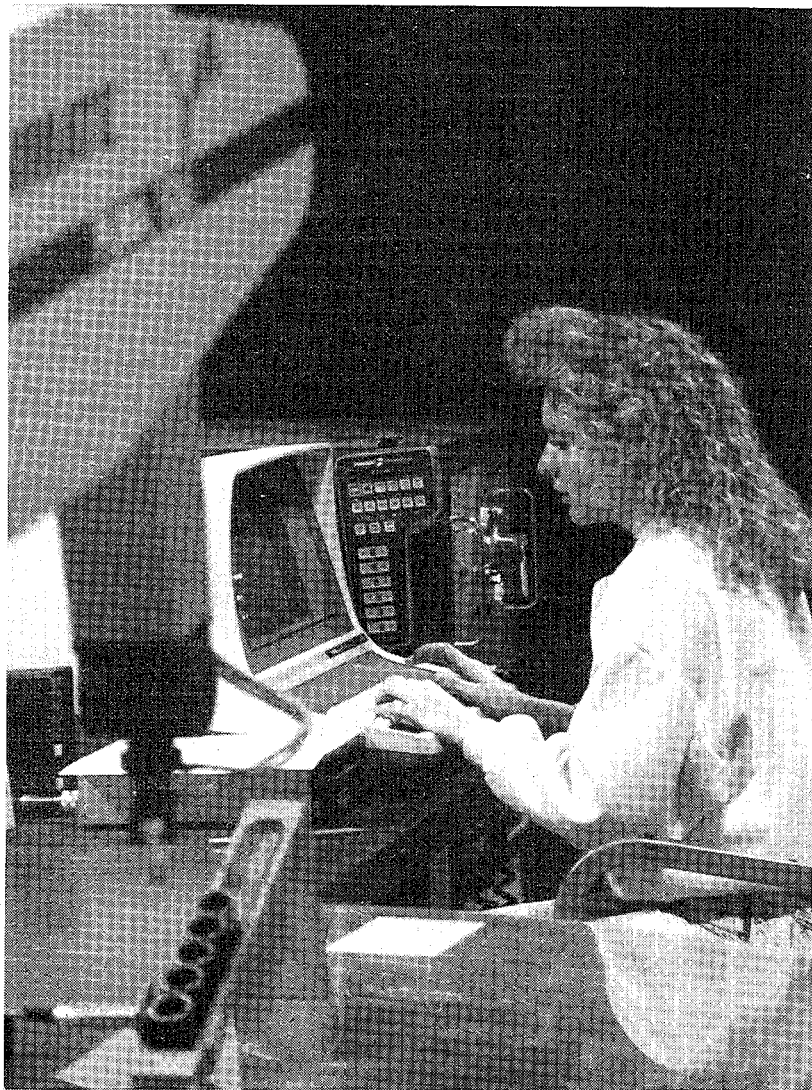
- 4 Recommended elective.  
Some engineering schools may require Composition II in place of a Social Science or Humanities. Please check with the engineering school about specific requirements.
- 5 It is recommended to take Differential Equations before Analytical Physics II. Therefore, students may want to take Calculus III, the prerequisite for Differential Equations, during the spring-summer semester following the second semester. Differential Equations would then be taken in the third semester.





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# Division of Technology Programs



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# AUTOMOTIVE SERVICES

## Automotive Body Repair

College Certificate Program: Code 414

This program provides career training as an auto body repair technician. Auto body repairers are the workers who straighten bent frames, remove dents, and replace damaged parts that are beyond repair. Usually they can fix all types of vehicles, but most repairers work mainly on cars and small trucks. They receive instruction from their supervisors who have determined which parts are to be restored or replaced and how much time the job should take. They use special machines to align damaged frames and body sections and tools such as a pneumatic metal-cutting gun, acetylene torch, welding equipment, hydraulic jack, hand prying bar, and pneumatic hammer. They also do filling of dents with plastic or solder, then file, grind, smooth and shape for painting. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	ABR 111	Auto Body Repair Fundamentals .....	4
2	ABR 112	Auto Refinishing Fundamentals .....	4
1	ABR 113	Light Body Service.....	1
1	ABR 114	Applied Auto Body Welding .....	1
2	MTH 090	Occupational Mathematics.....	3
1	WF 101	Acetylene Welding .....	2
			15
<b>Second Semester (Winter)</b>			
3	ABR 123	Auto Body Repair Applications .....	4
4	ABR 124	Auto Refinishing Applications .....	4
3	ABR 127	Major Repair Fundamentals .....	2
3	ENG 100	Communication Skills.....	4
4	WF 102	Arc Welding.....	2
			16
<b>Spring/Summer Semester</b>			
5	ABR 125	Flat Rate Estimating.....	2
5	ABR 126	Fundamentals of Frame and Body Alignment.....	2
			4

**Total Credit Hours for Program: 35**

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## Automotive Body Service

### Associate Degree Program: Code 411

This program provides career training as an auto body service technician. This program is a combination of the auto body repairer and automobile spray painter programs. Upon completion of the program one becomes a master technician. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	ABR 111	Auto Body Repair Fundamentals .....	4
2	ABR 112	Auto Refinishing Fundamentals .....	4
1	ABR 113	Light Body Service.....	1
1	ABR 114	Applied Auto Body Welding .....	1
2	MTH 090	Occupational Mathematics.....	3
1	WF 101	Acetylene Welding .....	2
			15
<b>Second Semester (Winter)</b>			
3	ABR 123	Body Repair Applications .....	4
3	ABR 124	Auto Refinishing Applications .....	4
4	ABR 127	Major Repair Fundamentals .....	2
4	AS 097	Automotive Service Fundamentals .....	2
4	WF 102	Arc Welding.....	2
			14
<b>Spring/Summer Semester</b>			
5	ABR 125	Flat Rate Estimating.....	2
5	ABR 126	Fundamentals of Frame and Body Alignment.....	2
			4
<b>Third Semester (Fall)</b>			
6	ABR 219	Major Repair Procedures.....	4
7	ABR 220	Enamel Refinishing Practices .....	4
7	AS 124	Wheel Balance and Alignment .....	2
6	ENG 100	Communication Skills.....	4
			14
<b>Fourth Semester (Winter)</b>			
9	ABR 199	On-The-Job Training* .....	4
8	ABR 230	Specialized Study .....	4
8	AS 227	Heating and Air Conditioning .....	2
9	PLS 108	Government and Society.....	3
			13
<b>Total Credit Hours: 60</b>			

\* Additional 4 hours ABR 230 Specialized Study or Recommended Elective may be substituted for ABR 199 On-The-Job Training.

## Automotive Mechanics

### College Certificate Program: Code 418

This program provides career training as an auto mechanic. The mechanic must have the ability and skill to make accurate diagnosis of mechanical problems. This requires good reasoning ability as well as a thorough knowledge of automobiles. The mechanic performs minor repairs, replaces and adjusts fuel, electrical and cooling system components. Upon completion of this program, students will be prepared to take the following certification tests: engine repair, brakes, and manual drive train and axle. High employability.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	AS 097	Automotive Service Fundamentals .....	2
1	AS 111	Cylinder Head Service .....	2
2	AS 113	Manual Trans. and Drivetrains .....	2
3	AS 116	Automotive Electronics.....	2
3	AS 118	Fuel Systems .....	2
1	AS 125	Brake Systems.....	2
3	WF 101	Acetylene Welding.....	2
			14
<b>Second Semester (Winter)</b>			
2	AS 121	Engine Repair .....	2
4	AS 126	Electrical Systems.....	2
4	AS 128	Fuel Injection.....	2
5	AS 129	Diagnosis and Repair I .....	2
2	AS 215	Brake Systems Service.....	2
5	ENG 100	Communication Skills.....	4
			14
<b>Spring/Summer Semester</b>			
6	AS 124	Wheel Balance and Alignment.....	2
6	AS 219	Diagnosis and Repair II .....	3
			5

**Total Credit Hours in Program: 33**

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# Automotive Service Technology

Associate Degree Program: Code 455

This program provides training as an automotive technician. Upon completion, students have the knowledge to pass state and national exams to become certified Master Automotive Technicians. The tests one would be prepared to take are: Engine Repair, Automotive Transmissions, Manual Drive Train and Axles, Suspension and Steering, Brakes, Electrical Systems, Heating and Air Conditioning, and Engine Performance. *Very high employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	AS 097	Automotive Service Fundamentals .....	2
1	AS 111	Cylinder Head Service .....	2
2	AS 113	Manual Trans. and Drivetrains .....	2
3	AS 116	Automotive Electronics .....	2
3	AS 118	Fuel Systems .....	2
1	PHY 110	Applied Physics .....	4
2	WF 101	Acetylene Welding .....	2
			<hr/> 16
<b>Second Semester (Winter)</b>			
2	AS 121	Engine Repair .....	2
5	AS 125	Brake Systems .....	2
4	AS 126	Electrical Systems .....	2
4	AS 128	Fuel Injection .....	2
5	AS 129	Diagnosis and Repair I .....	2
3	ENG 100	Communication Skills .....	4
			<hr/> 14
<b>Spring/Summer Semester</b>			
7	AS 124	Wheel Balance and Alignment .....	2
6	AS 219	Diagnosis and Repair II .....	3
			<hr/> 5
<b>Third Semester (Fall)</b>			
9	AS 212	Automatic Transmissions - Mechanical .....	2
8	AS 214	Steering and Suspension Systems .....	2
6	AS 215	Brake System Service .....	2
7	AS 216	Electrical Circuits .....	2
8	AS 218	Engine Performance Diagnosis .....	2
4	PLS 108	Government and Society .....	3
			<hr/> 13
<b>Fourth Semester (Winter)</b>			
10	AS 222	Automatic Transmissions - Hydraulic Systems .....	2
9	AS 228	Driveability .....	2
10	AS 229	Advanced Diagnosis and Repair .....	4
12	AS 250	New Car Products .....	2
5	**	Elective .....	3
			<hr/> 13

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**Spring/Summer Semester**

11	AS 227	Heating and Air Conditioning.....	2
12	AS 230	Practical Field Experience.....	2
11	AS 232	Automatic Trans. and Overdrive Trans. or	
11	AS 238	Computer Engine Controls.....	<u>2</u>
			6

**Total Program Credit Hours: 67****\*\*Recommended Electives**

BMG 160	Principles of Sales.....	3
BMG 209	Small Business Management.....	3
EC 150	Labor Relations.....	3
PSY 150	Industrial Psychology.....	3

## Automotive Spray Painting

### College Certificate Program: Code 413

This program provides training as an automotive spray painter. This person repaints automotive vehicles, removes old paint from vehicles or damaged or repaired portions of vehicles, mixes paints to attain specified color or to match color of vehicle, and paints vehicle or portion of vehicle with spray gun. *Average employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
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**First Semester (Fall)**

1	ABR 111	Auto Body Repair Fundamentals.....	4
1	ABR 112	Auto Refinishing Fundamentals.....	4
2	ABR 113	Light Body Service.....	1
2	ABR 114	Applied Auto Body Welding.....	1
3	MTH 090	Occupational Mathematics.....	3
2	WF 101	Acetylene Welding.....	<u>2</u>
			15

**Second Semester (Winter)**

2	ABR 124	Auto Refinishing Applications.....	4
4	ABR 199	On-The-Job Training*.....	2
3	ABR 230	Specialized Study.....	4
4	ENG 100	Communication Skills.....	<u>4</u>
			14

**Spring/Summer**

4	ABR 125	Flat Rate Estimating.....	2
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**Total Credit Hours for Program: 31**

\* An additional two hours in ABR 230 Specialized Study or Recommended elective may be substituted for ABR 199 On-The-Job Training.



# DRAFTING PROGRAMS

## Architectural Drafting

Associate Degree Program: Code 421

This program provides career training in architectural drafting. Drafters prepare detailed drawings based on rough sketches, specifications and calculations made by scientists, engineers, architects, and designers. They also calculate the strength, quality, quantity and cost of materials. Final drawings contain a detailed view of the object from all sides as well as specifications for materials to be used, procedures to be followed, and other information necessary to complete the job. In preparing drawings drafters use compasses, dividers, protractors, triangles and other drafting devices. To help solve technical problems, they also use engineering handbooks, tables and calculators. *Average to high employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	ARC 111	Architectural Drawing I.....	6
1	ARC 117	Construction Materials.....	3
6	ENG	English Requirement (091 or 111) .....	4
5	MTH 152	Applied Geometry and Trigonometry .....	4
			<u>17</u>
<b>Second Semester</b>			
3	ARC 100	Specifications.....	1
2	ARC 120	Mechanical and Electrical Systems in Buildings .....	3
2	ARC 122	Architectural Drawing II.....	6
5	ARC 150	Presentation Drawings and Models .....	4
6	ARC 109	Site Layout or	
	ARC 209	Surveying.....	3
			<u>17</u>
<b>Third Semester</b>			
5	ARC 207	Estimating Construction Costs I.....	2
4	ARC 210	Structure in Architecture .....	2
3	ARC 213	Architectural Drawing III.....	6
2	ENG 100	Communication Skills.....	4
3	PHY 111	General Physics .....	4
			<u>18</u>

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**Fourth Semester**

6	ARC 208	Estimating Construction Costs II.....	2
4	ARC 224	Architectural Drawing IV.....	6
7	PLS 108	Government and Society.....	3
7	PSY 150	Industrial Psychology.....	3
			<hr/>
			14

**Total Credit Hours for Program: 66**

## **Architectural Drafting Detailing**

**College Certificate Program: Code 422**

This program provides career training as an architectural drafting detailer. Detailers perform many of the same tasks as a Drafting Technician, drawing each part shown on the layout and give dimensions, materials and other information to make the drawing clear and complete. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
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**First Semester**

1	ARC 111	Architectural Drawing I.....	6
2	ARC 117	Construction Materials.....	3
5	ENG	English Requirement (091 or 111).....	4
4	MTH 169	Intermediate Algebra.....	4
			<hr/>
			17

**Second Semester**

4	ARC 100	Specifications.....	1
3	ARC 120	Mechanical and Electrical Systems in Buildings....	3
2	ARC 122	Architectural Drawing II.....	6
6	ARC 150	Presentation Drawings and Models.....	4
5	ARC 109	Site Layout or	
	ARC 209	Surveying.....	3
			<hr/>
			17

**Total Credit Hours for Program: 34**

## **Computer Aided Drafting Technology (CAD)**

The CAD programs provide career training as a CAD Operator/Technician. These technicians prepare clear, complete, and accurate working plans and detail drawings from rough sketches, specifications, and calculations of engineers and designers to be used for engineering and manufacturing purposes. Technician's drawings usually provide a number of different views of the object, must be exact and include information concerning the materials to be used. Technicians in this occupation often specialize in a

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particular field such as the electronic or mechanical (machine drafting and related) option. Advanced operators perform product manufacturing preparation for CAM and computer integrated manufacturing.

## Computer Aided Drafting (CAD) -- Electronic Option

Associate Degree Program: Code 423

Advisors, Andrew F. Ford, Belinda McGuire, Gary Hentz

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
6	ENG 100	Communication Skills.....	4
1	ID 111	Industrial Drafting.....	4
1	ID 112	Descriptive Geometry.....	4
1	ID 216	Introduction to Computer Aided Drafting.....	2
1	ID 251	Fundamentals of Electronic Drafting *.....	3
			17
<b>Second Semester (Winter)</b>			
2	ID 105	Pictorial Drawing.....	2
2	ID 114	Industrial Drafting.....	4
2	ID 217	Introduction to 3-D CAD.....	2
2	ID 252	Fundamentals of Electronic Drafting *.....	4
6	PSY 150	Industrial Psychology.....	3
			15
<b>Third Semester (Fall)</b>			
4	EE	Elective.....	3-4
4	ID 107	Mechanisms.....	4
4	ID 220	CAD Application--Electronic.....	4
4	MTH 179	Precalculus.....	4
			15-16
<b>Fourth Semester (Winter)</b>			
5	CPS 183	Introduction to BASIC Programming.....	4
5	ID 222	Introduction to Electronic Design.....	4
3	MT 103	Introduction to Materials.....	3
6	PLS 108	Government and Society.....	3
			14

**Total Credit Hours for Program: 61-62**

\*Appropriate Electronic Courses or work experience may be substituted.

## Computer Aided Drafting (CAD) Mechanical Option

Associate Degree Program: Code 424

**Advisors: Andrew F. Ford, Belinda McGuire, Gary Hentz**

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
5	ENG 100	Communication Skills.....	4
1	ID 111	Industrial Drafting.....	4
1	ID 112	Descriptive Geometry.....	4
1	ID 216	Introduction to Computer Aided Drafting.....	2
3	MT 111	Machine Shop Theory and Practice.....	4
			18
<b>Second Semester (Winter)</b>			
2	ID 105	Pictorial Drawing.....	2
2	ID 114	Industrial Drafting.....	4
2	ID 123	Tolerancing: Conventional and Geometrical.....	2
2	ID 217	Introduction to 3-D CAD.....	2
7	NC 100	Introduction to Numerical Control.....	3
			13
<b>Third Semester (Fall)</b>			
3	CPS 183	Introduction to FORTRAN Programming or	
	NC 111	Manufacturing Processes for NC.....	3-4
4	ID 107	Mechanisms.....	4
4	ID 219	2-D CAD Planning and Drawing.....	4
4	MTH 179	Precalculus.....	4
7	PSY 150	Industrial Psychology.....	3
			18-19
<b>Fourth Semester (Winter)</b>			
5	ID 221	CAD Application - Mechanical.....	4
5	ID 230	Advanced Product Drafting.....	4
5	IM 260	CIM Applications.....	2-5
3	MT 103	Introduction to Materials.....	3
7	PLS 108	Government and Society.....	3
			16-19
<b>Fifth Semester (Spring/Summer)</b>			
6	ID 223	Introduction to Mechanical Design.....	4
			4

**Total Credit Hours for Program: 69-73**

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## Drafting Detailing

College Certificate Program: Code 427

**Advisors: Gary Hentz, Andrew F. Ford,  
Belinda McGuire, James Packard**

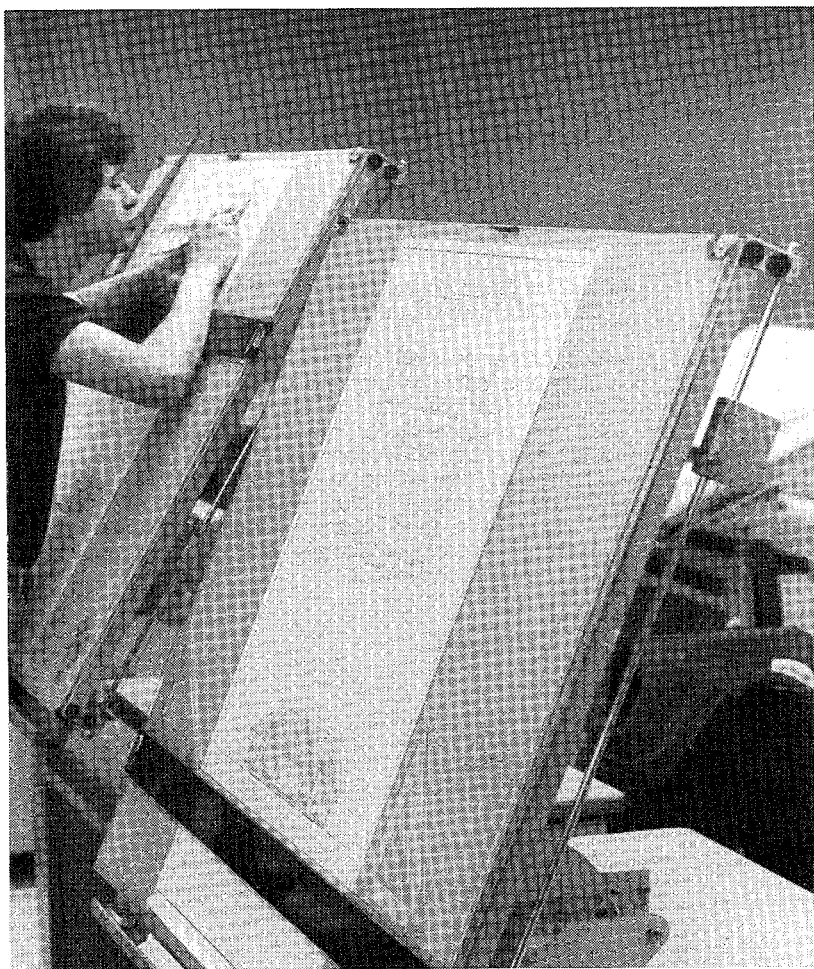
This program provides career training as a drafter detailer. The drafter prepares clear, complete and accurate working plans and detail drawings from rough sketches, specifications and calculations for engineers and designers to be used for engineering or manufacturing purposes. The drawings usually provide a number of different views of the object, must be exact and include information concerning the materials to be used. The detailer uses a variety of instruments including protractors, compasses, triangles, squares, drawing pens and pencils. Drafting detailers make complete drawings giving dimensions, materials and any other necessary information of each part shown on the layout.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	ID 111	Industrial Drafting.....	4
2	ID 112	Descriptive Geometry.....	4
3	MT 111	Machine Shop Theory and Practices.....	4
4	MTH	Mathematics Elective.....	4
			16
<b>Second Semester (Winter)</b>			
4	ENG	English Requirement (100 or 111).....	4
3	ID 105	Pictorial Drawing.....	2
2	ID 114	Industrial Drafting.....	4
4	ID 123	Tolerancing: Conventional and Geometrical.....	2
3	MT 103	Introduction to Materials.....	3
3	**	Technical Elective.....	2-4
			17-19

**Total Credit Hours for Program: 33-35**

**\*\*Recommended Electives**

ID 100	Technical Drawing.....	4
ID 121	Theory of Jigs & Fixtures.....	2
ID 216	Introduction to Computer-Aided Drafting.....	2
MTH 090	Occupational Mathematics.....	3
MTH 151	Applied Algebra.....	4
NC 100	Introduction to Numerical Control.....	3
WF 100	Fundamentals of Welding.....	2



## **Industrial Drafting Technology**

**Associate Degree Program: Code 419**

**Advisors: Gary Hentz, Andrew F. Ford,  
Belinda McGuire, James Packard**

This program provides training as an industrial drafting technician. This technician specializes in drafting detailed work drawings of machinery and mechanical devices indicating dimensions and tolerances, fasteners, and joining requirements and other engineering data. The technician drafts multiple-view assembly and sub-assembly drawings and documentation as required for manufacturing processes, material handling, tooling and

maintenance of equipment and plant production lines. The technician may be required to perform basic CAD operations on "desk top" stations.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	ID 111	Industrial Drafting.....	4
1	ID 112	Descriptive Geometry .....	4
3	MT 111	Machine Shop Theory and Practice.....	4
1	MTH 151	Applied Algebra * .....	4
			<u>16</u>
<b>Second Semester (Winter)</b>			
2	ID 114	Industrial Drafting.....	4
4	ID 121	Theory of Jigs and Fixtures.....	2
4	ID 123	Tolerancing: Conventional and Geometrical .....	2
3	MT 103	Introduction to Materials.....	3
4	MTH 152	Applied Geometry and Trigonometry * .....	4
			<u>15</u>
<b>Third Semester (Fall)</b>			
5	CPS 183	Introduction to BASIC Programming * .....	4
5	ENG 100	Communication Skills.....	4
4	ID 107	Mechanisms.....	4
3	ID 216	Introduction to Computer Aided Drafting.....	2
5	ID 251	Fundamentals of Electronic Drafting.....	3
			<u>17</u>
<b>Fourth Semester (Winter)</b>			
2	ID 105	Pictorial Drawing.....	2
5	ID 217	Introduction to 3-D CAD .....	2
6	ID 230	Advanced Product Drafting .....	4
6	PLS 108	Government and Society.....	3
6	PSY 150	Industrial Psychology .....	3
	**	Technical Elective.....	2-4
			<u>16-18</u>

**Total Credit Hours for Program: 64-66**

\* May substitute CPS 186 or 187 or NC 100. MTH 169A or 169B and MTH 177 may be substituted.

**\*\*Recommended Electives**

CPS 186	Introduction to Pascal Programming .....	4
CPS 187	Introduction to FORTRAN Programming.....	4
ID 100	Technical Drawing .....	4
ID 218	Interactive Computer-Aided Drafting.....	2
ID 252	Fundamentals of Electronic Drafting.....	4
PHY 105	Introductory Physics .....	4
WF 100	Fundamentals of Welding .....	2

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# ELECTRICITY AND ELECTRONICS

## Digital Equipment Technology

Associate Degree Program: Code 438

Advisors: Gary Downen, Philip Mullins,  
Arlene Paup, Albert Robinson

The Digital Equipment Technology program trains technicians to install, service and maintain a wide range of equipment such as digital computer systems, word processing systems, numerical control systems, security systems and instrumentation systems. Students in this program gain the basic electronic skills needed to install and service this wide range of electronic systems. A typical graduate will be employed as a field service representative for a company dealing in computer and digital electronic equipment. In addition to being technically competent, students must possess verbal, written communication and interpersonal skills in order to work successfully with customers, managers and co-workers.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
4	EE 101	Servicing Techniques .....	4
1	EE 123A	Fundamentals of Electricity (A) * .....	5
1	EE 137	Switching Logic.....	3
2	EE 140	Software Concepts .....	4
			<u>16</u>
<b>Second Semester (Winter)</b>			
2	EE 123B	Fundamentals of Electricity (B) * .....	5
3	EE 139	Microprocessors .....	4
3	EE 211	Basic Electronics .....	4
4	ENG 100	Communication Skills.....	4
			<u>17</u>
<b>Spring/Summer Semester</b>			
	EE 221	Computer Peripherals.....	3
	EE 299	Customer Relations .....	1
	ENG 107	Technical Communications.....	3
			<u>7</u>



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**Third Semester (Fall)**

5	EE 215	Digital Communications I .....	3
5	EE 230	Computer System Fundamentals .....	4
7	EE 238	Electronic Analog Circuits .....	4
8	EE 240	Career Practices Seminar .....	2
7	EE 241	Digital Electronics .....	4
			<u>17</u>

**Fourth Semester (Winter)**

6	EE 234	VAX/VMS for Hardware Technicians.....	3
6	EE 235	Computer System Troubleshooting.....	4
8	EE 250	Microprocessor Interfacing .....	4
8	PLS 108	Government and Society.....	3
5		Approved Non-Technical Elective.....	3
			<u>17</u>

**Total Credit Hours for Program: 74**

\* Students who place high on the Math Placement and Asset tests should consider enrolling in EE 123.

## Electronic Control Systems Technology

**Associate Degree Program: Code 437**

**Advisors: Dean Russell, William Cleary, Lawrence Kramer,  
Gary Downen, Dave Weyant, Philip Mullins**

This program is designed to provide career training as an industrial electronics and automation technologist. This technologist installs equipment; wires the factory; maintains motors, transformers, and switchgear; chooses wire sizes; locates equipment and ensures compliance with electrical codes and specifications. The technologist is part of a team of engineers, managers and skilled trades workers, who automate the factory. The technologist assembles and fabricates prototype equipment, installs and calibrates new equipment to manufacturer's specifications, recommends modifications to equipment, modifies both written and drawn documentation, and installs electrical and pneumatic instrumentation. The technician may work with programmable controllers, computer systems, microprocessor controlled machines and processes, material handling systems, temperature control systems, speed and position control systems, and assembly line controls. To this end, the program graduate is well versed in technical communications, digital and analog electronics, information processing, motors and solid state controls, and systems level troubleshooting.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	EE 123A	Fundamentals of Electricity (A) * .....	5
1	EE 137	Switching Logic.....	3
2	EE 140	Software Concepts .....	4
4	PHY 110	Applied Physics .....	4
			<u>16</u>

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**Second Semester (Winter)**

2	EE 123B	Fundamentals of Electricity (B) *	5
4	EE 134	Motors and Controls	4
3	EE 139	Microprocessors	4
3	EE 211	Basic Electronics	4
			<u>17</u>

**Spring/Summer Semester**

	EE 101	Servicing Techniques	4
	EE 204	National Electrical Code	2
	ENG 100	Communication Skills	4
			<u>10</u>

**Third Semester (Fall)**

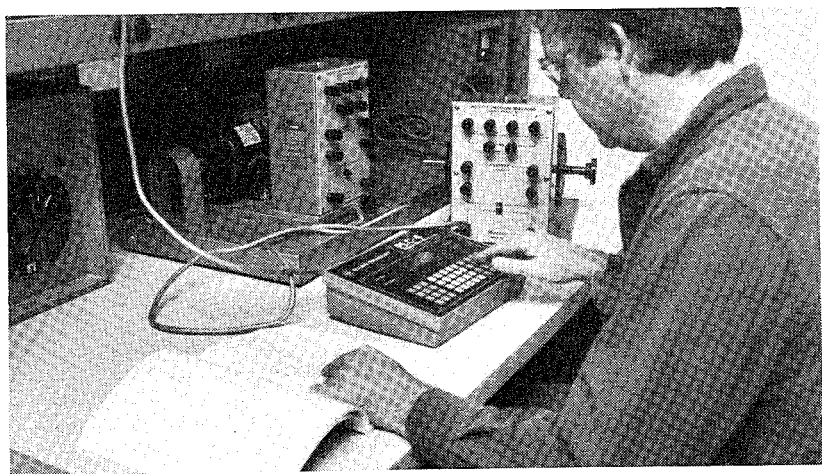
5	EE 224	Programmable Controllers	4
5	EE 238	Electronic Analog Circuits	4
8	EE 240	Career Practices Seminar	2
7	EE 241	Digital Electronics	4
7	PLS 108	Government and Society	3
			<u>17</u>

**Fourth Semester (Winter)**

6	EE 244	Electronic Control Systems	4
6	EE 250	Microprocessor Interfacing	4
8	EE 254	Programmable Controller Systems or Approved Technical Elective	4
8	ENG 107	Technical Communications or Approved non-technical elective	3
			<u>15</u>

**Total Credit Hours for Program: 75**

\* Students who place high on the Math Placement and Asset tests should consider enrolling in EE 123.



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# Telecommunication Technology

Associate Degree Program: Code 436

**Advisors: William Cleary, Lawrence Kramer, Gary Downen**

The Telecommunication Technology program is designed to train entry-level technicians for the telecommunications industry. The Telecommunications Technologist is employed in companies and institutions with telephone and data communications systems. Graduates install, maintain and troubleshoot telecommunication systems after an on-the-job-training program. In addition to technical skills, the technologist must be able to communicate effectively in oral and written form to other technologists, managers and customers.

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester (Fall)</b>			
4	EE 101	Servicing Techniques .....	4
1	EE 105	Introduction to Telecommunications .....	3
1	EE 123A	Fundamentals of Electricity (A) * .....	5
3	EE 137	Switching Logic.....	3
			<u>15</u>
<b>Second Semester (Winter)</b>			
2	EE 123B	Fundamentals of Electricity (B) * .....	5
3	EE 139	Microprocessors.....	4
2	EE 140	Software Concepts .....	4
4	EE 211	Basic Electronics .....	4
			<u>17</u>
<b>Spring/Summer Semester</b>			
	EE 205	Basic Telephony.....	4
	ENG 100	Communication Skills.....	4
			<u>8</u>
<b>Third Semester (Fall)</b>			
5	EE 215	Digital Communications I .....	3
5	EE 238	Electronic Analog Circuits .....	4
8	EE 240	Career Practices Seminar .....	2
7	EE 241	Digital Electronics .....	4
8	EE 275	Switching Systems.....	4
			<u>17</u>
<b>Fourth Semester (Winter)</b>			
6	EE 225	Digital Communications II .....	4
6	EE 245	Transmission Systems.....	4
8	EE 250	Microprocessor Interfacing .....	4
7	PLS 108	Government and Society.....	3
			<u>15</u>
<b>Total Credit Hours for Program: 72</b>			

\* Students who place high on the Math Placement and Asset tests should consider enrolling in EE 123.

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# INDUSTRIAL TECHNOLOGY

## Computer-Aided Manufacturing (CAM) Technology

Associate Degree Program: Code 473

Advisors: Roger Dick, Jeffrey Donahey

This program is designed to provide career training as a Computer Aided Manufacturing Technician. CAM Technicians can be considered the link between design and actual manufacture of products by firms using computer controlled equipment. They set up and operate various types of numerical control machine tools and have the primary responsibility of writing the programs which control the machine motion required to manufacture parts. They have a working knowledge of the many N/C machine tool languages used in industry. They write programs directly in the format used by the N/C machine tool (manual programming) or by using various computer-assisted languages and software. CAM Technicians are trained in the use of Computer Aided Design (CAD) hardware and software and are able to generate tool paths on data created on CAD systems. They are also trained in machining techniques, precision measurement, blueprint interpretation and industrial processes. Often CAM Technicians are required to design and manufacture jigs and fixtures used to hold parts which have been designed using CAD software. *High employability.*

Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>		
IM 111	CIM Fundamentals .....	4
MT 111	Machine Tool Theory and Practice .....	4
MTH 177	Triangle Trigonometry .....	3
NC 125	Computer Operation and Programming for NC .....	3
		<u>14</u>
<b>Second Semester</b>		
ID 219	2D CAD Planning & Drawing .....	4
MT 122	Machine Tool Operation and Set-Up I .....	4
NC 121	Manual Programming and NC Tool Operation .....	4
		<u>12</u>
<b>Spring/Summer Semester</b>		
ID 112	Descriptive Geometry .....	4
MTH 179	Precalculus.....	4
		<u>8</u>

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### Third Semester

ID 221	3D CAD Applications - Mechanical .....	4
NC 111	Manufacturing Processes for NC .....	4
NC 122	Advanced Manual Prog. and NC Tool Operation .....	4
NC 236	CAM Machine Tool Programming .....	4
		<u>16</u>

### Fourth Semester

ENG 111	English Composition .....	4
ID 123	Geometric Tolerancing .....	2
IM 260	CIM Applications.....	4
NC 247	Advanced CAM Machine Tool Programming.....	4
PLS 108	Government and Society.....	3
		<u>17</u>

**Total Credit Hours for Program: 67**

## Electro-Mechanical Technology

**Associate Degree Program: Code 454**

**Advisors: George Agin, Dean Avery, Gary Schultz**

This program provides career training as an electro-mechanical technician. This technician's duties include: fabricating, testing, analyzing, and adjusting precision electro-mechanical devices, following blueprints and sketches using hand tools, metalworking machines and measuring and testing instruments; operating metalworking machines such as the bench lathe, milling machine, and drill press to fabricate housing, fittings, jigs and holding fixtures; verifying dimensions using micrometers and vernier calipers; assembling wiring and electrical components plus mechanical components; testing assembly line devices for circuit continuity and operational reliability; analyzing test results and repairs or adjust according to analysis; recording test results and writing reports on fabrication techniques. In many small firms this person would also perform duties previously listed under Electrical or Mechanical Maintenance. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester</b>			
3	EE 123A	Fundamentals of Electricity (A) .....	5
6	ENG	English Requirement (100 or 111) .....	
1	MT 111	Machine Shop Theory and Practices.....	4
1	MTH 151	Applied Algebra .....	4
			<u>17</u>
<b>Second Semester</b>			
4	EE 123B	Fundamentals of Electricity (B) .....	5
1	ID 111	Industrial Drafting.....	4
2	MT 122	Machine Tool Operation and Set-Up I .....	4
2	MTH 152	Applied Geometry and Trigonometry .....	4
			<u>17</u>

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**Third Semester**

1	EE 224	Programmable Controllers .....	4
2	FLP 111	Fluid Power Fundamentals.....	4
5	MT 103	Introduction to Materials.....	3
2	NC 100	Introduction to Numerical Control.....	3
6	PLS 108	Government and Society.....	3
			<hr/>
			17

**Fourth Semester**

5	EE 137	Switching Logic.....	3
3	MT 123	Machine Tool Operation and Set-Up II .....	4
5	NC 121	Manual Programming and NC Tool Operation .....	4
2	PHY 111	General Physics .....	4
5	WF 100	Fundamentals of Welding .....	2
			<hr/>
			17

**Total Credit Hours for Program: 68**

## **Fluid Power Technology**

**Associate Degree Program: Code 441**

**Advisors: George Agin, Gary Schultz**

This program provides career training as a fluid power technician. As a technician in this field, one might work as a laboratory technician, production supervisor, field service technician, or design and development technician. A design technician would sketch designs and prepare drawings for the development of fluid components and systems. In field service he/she installs and maintains fluid power systems or serves as a manufacturer's representative. As a fluid power technician, he/she might work at inspecting, operating, and servicing fluid power equipment in various industrial applications. As a fluid power technician, he/she might work at inside sales, outside sales, servicing and testing fluid power equipment in various industrial applications. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
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**First Semester**

4	EE 123A	Fundamentals of Electricity (A) .....	5
1	FLP 111	Fluid Power Fundamentals.....	4
1	MT 111	Machine Shop Theory and Practice.....	4
1	MTH 169	Intermediate Algebra .....	4
			<hr/>
			17

**Second Semester**

7	CMT 101	Fundamentals of Speaking .....	3
2	FLP 213	Hydraulic Controls .....	3
2	FLP 214	Basic Hydraulic Circuits.....	3
2	FLP 226	Pneumatics .....	3
3	WF 100	Fundamentals of Welding .....	2
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			14

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**Third Semester**

7	ENG 100	Communication Skills.....	4
3	FLP 122	Hydraulic Pumps and Motors.....	2
5	ID 100	Technical Drawing.....	4
2	NC 100	Introduction of Numerical Control.....	3
6	PHY 110	Applied Physics.....	4
			<u>17</u>

**Fourth Semester**

4	FLP 225	Fluid Power Instrumentation.....	3
6	MT 122	Machine Tool Operation and Set-Up I.....	4
8	PLS 108	Government and Society.....	3
		Elective in Industrial Technology.....	4
8		Elective.....	3
			<u>17</u>

**Total Credit Hours for Program: 65**

## Hydraulic Assembly

**College Certificate Program: Code 442**

**Advisors: George Agin, Gary Schultz**

This program provides career training as a hydraulic assembler. This person assembles machinery by studying blueprints to plan logical assembly sequence and positions, aligns parts, and bolts them together. Then he/she lays out hydraulic hose or piping on machine (away from moving parts) to facilitate servicing machine and connects hydraulic hose or piping to pumps and specific fittings. *Average employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
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**First Semester**

1	FLP 111	Fluid Power Fundamentals.....	4
3	MT 111	Machine Shop Theory and Practice.....	4
3	WF 111	Welding (Basic Oxy-Acetylene).....	4
4	MTH 151	Applied Algebra.....	4
			<u>16</u>

**Second Semester**

2	FLP 122	Hydraulic Pumps and Motors.....	2
1	FLP 226	Pneumatics.....	3
2	BPR 101	Blueprint Reading II.....	3
2	FLP 214	Basic Hydraulic Circuits.....	3
4	CMT 101	Fundamentals of Speaking.....	3
			<u>14</u>

**Total Credit Hours for Program: 30**

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# Mechanical-Engineering Technology

Associate Degree Program: Code 451

**Advisors: Dean Avery, Burton Lowe**

This program provides career training as a mechanical engineering technician. The technician's duties are to: apply theory and principles of mechanical engineering to develop and test machinery and equipment under the direction of an engineering staff; review project instructions and blueprints to determine test specifications, procedures, and objectives; test equipment and review problems in order to provide possible solutions; prepare detailed drawings or sketches for the drafting room for fabrication by machine, wood, or sheet metal shops; set up and conduct tests and experiments of complete units and components to investigate engineering theories regarding improvement in design or performance of equipment; analyze indicated and calculated test results against design or rated specification and objectives of tests, and modify equipment to meet specifications; record test procedures, results, and suggestions for improvement; prepare engineering drawings, charts, and graphs. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
3	ENG 111	Composition I or	
	ENG 100	Communication Skills * .....	4
1	BPR 101	Blueprint Reading II .....	3
1	MT 111	Machine Shop Theory and Practice.....	4
1	MTH 151	Applied Algebra * .....	4
5	PHY 110	Applied Physics .....	4
			<u>19</u>
<b>Second Semester</b>			
2	ID 111	Industrial Drafting.....	4
2	MT 122	Machine Tool Operation and Set-Up I .....	4
2	MTH 152	Applied Geometry and Trigonometry * .....	4
	NC 100	Introduction to Numerical Control.....	3
			<u>15</u>
<b>Third Semester</b>			
5	EE 123A	Fundamentals of Electricity (A) .....	5
5	FLP 111	Fluid Power Fundamentals.....	4
3	MT 103	Introduction to Materials.....	3
3	MT 123	Machine Tool Operation and Set-Up II .....	4
5	NC 121	Manual Programming and NC Tool Operation .....	3
			<u>19</u>



**Fourth Semester**

4	FLP 214	Basic Hydraulic Circuits.....	3
4	MT 201	Machine Tool Technology.....	4
	NC 122	Advanced Manual Programming and NC Tool Operation .....	3
	PLS 108	Government and Society.....	3
4	WF 103	Heli-Arc Welding .....	2
			<u>15</u>

**Total Credit Hours for Program: 68**

- \* Students planning to transfer to EMU or other four-year institutions include these courses in place of courses listed: MTH 169 Algebra; ENG 111 Composition I; MTH 177 Trigonometry.

**Numerical Control Machine Operations**

**College Certificate Program: Code 472**

**Advisors: Roger Dick, Jeffrey Donahey**

This College Certificate program is designed to train persons to set up and operate Numerical Controlled machine tools. CNC operators must have a working knowledge of the relationship between part programs and machine tool operation. Precision measurement, blueprint interpretation, and CNC program editing are among the specific skills presented and practiced in this program. The program can serve as an entry into the Computer-Aided manufacturing (CAM) Technology Associate Degree program.

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester</b>			
1	BPR 101	Blueprint Reading I or	
	ID 100	Technical Drawing .....	2-4
1	MT 111	Machine Shop Theory and Practice.....	4
1	MTH 151	Applied Algebra .....	4
2	NC 121	Manual Programming and NC Tool Operation .....	4
			<u>14-16</u>
<b>Second Semester</b>			
2	ENG 100	Communication Skills.....	4
3	MT 122	Machine Tool Operation and Set-Up I.....	4
4	MT 123	Machine Tool Operation and Set-Up II .....	4
2	MTH 152	Applied Geometry and Trigonometry .....	4
			<u>16</u>
<b>Third Semester</b>			
3	NC 122	Advanced Manual Programming and NC Tool Operation .....	4
			<u>4</u>

**Total Credit Hours for Program: 34-36**

# Robotic Technology\*

## Associate Degree Program: Code 444

**Advisors: George Agin and Gary Schultz**

This program trains automated equipment technicians in robotics to assemble, install and maintain electrical and electronic, electro-mechanical, pneumatic and hydraulic components on computer-assisted multi-purpose machinery and equipment using hand tools, electronic testing instruments, diagrams and prints. Students who complete the program will be prepared to enter the field with job entry skills.

Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>		
EE 123A	Fundamentals of Electricity (A) .....	5
FLP 111	Fluid Power Fundamentals.....	4
ID 100	Technical Drawing .....	4
IM 121	Robotics I.....	3
		16
<b>Second Semester</b>		
EE 123B	Fundamentals of Electricity (B) .....	5
FLP 213	Hydraulic Controls .....	3
FLP 214	Basic Hydraulic Circuits.....	3
FLP 226	Pneumatics .....	3
		14
<b>Spring Semester</b>		
EE 137	Switching Logic.....	3
IM 212	Robotics II.....	4
		7
<b>Third Semester</b>		
EE 224	Programmable Controllers .....	4
ID 107	Mechanisms.....	4
IM 223	Robotics III .....	4
PSY 150	Industrial Psychology .....	3
WF 091	Welding Procedures for Robotics .....	1
		15
<b>Fourth Semester</b>		
EE 139	Microprocessors.....	4
ENG 100	Communication Skills.....	4
IM 224	Robotics IV.....	4
PLS 108	Government and Society.....	3
		15
<b>Total Credit Hours for Program: 68</b>		

\* Prerequisite: Math level ability of Math 151 or higher

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## Toolroom Machine Operation

College Certificate Program: Code 453

**Advisors: Dean Avery, Burton Lowe**

This program is designed to provide career training as a toolroom machine operator. Machine tools are stationary, power-driven machines which hold the metal that is to be cut, milled, ground or drilled. Some of the more common machine tools are engine lathes, saws, grinding machines, drilling machines, and milling machines. These tools are used to machine metal to exact dimensions. Semi-skilled workers operate machine tools on which the speeds and operation sequence have been set by a more skilled employee. They tightly secure the metal stock in the machine then check for precision through the use of measuring devices. Semi-skilled operators usually work with a single type of machine. They plan and set up the correct sequence of operation based on blueprint information. They adjust speed and other controls and select the proper cutting tools or instruments for the operation. They must also know how to use special attachments for the machine, plus be able to use precision measuring instruments. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>First Semester</b>			
1	BPR 101	Blueprint Reading II.....	3
3	ENG 100	Communication Skills *.....	4
3	MT 103	Introduction to Materials.....	3
1	MT 111	Machine Shop Theory and Practice.....	4
1	MTH 151	Applied Algebra *.....	4
			<u>18</u>
<b>Second Semester</b>			
3	ID 100	Technical Drawing.....	4
2	MT 122	Machine Tool Operation and Set-Up I.....	4
2	MTH 152	Applied Geometry and Trigonometry *.....	4
2	NC 100	Introduction to Numerical Control.....	3
			<u>15</u>

**Total Credit Hours for Program: 33**

\* Students planning to transfer to four-year institutions include these courses in place of the courses listed: MTH 169, ENG 111, MTH 177.

# VISUAL ARTS TECHNOLOGY

## Graphic Design Technology - Design Option

Associate Degree Program: Code 483

**Advisors: Dennis Guastella and John Martin**

This program provides career training as a graphic artist with an emphasis on design. Graphic artists work with typographers, printers, and other specialists in the graphic arts. They are artists for commerce. They work on projects and commissions with definite objectives for clients and employers - to communicate, inform, instruct, or sell. They may work in package design, professional publications, book illustrations, annual reports, magazines, trade publications, desktop publishing, and in-house publications. Multi-talented individuals who can write copy, are experienced in design and reproduction of material, and understand marketing techniques are in greatest demand. A creative or artistic ability is required for these careers as well as such qualities as resourcefulness, experimentation, and inquiry. Basic skill competencies in keylining, paste-up, typography, graphic communication, knowledge of materials (paper and ink), fundamental design, computer graphics, and illustration evident in a portfolio are minimum prerequisites for obtaining job experience. *Average to high employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
1	ART 111*	Basic Drawing I.....	4
2	ART 112*	Basic Design I.....	4
1	ENG *	English Requirement (100 or 111) .....	4
1	GDT 100 *	Typography I.....	4
1	GDT 102 *	Computer-Aided Publishing.....	2
			18
<b>Second Semester (Winter)</b>			
3	GDT 103 *	Perspective Drawing.....	4
3	GDT 113 *	Principles of Production .....	4
4	PHO 111 *	Photography .....	4
4	PLS 108 *	Government and Society.....	3
			15

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### Third Semester (Spring/Summer)

5	GDT 101 *	Design Survey.....	3
5	GDT 112	Graphic Communication .....	4
			<u>7</u>

### Fourth Semester (Fall)

6	GDT 214	Publication Layout .....	4
6	GDT 215	Typography II.....	2
7	GDT 217	Computer-Aided Publishing II .....	2
7	**	Elective .....	2-5
			10-13

### Fifth Semester (Winter)

8	GDT 227	Graphic Technology .....	4
8	GDT 232 *	Illustration.....	2
9	GDT 236 *	Specialized Study or	
	GDT 239	Specialized Study (Computer Graphics) .....	2-4
10	GDT 238 *	Computer-Aided Illustration.....	4
10	PSY 150	Industrial Psychology or	
	BMG 209	Small Business Management.....	3
			15-17

### Sixth Semester (Spring/Summer)

11	GDT 230 *	Professional Practices .....	2
			<u>2</u>

### Total Credit Hours for Program: 67-72

\*GDT core curriculum courses

### \*\*Recommended Electives

All GDT courses with advisor permission

All Photo courses with advisor permission

BMG 250	Principles of Marketing .....	3
BMG 270	Advertising Principles .....	3

## Graphic Design Technology - Illustration Option

### Associate Degree Program: Code 484

This program provides career training as an illustrator of commercial and technical art. Illustration requires understanding and visualizing technical information, attention to detail and an interest in precision drawing. The program places emphasis on the design and execution of a variety of subjects utilizing a variety of media and methods to produce a portfolio of finished art to present to a potential employer. Employment for the illustrator is found in medium to large manufacturing and technology-based companies that require staff to create visuals for manuals, advertising and presentation graphics. Other employers include newspaper art departments, department stores, advertising agencies, and design studios. Projects utilize methods and materials for producing posters, book illustrations, product

presentations, perspective and dimensional drawings. Computer generated illustration is included in the program to keep students abreast of the latest technology in the field.

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester (Fall)</b>			
2	ART 111 *	Basic Drawing I.....	4
2	ART 112 *	Basic Design I.....	4
1	GDT 100 *	Typography I.....	4
1	MTH 090	Occupational Mathematics or	
	PHY 110	Applied Physics .....	<u>3-4</u>
			15-16
<b>Second Semester (Winter)</b>			
4	ENG *	English Requirement (100 or 111) .....	4
3	GDT 102 *	Computer-Aided Publishing.....	2
3	GDT 103 *	Perspective Drawing .....	4
4	PHO 111 *	Photography .....	<u>4</u>
			14
<b>Third Semester (Spring/Summer)</b>			
5	GDT 101 *	Design Survey.....	3
5	GDT 232 *	Illustration.....	<u>2</u>
			5
<b>Fourth Semester (Fall)</b>			
6	GDT 201	Graphic Illustration.....	4
7	GDT 228	Airbrush Techniques I.....	4
6	ID 216	Intro to Computer-Aided Drafting.....	2
7	PLS 108 *	Government and Society.....	<u>3</u>
			13
<b>Fifth Semester (Winter)</b>			
8	GDT 222	Advanced Illustration .....	4
8	GDT 238 *	Computer-Aided Illustration.....	4
9	GDT 236 *	Specialized Study or	
10	**	Elective.....	<u>2-5</u>
			10-13
<b>Sixth Semester (Spring/Summer)</b>			
11	GDT 230 *	Professional Practices .....	2
11	GDT 239	Specialized Study (Computer Graphics) .....	<u>2-4</u>
			4-6

**Total Credit Hours for Program: 61-67**

\*GDT core curriculum courses

**\*\*Recommended Electives**

All GDT courses with advisor permission  
 All Photo courses with advisor permission

ID 217 Introduction to 3D CAD.....2

## Photographic Assisting

College Certificate Program: Code 486

This program provides career training as a photographic assistant. The photographic assistant helps the photographer by being able to perform the following: process negatives and positives in both black-and-white and color, copy negative and prints, and perform photographic retouching. The photographic assistant must have knowledge of small and large-format camera operation and functions and must be able to use the various accessories that can be used with the camera, including electronic flash, lenses, exposure meters, and studio-type lights. *Average to high employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
1	PHO 111	Photography .....	4
3	ART 112	Basic Design I .....	4
1	MTH 090	Occupational Mathematics .....	3
4	ENG 100	Communication Skills .....	4
5	PLS 108	Government and Society .....	3
			18
<b>Second Semester</b>			
2	PHO 112	Darkroom Techniques .....	5
2	PHO 113	Studio Techniques .....	3
4	PHO 114	Basic Color Photography .....	3
4	GDT 216	Graphic Reproduction .....	2
3	PHO 115	Photo Retouching .....	2
			15

**Total Credit Hours for Program: 33**

## Photographic Technology

**Advisors: Lance Burghardt and J. Raymond Steinbach**

This program has two options which provide career training in photographic technology. The photographic technician assists the photographer in a wide variety of photographic environments and assists in the planning, designing, constructing and use of equipment and set-ups. Using photographic techniques, problems are solved through controlled procedures to meet often unusual situations. The technician must be able to operate small, medium and large-format still camera systems and be able to process and enlarge positive and negative black-and-white and color materials. The technician will have more experience and be given more photographic responsibilities than the photographic assistant. *High employability.*

# Photographic Technology

## Associate Degree Program: Code 485

Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>		
ENG 100	Communication Skills.....	4
MTH 090	Occupational Mathematics.....	3
PHO 111	Photography.....	4
PHO 103	History of Photography.....	2
PHO 115	Photo Retouching.....	2
		15
<b>Second Semester</b>		
PHO 112	Darkroom Techniques.....	5
PHO 113	Studio Techniques.....	3
PHO 114	Basic Color Photography.....	3
PHO 219	Photo Design **.....	3
PSY 150	Industrial Psychology.....	3
		17
<b>Spring/Summer Semester</b>		
PHO 101	Photo Environment.....	3
		3
<b>Third Semester</b>		
PHO 220	Advanced Studio Techniques.....	3
PHO 221	Advanced Darkroom Techniques.....	3
PHO 222	Advanced Color Photography.....	3
PHO 223	Photographic Operations.....	3
GDT 216	Graphic Reproduction.....	2
		14
<b>Fourth Semester</b>		
PHO 230	Specialized Studies in Photography.....	2-4
PHO 231	Portfolio Seminar.....	2
BMG 209	Small Business Management.....	3
PLS 108	Government and Society.....	3
	Elective.....	3
		13-15

**Total Credit Hours for Program: 62-64**

\* A counselor or advisor can suggest a part-time sequence.

\*\* ART 112 Basic Design may be substituted for PHO 219.



# Photographic Technology - Marketing Option

Associate Degree Program: Code 487

Advisors: Lance Burghardt and J. Raymond Steinbach

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
4	BMG 140	Introduction to Business.....	3
4	ENG 100	Communication Skills **.....	4
1	MTH 090	Occupational Mathematics*.....	3
1	PHO 111	Photography.....	4
5	PLS 108	Government and Society.....	3
			17
<b>Second Semester</b>			
5	ACC 091	Fundamentals of Accounting I.....	3
3	BMG 209	Small Business Management.....	3
2	PHO 112	Darkroom Techniques.....	5
2	PHO 113	Studio Techniques.....	3
5	PHO 114	Basic Color Photography.....	3
			17
<b>Third Semester</b>			
6	BMG 160	Principles of Sales.....	3
3	PHO 220	Advanced Studio Techniques.....	3
3	PHO 221	Advanced Darkroom Techniques.....	3
6	PHO 222	Advanced Color Photography.....	3
	***	Elective.....	2
			14
<b>Fourth Semester</b>			
7	BMG 111	Business Law I.....	3
7	BMG 250	Principles of Marketing.....	3
8	BMG 260	Sales Management.....	3
7	EC 211	Principles of Economics.....	3
	***	Elective.....	2
			14

**Total Credit Hours for Program: 62**

\* If you test out of MTH 090, take ACC 091 or 092.

\*\* ENG 111 is recommended for students wishing to transfer to a four-year program.

**\*\*\*Recommended Electives**

PHO 101	Photography and Environment.....	3
PHO 103	History of Photography.....	2
PHO 116	Portrait Photography.....	2
PHO 216	Introduction to Fashion Photography.....	3

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# WELDING AND FABRICATION TECHNOLOGY

## Welding Maintenance Mechanics

College Certificate Program: Code 492

Advisors: William Figg and Clyde Hall

This program provides career training as a welding maintenance mechanic. Students weld metal parts together according to layouts, blueprints, or work orders using gas welding or brazing and any combination of arc-welding processes. Students perform related tasks such as frame cutting and grinding. They may also repair broken or cracked parts, fill holes and increase size of metal parts. *High employability.*

Part-Time Sequence	Full-Time Sequence	Course Title	Credit Hours
<b>First Semester</b>			
5	MTH	Math Requirement .....	4
1	WF 111	Basic Oxy-Acetylene Welding .....	4
2	WF 112	Basic Arc Welding.....	4
6	WF 200	Layout For Welders.....	2
7	WF 210	Welding Metallurgy.....	3
			<u>17</u>
<b>Second Semester</b>			
10	CMT 101	Fundamentals of Speaking .....	3
3	WF 123	Advanced Oxy-Acetylene Welding.....	4
4	WF 124	Advanced Arc Welding.....	4
8	WF 215	Advanced TIG and MIG Welding.....	4
9	WF 227	Basic Fabrication.....	3
			<u>18</u>

**Total Credit Hours for Program: 35**

## Welding Technology

Associate Degree Program: Code 491

Advisors: William Figg and Clyde Hall

This program provides career training as a welding and fabrication technician. Persons planning careers as welders or cutters need manual dexterity, good eyesight, and good coordination. They should be able to concentrate

on detailed work for long periods. These technicians position, fit, and weld fabricated, cast, and forged components to assemble structural forms such as machinery frames, tanks, pressure vessels, furnace shells, and building and bridge parts according to blueprints and knowledge of welding characteristics of metal. They also select equipment and plan layout, assembly and welding, and apply their knowledge of geometry, physical properties of metal, effects of heat, allowances for thicknesses, machining weld shrinkage, and welding techniques. They lay out, position, align, and fit components together and secure parts in position for welding. They set up equipment and welding parts using arc, gas-shielded arc, TIG and MIG, or gas-welding equipment. Assembling and repairing parts or products by using a cutting torch, straightening press and handbrake are also components of this technician's job. Upon completion of this program, students can also be foremen, sales representatives, or specialists. *Very high employability.*

Full-Time Sequence*	Course Title	Credit Hours
<b>First Semester</b>		
BPR 106	Blueprint Reading for Welders .....	3
ENG	English Requirement (091, 100 or 111) .....	4
MT 100	Machine Shop Theory .....	3
WF 111	Basic Oxy-Acetylene Welding .....	4
WF 112	Basic Arc Welding.....	4
		<u>18</u>
<b>Second Semester</b>		
ID 100	Technical Drawing .....	4
MTH 177	Triangle Trigonometry .....	3
WF 123	Advanced Oxy-Acetylene Welding.....	4
WF 124	Advanced Arc Welding .....	4
WF 200	Layout for Welders.....	2
		<u>17</u>
<b>Third Semester</b>		
ID 112	Descriptive Geometry .....	4
PSY 150	Industrial Psychology .....	3
WF 210	Welding Metallurgy .....	3
WF 215	Advanced TIG and MIG Welding .....	4
WF 227	Basic Fabrication .....	3
		<u>17</u>
<b>Fourth Semester</b>		
FLP 111	Fluid Power Fundamentals.....	4
PLS 108	Government and Society.....	3
WF 226	Specialized Welding Procedures .....	4
WF 229	Shape Cutting Operations.....	3
		<u>14</u>
<b>Total Credit Hours for Program: 66</b>		

\*An advisor or counselor can suggest a part-time sequence.

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# TECHNICAL JOB TRAINING

## Trade Related Instruction Apprentice and Employee Training

**What is an apprenticeship?** Apprenticeship training is on-the-job training with related instruction designed to ensure that each apprentice not only masters skilled tasks but does so with confidence and precision. Today, apprentices are trained in more than 300 occupations. Apprenticeships offer an alternative route to training and employment. They differ from other training methods in several ways. First, when individuals enter an apprenticeship training program they are hired in jobs for which vacancies exist and are paid a percentage of the journeyperson's (a person who has completed apprenticeship training) rate, usually starting at about 50% and increasing as additional skills are mastered. Second, the apprentice is under the supervision of an individual with demonstrated ability in the tasks to be learned. Third, the formalized on-the-job training is reinforced with appropriate classroom instruction. Fourth, upward mobility is built into the concept.

### Manufacturing and Construction

The main purpose of the Trade Related Instruction Program is to provide manufacturing and construction firms with the opportunity to participate in training programs which assist their employees in becoming more skilled.

### Apprentice Training and Employee Training

Required related instruction is provided for most apprenticeable trades. The College's Director of Technical Training works directly with the apprentice and the sponsoring firm to meet these requirements. The related instruction program has been approved by the Bureau of Apprenticeship and Training of the U.S. Department of Labor. Sponsoring firms are invited to contact the Director concerning individual employees who wish to participate.

### Pre-Apprenticeship Training

Individuals who wish to enter an apprenticeship program, but who have not passed the required entrance examination, are invited to contact the College counseling staff or the Director of Technical Training. An individual pre-apprenticeship curriculum can be arranged which helps prepare for most industrial apprenticeship entrance examinations. Placement cannot be guaranteed in an apprenticeship program. **Placement is at the mutual discretion of employers, employees and organizations representing the skill trades involved.**

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## Degree Programs of Study

### Journeyman Industrial Associate Degree Program: Code 490

This Associate Degree can be awarded to skilled tradespersons upon earning 60 hours or more of credit and complying with other College requirements. All credits earned in Trade Related Instruction may be applied to the Journeyman Industrial Degree. Credit earned at other institutions offering trade related subjects are evaluated and may be applicable.

### Refrigeration and Air Conditioning Associate Degree Program: Code 443

Basically, this is a trade-related instruction program. Its purpose is to upgrade persons currently employed in this industry; however, students who are not currently employed in the industry are welcome. Courses are offered in the evening only once a year. Membership in the Educational Society of the Refrigeration Service Engineers (RSES) is required. Initiation fee and dues are approximately \$53. RSES is a non-profit international educational organization whose sole purpose is the education and training of its members, assisting them in keeping their skills up to date; thereby offering better service to the public. The program is guided by an Advisory Committee consisting of journeymen and contractors and is offered in cooperation with the local chapter of the Refrigeration Service Engineers Society (RSES). Consent of the program advisor is required for registration.

Course Number	Course Title	Credit Hours
HTG 111	Heating Fundamentals .....	5
HTG 122	Heating Systems.....	5
HTG 213	Heating Controls.....	5
MTH 151	Applied Algebra or Mathematics Elective .....	4
RAC 111	Refrigeration I.....	5
RAC 122	Refrigeration II.....	5
RAC 123	Refrigeration and Air Conditioning Systems.....	5
RAC 124	Basic Controls.....	5
RAC 213	Air Conditioning .....	5
RAC 214	Control Systems .....	5
RAC 215	Troubleshooting Controls.....	5
RAC 216	Systems Laboratory.....	5
WF 104	Soldering and Brazing.....	2
ENG	English Requirement (100 or 111) .....	4
PLS	Political Science Requirement (108, 112 or 150).....	3
		68

# Statistical Process Control Technology (Quality Control)

## Associate Degree Program

The function of Quality Control has changed significantly in recent years. Statistical Process Control (SPC) skills used by the Quality Control Engineer or Analyst are now essential to keep manufacturers competitive in both quality and productivity.

In today's business environment, the Quality Control professional is no longer looked upon as the "Policeman" commissioned to catch errors or defects after they occur. Instead, Quality Control is the practice of preventing defects, reducing quality defect losses, increasing productivity through more informed process management and improving quality in general.

Designed by a highly qualified Quality Control Advisory Committee, the courses offer an opportunity for specialization in this important and expanding field. A large choice of electives enables students to train for either a technical or a supervisory position.

### Statistical Process Control - Electronics Option Associate Degree Program: Code 447

Course Number	Course Title	Credit Hours
CIS/CPS	Electives .....	5-6
EE 123A	Fundamentals of Electricity (A) .....	5
EE 123B	Fundamentals of Electricity (B) .....	5
EE 211	Basic Electronics .....	4
EE	EE Electives .....	8
ENG	English Requirement (100, 111 or 122) .....	7-8
MTH 169	Intermediate Algebra .....	4
PLS	Political Science Requirement (108, 112 or 150) .....	3
**	SPC Core Courses.....	18
		59-61

### Statistical Process Control - Management Option Associate Degree Program: Code 446

Course Number	Course Title	Credit Hours
ACC 111	Principles of Accounting.....	3
ACC 122	Principles of Accounting.....	3
CIS 111	Computer Concepts .....	3
CIS 130	PASCAL For Business and Industry .....	6
CMT 101	Fundamentals of Speaking .....	3
CPS 186	Introduction to PASCAL Programming.....	4
EC 211	Principles of Economics.....	3
EC 222	Principles of Economics.....	3
ENG 111	Composition I .....	4

ENG 122	Composition II .....	3
MTH 160	Basic Statistics .....	4
MTH 169	Intermediate Algebra .....	4
PLS	Political Science Requirement (108, 112 or 150).....	3
**	SPC Core Courses.....	18
		<u>64</u>

**Statistical Process Control - Science and Engineering Option  
Associate Degree Program: Code 449**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
CEM 111	General Chemistry .....	4
CEM 122	General Chemistry II .....	4
ENG 111	Composition I .....	4
ENG 122	Composition II .....	3
MTH 169	Intermediate Algebra .....	4
MTH 179	Precalculus.....	4
MTH 191	Calculus I .....	5
MTH 192	Calculus II .....	4
PHY 111	General Physics I .....	4
PHY 122	General Physics II .....	4
PLS	Political Science Requirement (108, 112 or 150).....	3
**	SPC Core Courses.....	18
		<u>61</u>

**Statistical Process Control - Specialty Option  
Associate Degree Program: Code 448**

The purpose of the Specialty Option is to meet the needs of students working in diverse fields of Quality Control.

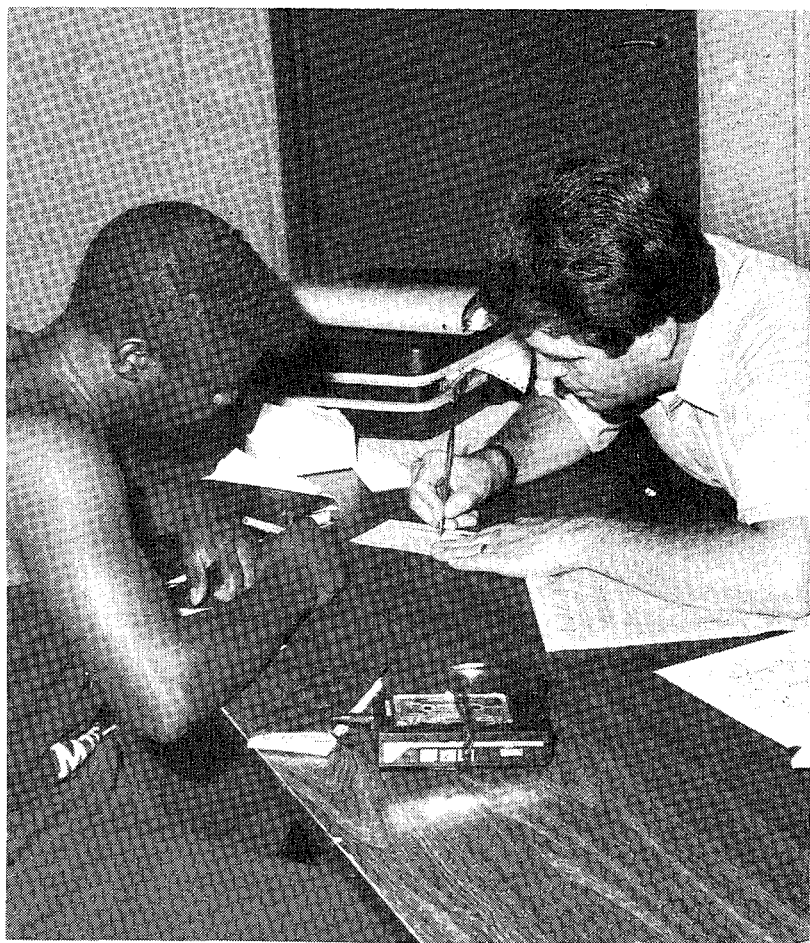
<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
ENG	English Requirement (100 or 111) .....	4
PLS	Political Science Requirement (108, 112 or 150).....	3
	Electives .....	35
**	SPC Core Courses.....	18
		<u>60</u>

**\*\*Core Courses (offered evenings only)**

SPC 101	Process Quality Control.....	3
SPC 122	Sampling Quality Control .....	3
SPC 213	Quality Control by Statistical Methods .....	3
SPC 224	Quality Control Problem Solving.....	3
SPC 225	Quality Control Management .....	3
SPC 226	Dimensional Metrology and Testing .....	3
		<u>18</u>







# Course Descriptions

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## COURSE DESCRIPTIONS

Descriptions of all credit courses offered at Washtenaw Community College follow. The number of hours each class meets per week is indicated in parentheses with the first number indicating the hours of lecture and/or discussion, and the second number indicating the hours of laboratory. This applies to a 15 week session. During short terms the number of hours per week increases.

Two courses available to students in most career programs are Study Problems and On-The-Job Training. In many cases they are not described separately for each course area.

### **ACCOUNTING** \_\_\_\_\_ **(ACC)**

#### **ACC 091. FUNDAMENTALS OF ACCOUNTING I ..... 3 credit hours**

Prerequisite or Corequisite: MTH 090

3 hours per week (3-0)

This course introduces students to the theory and practice of modern double-entry accounting systems and procedures. Emphasis is placed on journalizing and posting, adjusting and closing books and the preparation of financial statements for both service and merchandising businesses. The class is designed for the non-accounting major. Does not give transfer college credit.

#### **ACC 092. FUNDAMENTALS OF ACCOUNTING II ..... 3 credit hours**

Prerequisite: ACC 091

3 hours per week (3-0)

A continuation of ACC 091, which includes notes, inventories, depreciation, accruals, and end of the year procedures with financial statements. The course addresses partnerships, corporations, statement analysis and interpretation, and is designed for non-accounting majors. Does not give transfer college credit.

#### **ACC 111. PRINCIPLES OF ACCOUNTING ..... 3 credit hours**

Prerequisite or Corequisite: MTH 163 or higher

3 hours per week (3-0)

This is an introductory course in accounting principles and theory with emphasis on the accounting cycle, receivables and payables, depreciation, inventories, payroll, deferrals and accruals, systems and controls. It is required of all Accounting majors and Business Administration transfer students.

#### **ACC 122. PRINCIPLES OF ACCOUNTING ..... 3 credit hours**

Prerequisite: ACC 111

3 hours per week (3-0)

A continuation of Principles of Accounting 111 covering partnerships, corporations, statement of cash flows, financial analysis and an introduction to managerial accounting. It is required of all Accounting majors and Business Administration transfer students.

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**ACC 131. COMPUTERIZED ACCOUNTING ..... 3 credit hours**

Prerequisite: ACC 092 or ACC 111

3 hours per week (3-0)

Accounting applications (Spreadsheet, General Ledger, Accounts Receivable, Accounts Payable, Depreciation and Payroll) are presented and mastered on the microcomputer in such a manner that no prior knowledge of microcomputers is required. This course does not teach computer programming, but is intended to train students to become intelligent users of accounting software on the microcomputer.

**ACC 200. TAX PREPARATION: PERSONAL AND SMALL BUSINESS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory course in federal and state personal income taxes, federal and state payroll taxes, and other general taxes. The course covers tax returns for individuals and unincorporated (Schedule C sole proprietorship) businesses.

**ACC 213. INTERMEDIATE ACCOUNTING ..... 3 credit hours**

Prerequisite: ACC 122

3 hours per week (3-0)

Further study of generally accepted accounting principles is provided as they apply to financial statements, cash, and temporary investments, receivables, merchandise, plant assets, current liabilities, fixed assets, long-term investments, capital and earnings. It is required of all Accounting majors. Offered Fall Semester only.

**ACC 225. MANAGERIAL COST ACCOUNTING ..... 3 credit hours**

Prerequisite: ACC 122

3 hours per week (3-0)

Principles and procedures for measuring and controlling costs are discussed as well as cost-volume profit relationships, job order accounting, budgets, standard costs, relevant costs, process accounting. It is required of Accounting majors. Offered Winter Semester only.

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**ANTHROPOLOGY \_\_\_\_\_ (ANT)**

**ANT 150. RELIGIONS OF THE WORLD ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The anthropological study of religious beliefs and practices of non-literate people as well as major religions of the world is provided in this course.

**ANT 189. STUDY PROBLEMS IN ANTHROPOLOGY ..... Variable credit**

Prerequisite: Consent of instructor

This course provides individualized, directed activities in Anthropology. A specific problem/issue is studied, or a special project is assigned.

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**ANT 201. INTRODUCTION TO CULTURAL ANTHROPOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course explores the way our species lives and has lived. It begins with the hunting and gathering level of cultural development and ends with the origin of the state. Contemporary peasants are also studied. This course is taught as a television course using the program series "Faces of Culture."

**ANT 202. INTRODUCTION TO PHYSICAL ANTHROPOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines the emergence of the human species using materials from primate studies, archaeological findings and early humankind.

**ANT 211. INTRODUCTION TO THE PHILOSOPHY AND PRACTICE OF YOGA..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides an introduction to the system of Hatha Yoga and the philosophy of realized knowledge.

**ANT 222. PHILOSOPHY AND PRACTICE OF YOGA II..... 3 credit hours**

Prerequisite: ANT 211

3 hours per week (3-0)

A continuation of Anthropology 211, relating the system of Hatha Yoga to Hindu tradition.

**ARCHITECTONICS \_\_\_\_\_ (ARC)**

**ARC 100. SPECIFICATIONS ..... 1 credit hour**

Prerequisite: ARC 117

1 hour per week (1-0)

An introduction is provided to building construction specifications, stressing the organization and preparation of specifications for construction contracts.

**ARC 109. SITE LAYOUT ..... 3 credit hours**

Prerequisite: None

3 hours per week (1-2)

This is a lecture and field course dealing with the principles of site layout of construction projects. Approved site plans, builders level transit, tape chain and preferred equipment are demonstrated and used.

**ARC 111. ARCHITECTURAL DRAWING I ..... 6 credit hours**

Prerequisite: None

9 hours per week (3-6)

An introduction is provided to light frame construction and requirements including the preparation of working drawings for the construction of structures classified as Light Frame Structures.

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**ARC 117. CONSTRUCTION MATERIALS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

A survey is provided of typical types of materials used in building construction. Emphasis is placed on the properties, selection and building techniques appropriate for a wide range of materials. Included are woods, metals, plastics, clay, gypsum, glass and aggregate materials.

**ARC 120. MECHANICAL AND ELECTRICAL SYSTEMS  
IN BUILDINGS ..... 3 credit hours**

Prerequisite: None

3 hours per week (1-2)

The drafting of mechanical and electrical systems in buildings from prepared design data is emphasized. This is a laboratory course with lectures related to the laboratory. Students must have drafting instruments.

**ARC 122. ARCHITECTURAL DRAWING II ..... 6 credit hours**

Prerequisite: ARC 111

9 hours per week (2-7)

This class involves preparing architectural presentation drawings from diagrammatic sketches, pictures, surveys and conference notes. The student is taught to develop preliminary studies, presentation drawings and working drawings for an architectural project utilizing masonry construction.

**ARC 150. PRESENTATION DRAWINGS AND MODELS ..... 4 credit hours**

Prerequisite: None

6 hours per week (2-4)

Emphasized in this course are manual skills to make perspective drawings for pictorial presentation, scale models showing site conditions with topography, simple methods for rendering drawings, shades and shadows on architectural drawings, and photographs of models for simulated comparison of proposed building to proposed building site.

**ARC 207. ESTIMATING CONSTRUCTION COSTS I ..... 2 credit hours**

Prerequisite: ARC 117, 120

2 hours per week (2-0)

This class provides an introduction to methods of estimating construction costs for building construction projects involving the use of quantitative survey methods of estimating materials, labor, equipment. Methods of computing overhead and profit are included.

**ARC 208. ESTIMATING CONSTRUCTION COSTS II ..... 2 credit hours**

Prerequisite: ARC 207

2 hours per week (2-0)

This is an advanced course in estimating construction costs. It is intended for large scale construction projects using methods taught in ARC 207.

**ARC 209. SURVEYING ..... 3 credit hours**

Prerequisite: MTH 151

4 hours per week (1-3)

A lecture and field course on the process of surveying and the analysis of survey data.

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**ARC 210. STRUCTURE IN ARCHITECTURE..... 2 credit hours**

Prerequisite: PHY 111

2 hours per week (2-0)

This class provides an introduction to the use of structural systems (steel, timber, and reinforced concrete, etc.). Design fundamentals of simple structural components are emphasized.

**ARC 213. ARCHITECTURAL DRAWING III..... 6 credit hours**

Prerequisite: ARC 122

9 hours per week (2-7)

Major problems in architectural detailing are studied through the preparation of drawings and details for a moderate sized building such as a school or church.

**ARC 224. ARCHITECTURAL DRAWING IV..... 6 credit hours**

Prerequisite: ARC 213

9 hours per week (2-7)

Major problems in architectural drawing are studied through the preparation of programs and drawings for a large size building project such as a shopping center or multi-story structure.

**ART \_\_\_\_\_ (ART)**

**ART 101. DRAWING AND PAINTING ..... 3 credit hours**

Prerequisite: None

3 hours per week (1-2)

This class is for students with no previous studio work who wish to experience an introductory art course and develop individual creative expression. Instruction is in the fundamentals of color and composition involving basic use of art media. It is not intended to take the place of Art 111 or Art 114.

**ART 111. BASIC DRAWING I ..... 4 credit hours**

Prerequisite: None

6 hours per week (1-5)

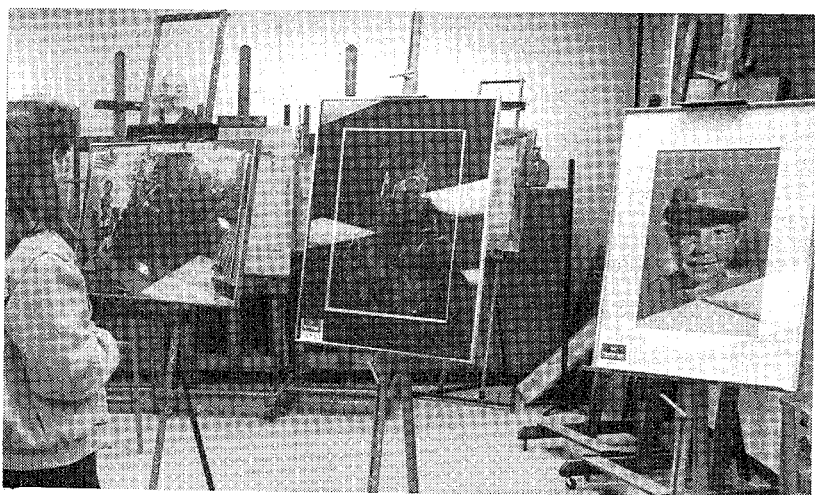
This class is an introduction to fundamentals of drawing. Through projects students are given experience in basic problems and issues of drawing. Emphasis is on training the eye and the hand. This course serves as a basis for those who wish to improve their ability to think and articulate in visual terms.

**ART 112. BASIC DESIGN I ..... 4 credit hours**

Prerequisite: None

6 hours per week (4-2)

Study is carried out in this class of two dimensional structures through the exploration of the elements of art: line, value, shape, texture, color. The visual recognition that the predominance of the whole constitutes the composition of its parts is stressed. Emphasis is on experimentation and imagination to arrive at visual ordering.



**ART 114. PAINTING ..... 4 credit hours**

Prerequisite: None  
6 hours per week (0-6)

The necessary skills of controlling the application of colored pigments to achieve a unified two dimensional surface are developed. Emphasis is on development of sustaining attitudes toward painting regardless of subject matter or style.

**ART 120. PORTRAIT PAINTING AND LIFE DRAWING..... 4 credit hours**

Prerequisite: None  
6 hours per week (0-6)

Working from live models, students study anatomy, techniques in drawing, painting and visual expression; multi-media; clay modeling. It is preferred that the students have some art background, although not required.

**ART 122. BASIC DRAWING II ..... 4 credit hours**

Prerequisite: ART 111  
6 hours per week (0-6)

Complex problems of drawing are explored with greater emphasis placed on individual solutions. Several new media are introduced.

**ART 123. BASIC DESIGN II..... 4 credit hours**

Prerequisite: ART 112 or consent  
6 hours per week (0-6)

Three dimensional design is studied through a series of carefully conceived projects for which individual solutions are sought. Investigated is form, volume and structure with a variety of materials of different properties.

**ART 124. IMAGINATIVE DRAWING I..... 2 credit hours**

Prerequisite: None  
2 hours per week (0-2)

This course is devoted to imaginative drawing, both abstract and representational. The aim is to help students to develop and to refine imaginative ideas and to improve the graphic quality of their work.

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**ART 126. IMAGINATIVE DRAWING II..... 2 credit hours**

Prerequisite: ART 124 or consent

2 hours per week (0-2)

This course allows the student to continue work begun in ART 124.

**ART 130. ART APPRECIATION..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

An inquiry into the ways in which art reflects, extends and shapes experience. Art of the past and the present as a statement of our human condition is emphasized through class discussion, short papers and projects.

**ART 140. LIFE DRAWING ..... 4 credit hours**

Prerequisite: None

6 hours per week (0-6)

This class involves drawing of the nude to develop visual acuity and self awareness. Emphasis is on, but not limited to, gesture and contour drawing as a means towards graphic, conceptual and emotional communication through figure studies.

**ART 143. ART AND CULTURE OF AFRO-AMERICA..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course prepares students to participate in and appreciate the arts (visual, dance, music, film, poetry, literature) of African and Afro-American people. Perspectives and definitions that differ from Western values and standards are presented. The anthropological approach is used to recognize the importance of history in understanding the present. Multi-media methods. Skill development and aesthetic competence are emphasized.

**ART 189. STUDY PROBLEMS IN ART..... Variable credit**

Prerequisite: Consent of instructor

This class provides individualized directed activities in Art. A special project is assigned.

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**ASTRONOMY \_\_\_\_\_ (AST)**

**AST 100. INTRODUCTORY ASTRONOMY ..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

The sun, moon, planets and stars are observed with telescope, and through films and slides. Astronomy is presented as a hobby as well as a basic science. No prior knowledge of astronomy is required.

**AST 111. GENERAL ASTRONOMY..... 3 credit hours**

Prerequisite: None

4 hours per week (4-0)

A survey is provided of the solar system and the universe designed for both transfer and vocational students. No previous mathematics or science is required. Topics include: the sun, moon and planets; Ptolemaic and Copernican systems; seasonal changes in the sky and modern ideas growing from early beliefs in astrology.

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## **AUTO BODY REPAIR \_\_\_\_\_ (ABR)**

*Students enrolling in the Auto Body Repair Program are required to furnish basic tool sets. They also are required during their training to add to the tool sets so they are equipped upon completion of their programs.*

### **ABR 111. AUTO BODY REPAIR FUNDAMENTALS..... 4 credit hours**

Prerequisite: None

8 hours per week (1-8)

This course involves repairing damaged body panels and studying the working properties of automobile sheet metal and basic damage conditions, analyzing typical damage conditions and establishing accepted repair procedures.

### **ABR 112. AUTO REFINISHING FUNDAMENTALS..... 4 credit hours**

Prerequisite: None

8 hours per week (2-6)

Methods and procedures used with automobile refinishing materials are covered in this course. Also included are: acrylic lacquers and enamels used to spray paint automobile body panels and complete automobiles; proper use of refinishing materials and the development of basic skills and procedures used in the trade.

### **ABR 113. LIGHT BODY SERVICE..... 1 credit hour**

Prerequisite: None

7½ weeks, 4 hours per week (0-4)

Principles of alignment and servicing of body components are the focus of this class. Students are exposed to the adjustments of various designs of hinges, latches, window regulators and the problems involved in servicing body trim, hardware and the sealing of water and dust leaks. Correct fit and the function of body parts are stressed.

### **ABR 114. APPLIED AUTO BODY WELDING ..... 1 credit hour**

Prerequisite: None

7½ weeks, 4 hours per week (0-4)

This class is a demonstration-lab course developing basic welding skills used in auto body repair. Types of welded joints used to repair or replace damaged panels are taught with special emphasis on joint construction and heat control.

### **ABR 123. BODY REPAIR APPLICATIONS..... 4 credit hours**

Prerequisite: ABR 111

8 hours per week (0-8)

This is a continuation of Auto Body Repair 111. Lab work includes actual repair jobs to develop all of the basic bumping skills. Emphasis is placed on quality and work habits.

### **ABR 124. AUTO REFINISHING APPLICATIONS..... 4 credit hours**

Prerequisite: ABR 112

8 hours per week (0-8)

This is a continuation of units in Auto Refinishing 112. Lab assignments on actual automobiles provide opportunity to improve skills, matching of high metallic colors using modern spot repair and color blending techniques, as well as overall refinishing.

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**ABR 125. FLAT RATE ESTIMATING ..... 2 credit hours**

Prerequisite: None

3 hours per week (0-3)

The course involves the use of flat-rate manuals to determine parts and labor prices in estimating damaged automobiles. Emphasis is on procedures used to establish complete and accurate prices in preparing the estimate.

**ABR 126. FUNDAMENTALS OF FRAME AND BODY ALIGNMENT ..... 2 credit hours**

Prerequisite: Consent

4 hours per week (0-4)

This course provides an opportunity to work with common types of body frame damage and the equipment used to make repairs. Laboratory assignments include use of frame gauges and portable body-frame straightening equipment to make a diagnosis and set up corrective hook ups.

**ABR 127. MAJOR REPAIR FUNDAMENTALS ..... 2 credit hours**

Prerequisite: None

4 hours per week (0-4)

This course teaches the use of hydraulic jacking equipment to repair sheet metal damage. Lab work includes set up of typical push or pull operations and straightening procedures used on major collision damages.

**ABR 130. CUSTOM PAINTING ..... 1 credit hour**

Prerequisite: ABR 112

7 weeks, 4 hours per week (1-3)

This course provides students with an understanding of the art of custom painting. Students are familiarized with the tools and techniques used in the field. The course covers the use of candy apple, pearl and metal flake paints; also the use of air brushes and custom murals on vans as well as other specialized techniques.

**ABR 131. ADVANCED CUSTOM PAINTING ..... 2 credit hours**

Prerequisite: ABR 130

7½ weeks, 8 hours per week (0-8)

This class is a continuation of methods and procedures used in automotive custom painting. Lab assignments on actual automobiles provide opportunity to improve skills in pin striping, color design coordination, lettering on automobiles, mural development, and the use of specific effect color and related materials.

**ABR 219. MAJOR REPAIR PROCEDURES ..... 4 credit hours**

Prerequisite: ABR 123

8½ hours per week (0-8½)

This course provides a detailed study of the automobile body that includes use of hydraulic jacks and accessories to make repairs common to the front, side and rear sections of automobiles damaged by collision. Repair jobs are involved to provide diversified experience on body trim and hardware, replacement and aligning various body components.

**ABR 220. ENAMEL REFINISHING PRACTICES ..... 4 credit hours**

Prerequisite: ABR 112 and 124

8 hours per week (0-8)

This class is a study of modern acrylic and polyurethane enamels which includes surface preparation, mixing and application of solid and metallic

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colors. Actual cars and light trucks provide the student diversified experience and skill development.

**ABR 226. UNIBODY STRUCTURAL ALIGNMENT..... 2 credit hours**

Prerequisite: None

4 hours per week (2-2)

This course offers training for the repair of structurally damaged unibody automobiles and light trucks. Included are a detailed study of body construction, diagnostic procedures, repair techniques and structural parts replacement using both conventional gauging and universal measuring equipment.

**ABR 230. SPECIALIZED STUDY..... Variable credit**

Prerequisite: Consent

In this class, students utilize periods of concentrated effort on specific assignments in selected areas of the auto body repair field. Students work with instructor consultation to demonstrate development within the assigned area of general collision service, body shop organization and management, or estimating automobile physical damage.

**AUTOMOTIVE SERVICE \_\_\_\_\_ (AS)**

*Students enrolling in automotive service programs are required to furnish basic tool sets. They are also required to add to the tool sets during their period of training so they are equipped for employment upon completion of their program.*

**AS 059. CONSUMER CAR CARE ..... 1 credit hour**

Prerequisite: None

7½ weeks, 4 hours per week (1-3)

This course is an introduction to the basic principles of operation and service of today's automobiles. The course includes the following: orientation, personal auto familiarization, basic automobile operation, safety, battery service, cooling system service, lubrication, oil and filter service, wheel bearing service, tire service and brake inspection.

**AS 097. AUTOMOTIVE SERVICE FUNDAMENTALS ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

Students learn basic theory, diagnosis, service and repair skills needed to enter a technical automotive service curriculum. Instruction centers on safety, tools, measurement, fasteners and specialized automotive equipment. Service includes cooling, lubricating and exhaust systems. Students with quality automotive experience equal to a vocational automotive course are encouraged to articulate or test out of this course. Those not interested in a career in Auto Service are encouraged to take consumer base classes.

**AS 111. CYLINDER HEAD SERVICE ..... 2 credit hours**

Prerequisite: None

4 hours per week (2-2)

Students develop skills and understanding of the automobile engine and

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related service procedures for the most common engine service complaints. Using text, tools, manuals and automobiles in a laboratory setting, students perform service on the upper half of the modern automobile engine. This is the first half of a complete engine repair sequence. Students are encouraged to take this course early in their schooling but must have, or be developing, the skills offered in AS 097, to expect success.

**AS 113. MANUAL TRANSMISSIONS AND DRIVETRAINS.... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This is an introductory course to the operating principles and repair procedures of manual driveline systems. Units of study include a wide range of concepts dealing with such areas as: final drive systems, clutches, transmissions and transaxles. Both front- and rear-wheel drive systems as well as four-wheel drive units are studied. Diagnosis and repair procedures on live vehicles is stressed.

**AS 116. AUTOMOTIVE ELECTRONICS ..... 2 credit hours**

Prerequisite: None

4 hours per week (2-2)

Students are introduced to basic electricity theory and practice. Using automotive components and laboratory exercises, students progress from the theory of Ohms Law and component function, total diagnosis, service and/or repair of battery, charging system and cranking circuits. Electricity is a vital component in almost every phase of auto service. It is recommended that this course be one of the first courses taken to build a strong foundation for advanced automotive courses.

**AS 118. FUEL SYSTEMS ..... 2 credit hours**

Prerequisite: None

4 hours per week (1½-2½)

Students experience demonstrations, laboratory exercises and discussion designed to develop an understanding of basic fuel system operation and factors affecting its performance. Objectives are designed to build a strong understanding of carburetion, emission controls, fuel injection theory and their components. Emission systems are introduced and basic service procedures are practiced. The knowledge obtained in PHY 110 Applied Physics, provides an excellent base of theory for successful completion of this course.

**AS 121. ENGINE REPAIR ..... 2 credit hours**

Prerequisite: AS 111

4 hours per week (2-2)

Using the skills developed in AS 111, students increase their understanding of the automobile engine through study and lab activities focused on the block and its components' repair. Text, tools, comprehensive manuals and special tools aid students in complete engine disassembly, repair, reassembly and operation.

**AS 124. WHEEL BALANCE AND ALIGNMENT ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

Students learn the basic theory of wheel alignment and develop skills needed to diagnose and align all foreign and domestic cars. Using state-of-the-art balancers, students understand and perform wheel balance equal to

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the level accepted by the industry. This is the first course in a two course suspension sequence. To repair and align vehicles, both courses must be completed.

**AS 125. BRAKE SYSTEMS..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

Students are guided through each component of the brake system. Text, tools, manuals, and live automobiles are used to teach the theory of brakes and function of components. Students are prepared to perform comprehensive brake service required in later classes. This is the introductory automotive brakes class and must be followed by the second in the sequence. Completion of the first semester auto service courses are recommended to get full benefits of the course.

**AS 126. ELECTRICAL SYSTEMS..... 2 credit hours**

Prerequisite: AS 116

4 hours per week (1-3)

Building on the skills developed in AS 116, students explore electronic and computerized ignition, starting systems and charging systems. This is the middle class in a three course sequence designed for in-depth understanding and skill development. It is strongly recommended that the first semester classes be completed prior to enrolling in this class.

**AS 128. FUEL INJECTION..... 2 credit hours**

Prerequisite: AS 118

4 hours per week (1-3)

Students build on the concepts of carburetor and emission controls. Instruction centers on electronic fuel injection systems, computer controlled systems, final testing and service of them. This is the second course in the fuel sequence. Students are encouraged to enroll in this class immediately following AS 118. Involvement in Automotive Electronics will enhance learning in this course.

**AS 129. DIAGNOSIS AND REPAIR I..... 2 credit hours**

Prerequisite: AS 111, 113, 116, 118

4 hours per week (1-3)

This course is designed to provide students with the basic diagnosis and repair skills necessary to properly service late model automobiles. Specialized areas of instruction include engines, electrical systems, fuel systems and drive trains. Cooling, lubrication and exhaust system service are also included.

**AS 160. SMALL ENGINE REPAIR..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This course covers the complete teardown and assembly of a small air cooled engine. It covers in detail the theory and operation of Briggs & Stratton, Tecumseh, and Kohler engines which constitute about 80% of the lawnmowers, garden tractors, tillers, mini-bikes, etc. in the area.

**AS 161. SMALL ENGINE DIAGNOSIS AND REPAIR..... 2 credit hours**

Prerequisite: AS 160

4 hours per week (1-3)

This course is a continuation of AS 160 Small Engine Repair. Students

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perform in-depth diagnosis and repair of small gasoline engine units. In addition, units in electrical troubleshooting, advanced test equipment and driveline components are studied.

**AS 212. AUTOMATIC TRANSMISSIONS - MECHANICAL .... 2 credit hours**

Prerequisite: AS 113

4 hours per week (2-2)

Complete live automatic transmission overhaul is featured in this course. Principles of operation and diagnosis are also included. The development of high standards of workmanship is given special emphasis.

**AS 214. STEERING AND SUSPENSION SYSTEMS ..... 2 credit hours**

Prerequisite: AS 124

4 hours per week (1-3)

This is an advanced course involving diagnosis and service procedures of front and rear wheel drive suspension and steering systems. Emphasis is on proper removal and replacement of components. It is essential that students have all required hand tools and have successfully completed AS 124, or have previous alignment experience.

**AS 215. BRAKE SYSTEM SERVICE ..... 2 credit hours**

Prerequisite: AS 125

4 hours per week (1-3)

Using live cars where possible, students develop skills in repairing brake systems. Concentration is on factory technique and accepted field practice. Instruction includes drum, rotor, hydraulic system and mechanical system inspection and service.



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**AS 216. ELECTRICAL CIRCUITS ..... 2 credit hours**

Prerequisite: AS 126

4 hours per week (1-3)

This class involves the theory and application of automotive electronic circuits and accessories. It includes construction and servicing lighting systems, gauges, warning devices, windshield wipers and solid state devices.

**AS 218. ENGINE PERFORMANCE DIAGNOSIS ..... 2 credit hours**

Prerequisite: AS 111, 126, 128

4 hours per week (1-3)

This course is designed to incorporate the basic skills learned in AS 111, 116, 121, 126, and 128, into a working diagnostic and repair sequence. Extensive use is made of live vehicles to enable students to learn in as close to a real situation as possible.

**AS 219. DIAGNOSIS AND REPAIR II..... 3 credit hours**

Prerequisite: First year auto service courses

6 hours per week (1-5)

This course is designed to provide students with basic diagnosis and repair skills necessary to properly service late model automobiles. Specialized areas of instruction include engine, brake systems, electrical systems and carburetion.

**AS 222. AUTOMATIC TRANSMISSION**

**HYDRAULIC SYSTEMS ..... 2 credit hours**

Prerequisite: AS 212

4 hours per week (2-2)

An application of hydraulic fundamentals to automatic transmission operation is provided in this class. Diagnosis of transmission problems is featured, with emphasis on understanding basic transmission functions.

**AS 227. HEATING AND AIR CONDITIONING ..... 2 credit hours**

Prerequisite: None

4 hours per week (2-2)

Air conditioning now appears on 80% of all new cars produced. This unique accessory is explained in depth including theory of refrigeration, servicing procedures and diagnostic techniques. Compressor service and distribution systems are studied. Laboratory experience is given; testing and servicing a variety of systems and problems.

**AS 228. DRIVEABILITY ..... 2 credit hours**

Prerequisite: AS 218

4 hours per week (2-2)

This course is designed to utilize the diagnostic and repair skills learned in AS 218 on later model vehicles that have computerized controlled ignition, fuel and emission control systems. Additional diagnostic and repair sequences of the computerized systems are introduced.

**AS 229. ADVANCED DIAGNOSIS AND REPAIR ..... 4 credit hours**

Prerequisite: All third semester automotive courses

4 hours per week (1-3)

This course covers the diagnosis and repair of engine, engine related systems, chassis units and drive trains.

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**AS 230. PRACTICAL FIELD EXPERIENCE ..... 2 credit hours**

Prerequisite: Consent

4 hours per week (1-3)

This course provides an opportunity to experience first-hand the occupation of auto mechanics. Resume writing, interviewing techniques and customer relations are highlighted, as well as an internship working in the field.

**AS 232. AUTOMATIC TRANSAXLE AND AUTOMATIC OVERDRIVE TRANSMISSIONS ..... 2 credit hours**

Prerequisite: AS 222

4 hours per week (1-3)

To improve fuel economy, automatic transmissions have undergone major design developments in recent years. This course includes a detailed study of front wheel drive, lock-up converters and fourth gear overdrives. Also included is specialized instruction in maintenance, disassembly/reassembly, adjustment and diagnosis.

**AS 238. COMPUTER ENGINE CONTROLS ..... 2 credit hours**

Prerequisite: AS 228

4 hours per week (1-3)

Using manuals, test equipment, special tools and the computer, students move through flow charts and standard diagnostic procedures to find and repair driveability problems on computer equipped cars. An understanding of the theory, purpose and operation of the engine control computer is an area of concentration. Prerequisite skills include knowledge of fuel, emission, ignition and electrical systems. A strong background in test equipment with skills in driveability are essential to comprehend instruction.

**AS 250. NEW CAR PRODUCTS ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Two dynamics of the modern automobile industry require constant updating of technological information. This class allows the student an opportunity to learn the new technology which is now included in courses taken earlier without repeating that course. New technology and a review of important updates are studied.

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**BIOLOGY \_\_\_\_\_ (BIO)**

**BIO 101. CONCEPTS OF BIOLOGY ..... 4 credit hours**

Prerequisite: None

6 hours per week (3-3)

Basic principles and concepts of biology are studied in lecture and laboratory with emphasis on practical applications and effects on the environment. It is designed for the non-science student, but provides a basic introduction for advanced biology courses.

**BIO 102. HUMAN BIOLOGY ..... 4 credit hours**

Prerequisite: None

6 hours per week (3-3)

Structure, function and the place of human beings in the biological world are studied in lecture and laboratory. Labs involve use of microscopes and other

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medical equipment, dissection and observation, and recording/reporting results of activities. Course covers basic anatomy and physiology of all body systems.

**BIO 107. FIELD ECOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The activities in this class stress campus wooded areas, ponds, fields and the Huron River system. Laboratory work and investigation of off-campus environmental problems are used as supplements.

**BIO 111. ANATOMY AND PHYSIOLOGY..... 5 credit hours**

Prerequisite: None

7 hours per week (4-3)

The structure and function of all body systems is the foundation of this course. It covers diseases and other dysfunctions with emphasis on practical applications to various health fields. This course is designed for students pursuing nursing and other allied health programs.

**BIO 127. BOTANY..... 4 credit hours**

Prerequisite: BIO 101 or consent

6 hours per week (3-3)

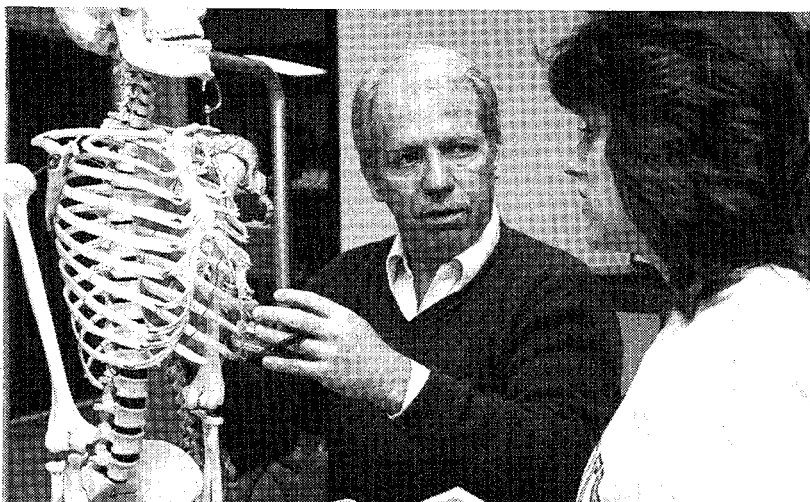
In this class, field and laboratory investigations provide detailed study of plant structure and function. It is for students with a general interest in plants or to provide a basis for further work in botany or other programs.

**BIO 128. ZOOLOGY..... 4 credit hours**

Prerequisite: BIO 101 or consent

6 hours per week (3-3)

In this class, field and laboratory investigation provide a detailed study of classification, evolutionary relationships, structure, and function of the animal kingdom. For students with a general interest in animals or to provide a basis for further work in zoology or other programs.



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## **BIO 131-138. APPLIED PLANT SCIENCE SEQUENCE**

*These courses may be taken individually or in series. This series is designed to enable students to apply basic botanical information to indoor and outdoor gardening. The courses study plants of economic importance to human beings for food as well as pleasure in the home and outdoors. Practical experience is given in the College's greenhouse and gardens. This series is designed for the non-specialist with an interest in plants, their propagation, growth, maintenance, harvesting and utilization. Students are encouraged to enroll in the sequence beginning with BIO 131 in the winter semester, and continue through spring and summer semesters into the fall semester with BIO 132, 133 and 134.*

### **BIO 131. OUTDOOR GARDEN PREPARATION ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This Winter Semester course deals with the propagation of plants from cuttings and seeds, and the maintenance and care of indoor plants. Most class sessions are held in the College Greenhouse. All plants used are identified and students are able to increase their collections of houseplants and grow vegetable plants for transplanting in the garden when weather permits. Identification and control of insect pests are discussed along with soil testing and proper use of fertilizers.

### **BIO 132. GARDEN PLANTING ..... 1 credit hour**

Prerequisite: None

7 weeks, 5 hours per week (5-0)

This Spring Semester course deals with seed bed and planting area preparation. Further opportunities for germination of seeds indoors for transplanting into prepared areas are available in the early weeks of the semester. Transplanting of seedlings and direct planting of selected varieties of seeds highlight this course with emphasis on proper care. Scheduling of plantings for continuous yield and plant rotation techniques are demonstrated in each student's garden area. Pest control is an item of concern.

### **BIO 133. GARDEN CARE ..... 1 credit hour**

Prerequisite: None

7 weeks, 5 hours per week (5-0)

This Summer Semester course emphasizes continued care and maintenance of plants being grown. Planting schedules for continuous yield are an integral part of this semester's activities. Irrigation practices are utilized. Pest control practices continue from the previous semester. Harvesting and utilization of selected plants for food and ornamental purposes highlight semester's activities.

### **BIO 137. ORNAMENTAL INDOOR PLANTS ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course is designed for people who enjoy houseplants and want to learn more about them. Selection and growth of ornamental indoor plants from seeds and cuttings highlight the course. Students should be able to increase their collection of houseplants by at least fifteen varieties. Proper care of houseplants is stressed, relating to soil, potting, transplanting, watering, fertilizers, insects, control of growth and flowering.

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**BIO 147. HOSPITAL MICROBIOLOGY..... 1 credit hour**

Prerequisite: None

5 weeks, 3 hours per week (3-0)

This class provides a survey of the morphology, physiology and immunology for pathogenic organisms with emphasis on infection, aseptic, and sterilizing procedures.

**BIO 189. STUDY PROBLEMS IN BIOLOGY AND ECOLOGY ..... Variable credit**

Prerequisite: Consent

This class involves directed activities in the biological sciences. These activities may be laboratory centered, field studies, or small groups using seminars to investigate special problems.

**BIO 237. MICROBIOLOGY ..... 4 credit hours**

Prerequisite: BIO 101 or consent

6 hours per week (3-3)

Micro-organisms and their activities are studied in lecture and laboratory.

**BIO 247-289. FIELD STUDY BIOLOGY SEQUENCE**

*Students who enjoy outdoor activities will find the following courses to their liking. They are real nature study for one credit. Most courses meet outdoors. See individual courses below.*

**BIO 249. FIELD STUDY OF BIRDS ..... 1 credit hour**

Prerequisite: None

7 weeks, 5 hours per week (5-0)

This class involves identification of birds, their songs and nesting habits.

**BIO 258. FIELD STUDY OF TREES AND SHRUBS..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

Identification and habitat study of woody plants takes place in this class.

**BIO 259. FIELD STUDY OF COMMON PLANTS ..... 1 credit hour**

Prerequisite: None

7½ weeks, 2 hours per week (2-0)

Non-woody higher plants are studied with emphasis on identification.

**BIO 260. SPRING WILD FLOWERS..... 1 credit hour**

Prerequisite: None

7 weeks, 5 hours per week (5-0)

The Spring flora is studied with emphasis placed on recognition.

**BIO 267. WINTER FIELD STUDY ..... 1 credit hour**

Prerequisite: None

7½ weeks, 2 hours per week (2-0)

Biological organisms are studied in their winter conditions.

**BIO 270. NATURE PHOTOGRAPHY ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This is a practical course in photographing nature. Several approaches are used to give students experience with different techniques and films. Use of a camera and film is required.

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## **BLACK STUDIES \_\_\_\_\_ (BLS)**

**BLS 102. BLACK WOMEN..... 3 credit hours**  
(See SOC 102)

**BLS 107. BLACK PSYCHOLOGY ..... 3 credit hours**  
(See PSY 107)

**BLS 120. PORTRAIT PAINTING AND LIFE DRAWING ..... 4 credit hours**  
(See ART 120)

**BLS 143. ART AND CULTURE OF AFRO-AMERICA..... 3 credit hours**  
(See ART 143)

**BLS 150. AFRO-AMERICAN HISTORY ..... 3 credit hours**  
(See HST 150)

**BLS 154. THE BLACK FAMILY..... 3 credit hours**  
(See SOC 154)

**BLS 181. AFRO-AMERICAN LITERATURE..... 3 credit hours**  
Prerequisite: None  
3 hours per week (3-0)  
(See ENG 181)

This course provides a critical analysis of the AfroAmerican experience in the world of literature. It is an introduction to contemporary Black literature, letters and thought, as well as a survey of the great works of Afro-Americans.

**BLS 183. AFROMUSICOLOGY ..... 3 credit hours**  
(See MUS 183)

**BLS 201. THE BLACK CHILD..... 3 credit hours**  
Prerequisite: None  
3 hours per week (3-0)

This course focuses on the Black child as a human being and a member of a Black subculture of American society. A study is done of the common pattern of growth stages and developmental tasks that the Black child shares with Euro-American children. Also, study is done on unique historical and current patterns of oppression in the American color caste system and the challenge this presents to Black families and the broader society in building a positive self concept in the Black child.

**BLS 210. BLACKS IN THE CITY ..... 3 credit hours**  
(See SOC 210)

## **BLUEPRINT READING \_\_\_\_\_ (BPR)**

**BPR 100. BLUEPRINT READING I..... 2 credit hours**  
Prerequisite: None  
3 hours per week (3-0)

This course includes elementary blueprint reading for the construction trades

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with emphasis on the development of visualization skills and the study of practices and symbols for interpreting construction prints. Smaller scale construction projects are studied.

**BPR 101. BLUEPRINT READING II..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Fundamentals of blueprint reading as applied to the manufacturing industry are studied. Basic drafting principles are studied as applied to specific problems. The class is designed for pre-engineers, draftsmen, machine operators, machine repairmen, inspectors, welders and supervisors.

**BPR 103. SHEET METAL BLUEPRINT READING AND LAYOUT..... 3 credit hours**

Prerequisite: None

4 hours per week (2-2)

Elementary sheet metal layout with emphasis placed on developing sheet metal patterns by standard short cut methods is the focus of this course. Hands-on experience fabricating the patterns into actual sheet metal locks, seams, clips, connectors, ducts, elbows, tees and offsets takes place in the sheet metal shop.

**BPR 106. BLUEPRINT READING FOR WELDERS..... 3 credit hours**

Prerequisite: None

3 hours per week (1-2)

This class is designed for the welders responsible for properly locating weld on the weldment and determining weld size, contour, length, type of filler metal and any applicable welding procedures.

**BPR 110. BLUEPRINT READING FOR CONSTRUCTION TRADES..... 2 credit hours**

Prerequisite: BPR 100

2 hours per week (2-0)

This class is for construction trade workers. Emphasis is on the application of blueprint reading, and principles and fundamentals to the construction process. Large scale construction projects are the base of instruction.

**BUSINESS MANAGEMENT \_\_\_\_\_ (BMG)**

**BMG 100. INVESTMENTS ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This course is designed to acquaint students with various aspects of financial investments. Topics include: corporate securities, investment banking, financial statement analysis, over-the-counter market and other phases of financial investments.

**BMG 111. BUSINESS LAW I ..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

This course involves text and case study of the general laws applicable to business, covering the nature of law courts and court procedures, contracts,

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real and personal property, wills and trusts and negotiable instruments. It is offered all semesters and will transfer to EMU as BUS 293.

**BMG 122. BUSINESS LAW II ..... 3 credit hours**

Prerequisite: BMG 111

3 credit hours (3-0)

Text and case study of agency relationships, formation and operation of partnerships, formation and operation of corporations, security laws, sales agreements debt relationships, and current computer law. BUS 122 is offered only Winter Term and will transfer to EMU with departmental consent.

**BMG 130. INVESTMENT STRATEGIES..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

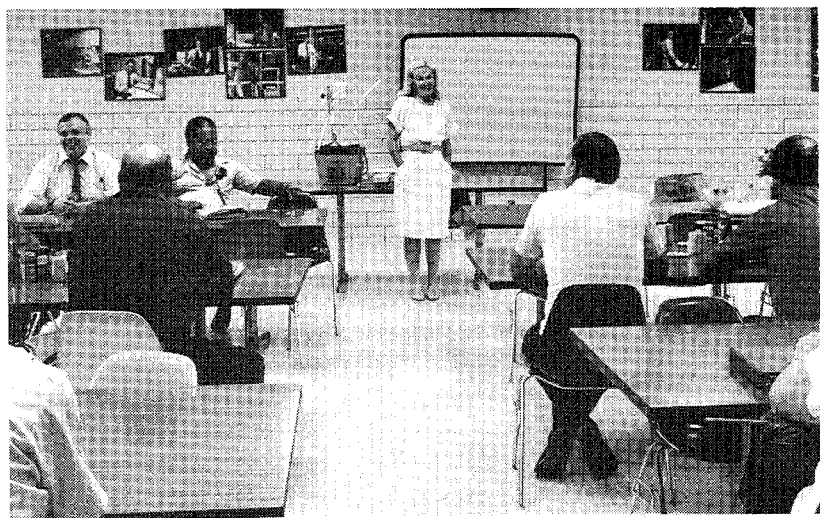
This is a course designed to help potential investors keep abreast of opportunities in today's changing financial world. This course presents current information on stock and bond markets, commodities, real estate investment, and other investment opportunities including antiques and gems. Students are taught how to analyze risk and return, and relate to the current tax structure.

**BMG 140. INTRODUCTION TO BUSINESS..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

This course covers functions, objectives, problems, organization, and management of modern business. Also the free-enterprise system of business-economic activity and the impact of the consumer and governmental forces upon the system. Develops insight into vital role of the administrative function in our economy as a whole and in the operation of a single business unit. Practical orientation in the career opportunities available in business and industry. This course is also taught as a television course using the program series "The Business File."



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**BMG 150. LABOR-MANAGEMENT RELATIONS..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

This course acquaints students with factors affecting the labor-management relationships, develops insights into the growth, objectives and methods of organized labor and the significant managerial problems involved in dealing with labor. Analysis is done of the legal and institutional framework for collective bargaining; the nature, content and problem areas of the collective bargaining process and other labor relations problems.

**BMG 160. PRINCIPLES OF SALES ..... 3 credit hours**

Prerequisite: BMG 140

3 credit hours (3-0)

This class studies the principles and concepts of the sales function. Its primary purpose is to help students plan and deliver sales presentations. Areas of analysis are consumer buying motives, effective communication, handling objections, presenting demonstrations and closing a sale.

**BMG 200. HUMAN RELATIONS IN BUSINESS  
AND INDUSTRY ..... 3 credit hours**

Prerequisite: BMG 140

3 credit hours (3-0)

This course acquaints students with administrative principles and practices emphasizing the human relations aspect of management responsibility as it affects employee attitudes, morale and productivity. Major emphasis is on relationships among individuals and/or small groups, with problem-oriented sessions used to realistically relate the course materials to the human relations aspect of modern business-industrial enterprise.

**BMG 207. BUSINESS COMMUNICATION..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

Oral, written, and non-verbal skills are developed for effective internal and external communications in business. Emphasis is placed on organization, style, clarity, accuracy, and conciseness as students prepare reports, routine correspondence, resumes, and formal business presentations.

**BMG 208. PRINCIPLES OF MANAGEMENT ..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

This course is an introduction to the concepts and theories of management. Emphasis is on the functions of management -- planning, organizing, staffing, directing, and controlling, including motivation, decision-making and communication. This course is also taught as a television course using the program series "The Business of Management."

**BMG 209. SMALL BUSINESS MANAGEMENT ..... 3 credit hours**

Prerequisite: None

3 credit hours (3-0)

This class is intended for persons interested in starting a small business. This course enables students to learn to translate a business ownership dream into reality. Students prepare a business plan for their chosen, future business. It is required for the Photographic Technician and Graphic Design Technician programs and a recommended elective for the Auto Body Specialist, Electronics Service, and Food Service programs.

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**BMG 215. SMALL BUSINESS MANAGEMENT OPERATIONS ..... 3 credit hours**

Prerequisite: None  
3 credit hours (3-0)

This class is intended for persons expecting to be employed or already employed in a high technology or other smaller business. This course focuses on the management of small business, the small business environment, small business administrative and fiscal control, and small business marketing and operations. It is recommended for students in programs such as Numerical Control, Computer Information Systems, Robotics, Telecommunications, and Computer Aided Drafting.

**BMG 220. PRINCIPLES OF FINANCE ..... 3 credit hours**

Prerequisite: ACC 092 or ACC 122  
3 credit hours (3-0)

A survey is provided of the whole field of finance, both private and public. Emphasis is on the nature and role of finance in our economy, monetary system of the United States, commercial banking, Federal Reserve System, savings, nature of business financing, international finance, nature of consumer credit, interest rates, money markets, and financing state and federal governments.

**BMG 230. SUPERVISORY MANAGEMENT ..... 3 credit hours**

Prerequisite: None  
3 credit hours (3-0)

This class focuses on the application of the principles of management. Emphasis is on the managerial process, examining the functions of planning, organizing, staffing, directing, and controlling, and their relationship to the job of a supervisor. It helps potential or practicing supervisors gain a broader perspective of their role in the organizational structure, enabling them to contribute more effectively to the goals of the organization.

**BMG 235. WOMEN IN MANAGEMENT ..... 3 credit hours**

Prerequisite: None  
3 credit hours (3-0)

This is a course designed to help women develop management skills that establish competence, to examine how self-concept affects management style, and to assist in effecting behavioral changes to more effectively function as a manager. Topics covered include: problem solving and decision-making, planning for results, effective communication, motivation and team building.

**BMG 240. HUMAN RESOURCES MANAGEMENT ..... 3 credit hours**

Prerequisites: BMG 140 and BMG 208  
3 credit hours (3-0)

This class covers basic human resources activities that must be managed in any organization. It covers employment techniques, wages and hours, job evaluation, training, employee performance reviews, collective bargaining, employment counseling and collateral benefits such as pensions and fringe benefits.

**BMG 250. PRINCIPLES OF MARKETING ..... 3 credit hours**

Prerequisite: None  
3 credit hours (3-0)

This course is a study of our market-directed system with emphasis on the

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managerial level. Primary emphasis is on marketing strategy, planning in relationship to product, place, promotion and price. The concepts of economic fundamentals, marketing arithmetic, service and international marketing are incorporated.

**BMG 255. MARKETING AND MANAGEMENT CAREER DEVELOPMENT ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course is designed to develop skills and understanding in careers of Marketing, Management and Merchandising using simulated and actual applications through Delta Epsilon Chi competitive events. Membership in Delta Epsilon Chi is required. This course may be elected twice. Offered Winter semester only.

**BMG 270. ADVERTISING PRINCIPLES ..... 3 credit hours**

Prerequisite or Corequisite: BMG 250

3 credit hours (3-0)

This is a managerial approach to the study of the basic principles and concepts which underlie advertising practice and procedure in the marketing-promotional and distribution aspects of modern business-industrial enterprise operations. It includes the role of advertising in the individual firm and the total economy; also advertising objectives, methods, techniques, preparation, research, surveys, copywriting, layout, media selection and testing advertising effectiveness, as well as advertising rates and budgetary factors.

**BMG 290. INDEPENDENT DIRECTED STUDY ..... Variable credit**

Prerequisite: Consent. Credit hours determined prior to registration

This is a planned program of study in selected business-industrial occupational career subject matter under the guidance and direction of a regular staff member. It supplements classroom study in a way that enhances the student's total occupational, career, and educational experience. Readings, analyses, conferences and reports are included.

**BMG 299. INTERNSHIP-EXTERNSHIP ..... Variable credit**

To be assigned prior to registration

Prerequisites: Consent of I-E Coordinator

Internships are for the purpose of acquiring work experience in students' business-related occupational program area. Students are expected to work between 15 and 20 hours per week and attend a one-hour weekly seminar. Students in a two-year program must have completed a minimum of one year of their program before becoming eligible for Internship-Externship. Opportunities may be available on or off campus; however, there is no guarantee of placement. Normally students earn three credits each for I-E in Fall and Winter semesters and two credits each for Spring and Summer terms. A maximum of 12 credit hours may be applied toward the Associate Degree, and 6 credit hours toward a one-year Certificate of Achievement. Externships are programs of study designed for full time employees for occupational upgrading purposes and are integrated with their job activities. Students planning to enroll for Internship-Externship credit should first review their plans with their program advisor and with the Internship-Externship Coordinator to ensure proper program planning and to secure the appropriate permission.

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**BMG 211. SMALL BUSINESS MANAGEMENT****FOR WOMEN ..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This class is a combination of BMG 209 Small Business Management and WS 102 Growth Experience for Women, developed in conjunction with AAWCJC specifically for women considering entrepreneurship.

**CHEMISTRY \_\_\_\_\_ (CEM)****CEM 057. INTRODUCTORY CHEMISTRY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course offers a basic exposure to chemistry. Students with no background in high school science or algebra, or students wishing to improve their chemistry background should take this course before taking CEM 105 or CEM 111. Introductory Chemistry Laboratory (CEM 058) should be taken concurrently.

**CEM 058. INTRODUCTORY CHEMISTRY****LABORATORY ..... 1 credit hour**

Prerequisite or Corequisite: CEM 057

3 hours per week (0-3)

Designed to accompany CEM 057, this course provides an experience with basic chemical laboratory practices and procedures.

**CEM 105. FUNDAMENTALS OF CHEMISTRY ..... 4 credit hours**

Prerequisite: High school chemistry or CEM 057

6 hours per week (3-3)

Students with an interest in nursing or other health related areas, or needing a general science elective find that this broad survey of the major topics in chemistry meets the requirements of their program.

**CEM 111. GENERAL CHEMISTRY I ..... 4 credit hours**

Prerequisites: High school chemistry and one year high school algebra or CEM 057

6 hours per week (3-3)

This course covers the major topics in chemistry: laws of chemical combination, states of matter, atomic and molecular structure, bonding, and other basic principles. It is for students in a professional or preprofessional curriculum.

**CEM 122. GENERAL CHEMISTRY II ..... 4 credit hours**

Prerequisite: CEM 111 and MTH 169

8 hours per week (3-5)

Ionic equilibria, qualitative and quantitative analysis make up the three components of this course. Laboratory work includes the identification of unknowns using classical and instrumental techniques.

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**CEM 140. ORGANIC BIOCHEMISTRY ..... 4 credit hours**

Prerequisite: CEM 105 or CEM 111

6 hours per week (3-3)

An introduction to both organic and biochemistry is experienced by nursing and other health services students. Major topics covered are the structure and functional groups of organic compounds, structure of biological molecules, mechanisms of enzyme-catalyzed reactions, equilibria involved in the exchange and transport of oxygen and carbon dioxide, acid-base balance, and bioenergetics.

**CEM 211. ORGANIC CHEMISTRY I ..... 3 credit hours**

Prerequisite: CEM 111

3 hours per week (3-0)

As the first part of a two semester sequence, CEM 211 provides students with the background in nomenclature of organic chemistry, stereochemistry, the preparation and reactions of aliphatic and aromatic compounds in preparation for further work in CEM 222. This course is normally offered only in the fall semester.

**CEM 218. ANALYTICAL CHEMISTRY ..... 4 credit hours**

Prerequisite: CEM 122

8 hours per week (2-6)

Techniques for the separation and quantitative determination of chemical substances by gravimetric, volumetric, and instrumental methods are learned and practiced in this course.

**CEM 222. ORGANIC CHEMISTRY II ..... 5 credit hours**

Prerequisite: CEM 122, 211

9 hours per week (3-6)

This second part of a two-semester sequence in organic chemistry provides students with an opportunity to practice the preparation and handling of organic compounds in the laboratory in addition to extending their knowledge of the principles of organic chemistry learned in CEM 211. This course is normally offered only in the winter semester.

**CHILD CARE WORKER \_\_\_\_\_ (CCW)**

**CCW 100. THE EXCEPTIONAL CHILD ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

For those with no background in special education, this course presents an overview of the various physical, sensory, intellectual, social and emotional differences found in children from birth through six years of age. Identifying and working with handicapped and gifted children within the regular child care setting is stressed. Various community, state and national resources to assist exceptional children are identified.

**CCW 101. CHILD DEVELOPMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides a general overview of the physical, social, emotional and intellectual development of the child from conception to maturity with

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emphasis on the preschool years. It examines the environmental, ethnic and familial factors that make for group differences and individuality of growth, and reviews current research in these areas.

**CCW 103. ALTERNATIVE PROGRAMS IN CHILD CARE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The philosophy and theory of programs in child care are examined. Traditional, open, Montessori, High Scope, Piaget Based, Head Start, parent involvement and kindergarten programs are explored. Observations of area child care centers are frequently assigned.

**CCW 105. PRACTICUM I..... 3 credit hours**

Prerequisite: None

9 hours per week (0-9)

This course provides supervised teaching at the WCC Children's Center. Students work in the classroom, supervised by a qualified teacher at the Center. One and one half hours per week are spent attending a practicum seminar. Opportunities for observation, planning and participation are dependent on students' readiness. The course should be taken during the first semester in the Child Care Worker program. Credit may be arranged for students with past experience working at a licensed child care center. Contact the coordinator to arrange credit. In order to reserve available blocks of time, students are required to arrange supervised teaching hours at WCC Children's Center **before** registration.

**CCW 106. PRACTICUM II..... 3 credit hours**

Prerequisite: CCW 105 and completion of 30 credit hours of CCW Program

9 hours per week (0-9)

This course is an advanced continuation of CCW 105. Students who completed CCW 105 on campus are required to select an off-campus placement for CCW 106. See staff for assistance. If CCW 105 was completed off-campus, CCW 106 must be completed on campus. In order to reserve available blocks of time, students are required to arrange supervised teaching hours at WCC Children's Center **before** registration.

**CCW 107. EDUCATIONAL EXPERIENCES IN SCIENCE AND MATH ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Integrated curriculum workshops introduce the theory of math and science experiences for the young child. Topics include: learning to observe and teach the science and math around us every day; making materials, collecting resource files and practical application of ideas to be used in the child care setting. Community resources are explored.

**CCW 108. EDUCATIONAL EXPERIENCES IN EXPRESSIVE ARTS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Integrated curriculum workshops cover a wide range of the arts, especially music, creative movement, art and drama. How to facilitate creativity and

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self-expression is emphasized. Basic materials, techniques and activities are introduced and then used with young children.

**CCW 109. LANGUAGE AND COMMUNICATION..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Designed for child care persons and parents, this course examines the theory of language development in children. Consideration is given to non-verbal communication and cultural differences. Basic methods, activities and materials which explore the current philosophies of communication are discussed.

**CCW 110. SOCIAL/EMOTIONAL DEVELOPMENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides a multi-cultural approach to the study of personality development during the first six years of life. The characteristics and needs that emerge with each developmental stage are explored. Methods, suggestions and practical guides for meeting these needs in the child care setting are emphasized.

**CCW 111. DAY CARE ADMINISTRATION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Practical aspects of starting and operating a child care center are presented: proposal writing, equipment selection, accounting, administrative forms, taxes, insurance, operational management, interpersonal relationships within a center and staff training. State and federal guidelines are also examined.

**CCW 114. PRACTICUM III ..... 4 credit hours**

Prerequisite: CCW 105 and 106; must have completed or be completing 54 credit hours of CCW program (last semester in CCW program).

12 hours per week (0-12)

Students are assigned full responsibility as a practicing head teacher for a classroom of children for several weeks during the semester. Advance lessons and active participation as an assistant teacher are required. In order to reserve available blocks of time, students are required to arrange supervised teaching hours at WCC Children's Center before registration.

**CCW 116. SEMINAR IN INFANT CARE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Infant development is studied. Theories of growth are examined and related to the characteristics and needs of the infant in group or an individual setting. Maternal care needs and facilities are also explored.

**CCW 117. CHILDHOOD NUTRITION ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course presents the study of nutritional needs of the child. Included are the changing needs that occur from infancy through adolescence. There is particular emphasis on the impact of nutrition on the growth and function of children in the day care setting.

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**CCW 121. FIRST AID FOR CHILD CARE WORKER ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course consists of lectures, textbooks and practical work in first aid as outlined by the American Red Cross. Students are certified in first aid and CPR. There is additional emphasis on child safety.

**CCW 189. STUDY PROBLEMS..... Variable credit**

Prerequisite: Consent of program coordinator or instructor

Directed activities in child care are provided in this course. Working with child care faculty or other recognized child care specialists, students concentrate on an assigned problem and demonstrate understanding and skill development within the child care area.

**CCW 200. STAFF/PARENT INTERPERSONAL RELATIONS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course explores the many facets of parent and staff involvement in the child care setting. Topics include: various forms of parent participation, ways of increasing positive communication with parents, cultural differences and goals of parents, and planning parent education programs. Emphasis is given to the preparation, mechanics and techniques for the individual parent/teacher conference.

**COMMUNICATIONS AND THEATRE \_\_\_\_\_ (CMT)**

**CMT 101. FUNDAMENTALS OF SPEAKING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Instruction is provided in essential speech processes and skills. Organization of speeches and effective delivery are studied through the use of practical problems. The course attempts to relieve the stress the average person encounters when speaking in public, whether to a large group or to a familiar or an unfamiliar audience.

**CMT 102. INTERPERSONAL COMMUNICATION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course covers basic elements of interpersonal communication in both theory and practice. Such concepts, meanings, listening, and emotions are stressed. Particular attention is paid to building positive relationships and resolving conflict.

**CMT 131. RADIO-TELEVISION SPEECH..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class studies the development of an effective voice for speaking on the microphone through a study of contemporary standards in broadcast diction and voice production. The study of voice requirements for standard broad-

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cast forms, views, interviews, features, commercials and music continuity is involved as are basic oral reading techniques and a brief introduction to the International Phonetic Alphabet.

**CMT 140. VOICE IMPROVEMENT FOR BUSINESS AND PROFESSION ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This is an introduction to contemporary scientific and linguistic theory of the human speaking voice. It provides a basic method for the improvement of the individual's speaking voice for business conversation. The new and unique qualities of the human speaking voice for controlled and effective use on the microphone and telephone is studied.

**CMT 152. ACTING FOR THE THEATRE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class is an introduction to acting through the physical aspects of the stage, using the stage as a vehicle to promote ideas and feelings. Scenes will be assigned.

**CMT 189. STUDY PROBLEMS IN SPEECH..... Variable credit**

Prerequisite: Consent of instructor

This class involves individualized directed activities in Speech. A specific problem/issue is studied, or a special project is assigned.

## **COMPUTER INFORMATION SYSTEMS \_\_\_\_\_(CIS)**

**CIS 090. COMPUTER SKILLS..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is a lab course in computer operation for beginners. It teaches the use of microcomputers and related equipment, such as printers. It is designed to deal with "computer anxiety." Startup procedures and basic DOS functions are covered, and examples of today's powerful, user-friendly software are introduced, including word processing, spreadsheet, and filing programs. Other practical topics are covered such as shareware and shopping for computers. IBM or compatible computers are used.

**CIS 100. INTRODUCTION TO COMPUTERS ..... 3 credit hours**

Prerequisite: None

3 hours per week (1½-1½)

This course teaches computer novices how to use computers, together with the terms and concepts needed. It emphasizes how to use a microcomputer, and how to use powerful software packages such as spreadsheet, word processing, and database. The course teaches the basic vocabulary of computers, how computers are used in today's world, the basic cycle of computer operation, input and output devices, how computers follow directions and store information. This course is also taught as a telecourse.

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**CIS 102. COMPUTER GENERATED BUSINESS GRAPHS ..... 1 credit hour**

Prerequisite: None

7½ weeks, 2 hours per week (0-2)

This is an introductory course in computer-generated business graphs using formulas and menu or command-driven microcomputer software. Topics include computer hardware requirements, loading/preparing data sources, selecting data for display, choosing graph type (pie, bar, stacked bar, line, marked point, continuous data), displaying and printing the graph, naming and saving graph, recalling source data and graph, and producing complex graphs.

**CIS 103. MSDOS COMMANDS..... 1 credit hour**

Prerequisite: None

7½ weeks, 2 hours per week (0-2)

This course presents elementary and advanced MSDOS commands for making the system disk and for managing files, storage media and tree structure directories. All internal and many external commands and their syntax are covered. The concepts of the boot disk, system prompt, system disk, wildcards, switches and the default drive are taught.

**CIS 104. ADVANCED MSDOS ..... 1 credit hour**

Prerequisite: CIS 103 or equivalent

7½ weeks, 2 hours per week (0-2)

This course covers all commands for enhancing the microcomputer operating environment by building batch and configuration files. The EDLIN utility program commands are used to build batch, AUTOEXEC & CONFIG files. The basic concepts and commands for input-output-redirection to devices and files, pipes and filter, and RAM disk are covered.

**CIS 105. MICROCOMPUTER PROGRAMMING FOR BEGINNERS..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

In this class, students gain insights into computer organization, how it works in layman terms, develop (through lectures and exploring graduated exercises and assignments) skills necessary to identify problems and develop simple BASIC programs to solve them.

**CIS 107. SPREADSHEET SOFTWARE..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is an individualized course for persons wishing to learn how to use an electronic spreadsheet on a personal computer. Individuals may choose any spreadsheet software package approved by the instructor. The course utilizes one-to-one instructor guidance as needed while students work with tutorial guides and software. Individuals may work at their own pace.

**CIS 108. SOFTWARE TOOLS (SPECIAL SOFTWARE)..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is an individualized course for students who want to learn how to use an IBM compatible microcomputer or an application package on it. Individuals may choose a text processor, a spreadsheet, or a data management program. The course utilizes one-to-one instructor guidance as needed while



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students work with tutorial guides and software. Individuals may work at their own pace. Those wishing to learn more than one of the three software packages may do so, but should finish one before starting another.

**CIS 109. DATABASE SOFTWARE..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is an individualized course for persons wishing to learn how to use a database management system on a personal computer. Individuals may choose any database management system approved by the instructor. The course utilizes one-to-one instructor guidance as needed while students work with tutorial guides and software. Individuals may work at their own pace.

**CIS 111. COMPUTER CONCEPTS..... 3 credit hours**

Prerequisite: None

7½ weeks, 6 hours per week (3-3); or 15 weeks, 3 hours per week (1½-1½)

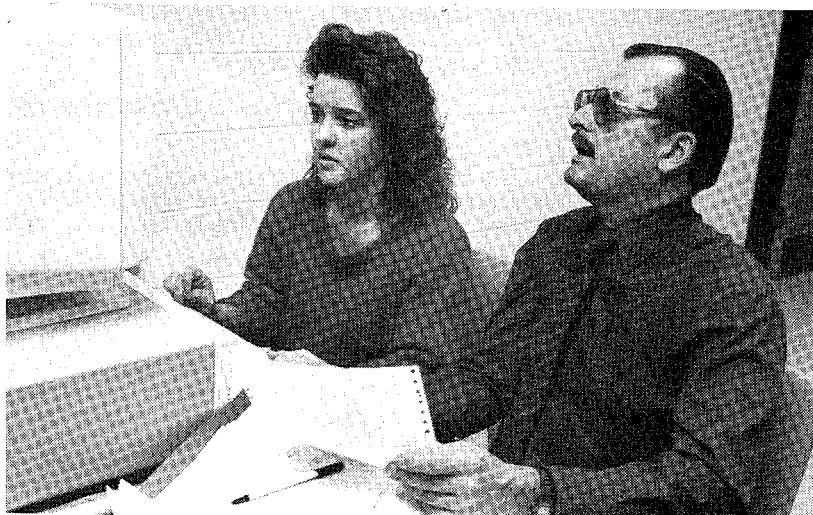
This course provides an overview of Business Information Systems. Topics developed include basic terminology, the role of computers in society and the discussion of hardware and software with an emphasis on business applications. Students survey microcomputer applications including word processing and electronic spreadsheets. (This course is offered in 15-week and 7½-week formats.)

**CIS 112. COMPUTER FUNCTIONS..... 3 credit hours**

Prerequisite or Corequisite: CIS 111

7½ weeks, 6 hours per week (3-3); or 15 weeks, 3 hours per week (1½-1½)

This course is a continuation of CIS 111. Topics developed include an introduction to Database Management Systems, a survey of programming languages and a discussion of the Systems development process. Some programming is done to demonstrate problem solving using a computer. (This course is offered in 15-week and 7½-week formats.)



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**CIS 115. PROGRAMMING LOGIC..... 3 credit hours**

Prerequisite: CIS 112

3 hours per week (3-0)

In this course students learn development of structured solutions to business computer problems using flowcharting techniques, pseudo code and other structured development tools.

**CIS 130. PASCAL FOR BUSINESS AND INDUSTRY ..... 4 credit hours**

Prerequisite: CIS 112. Corequisite: CIS 115

4 hours per week (4-0)

This is a first course in Pascal covering structured algorithm development including branching and looping techniques. Strong emphasis is placed on good programming design using procedures and functions and efficient passing of parameters. Data structures, including arrays, records and sets are covered. During the semester, students write several programs, at least one of which is a large program.

**CIS 135. PL/1 PROGRAMMING ..... 4 credit hours**

Prerequisite: CIS 130 or consent

4 hours per week (4-0)

This is an introductory course in PL/1 covering structured algorithm development, various control structures, functions, procedures, simple data structures, and formatted and unformatted record input/output. Programming problems relate to business applications using sequential, indexed sequential and random files on a large computer system. The operating system environment of the large system, the edit and command language, and file design topics are covered in detail.

**CIS 136. BASIC FOR BUSINESS AND INDUSTRY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The principles of the BASIC language using structured techniques are taught. Entry and retrieval of data, mathematical operations, comparison and control statements, subscripted variables and functions as well as data files and formatted output are addressed. Students write BASIC programs, then enter and run them on an IBM compatible microcomputer.

**CIS 137. RPG..... 3 credit hours**

Prerequisite: CIS 112

3 hours per week (3-0)

Report Program Generator is a language used to solve common business application problems. This course covers arithmetic operations, comparing, table handling and file building on auxiliary storage media. Students code and execute program assignments.

**CIS 141. COMPUTER OPERATIONS I..... 3 credit hours**

Prerequisite: None

4 hours per week (3-1)

This is the study of computer systems including input/output devices, mass storage, the central processing unit and software with emphasis on their operation. Students gain hands-on experience performing a realistic multi-job assignment while using the devices about which they have studied. The interrelationships between system hardware and software are covered. Other topics include data center operations, the importance of job documentation, standards manuals and error logs.

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**CIS 170. COBOL I ..... 4 credit hours**

Prerequisite: CIS 130 or consent

4 hours per week (4-0)

This is an introductory course in the COBOL language. Topics covered are file input, printer output, looping, basic arithmetic operations and comparisons. The production of reports with heading lines, total lines, and control breaks are presented and used to illustrate solutions to several typical business problems.

**CIS 199. ON-THE-JOB-TRAINING..... Variable credit**

Prerequisite: Two data processing courses. Employment in data processing related jobs.

This course recognizes the value of learning which can take place on the job by offering an opportunity to earn college credit for development and achievement of learning objectives which are accomplished through current work experience. Students also participate in data processing-related seminar activities.

**CIS 230. ADVANCED PASCAL FOR BUSINESS AND INDUSTRY ..... 4 credit hours**

Prerequisite: CIS 130 or CPS 186

4 hours per week (4-0)

This is a second course in Pascal, designed to prepare a student to use Pascal in real world software applications. Modularization, data encapsulation, data structures, pointers, testing strategies, program verification and documentation are covered. Searching and sorting techniques are studied. Students complete an in-depth programming project.

**CIS 238. ASSEMBLER ..... 3 credit hours**

Prerequisite: CIS 130 or consent

3 hours per week (3-0)

This is a first course in the 8088 series Assembly language (the assembly language of the IBM PC series machines). MS-DOS (PC-DOS) interrupts are used for input/output. The organization of the 80xxx microprocessor is examined to aid in the study of the instruction set. Topics include various character/numeric conversions, the calling of Assembly language routines from BASIC, and the modification of DOS by the redirection of DOS interrupts.

**CIS 240. CAREER PRACTICES SEMINAR ..... 2 credit hours**

Prerequisite: ENG 100

2 hours per week (2-0)

This course covers career options available in the computer industry, how to develop a career plan, preparing a job hunting plan, hiring practices, resume preparation, interviewing skills, writing a journal of job-seeking activities, salary negotiations, customer relations and how to succeed on the job.

**CIS 270. COBOL II ..... 4 credit hours**

Prerequisite: CIS 170

4 hours per week (4-0)

This course is a continuation of COBOL I, and includes table processing, sequential and indexed sequential files. Sorting and various file updating techniques, as well as Report Writer are discussed. Several programs are written to illustrate the topics covered, and at least one subprogram is written and called from another COBOL program.

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**CIS 275. C PROGRAMMING LANGUAGE ..... 4 credit hours**

Prerequisite: CIS 130 or consent

4 hours per week (4-0)

This is an introductory course in the C programming language. The intended audience is experienced programmers. Most features of the C language are discussed so that students who successfully complete the course are capable of versatility in using C. Emphasis is placed on structured programming techniques and sound documentation.

**CIS 276. ADVANCED C PROGRAMMING LANGUAGE..... 4 credit hours**

Prerequisite: CIS 275 or professional C programming experience

4 hours per week (4-0)

This is a course for programmers who have experience or coursework in the C language and want to learn advanced topics. It includes data structures, advanced I/O, dynamic memory management and successful techniques for team design of large programs.

**CIS 282. SMALL SYSTEM DATA BASE ..... 3 credit hours**

Prerequisite: CIS 130 or consent

3 hours per week (3-0)

This course presents the theory and concepts underlying the use of database environments in today's integrated business information systems. The features and relative merits of relational, network and hierarchical data models are discussed; and the significance of database administration and security are emphasized. Students apply the theoretical concepts to realistic case studies.

**CIS 283. LARGE SYSTEM DATA BASE ..... 4 credit hours**

Prerequisite: CIS 130 or consent

4 hours per week (4-0)

This is an introductory course using a CODASYL DBTG Model Data Base. Relational, hierarchical, and network data base concepts are discussed. Other topics include accessing the data base through a high-level language, error conditions, using Data Description Language (DDL), efficient record selection expressions, and interpretation of logical information about the data base. This course is currently taught using DMS II on a Unisys A5 computer.

**CIS 284. DATA COMMUNICATIONS..... 3 credit hours**

Prerequisite: CIS 130 or consent

3 hours per week (3-0)

This course introduces design issues in a network configuration, basic terminology and methodology, typical applications and uses of teleprocessing networks. Students study in detail typical building blocks and types of network organizations, common carrier services, tariffs, transmission facilities and signal conversion devices.

**CIS 286. OPERATING SYSTEMS ..... 4 credit hours**

Prerequisites: First year required CIS courses

4 hours per week (3-1)

Concepts and technical knowledge of operating systems, utilities and control languages are presented with case studies of some operating systems, such as UNISYS/MCP, UNIX, VAX/VMS, IBM/MVS and VM. Students write and run command procedures in control languages of the systems studied.

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**CIS 288. SYSTEMS ANALYSIS AND DESIGN..... 3 credit hours**

Prerequisite: CIS 130 or consent

3 hours per week (3-0)

This course surveys computer applications and techniques in major areas of business, business structure, analytical communication with system users, principles of package software evaluation and acquisition, planning schedules and resource requirements for software development, program testing and installation procedures, principles of software development monitoring, structured walkthroughs and other programmer communication, and producing software development specifications.

**COMPUTER SCIENCE \_\_\_\_\_ (CPS)**

**CPS 183. INTRO TO BASIC PROGRAMMING ..... 4 credit hours**

Prerequisite: MTH 097

4 hours per week (4-0)

This course is designed for people with or without prior computer experience. Students learn the capabilities and special features of BASIC as it appears on popular home computers, or on a time-sharing system. Largely a hands-on course, students write and execute a wide variety of programs designed to teach programming principles, and principles of problem solution. Topics include program structure, file structure, menu-driven programs, string manipulation, arrays, sorting, searching, report generation, CAI, simulation and entertainment. This course is offered every term.

**CPS 186. INTRO TO PASCAL PROGRAMMING..... 4 credit hours**

Prerequisite: MTH 169

4 hours per week (4-0)

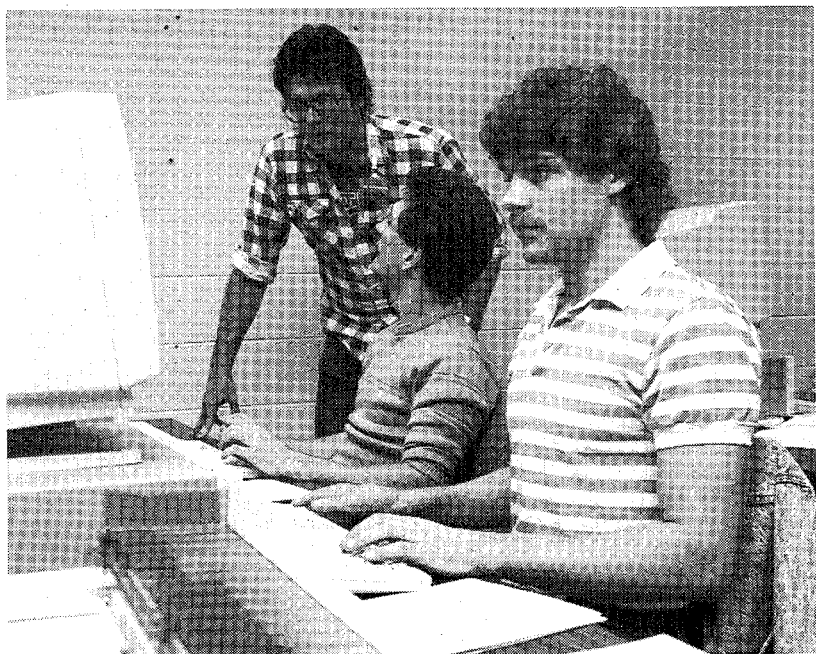
This course is an introduction to the principles and practices of the Pascal programming language. Designed as a teaching tool for programming concepts, Pascal has become the preferred language of computer science departments. Students learn about problem-solving strategies, top-down program development and good programming style. Students write and execute approximately eight programs in Pascal leading to a significant final project. This course is offered every term and transfers to some four-year institutions.

**CPS 187. INTRODUCTION TO FORTRAN PROGRAMMING..... 4 credit hours**

Prerequisite: MTH 169

4 hours per week (4-0)

This course is an introduction to the principles and practices of the FORTRAN 77 programming language. FORTRAN is designed for the science or business student who will use the computer as a tool in sorting, classifying, scheduling, performing complex or repetitive calculations, or evaluating models through simulation. Students learn about problem-solving strategies, top-down program development, and good programming style. Students write and execute selected programs in FORTRAN 77. This course transfers to some four-year institutions.



**CPS 191. INTRODUCTION TO LISP PROGRAMMING ..... 3 credit hours**

Prerequisite: One programming language course

3 hours per week (3-0)

This course presents an introduction to the principles and practices of the LISP programming language for students with prior programming experience in another language. The course includes the history and applications of LISP, atoms and lists, defining functions, conditionals, iteration and recursion, input and output and manipulation of property lists. Students design and execute several programs covering these topics.

**CPS 284. PRINCIPLES OF COMPUTER GRAPHICS ..... 4 credit hours**

Prerequisite: One computer language and 1 year algebra or permission

4 hours per week (4-0)

This course develops principles, algorithms and methods for graphics applications, using microcomputer graphics-enhanced BASIC language. Topics include complete coverage of the available graphics language, function, line, bar and pie graphs, rectangular and polar coordinates, creative design, movement, color, and 3D. The course includes graphics-enhanced discussion of topics in plane, solid, and analytic geometry and trigonometry. All necessary mathematics and BASIC are explained. Students create professional quality graphics. Special projects are encouraged.

**CPS 286. ADVANCED PASCAL PROGRAMMING ..... 4 credit hours**

Prerequisite: MTH 169 and CPS 186 or 294 or CIS 130

4 hours per week (4-0)

Students are assumed to have a basic knowledge of Pascal. The more advanced features of Pascal and of scientific and data structure program-

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ming in general are covered. Students write and execute several Pascal programs utilizing recursion, files and libraries, sorting and dynamic data structures such as stacks, queues, linked lists, trees and hash tables. At least two of these are large programs. This course is normally offered in the Winter semester and transfers to some four-year institutions.

**CPS 287. ADVANCED FORTRAN PROGRAMMING ..... 4 credit hours**

Prerequisite: CPS 187 or 294

4 hours per week (4-0)

The student is assumed to have a basic knowledge of FORTRAN. The more advanced features of FORTRAN and of scientific and data structure programming in general are covered. Students write and execute several FORTRAN programs utilizing files, libraries, sorting and data structures such as stacks, queues, linked lists, trees and hash tables. This course transfers to some four-year institutions and is normally offered in the Fall term.

**CPS 290. PROGRAM DESIGN METHODOLOGIES ..... 4 credit hours**

Prerequisite: CPS 286, 287 or 288

4 hours per week (4-0)

This course has a transfer program orientation. Techniques and methodologies of designing computer programs are presented. The course illustrates the importance of a good design in the implementation of any large computer program. Topics include: structured programming, program testing and verification, and debugging methods. Students design and implement one major computer system.

**CPS 291. FILE STRUCTURES ..... 4 credit hours**

Prerequisite: CPS 286, 287 or 288

4 hours per week (4-0)

This course has a transfer program orientation. It deals with data representation and manipulation on bulk-storage devices. Both disk and tape files are considered. The various organizational and indexing techniques available with these devices are discussed. Students write programs which demonstrate these concepts and techniques.

**CPS 292. ASSEMBLER LANGUAGE PROGRAMMING ..... 4 credit hours**

Prerequisite: CPS 186, or 187 or 188

4 hours per week (4-0)

This course has a transfer program orientation. The basic architecture of computers is discussed including the physical and logical components of a computer system. Processing, control and I/O are dealt with and programmed using most of the instruction set of a computer. Students write several programs in assembler language. The course provides a foundation in assembler general enough to be applied easily to numerous machines.

**CPS 294. COMPARATIVE LANGUAGES ..... 4 credit hours**

Prerequisite: CPS 183, or 186, or 187 or 188

4 hours per week (4-0)

This course has a transfer program orientation. It is designed to compare and contrast the characteristics of several popular programming languages. Each language is discussed and evaluated in terms of criteria such as: general application area, efficiency, portability, ease of programming, and ease of maintenance. Students write short programs in most of the languages discussed. Languages normally include: BASIC, PL/I, FORTRAN, FORTRAN 77, ALGOL and Pascal.

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**CORRECTIONAL SCIENCE \_\_\_\_\_ (COR)**

**COR 122. INTRODUCTION TO CORRECTIONS..... 3 credit hours**

(see CJ 122)

Prerequisite: None

3 hours per week (3-0)

This course is an introduction to the correctional system from historical to contemporary times. Examined are incarceration, probation, parole, and new programs in dealing with offenders.

**COR 132. CORRECTIONAL INSTITUTIONS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to examine the various types of correctional institutions and the training of the personnel who staff them. There is also an examination of the rights and responsibilities of both staff and inmates to include the social effects upon each.

**COR 189. STUDY PROBLEMS..... Variable credit**

Prerequisite: Consent of program coordinator or instructor.

Directed activities in corrections are provided in this course. Working with corrections faculty or other recognized corrections specialists, students concentrate on an assigned problem and demonstrate understanding and skill development within the corrections area.

**COR 199. CORRECTIONS ON-THE-JOB-TRAINING ..... Variable credit**

Prerequisite: COR 122 and 6 additional credits in corrections, and consent of department Instructional Coordinator.

8 hours per week minimum (8-0)

In this course students are given supervised, non-salaried positions as observers with various corrections agencies. Students are required to maintain a log of activities and submit a report at the end of the semester. Some agency assignments may require additional corrections courses for eligibility. All activities are monitored by the instructor and regular meetings with the instructor are required.

**COR 211. LEGAL ISSUES IN CORRECTIONS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course gives students an overview of the law as it currently applies to the field of corrections. Included is an in-depth look at the application of the Constitution and the court processes, including prisoners rights and section 42, 1983 concerns.

**COR 218. CORRECTIONAL COUNSELING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course presents the casework method of diagnosing and treating criminal offenders. A variety of counseling methods and their application to correctional casework are discussed.



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**COR 219. CLIENT RELATIONS IN CORRECTIONS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to provide students with a general knowledge of the various meanings and functions of cultures as they might apply to the corrections setting. In addition, students are introduced to the impact of discrimination in corrections and the melting pot concept. There is also work on how one's attitudes are formed and how their background has an impact on them. Students are also exposed to the interaction approach in dealing with the correctional client, and the proper responses within the walls.

**COR 227. SEMINAR IN CORRECTIONS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides an overall look at the system of corrections. It includes discussions on alternative methods, parole, probation and community based corrections. A research effort is required in this course.

**COR 228. THE CORRECTIONAL CLIENT:  
GROWTH AND DEVELOPMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The course is designed to examine the growth and development of the correctional client, with a particular emphasis on the early environment, psychological and sociological factors, specific problems (i.e. substance abuse, sexual, medical, mental, etc.) and intervention strategies.

**CRIMINAL JUSTICE \_\_\_\_\_ (CJ)**

**CJ 100. INTRODUCTION TO CRIMINAL JUSTICE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides an in-depth look at the Criminal Justice System including law enforcement, courts and corrections. Individuality and the purpose of each division is studied. The student is provided with a sound understanding of the basic functions of each component.

**CJ 103. POLICE RESERVE TRAINING..... 6 credit hours**

Prerequisite: None

6 hours per week (6-0)

This course is designed to provide the auxiliary, reserve and/or part-time law enforcement officer with the skills necessary to function safely and effectively in that capacity. The course covers topics such as legal implications, juvenile law, investigations, traffic, first aid, liability, defensive tactics, and firearms qualifications. (Accredited by MROTC)

**CJ 111. POLICE/COMMUNITY RELATIONS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The role of individual officer and the department in achieving and maintain-

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ing public support is studied. Topics include: customs, culture, and problems of ethnic and minority groups. Public information services, and techniques for the alleviation of community tensions are also covered.

**CJ 122. INTRODUCTION TO CORRECTIONS ..... 3 credit hours**

(See COR 122)

Prerequisite: None

3 hours per week (3-0)

The course is an introduction to the correctional system from historical to contemporary times. Examined are incarceration, probation, parole, and new programs in dealing with offenders.

**CJ 150. CRIMINAL JUSTICE PHYSICAL CONDITIONING ... 3 credit hours**

Prerequisite: Physician's approval

3 hours per week (3-0)

This course is designed to build a skill/physical conditioning level to allow the student to successfully pass the Michigan Law Enforcement Officer's Training Council Pre-employment Physical Skill Test. The course is primarily for law enforcement students, but is also open to other students. (Prior to registration the student must present a medical examination certificate which is obtained in the CJ department office.)

**CJ 189. STUDY PROBLEMS ..... Variable credit**

Prerequisite: Consent of program coordinator or instructor

Directed activities in criminal justice are provided in this course. Working with criminal justice faculty or other recognized criminal justice specialists, students concentrate on an assigned problem and demonstrate understanding and skill development within the criminal justice area.

**CJ 199. CRIMINAL JUSTICE ON-THE-JOB-TRAINING..... Variable credit**

Prerequisite: CJ 100 and 6 additional credits in criminal justice, and permission of department Instructional Coordinator

8 hours per week minimum (8-0)

In this course students are given supervised, non-salaried positions as observers/interns with various criminal justice agencies. Students are required to maintain a log of activities and submit a report at the end of the semester. Some agency assignments may require additional coursework for eligibility. All activities are monitored by an instructor and regular meetings with the instructor are required.

**CJ 205. APPLIED PSYCHOLOGY FOR POLICE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

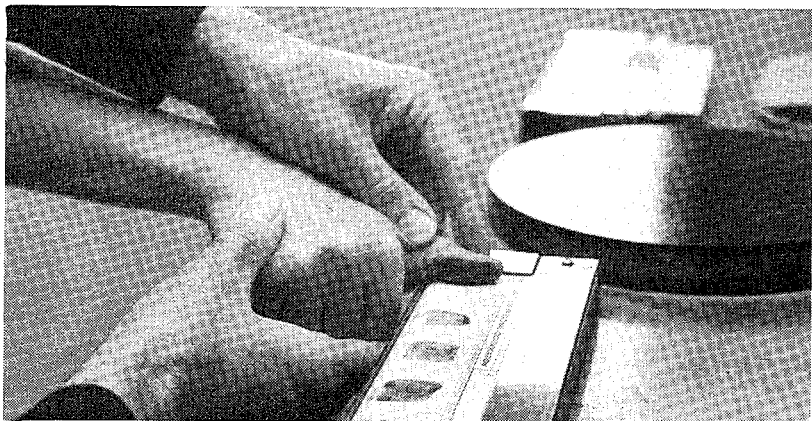
Principles of psychology relevant to specific applications in law enforcement, and major psychological theories are viewed from the perspective of their application to law enforcement practices. Much of the course content deals with abnormal behaviors which police often encounter and proper techniques used to deal with them.

**CJ 207. TRAFFIC ADMINISTRATION AND CONTROL..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The course is designed to introduce the student to the purpose and design of traffic administration. Included are coverage of the motor vehicle law, traffic engineering, control devices and accident investigation.



**CJ 208. CRIMINAL EVIDENCE AND PROCEDURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines principles of constitutional, federal and state laws as applied to law enforcement. Topics include: adjectival law, the law of evidence; role of the police, prosecutor, defense counsel, judge and jury; the judicial process; criminal procedure in various courts; law of arrest and search and seizure; and constitutional restraints.

**CJ 209. CRIMINAL LAW ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed in order for either lawyer or layman to broaden understanding of the various agencies involved in the administration of criminal law. The more important law enforcement functions from arrest to executive pardon are emphasized.

**CJ 210. INTRODUCTION TO CRIMINALISTICS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Criminalistics is the study and application of the physical and natural sciences to the collection and evaluation of evidence. This course offers an introduction to the examination of physical evidence including the collection, preservation, transportation, storage and identification of physical evidence; crime laboratory resources and capabilities; and a demonstration of laboratory criminalistics.

**CJ 221. LAW ENFORCEMENT TRAINING ..... 16 credit hours**

Prerequisites: 45 credit hours and successful completion of the Michigan Law Enforcement Training Council (MLEOTC) pretest

13 weeks, 40 hours per week (flexible hours due to classroom and lab activities)

This is a basic law enforcement training program, also known as the Police Academy. It is intensive and challenging. The curriculum, established by the MLEOTC, includes physical conditioning, defensive tactics, firearms, and first aid as well as subjects requiring extensive reading, writing, and note-taking skills. Students must adhere to regulations in the policy and proce-

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dures manual. Students successfully completing the course are eligible for the mandatory mastery examination administered by the MLEOTC for certification as a law enforcement person. The class meets at least 8 hours per day, 5 days per week for 13 weeks. Some weekends may also be involved. (Drug screening occurs prior to employment, as established by law.)

**CJ 223. JUVENILE JUSTICE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The major emphasis of this course is on problems of law enforcement related to juvenile crime. Major topics covered include theories of juvenile delinquency, work of youth agencies, legislative involvement and new approaches to the prevention of juvenile crime.

**CJ 224. CRIMINAL INVESTIGATION..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to provide a basic overview of investigative techniques as they pertain to many criminal justice agencies, including the police. The course includes practical applications at crime scenes.

**CJ 225. SEMINAR IN CRIMINAL JUSTICE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides a unifying experience and evaluation of criminal justice systems, policies and practices. Preparation of a concluding research paper is required for this course. The focus is on analytical thought processes and problem solving.

**CULINARY ARTS \_\_\_\_\_ (CUL)**

**CUL 100. INTRODUCTION TO HOSPITALITY  
MANAGEMENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to give students an overview of the hospitality industry, trends, and opportunities in the industry today. It is an introduction to the study of the business organization and functions of management.

**CUL 110. SANITATION AND HYGIENE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course communicates the importance of sanitation to the hospitality worker: layman's bacteriology, communicable diseases, food poisoning, pest control, cleaning and sanitizing, and personal hygiene. Students who complete this course and pass the exams receive National and State Sanitation Certification.

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**CUL 111. ELEMENTARY FOOD PREPARATION..... 6 credit hours**

Prerequisite: None

14 hours per week (7-7)

This is a beginning production course that examines the development of standards in food preparation, portion control, service techniques, sanitation, receiving and storage of food products and demonstrates their proper use in preparation and service.

**CUL 118. PRINCIPLES OF NUTRITION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

General principles of nutrition are discussed in this course as they pertain to selection of foods, nutritional needs of all age groups, the meaning of food to people, the relationship of food and nutrition to menu planning.

**CUL 150. FOOD SERVICE MANAGEMENT ..... 6 credit hours**

Prerequisite: None

14 hours per week (7-7)

Students demonstrate service and supervisory techniques utilized in the operation of a full service restaurant. Guest speakers, tours and classroom discussions follow the lab, covering issues of CPR, marketing, advertising, financial accounting, responsible beverage service, and human relation principles, related to front of the house management. Students who complete this course and pass the exams may receive Race for Life CPR and Techniques of Alcohol Management TAM certificates.

**CUL 199. ON-THE-JOB TRAINING..... Variable credit**

Prerequisite: 30 credit hours within the program or consent

On the Job training provides students with the opportunity to earn 3 credit hours while working under supervised conditions in a commercial food facility. A minimum of 300 hours of work on the job is required.

**CUL 210. GARDE MANGER ..... 4 credit hours**

Prerequisite: CUL 111 or consent

6 hours per week (0-6)

Garde Manger is designed to demonstrate classical food preparation and presentation techniques. Students progress to more elaborate techniques such as those used in culinary competition and in classical buffets.

**CUL 219. ELEMENTARY BAKING ..... 4 credit hours**

Prerequisite: None

6 hours per week (0-6)

Through lectures and demonstration, students are required to produce yeast doughs, hot breads, muffins, desserts, pastry doughs, fillings glazes, and basic cake decorating.

**CUL 220. ORGANIZATION AND MANAGEMENT OF FOOD SYSTEMS ..... 3 credit hours**

Prerequisite: CUL 100 or consent

3 hours per week (3-0)

A study of the processes of recruitment, selection, training and evaluation, collective bargaining and human relations techniques in personnel management. Theoretical applications are developed and discussed through actual case studies.

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**CUL 222. QUANTITY FOOD PRODUCTION ..... 6 credit hours**

Prerequisite: CUL 111 or consent

15 hours per week (7½-7½)

This course builds on the techniques learned in Elementary Food Preparation. Students learn how to properly prepare, from scratch: soups, sauces, meats, seafoods, poultry, breads, desserts, salads and salad dressings, appetizers, and vegetables. This is accomplished by preparing food for the Culinary Arts Dining Room, a full-service restaurant, operated by the students.

**CUL 224. PRINCIPLES OF COST CONTROLS ..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This course involves discussions and exercises used in the process of purchasing foods and materials used in the hospitality industry. The course involves analyzing all related costs that affect production and service in the foods and hospitality industry (foods, beverage, labor and supplies).

**CUL 225. ADVANCED BAKING AND PASTRY ..... 4 credit hours**

Prerequisite: CUL 219

4 hours per week (0-4)

Expanding on elementary baking principles, students acquire production techniques in classical pastry items such as tortes, french pastries, puff pastries; utilization of various food products such as chocolates, pulled sugar, marzipan, and other food items used for culinary centerpieces.

**CUL 227. ADVANCED CULINARY TECHNIQUES ..... 6 credit hours**

Prerequisite: CUL 122 or consent

7 weeks, 20 hours per week (5-15)

This course is a culmination of experiences for the advanced student. Hors d'oeuvres, chaud-froid, ballontine and soufflé, tallow and salt carvings, aspics, ice carving, gum paste and decorating techniques become familiar to the student.

**CUL 228. LAYOUT AND EQUIPMENT ..... 4 credit hours**

Prerequisite: CUL 111 or 150 or consent

6 hours per week (3-3)

This class is designed to give necessary insight involved in establishing a restaurant or food service facility. Includes research, surveying, planning and construction of both menu and kitchen layout.

**CUL 250. ADVANCED SERVICE TECHNIQUES ..... 3 credit hours**

Prerequisite: CUL 150 or consent

3 hours per week (3-0)

Identification and service of wine and liquor, tableside preparation and management styles utilized in satisfying the more discriminating diner are demonstrated and discussed. Comparative tastings are a major component of this course.

**CUL 260. CATERING AND BANQUETS ..... 3 credit hours**

Prerequisite: CUL 111 or consent

2 hours per week (30 lab hours as needed)

The complete process of planning and serving banquets including facility use, menu planning, food purchasing and production. Students practice in actual development of banquets from inception to service.

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**DANCE** \_\_\_\_\_ **(DN)****DN 101. BEGINNING MODERN DANCE I** ..... **2 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course introduces dance as a creative art form. Basic movement vocabulary is taught along with body placement, alignment and simple tools for composing dance studies.

**DN 102. BEGINNING MODERN DANCE II** ..... **2 credit hours**

Prerequisite: DN 101 or consent

3 hours per week (3-0)

This course goes beyond the use of basic movement vocabulary by applying movement to more complex dance phrases and is paced faster than DN 101.

**DN 103. BEGINNING TAP DANCE I** ..... **1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

Students learn basic tap dance vocabulary which is incorporated into traditional steps and dance routines. Rhythmical enjoyment is emphasized.

**DN 105. BEGINNING JAZZ DANCE I** ..... **2 credit hours**

Prerequisite: None

3 hours per week (3-0)

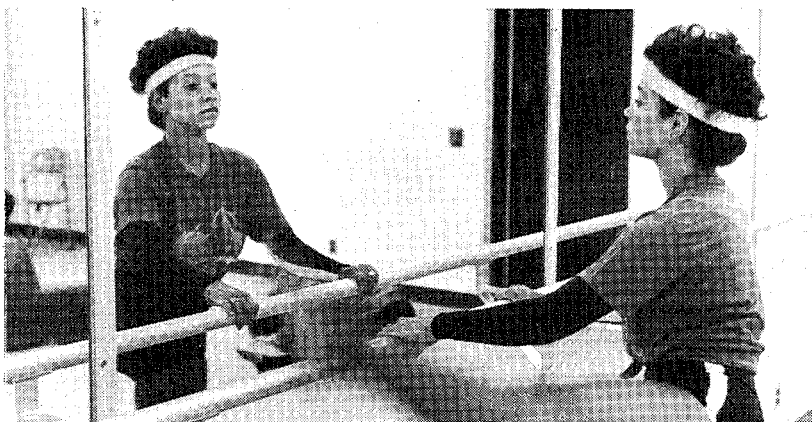
This dance form originated in Africa and has evolved through American social and stage dance. The movement is rhythmical, bold, percussive, and expansive. Basic jazz vocabulary is taught along with body alignment. This course helps to improve overall body control, agility, and coordination.

**DN 106. BEGINNING JAZZ DANCE II** ..... **2 credit hours**

Prerequisite: DN 105 or consent

3 hours per week (3-0)

This is a course designed for students with jazz dance background who want to work on proficiency of jazz movement and stylized dancing.



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**DN 107. BEGINNING BALLET I..... 2 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides basic ballet movement vocabulary by associating the French ballet terms with the appropriate execution. Balance, body alignment, flexibility, and overall body control can be developed in this course and students learn how to view performances.

**DN 108. BEGINNING BALLET II..... 2 credit hours**

Prerequisite: DN 107 or consent

3 hours per week (3-0)

This course introduces more complex ballet movements and turns. Students who want to improve their proficiency at the barre, centre, and through the space find this course appropriate.

**DN 110. AFRO-AMERICAN DANCE I ..... 1 credit hour**

Prerequisite: None

2 hours per week (2-0)

This course introduces the basic movements used in American boogie, jazz, Dixieland, modern and Latin dance. The focus of the class is to identify these movements and relate them to their ancestral African and African/American dance heritage.

**DN 122. BALLROOM DANCE I..... 1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

Students learn the basics of good social dance so they can feel comfortable in any dance situation. They learn how to lead, follow, and dance the most popular and most useful dances: fox trot, waltz, swing, cha-cha, rumba, polka and hustle. Designed for those with limited or no experience or for those who wish to review the basics.

**DN 123. DANCE EXERCISE I..... 1 credit hour**

Prerequisite: None

7½ weeks, 3 hours per week (3-0)

Designed for students who are looking for a slower paced dance exercise course, this choreographed program of stretching and simple dance routines set to various types of music, helps trim and recondition the body while providing an excellent starting or re-entry point for a fitness program. Students are encouraged to develop a total fitness program. Discussion of nutrition and the learning of simple relaxation techniques are also a part of this class where no prior dance or exercise experience is required.

**DN 125. DANCE COMPOSITION I..... 3 credit hours**

Prerequisite: Any dance activity class or consent

4½ hours per week (4½-0)

This course familiarizes students with the components of dance and the process of phrase creation. An opportunity to learn manipulation of various dance forms to develop a performance idea are discussed. Students learn to choreograph a performance, audition and choose dancers, rehearse and present to an audience. Some background knowledge in dance activity courses is helpful, as this course consists of lecture and activity components.



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**DN 126. COUNTRY WESTERN DANCE ..... 1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

Students learn the basics of country western music. They learn to lead, follow and dance the Texas Two Step, Western Polka, Schottische, Waltz, Cotton Eyed Joe, and Swing. It is designed for those with limited or no experience or for those who wish to review the basics.

**DN 130. BEGINNING CLOGGING I ..... 1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

Students learn the basic clogging steps which are incorporated into dance routines. They learn to clog to Cotton Eyed Joe, Little Liza, Down South, and Old Time Rock-n-Roll. The course is designed for those with no or limited clogging experience.

**DN 201. CLASSICAL DANCES OF INDIA ..... 1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

Students learn the dance forms that were systematized by the sages of India centuries ago. Dances are performed to Indian music and incorporate many Yoga postures. This class is for anyone interested in Indian mythology, philosophy and Yoga.

**DN 210. AFRO-AMERICAN DANCE II ..... 1 credit hour**

Prerequisite: DN 110 or consent

2 hours per week (2-0)

This class is designed to further students' dance vocabulary using basic African/Afro-American movements employed in the boogie, jazz, Dixieland, modern and Latin dance. Emphasis is on building confidence through the use of movement combinations; traditional African/Afro-American movement; exploring solo creation, and learning at least one Afro-American dance.

**DN 222. BALLROOM DANCE II ..... 1 credit hour**

Prerequisite: DN 122 or consent

1½ hours per week (1½-0)

Students perfect the basics of good social dance so they can excel in any dance situation. They learn advanced patterns in fox trot, waltz, swing, cha-cha, rumba, polka and hustle. They are introduced to tango, mambo and samba. It is designed for those who have previous ballroom dance experience.

**DN 223. DANCE EXERCISE II ..... 1 credit hour**

Prerequisite: DN 123 or consent

7½ weeks, 3 hours per week (3-0)

This course is designed for students who are in reasonable physical shape. Students in this dance exercise class learn choreographed warm-up, aerobic, strengthening, and cool down routines that help condition the heart and lungs and help keep the body flexible and toned. All routines are set to various types of music. To encourage students to develop a total fitness program, discussion of nutrition and the learning of simple relaxation techniques is included.

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**DN 224. DANCE EXERCISE III..... 2 credit hours**

Prerequisite: DN 223 or consent

2 hours per week (2-0)

This class is a continuation of DN 123 and 223. It is a fitness maintenance program for those who have already been introduced to aerobic dance exercise. Students learn choreographed warm-up, aerobic, strengthening, and cool down routines that help condition the heart and lungs and help keep the body flexible and strong. All routines are set to various types of music. For the development of a total fitness program, time is devoted to a discussion of nutrition and the learning of relaxation techniques.

**DENTAL ASSISTING \_\_\_\_\_ (DA)**

*Enrollment priority for these courses is granted to students admitted to this program.*

**DA 039. DENTAL ASSISTANT REVIEW ..... 1 credit hour**

Prerequisite: Graduate or OJT Dental Assistant

2½ weeks, 6 hours per week (6-0)

This course provides the opportunity for a prospective candidate for a dental assistant credentialing exam to review course materials; gain knowledge about test taking; take a simulated exam; and examine areas of need prior to taking a credentialing exam.

**DA 103. DENTAL NUTRITION ..... 2 credit hours**

Prerequisite: Admission to the Dental Assisting Program or consent

10 weeks, 3 hours per week (3-0)

This course is designed to give dental assisting students an indepth awareness of nutrition and preventive dentistry. The etiology, prevention, and control of dental caries, and oral hygiene instructions are emphasized.

**DA 110. INTRODUCTION TO DENTAL ASSISTING..... 3 credit hours**

Prerequisite: Admission to the Dental Assisting Program

7½ weeks, 7 hours per week (3-4)

This course is an orientation to dental assisting. It is a study of the history of dentistry, professional organizations, ethics, and the role of the modern dental health team. Students are introduced to the dental operatory, equipment and basic procedures used in four-handed dentistry.

**DA 111. DENTAL SCIENCE..... 4 credit hours**

Prerequisite: Admission to the Dental Assisting Program

4 hours per week (4-0)

This is an introductory course in head and neck anatomy. It studies skull and facial bones, masticatory muscles, oral anatomy – hard and soft tissues, anatomical nomenclature, tooth development and morphology, tooth surface annotation, cavity classification, occlusion and malocclusion, dental caries and fluoride.

**DA 113. DENTAL MATERIALS ..... 3 credit hours**

Prerequisite: Admission to the Dental Assisting Program

10 weeks, 7 hours per week (4-3)

This course is designed to give dental assistant students a general knowledge of the uses and properties (chemical and physical) of the most

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commonly used dental materials. Students gain actual experience in manipulation of common dental materials used in the practice of dentistry.

**DA 114. CLINICAL DENTAL ASSISTING ..... 3 credit hours**

Prerequisite: Adm. to the Dental Assisting Program, a 2.0 GPA in DA 110

7 weeks, 7 hours per week (3-4)

This course is an introduction to the clinical role of the dental assistant. It is a study of the procedure and instrumentation of common dental operating procedures. Students are introduced to the basic techniques used in the operative procedures.

**DA 120. ORAL DIAGNOSIS ..... 2 credit hours**

Prerequisite: A 2.0 GPA in DA 111 and 114

7 weeks, 4 hours per week (4-0)

This theoretical and practical course provides students with the knowledge and techniques used to obtain diagnostic data and the methods of recording this data. Treatment planning and referral letter writing are also included as well as instruction in blood pressure recording.

**DA 121A. ORAL DIAGNOSIS PRACTICUM A ..... 1 credit hour**

Prerequisite: A 2.0 GPA in DA 111, DA 114, and DA 120

4 weeks, 8 hours per week (0-8)

This clinical course is designed to actively involve students in applying their knowledge of recording diagnostic data and treatment plans. Complete clinical records including referral letter are written on actual clinical cases being treated in the College Dental Clinic. In addition, students have the opportunity to assist during actual prophylaxis and operative procedures as well as monitoring and recording blood pressure. Students also gain experience in using aseptic techniques and management of the sterilization area.

**DA 121B. ORAL DIAGNOSIS PRACTICUM B ..... 1 credit hour**

Prerequisite: A 2.0 GPA in DA 121A

4 weeks, 8 hours per week (0-8)

This is a clinical course designed to actively involve students in applying their knowledge of clinical dental assisting in the Washtenaw Community College Dental Clinic. Activities in this class include assisting during prophylaxis and operative procedures, monitoring vital signs, completion of clinical records, and management of the sterilization area.



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**DA 122. ADVANCED DENTAL SCIENCE ..... 4 credit hours**

Prerequisite: A 2.0 GPA in DA 111

4 hours per week (4-0)

A continuation of Dental Science 111, this course provides a study of the relationship of systemic health to oral health and oral pathology.

**DA 124. ADVANCED CLINICAL DENTAL ASSISTING..... 3 credit hours**

Prerequisite: A 2.0 GPA in DA 114

7 hours per week (3-4)

A continuation of Clinical Dental Assisting 114, this course provides a study of more complex clinical procedures and the instrumentation necessary to perform them.

**DA 125. DENTAL ROENTGENOLOGY ..... 2 credit hours**

Prerequisite: Admission to the Dental Assisting Program or consent

10 weeks, 5½ hours per week (4-1½)

The principles, techniques, precautions, and the operation of the x-ray equipment are studied. Film processing methods and mounting are covered.

**DA 126. DENTAL LABORATORY PROCEDURES ..... 4 credit hours**

Prerequisite: Admission to the Dental Assisting Program or consent

10 weeks, 8 hours per week (0-8)

This is a demonstration and laboratory course in which students construct various dental devices for diagnosis and impression taking. Emphasis is on impression for the fabrication of diagnostic models, model trimmings and the fabrication of custom acrylic impression trays. The construction base-plates and occlusal rims, temporary crowns and bridges are demonstrated.

**DA 200. CLINICAL PRACTICE ..... 2 credit hours**

Prerequisite: a 2.0 GPA in all Dental Assisting courses

4 weeks, 16 hours per week (0-16)

This course is an orientation to a clinical environment. Students actively utilize all previous dental courses in a controlled clinical environment.

**DA 201. DENTAL SPECIALTIES ..... 3 credit hours**

Prerequisite: A 2.0 GPA in all Dental Assisting courses

10 weeks, 4½ hours per week (4½-0)

This course is designed to orient dental assisting students to the various dental specialties and their relationship to one another.

**DA 202. ADVANCED CLINICAL PRACTICE ..... 3 credit hours**

Prerequisite: A 2.0 GPA in all Dental Assisting courses

12 weeks, 24 hours per week (0-24)

Students actively participate in a variety of clinical settings. The course is structured according to students' areas of interest and geographic access in dentistry. Students becomes acquainted with a number of office routines, procedures, equipment, and patient and staff relationships.

**DA 212. DENTAL OFFICE PROCEDURES..... 4 credit hours**

Prerequisite: 1 year of high school typing or OS 101

7 weeks, 9 hours per week (6-3)

This course is an introduction to the dental business office. It is a study of the systems of management used in dentistry, interpersonal communications, basic concepts of third party payment, and machines utilization.

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**DA 215. ADVANCED DENTAL ROENTGENOLOGY ..... 2 credit hours**

Prerequisite: A 2.0 GPA in DA 125

5 weeks, 12 hours per week (0-12)

A clinical practice is provided in making x-ray exposures using manikins and patients participating in the WCC Dental Clinic Program.

**DA 222. DENTAL PRACTICE MANAGEMENT SEMINAR..... 3 credit hours**

Prerequisite: A 2.0 GPA in all DA 212 or permission of instructor

7 weeks, 7 hours per week (2-5)

This course is designed for the person whose principle responsibilities are in the dental business office. This course presents seminar sessions in management and supervisory techniques and includes exposure to advanced dental office procedures. Students are required to gain experience in a dental business office through current employment or on assigned rotation of sixty clock hours.

**DA 224. ADVANCED FUNCTIONS..... 3 credit hours**

Prerequisite: A 2.0 GPA in all Dental Assisting courses

5½ hours per week (1½-4)

This course is designed to provide dental assisting students with knowledge and skill in performing intraoral functions as outlined in the Michigan State Dental Practice Act.

**ECONOMICS \_\_\_\_\_ (EC)**

**EC 111. CONSUMER ECONOMICS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The wise use of financial resources today requires more than an income-producing job and simple subtraction skills. In this course, students learn the basics of budgeting, money management, use of credit and buying, the intricacies of home ownership, income tax, investments, and the wise use of insurance, wills, and trusts. This course is also taught as a telecourse using the program series "Personal Finances and Money Management."

**EC 189. STUDY PROBLEMS IN ECONOMICS..... Variable credit**

Prerequisite: Consent

This course provides individualized directed activities in Economics. A specific problem/issue is studied, or a special project is assigned.

**EC 211. PRINCIPLES OF ECONOMICS I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is the first half of basic principles of economics. Emphasis is on macroeconomics concepts of national income, fiscal and monetary policy and problems of unemployment, inflation and economic growth. This course is required of all Business Administration transfer students. This course is also taught as a telecourse using the program series "Economics USA."

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**EC 222. PRINCIPLES OF ECONOMICS II ..... 3 credit hours**

Prerequisite: EC 211 or consent

3 hours per week (3-0)

This is the second half of Principles of Economics 211. Emphasis is on microeconomic concepts of demand, supply and problems relating to prices and resource allocation. This course is also taught as a telecourse using the program series "Economics USA."

**ELECTRICITY ELECTRONICS \_\_\_\_\_ (EE)**

**EE 040. KNOW YOUR HOME'S ELECTRICAL SYSTEM ..... 2 credit hours**

Prerequisite: None

10 weeks, 3 hours per week (3-0)

This course has been designed to help students better understand their home's electrical system. During the class sessions, students evaluate their home's existing electrical system in an effort to understand the capabilities and limitations of the system. A great deal of hands on time is offered and is devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that are discussed and wired by students are: duplex outlet circuits, dimmer circuits, three and four way switch circuits, GFI circuits, lawn and garden lighting circuits, electric dryer and electric stove circuits.

**EE 101. SERVICING TECHNIQUES I ..... 4 credit hours**

Corequisite: 123A

6 hours per week (2-4)

This course offers instruction and development in the techniques and skills necessary for the service and maintenance of electrical/electronic systems. Proper use and care of tools and measuring instruments is stressed. Instruction in the following areas is included: splicing, soldering, printed circuit layout and fabrication, circuit building, testing and troubleshooting. Time is also spent learning the wiring techniques and special applications needed to understand 110/220 volt supply and control systems.

**EE 105. INTRODUCTION TO TELECOMMUNICATIONS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory level course designed to expose the entering student to the concepts, equipment, and terminology used in the telecommunication industry. Topics include: basic telephony, transmission systems, satellite communications, fiber optics, switching systems, data communications and local area networks.

**EE 123. FUNDAMENTALS OF ELECTRICITY ..... 8 credit hours**

Prerequisite: MTH 151 or equivalent

9 hours per week (9-0) plus open lab time

An accelerated introductory course in electricity. BECAUSE OF THE ACCELERATED PACE, ONLY STUDENTS HAVING ABOVE AVERAGE MATH AND READING SKILLS SHOULD ENROLL IN THIS COURSE. Students study theory and applications of direct current (D.C.), alternating

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current (A.C.), Ohms law, Kirchoff's law, superposition, Thevenin's theorems and the  $j$  operator. In the laboratory students apply the theory to lab projects by wiring circuits, measuring voltage, current, resistance and analyzing waveforms.

**EE 123A. FUNDAMENTALS OF ELECTRICITY (PART A) ..... 5 credit hours**

Prerequisite: MTH 151 or equivalent

6 hours per week (6-0) plus open lab time

The topics covered in the first half of EE 123 are covered here. STUDENTS ENTERING AN ELECTRONICS PROGRAM WITH AVERAGE MATH AND READING SKILLS SHOULD ENROLL IN THIS COURSE. Lecture topics include: theory and applications of direct current (D.C.), Ohms law, Kirchoff's laws and Thevenin's theorems. Lab exercises include: wiring circuits, making voltage, current and resistance measurements with laboratory test equipment.

**EE 123B. FUNDAMENTALS OF ELECTRICITY (PART B) ..... 5 credit hours**

Prerequisite: EE 123A

6 hours per week (6-0) plus open lab time

The topics covered in the second half of EE 123 are covered here. Lecture topics include: theory and applications of alternating current (A.C.), Ohms law, Kirchoff's law and the  $j$  operator. Lab exercises include: drawing and wiring A.C. circuits and circuit measurement. Students gain proficiency in the uses of oscilloscopes, signal generators and other associated test equipment.

**EE 134. MOTORS AND CONTROLS..... 4 credit hours**

Prerequisite: EE 123 or 123A. Corequisite: EE 123B

6 hours per week (3-3)

Topics include DC motors and generators, alternators, AC motors and typical controls for DC and AC motors. This is a hands-on course with heavy emphasis on laboratory exercises.

**EE 137. SWITCHING LOGIC ..... 3 credit hours**

Prerequisite: None

4 hours per week (4-0)

This is a beginning course in digital fundamentals. Students learn different number systems and codes, logical operations using basic logic gates and combinational logic circuits that are used in computers. Other topics are: Boolean algebra, truth tables, timing diagrams, Karnaugh maps, and arithmetic logic.

**EE 139. MICROPROCESSORS..... 4 credit hours**

Prerequisite: EE 137 or equivalent. Corequisite: EE 140

6 hours per week (3-3)

This course is an introduction to the physical and logical makeup of a microprocessor-based computer system. The major functional elements of a microprocessor system and their relationship to each other are examined. Topics include data coding, data storage, microprocessor architecture, input/output devices and machine language programming. The laboratory exercises provide experience with microprocessor hardware and machine language programming.

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**EE 140. SOFTWARE CONCEPTS..... 4 credit hours**

Prerequisite: None

6 hours per week (4-2)

Students use standard software design techniques to develop and code algorithms for the solution of electrical circuit problems, thus gaining a useful tool for problem solution while learning software fundamentals such as understanding the difference between syntax and semantics, refinement of algorithms into working solutions and executing programs on a computer system. Introductory file concepts and data structures are covered in addition to fundamental operating system concepts. Students compare high level languages.

**EE 204. NATIONAL ELECTRICAL CODE..... 2 credit hours**

Prerequisite: EE 123 or EE 123A and EE 123B

3 hours per week (3-0)

This lecture course deals with the aspects of the National Electrical Code and its applications as it is applied to electrical safety, industrial electrical and residential electrical installations. Other topics include: symbols, schematics and wiring diagrams.

**EE 205. BASIC TELEPHONY..... 4 credit hours**

Prerequisite: EE 139. Corequisite: EE 211

6 hours per week (4-2)

This course covers the theory, maintenance, and installation of telephone systems. Topics include state of the art telephone system technology, basic electromechanical and electronic key systems with emphasis placed on voice systems. Laboratory experiments involve measurements, troubleshooting, transmission line noise analysis, and switching concepts.

**EE 211. BASIC ELECTRONICS ..... 4 credit hours**

Prerequisite: EE 123 or EE 123B

6 hours per week (3-3)

Basic Electronics is a beginning lecture and laboratory course covering solid state devices. It includes the theory and application of diodes, and both bipolar and field effect transistors. These devices are tested and then circuits using them are constructed and tested in the laboratory using common laboratory equipment.

**EE 215. DIGITAL COMMUNICATIONS I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a lecture course in data communication principles and techniques. Student taking this course learn about communication media, data codes, circuit types, protocols, data transmission integrity and distributed data processing networks. Other topics include: modems and modulation, multiplexers, digital transmission and network types and services.

**EE 221. COMPUTER PERIPHERALS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory course which studies the input and output devices of a computer system. Emphasis is placed on Digital magnetic recording theory and Digital magnetic input/output (peripheral) devices.



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**EE 224. PROGRAMMABLE CONTROLLERS..... 4 credit hours**

Prerequisites: EE 123 or EE 123A and EE 123B

6 hours per week (3-3)

The theory of operation of programmable controllers is studied in this course. Students review digital logic principles needed to understand programmable controllers. Lecture topics include ladder diagrams, relays, programming and interfacing. Types of programmable controllers discussed are the Modicon Micro-84, Allen Bradley PLC-4 and selected I/O devices.

**EE 224A. PROGRAMMABLE CONTROLLERS A..... 3 credit hours**

Prerequisites: EE 123 or EE 123A and 123B

6 hours per week (3-3)

This course covers the first half of EE 224. Studied in this course is the theory and operation of programmable controllers with emphasis placed on the Modicon Micro-84. Other lecture topics are ladder diagrams, relays, programming and interfacing.

**EE 224B. PROGRAMMABLE CONTROLLERS B ..... 3 credit hours**

Prerequisites: EE 123 or EE 123A and 123B

7½ weeks, 6 hours per week (3-3)

This course covers the second half of EE 224. Studied in this course is the theory and operation of programmable controllers with emphasis placed on the Allen Bradley PLC-4. Other lecture topics are ladder diagrams, relays, programming and interfacing.

**EE 224C. PROGRAMMABLE CONTROLLERS C ..... 3 credit hours**

Prerequisite: None

7½ weeks, 6 hours per week (3-3)

This course is intended for electricians, engineers, and managers in programming the Allen Bradley Mini-PLC-2/05 programmable controller. It is an introductory-level course in working with programmable controllers. Theoretical topics include a general introduction to programmable controllers, digital codes and number systems common to programmable controllers, and efficient program design. Practical laboratory topics include use of a simulator to proof and debug a program, mating a controller to various input/output devices, and troubleshooting a control system that includes the PLC-2/05. The only prerequisite for this course is a minimal understanding of AC and DC circuits.

**EE 225. DIGITAL COMMUNICATIONS II ..... 4 credit hours**

Prerequisites: EE 205 and EE 215

6 hours per week (4-2)

This course studies the theoretical and practical aspects of data communication systems. Major lecture discussions are directed toward telephone system performance requirements, transmission of data, digital modulation and network protocols. Major topics are operation of data communication modems, multiplexers and local area networks, and the effects of noise and other distortions in data communications.

**EE 230. COMPUTER SYSTEM FUNDAMENTALS..... 4 credit hours**

Prerequisites: EE 139 and EE 140

6 hours per week (4-2)

The basic concepts and characteristics of a digital computer system are examined in this course. The instruction set and addressing modes of the PDP-11 family of minicomputers are covered. Emphasis is placed on under-

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standing the organization and functions of the CPU, main memory, and terminal and disk drive subsystems.

**EE 234. VAX/VMS FOR HARDWARE TECHNICIANS..... 3 credit hours**

Prerequisites: EE 140 and EE 230

4 hours per week (4-0)

This course deals with the knowledge and practical skills needed to use the VAX/VMS operating system as a hardware maintenance tool. Topics include the functions of an operating system, installation of the current version of VMS, use of the Digital Command Language, management of account privileges, use of tape and disk volumes, and use of the Error Log and System Dump Analyzer utilities to collect relevant data on system problems.

**EE 235. COMPUTER SYSTEM TROUBLESHOOTING..... 4 credit hours**

Prerequisites: EE 221 and EE 230. Corequisite: EE 234

6 hours per week (4-2)

This course provides the basic knowledge and skills required to operate and perform corrective maintenance on modern, networked, computer systems. Based on the VAX-11 family of computers, the uses of operational theory, block diagrams and diagnostics as aids in troubleshooting are emphasized. Local Area Network (LAN) concepts and fault isolation tools are introduced.

**EE 238. ELECTRONIC ANALOG CIRCUITS..... 4 credit hours**

Prerequisite: EE 211

6 hours per week (3-3)

Electronic Analog circuits is a lecture and laboratory course that is a continuation of EE 211. It covers the theory and application of solid state devices including integrated circuit operational amplifiers and many of their applications, thyristors and other solid state switching devices. Circuits using these devices are constructed and tested in the laboratory.

**EE 240. CAREER PRACTICES SEMINAR..... 2 credit hours**

Prerequisite: ENG 100

2 hours per week (2-0)

This course studies career options in the computer and electronics industry. Students learn how to develop a career plan, prepare a job hunting plan and a successful resume. Salary negotiations, interviewing for the job and how to succeed on the job are other topics discussed.

**EE 241. DIGITAL ELECTRONICS ..... 4 credit hours**

Prerequisites: EE 137 and EE 211

6 hours per week (3-3)

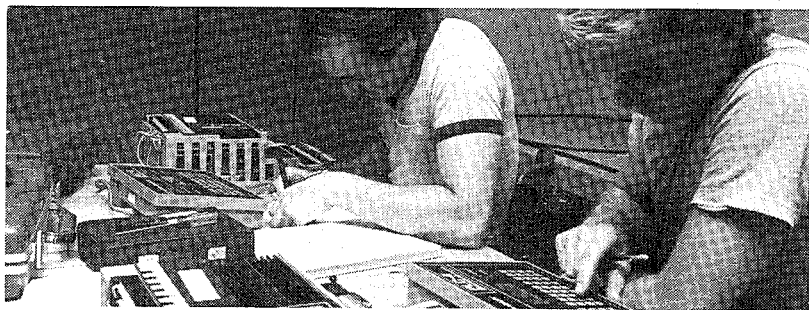
This course is an in-depth study of the logic presented in EE 137. The operation, electrical parameters and application of logic gates with emphasis on TTL and CMOS logic families are studied. Combinational logic circuits such as adders, subtractors, shift registers, multiplexers, encoders and memories are also covered. Experience in the use, operation, testing and troubleshooting of integrated circuits is gained in the lab.

**EE 244. ELECTRONIC CONTROL SYSTEMS..... 4 credit hours**

Prerequisites: EE 134, EE 211 and PHY 110

6 hours per week (3-3)

This is a class in servo controls. Topics include open and closed loop feedback theory, DC drives, speed and position controls.



**EE 245. TRANSMISSION SYSTEMS ..... 4 credit hours**

Prerequisites: EE 205, EE 215

6 hours per week (4-2)

This course studies the principles of digital and analog transmission systems. Topics covered are transmission codes, conventions, and hierarchy. Specific subjects include the T-1 system, Time Division Multiplexing, Frequency division Multiplexing, multiplexer interfacing and system maintenance.

**EE 250. MICROPROCESSOR INTERFACING ..... 4 credit hours**

Prerequisites: EE 139

6 hours per week (3-3)

This is an advanced level course covering theory, hardware, software and applications of microprocessors. topics include interfacing with sensors and actuators to control position, velocity, acceleration, temperature, flow rate and pressure. Laboratory exercises provide experience in analyzing and troubleshooting modern microprocessor-based control circuits.

**EE 254. PROGRAMMABLE CONTROLLER SYSTEMS ..... 4 credit hours**

Prerequisites: EE 224 or permission of instructor

6 hours per week (3-3)

This is an advanced class in programmable controllers. The Allen Bradley PLC 2/05 is integrated with conveyors to study material handling problems. Emphasis is on programming the PLC 2/05, I/O devices, and troubleshooting a typical PC control system.

**EE 275. SWITCHING SYSTEMS ..... 4 credit hours**

Corequisite: EE 205

6 hours per week (3-3)

The theory, operation and maintenance of analog and digital switches is studied. Topics include switch programming, diagnostic procedures, system trouble shooting. Customer-owned switching systems are emphasized.

**EE 299. CUSTOMER RELATIONS ..... 1 credit hour**

Prerequisite: None

7 weeks, 3 hours per week (3-0)

Students enhance their interpersonal skills through the techniques gained in this course. Developing insight using demonstrations, video tape, role playing, and interaction, the student is guided in a curriculum which builds a value-added attitude for customer service personnel. Skills learned include controlling one's emotions in difficult situations and increasing customer satisfaction.

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**ENGLISH****(ENG)****ENG 000. WRITING LAB..... 0 credit hours**

The Writing Lab provides two services. First, students enrolled in English 040, 050, 051, 091, 100, and 111 receive additional practice and/or assignments in developing writing skills in the lab. The practice method and assignments vary from course to course. Second, students can receive help on any writing projects from the lab staff.

**ENG 010. WRITING PRACTICUM..... 1 credit hour**

Prerequisite: None

1 hour per week (0-1)

This course provides individualized instruction. Students may be referred to this course by their instructor to remove a specific deficiency in their writing. Students may enroll in this course to improve writing or receive help in completing writing assignments for English classes or other courses requiring writing.

**ENG 020. ENGLISH AS A SECOND LANGUAGE I..... 8 credit hours**

Placement based on oral interview

8 hours per week (8-0)

This class is designed for students who do not speak or understand spoken or written English. This course teaches survival language necessary for minimum functioning in the community.

**ENG 021. ENGLISH AS A SECOND LANGUAGE II ..... 8 credit hours**

Placement based on oral interview or successful completion of ENG 020

8 hours per week (8-0)

This class is designed for students who have had some exposure to and/or instruction in English. The course emphasizes survival language.

**ENG 022. ENGLISH AS A SECOND LANGUAGE III ..... 8 credit hours**

Placement based on results of English Placement Test (EPT) or successful completion of ENG 021

8 hours per week (8-0)

This class is designed as a continuation of ENG 021 and is for students who have had some exposure to and/or instruction in English. This course goes beyond minimal survival English toward communication for daily living.

**ENG 030. ENGLISH FOR THE FOREIGN BORN I..... 2 credit hours**

Placement based on results of English Placement Test (EPT) or successful completion of ENG 022

3 hours per week (3-0)

This intermediate level class expands students' knowledge of English grammar and vocabulary and their ability to understand and use spoken and written English. Special attention is given to the appropriate use of the forms studied.

**ENG 031. ENGLISH FOR THE FOREIGN BORN II ..... 2 credit hours**

Placement based on results of English Placement Test (EPT) or successful completion of ENG 030

3 hours per week (3-0)

This course is a continuation of English 030.

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**ENG 040. BASIC WRITING - ESL ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

This course provides opportunities to develop skills in formal written English for non-native speakers of English. It emphasizes rhetorical structures, vocabulary, and a review of selected problem areas in grammar.

**ENG 050. BASIC WRITING I ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

This class is the first course for inexperienced writers. It helps students to gain confidence writing formal English sentences and paragraphs. It is strongly recommended that students enroll in Reading 040 before or at the same time as this course.

**ENG 051. BASIC WRITING II ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

This is a continuation of English 050. It meets along with an ENG 050 class but has more advanced writing lab assignments.

**ENG 085. REVIEW OF ENGLISH GRAMMAR ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course reviews the basics of our grammatical system and looks at some complex language problems often experienced by native speakers. It helps students to write more precisely and effectively. It may be taken in conjunction with ENG 091, 100, 107, 111 and 122.

**ENG 091. WRITING FUNDAMENTALS ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

This course focuses on strengthening the writing skills required of a worker, citizen, or college student. The emphasis is on developing and organizing ideas in long paragraphs and short narrative essays in preparation for ENG 100- or 111-level writing courses.

**ENG 100. COMMUNICATION SKILLS ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

Students receive practice in a variety of writing assignments relevant to their program area. Assignments include letter writing for a variety of situations (e.g., job application, complaint, commendation, courtesy), memos written in response to situations students are likely to encounter on the job, resumes fitted to the student's particular background (work and educational experience), and other writing forms. During the first week of class, students must demonstrate a writing proficiency at the ENG 091 level. This course is intended primarily for native speakers of English.

**ENG 102. TERM PAPER ..... 1 credit hour**

Prerequisite: None

1 hour per week (0-1)

This course provides individual instruction for students engaged in preparing a research paper. Step-by-step help is provided in topic selection, information gathering, note taking, organization, writing, documenting, and revising.

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Students who enroll in this course must use a text processor (computer) to complete their work. Student-accessible computers are available at several locations on campus, including the Writing Lab.

**ENG 107. TECHNICAL COMMUNICATIONS..... 3 credit hours**

Prerequisite: ENG 100

3 hours per week (3-0)

This course is a continuation of ENG 100 with emphasis on longer, more complex assignments which simulate work situations. As an introduction to more advanced courses in Technical communications, this course is a requirement for the Technical Communications degree program.

**ENG 108. ADVANCED TECHNICAL COMMUNICATIONS .... 3 credit hours**

Prerequisite: ENG 107

3 hours per week (3-0)

This course consists of 15 classroom hours of instruction in each of the following modules: research/interview techniques; editing and proofreading; and introduction to software documentation. Students can sign up for one to three credits and receive one credit for each module satisfactorily completed. Students can work on different modules in different semesters.

**ENG 109. AWARD WINNING DOCUMENTS..... 3 credit hours**

Prerequisites ENG 108 and GDT 217

3 hours per week (3-0)

This course focuses on putting the components of good manuals into complete documents. It concentrates on perfecting presentations and format, determining the different types of documentation needed, performing in-depth audience analyses, developing sequencing techniques, creating task-oriented documents, testing document outlines, and evaluating completed projects. Students can add four documents with camera-ready text to their portfolios. Documents may include video scripts, manuals, pamphlets, brochures or computer-aided instruction screen flows.

**ENG 111. COMPOSITION I ..... 4 credit hours**

Corequisite: ENG 000

4 hours per week (3-1)

This course focuses on developing skills in critical reading, logical thinking, and written composition (from paragraphs to expository essays and documented papers). Reading materials serve as a basis for papers and classroom discussions. Students write both in-class and outside themes frequently. Methods of organization and development are emphasized. During the first week of class, students must demonstrate their writing proficiency.

**ENG 122. COMPOSITION II ..... 3 credit hours**

Prerequisite: ENG 111

4 hours per week (3-1)

This course is a continuation of ENG 111 with emphasis on research and critical literary papers along with narrative and persuasive writing.

**ENG 140. SCIENCE FICTION..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course looks at the relevancy of science fiction as prophecy and as a guide to shaping future societies. The course centers around a series of

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short stories while also permitting students to select and read several novel-length books independently. Included are science fiction films and guest lectures though most of the class activity consists class discussion.

**ENG 145. WOMEN WRITERS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

A survey of poetry, fiction, drama and essays by women, with an emphasis on 20th Century writers is provided in this class. The class explores the writings of women authors and what those authors have to say about themselves and the world around them.

**ENG 160. INTRODUCTION TO LITERATURE:  
POETRY AND DRAMA ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to give an understanding of literature through close reading and discussion of selected works of poetry and drama. Students are encouraged to evolve criteria for assessing the value of literary works.

**ENG 170. INTRODUCTION TO LITERATURE:  
SHORT STORY AND NOVEL..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Students explore short stories and the novel as they provide blueprints for living, self-discovery and recreation. Each student is helped in strengthening reading and writing skills. Readings and discussion consider the cultural relevance of writings, the structural design, and the effect upon the reader. Students are encouraged to evolve criteria for assessing the value of literary works. Special designated sections of ENG 170 emphasize popular literature, science fiction, biography, mystery, westerns or images of women in literature.

**ENG 175. LITERATURE OF NATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

An historical survey of attitudes toward wilderness and nature as expressed in a variety of literary genres, with an emphasis on modern American works. (NOTE: This course may also be offered as a special section of English 170)

**ENG 181. AFRO-AMERICAN LITERATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides a critical analysis of the Afro-American experience in the world of literature. It is an introduction to contemporary Black literature, letters and thought, as well as a survey of the great works of Afro-Americans.

**ENG 189. STUDY PROBLEMS IN ENGLISH..... Variable credit**

Prerequisite: Consent

This course involves individualized directed activities in English. A special project is assigned.

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**ENG 200. SHAKESPEARE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides introductory reading and discussion of the varieties of Shakespeare's plays: comedy, history, tragedy and dramatic romance. All periods of Shakespeare's work are represented. Wherever possible, the opportunity to view performances, either live or on film, is made available.

**ENG 207. LITERATURE OF THE BIBLE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Content and literary forms of the Old and New Testaments and their influence on the literatures of the world to the present day are discussed.

**ENG 211. AMERICAN LITERATURE I..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The nation's literature from its beginnings to the Civil War are discussed, stressing the major authors of the period. The course relates trends of the period to contemporary problems and readings.

**ENG 212. ENGLISH LITERATURE I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The course studies English literature from the Anglo-Saxon period through the 18th Century. Readings stress the major authors from Chaucer to Johnson.

**ENG 213. WORLD LITERATURE I..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

World Literature 213 and 224 is a sequence which attempts an approach to the eternal values of man through literary masterpieces written from the time of ancient Greece to the present.

**ENG 222. AMERICAN LITERATURE II ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is the second half of a two-semester sequence (see ENG 211). It covers the period from the Civil War to the present and relates trends of the period to problems and writings occurring after the Civil War. Major fiction of the period including poetry, drama, short stories and novels as well as literary, social, political and economic trends are part of discussions. Some writing is required.

**ENG 223. ENGLISH LITERATURE II..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a continuation of ENG 212. It involves a study of representative writers of the Romantic, Victorian and Modern periods.

**ENG 224. WORLD LITERATURE II ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a continuation of ENG 213. It explores some of the great

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literary experiences of the Western tradition since the Renaissance and attempts to show how they have contributed to present cultural heritage.

**ENG 225. INTERMEDIATE EXPOSITION ..... 3 credit hours**

Prerequisite: ENG 100 or 111

3 hours per week (3-0)

Students review writing fundamentals and practice writing using materials drawn from students' special interest fields.

**ENG 230. NATURE OF ENGLISH LANGUAGE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The nature and development of the English language is discussed. Consideration is given of English from its beginning to the present. Language is examined in its social context and also in terms of dialects, speech and formal structure.

**ENG 240. CHILDREN'S LITERATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a survey of prose, poetry and illustrated books suitable for the preschool, elementary, and early adolescent child. This course is required of students entering elementary education; also for library studies or work, teacher's aide program, nursery and day care work and as general education for parents.

**ENG 241. ADOLESCENT LITERATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a survey of prose and poetry suitable for adolescent readers. It is recommended for students entering upper elementary and high school teacher training programs; also for library-science students and as a general education for parents.

**ENG 260. JOURNAL WORKSHOP I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This workshop is for emotionally mature, self-directed people committed to growth and discipline in their writing and in their lives. It offers in-class writing as a means to self-discovery and expression. Students explore movement and continuity of their lives while exploring creative and healing power of symbols. There is a choice of many ways to use writing: biography, mind exploration, growth work, creative expansion, problem solving, renewing faith, celebrating life, affirming commitments. Journals remain confidential. The course is transferable to four year colleges.

**ENG 261. JOURNAL WORKSHOP II ..... 3 credit hours**

Prerequisite: ENG 260

3 hours per week (3-0)

This is a continuation of ENG 260, for students who have already completed 260, and who wish to continue to develop their skills and produce additional written work.

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**ENG 270. CREATIVE WRITING I..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Students explore processes by which writers discover ideas. Aided by a series of writing exercises, students create elements of poetry, fiction, drama, and/or non-fiction such as dialogue, point of view, voice, and rhythm. Students also explore relationships between form and ideas in writing. Writing is viewed as a means of personal expression and as a craft with definable measures of quality.

**ENG 271. CREATIVE WRITING II..... 3 credit hours**

Prerequisite: ENG 270

3 hours per week (3-0)

This course is a continuation of English 270, Creative Writing, for those students who have already completed 270 and who wish to continue to develop skills. Students develop individual writing projects. Designated sections coordinate publication of Northern Spies, WCC's creative arts journal.

**FIRE PROTECTION \_\_\_\_\_ (FP)**

**FP 099. LABOR RELATIONS IN THE PUBLIC SECTOR..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Labor relations in the public sector are studied using simulated collective bargaining procedures and case studies. A field study report is required.

**FP 100. INTRODUCTION TO FIRE PROTECTION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Covered in this course are the history and development of fire protection, the role of the fire service in the development of civilization, personnel in fire protection, introduction to general fire hazards, and the problems and possible solutions for current and future fire protection.

**FP 103. FLAMMABLE HAZARDOUS MATERIALS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Designed for students in the Fire Protection program, this course covers the chemistry of flammable and explosive materials with special emphasis on hazards. Information from DOT and other agencies dealing with hazardous material response is provided.

**FP 109. INCIDENT COMMAND..... 3 credit hours**

Prerequisite: FP 100 or consent

3 hours per week (3-0)

The student is exposed to the decision making process required to manage fireground operations. Emphasis is on methods used in rescue, exposure, confinement, extinguishment and overhaul.

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**FP 111. HYDRAULICS ..... 3 credit hours**

Prerequisites: Math 097 and consent

3 hours per week (3-0)

This course covers basic skills and knowledge relevant to fire service hydraulics operation. Emphasis is placed on types and styles of pumps, construction, testing and maintenance procedures. In addition, main streams water distribution systems and automatic extinguishing systems are discussed. Partial coverage of NAPA Standard 1002 objectives is provided.

**FP 112. FIRE COMPANY SUPERVISION..... 3 credit hours**

Prerequisite: Consent

3 hours per week (3-0)

The theory and practice of supervision are studied. Included are the relationship of supervision to leadership, leadership styles, individual differences, problems of morale and motivation, interpersonal communication, instructional basics, supervision and strategy.

**FP 116. BUILDING CONSTRUCTION FOR FIRE SERVICE .. 3 credit hours**

Prerequisite: Consent

3 hours per week (3-0)

Firefighters are confronted with many unknown factors at the fire ground. Among these is the questionable structural stability of the fire building. The design of the building also contributes to fire spread and extinguishment in direct forms. This course provides a study of the fundamental concepts of building design and construction, including site selection, code compliance, architectural plans, terminology and explorations of design. Emphasis is focused on fire protection concerns.

**FP 122. FIRE PREVENTION THEORY AND APPLICATIONS..... 3 credit hours**

Prerequisite: FP 100 or consent

3 hours per week (3-0)

The development of fire prevention laws and ordinances for elimination of fire hazards is studied. Topics included are: inspection organization, practices and procedures, theory and application of laws and ordinances in modern concepts of fire prevention.



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**FP 124. FIRE PROTECTION SYSTEMS I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides an introduction to the concepts of fire protection systems and their relationship to the control and extinguishment of fires. It includes a review of extinguishing agents and their application, study of sprinkler systems, automatic fire detection systems and municipal fire alarm systems.

**FP 189. STUDY PROBLEMS ..... Variable credit**

Prerequisite: Consent of program coordinator or instructor

Directed activities in fire protection are provided in this course. Working with fire protection faculty or other recognized fire protection specialists, students concentrate on an assigned problem and demonstrate understanding and skill development within the fire protection area.

**FP 209. COMMAND AND CONTROL OF MAJOR FIRES ..... 3 credit hours**

Prerequisite: Consent

3 hours per week (3-0)

Covered in this course are fireground operations, strategy and judgments. Topics include: when to call for additional equipment, why buildings collapse, when to retreat, when or when not to ventilate and how to best augment systems which are installed in the building. Factors or conditions which affect and determine a department's operations are studied.

**FP 210. INTRODUCTION TO FIRE ADMINISTRATION..... 3 credit hours**

Prerequisite: Consent

3 hours per week (3-0)

This course provides a study of the practical application of records, reports, and training in fire administration. Topics included are: the municipal fire problem, organization for fire protection to include manpower, equipment and facilities, principles of organization, methods of supervision and discipline, relations with the public and other city departments, budget and purchasing practices, rating systems and their application to the fire service, and ways to handle personnel problems and employee suggestions.

**FP 213. FIRE INVESTIGATION AND ARSON..... 3 credit hours**

Prerequisite: Consent

3 hours per week (3-0)

The fire fighter's role in arson investigations is studied. Topics include: method and mechanics of protecting, searching and controlling the fire scene; determining the point of origin, path of fire travel and fire causes; interviews and interrogations; and recognizing and preserving evidence. This course covers Michigan laws, alibis, motives and proving the corpus delicti, preparation of the case, court testimony, reports and records and juvenile fire setters.

**FP 216. LEGAL ASPECTS OF FIRE PROTECTION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Legislative and court decisions which affect the fire service are studied. This course reviews criminal and administrative law, tort actions against municipalities, legal implications of hiring, discipline and promotions.

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**FP 224. PROTECTION SYSTEMS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course covers attitudes prevalent in industry toward fire protection, development of fire and safety organizations in industry, relationships between private and public fire protection organizations, industrial obligations to communities in regard to fire and safety, current trends, deficiencies, and possible solutions for fire protection problems facing industry today.

**FP 250. FIRE PROTECTION TRAINING METHODOLOGY.... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to prepare training officers to conduct fire protection training programs. It includes the study of various components essential in the development and delivery of fire protection training. This course is equivalent to the National Fire Academy Educational Methodology I course.

**FLUID POWER \_\_\_\_\_ (FLP)**

**FLP 111. FLUID POWER FUNDAMENTALS ..... 4 credit hours**

Prerequisite: None

5 hours per week (3-2)

This is a beginning course in fluid power that deals with the basic principles of hydraulics and pneumatics. (Hydraulics is used as a means of teaching the fundamentals.) Directional valves, pressure control valves, flow control valves, actuators and basic pump theory are studied. ANSI symbols are used to design simple circuits. Disassembly of components and assembly of circuits make up the lab experiences.

**FLP 122. HYDRAULIC PUMPS AND MOTORS ..... 2 credit hours**

Prerequisite: FLP 111

4 hours per week (2-2)

This course takes a look at the principles of the major positive displacement pumps. Building on the information from FLP 111, students study hydraulic pump controls, and multi-pressure systems. Other topics include hydrastatic drives, power unit construction, and rotary actuator principles and controls. Lab sessions are an important part of the class.

**FLP 201. PLUMBING AND PIPEFITTING I..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a practical study of plumbing and pipefitting fundamentals as well as the classifications and functions of boilers, steam and hot water heating systems. Heating code is included.

**FLP 202. PLUMBING AND PIPEFITTING II..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This course is a continuation of FLP 201 involving the study of water supply, waste disposal, drainage, venting, unit sanitation equipment and plumbing codes.

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**FLP 213. HYDRAULIC CONTROLS ..... 3 credit hours**

Prerequisite: FLP 111. Corequisite (recommended): FLP 214

4 hours per week (2-2)

FLP 213 parallels FLP 214 concentrating on the controls used in hydraulic circuits. The course takes a closer look at the directional, pressure and flow controls studied in FLP 111. We concentrate on specialty type valves such as stack modules, cartridge valves, proportional and servo valves. Other topics include electric components used in sequencing of hydraulic actuators, and component trouble shooting. Lab time is an integral part of this course.

**FLP 214. BASIC HYDRAULIC CIRCUITS..... 3 credit hours**

Prerequisite: FLP 111. Corequisite (recommended): FLP 213

4 hours per week (2-2)

This course parallels FLP 213 and deals with circuits as the application of hydraulic controls. Circuit design, application and troubleshooting are major topics studied. Electric logic for hydraulic sequencing is included along with open and closed loop servo circuits. Lab time is an important part of this course.

**FLP 225. FLUID POWER INSTRUMENTATION ..... 3 credit hours**

Prerequisites: FLP 111 and EE 123A

4 hours per week (2-2)

This course includes the study of electronic instrumentation as it applies to hydraulics and an introduction to automatic control. Discussion and laboratory exercises involve sensors of all types, oscilloscopes, and X/Y recorders. Characteristics of various pressure controls and electro-hydraulic valves are studied utilizing this equipment. The course concludes with an introduction to feedback control theory.

**FLP 226. PNEUMATICS..... 3 credit hours**

Prerequisite: None

4 hours per week (2-2)

Basic air systems are studied as a control medium in industrial applications such as presses, clamps, transfer devices, etc. Valves, cylinders, motors, compressors, regulators, filters and other power components are included.

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**FRENCH \_\_\_\_\_ (FRN)**

**FRN 111. FIRST YEAR FRENCH I..... 4 credit hours**

Prerequisite: None

4 hours per week (3-1)

This is a beginning and transferable course in French which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language.

**FRN 120. BEGINNING CONVERSATIONAL FRENCH ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This is a basic French course, mainly conversational in approach, which assumes no previous knowledge of the language. It is chiefly for persons

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interested in foreign travel through a basic knowledge of spoken and written French. It may also be taken as a preview for students entering the first-year college French studies or students already enrolled in the first year course.

**FRN 121. INTERMEDIATE CONVERSATIONAL FRENCH..... 2 credit hours**

Prerequisite: FRN 120

3 hours per week (3-0)

This is a continuation of FRN 120. The course provides vocabulary expansion and cultural insights through student involvement in conversation practice sessions.

**FRN 122. FIRST YEAR FRENCH II..... 4 credit hours**

Prerequisite: FRN 111

4 hours per week (3-1)

This is a continuation of FRN 111. Continuing classroom work and language sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

**FRN 189. STUDY PROBLEMS IN FRENCH ..... Variable credit**

Prerequisite: Consent

This course includes directed activities in French. These activities are individualized. Special aspects of the French language or culture are studied.

**FRN 213. SECOND YEAR FRENCH I ..... 3 credit hours**

Prerequisite: FRN 122 or consent

3 hours per week (3-0)

This course provides a review of first year French language, as well as an introduction to cultural and commercial French. Students with good high school backgrounds or previous language experience in French may be eligible for admission without FRN 111 and 122.

**FRN 224. SECOND YEAR FRENCH II ..... 3 credit hours**

Prerequisite: FRN 213 or consent

3 hours per week (3-0)

This is a continuation of FRN 213. Short-wave broadcasts and language laboratory practice augment the oral-aural method. The course covers aspects of Canadian as well as French cultural life.

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**GENERAL STUDIES \_\_\_\_\_ (GS)**

**GS 111. FIRST YEAR RUSSIAN I..... 4 credit hours**

Prerequisite: None

4 hours per week (3-1)

This is a beginning and transferable course in Russian which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language.

**GS 120. CONVERSATIONAL RUSSIAN ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Designed to be a short term, seven week, non-sequential conversational

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course. This course is intended for those interested in basic and essential aspects of the Russian language and culture for the purpose of travel and enjoyment. The writing system, useful everyday expressions, and current topical informational items are studied.

**GS 122. FIRST YEAR RUSSIAN II..... 4 credit hours**

Prerequisite: GS 111 or consent

4 hours per week (3-1)

This is a continuation of GS 111. Continuing classroom work and language laboratory sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

**GS 189. STUDY PROBLEMS IN RUSSIAN ..... Variable credit**

Prerequisite: Consent

This class involves individualized directed activities in Russian. Special aspects of the Russian language or culture are studied.

**GEOGRAPHY \_\_\_\_\_ (GEO)**

**GEO 100. GEOGRAPHY AND ENVIRONMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course surveys contemporary global society emphasizing the inter-relationships between developed and developing nations. It introduces students to the theory and methodology of the discipline and examines current environmental issues such as land use, acid rain, and soil erosion.

**GEO 200. MICHIGAN GEOGRAPHY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course surveys the various types of natural resources and regions within the state and of the cultural adjustment humans have made to natural conditions. Emphasis is on points of history with geographic interest. The economic, social and political development of the territory as part of the history of the Great Lakes area are covered.

**GEOLOGY \_\_\_\_\_ (GLG)**

**GLG 100. INTRODUCTION TO EARTH SCIENCE..... 4 credit hours**

Prerequisite: None

5 hours per week (2-3)

For students who wish to obtain a broad perspective of the science, this course provides practical training in earth science including work with soils, minerals, glaciers, volcanism, maps, meteorology, astronomy and oceanography. Field trips to points of interest are included.

**GLG 103. FIELD GEOLOGY ..... 3 credit hours**

Prerequisite: None

7 weeks, 6 hours per week (1-5)

Students examine the processes that have formed and are forming the

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landscape by studying formations at local sites. GLG 103 is normally offered only in the Summer Term.

**GLG 104. WEATHER ..... 3 credit hours**

Prerequisite: None

7 weeks, 6 hours per week (3-3)

Atmospheric processes and phenomena that produce the day-to-day weather changes experienced throughout the world are studied. Emphasis is placed on empirical observation of cloud type, development and movement. Weather map interpretation and analysis including elementary weather forecasting techniques are presented. Field trips are included. GLG 104 is normally offered only in the Spring Term.

**GLG 109. COMMON ROCKS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The identification of rocks and minerals is studied. This course is for students interested in becoming school teachers, or needing a science elective.

**GLG 110. GEOLOGY OF THE NATIONAL PARKS AND MONUMENTS ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

The geological settings of specific National Parks and Monuments is studied including the principles and processes which shaped them. Slide programs are used to illustrate the geological features.

**GLG 114. PHYSICAL GEOLOGY ..... 4 credit hours**

Prerequisite: None

5 hours per week (2-3)

The physical features and processes of the earth are studied. Plate tectonics along with the interpretation of topographic maps and the study of common rocks and minerals are included. A three day field trip is required with food and housing expenses the responsibility of the student.

**GLG 125. HISTORICAL GEOLOGY ..... 4 credit hours**

Prerequisite: GLG 100, 114 or consent

5 hours per week (2-3)

The development of North America as a typical continent is presented including the formation of mountains, plains, the evolution of life on land and water, and the identification of fossils. A three day field trip is required with food and housing expenses the responsibility of the student.

**GERMAN ..... (GRM)**

**GRM 111. FIRST YEAR GERMAN I ..... 4 credit hours**

Prerequisite: None

4 hours per week (3-1)

This is a beginning and transferable course in German which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language. (Students intending to study German should have a sound,

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basic background in English grammar and syntax to be able to take and succeed in a foreign language as inflected and analytical as German.)

**GRM 120. CONVERSATIONAL GERMAN ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Conversational in approach. Assumes no previous knowledge of the language and geared chiefly for persons interested in obtaining a basic knowledge of spoken and written German, as well as an appreciation and awareness of contemporary German culture. German 120 may be taken as a preview for students entering the first year German studies or students already enrolled in the first year course.

**GRM 122. FIRST YEAR GERMAN II..... 4 credit hours**

Prerequisite: GRM 111 or consent

4 hours per week (3-1)

This is a continuation of GRM 111. Continuing classroom work and language laboratory sessions emphasize the aural-oral approach. Class conversations, short readings, and lab practice also assist students in acquiring facility in the language, as well as informational aspects of the culture.

**GRM 189. STUDY PROBLEMS IN GERMAN ..... Variable credit**

Prerequisite: Consent of instructor

This is a class with individualized directed activities in German. Special aspects of the German language or culture are studied.

## **GRAPHIC DESIGN TECHNOLOGY \_\_\_\_\_ (GDT)**

**GDT 100. TYPOGRAPHY I..... 4 credit hours**

Prerequisite: MTH 151 or equivalent

6 hours per week (2-4)

This is an introduction to evolution/principles of typography with concentration on typeface identification, copyfitting, and layout formulation. Assignments investigate lettering as a design element in graphic design and advertising.

**GDT 101. DESIGN SURVEY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course surveys historical and contemporary styles and influences in graphic design through the ages.

**GDT 102. COMPUTER AIDED PUBLISHING..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

An introduction to "desktop publishing" involving hands-on experience in preparing publication design, copy, artwork and page composition using a microcomputer.

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**GDT 103. PERSPECTIVE DRAWING..... 4 credit hours**

Prerequisite: None

6 hours per week (2-4)

This course includes development of ideas with three dimensional drawing techniques. Emphasis is on the fundamentals of oblique, isometric, one point, two point and three point perspective drawing. Projects utilize parallel and perspective line projection for shadow construction.

**GDT 112. GRAPHIC COMMUNICATION..... 4 credit hours**

Prerequisite: GDT 100, ART 112

6 hours per week (2-4)

This class provides coverage of methods in visual communication, ideation, visual perception and problem solving techniques. Exercises explore word-picture-abstract design, visual thinking and communication theories.

**GDT 113. PRINCIPLES OF PRODUCTION..... 4 credit hours**

Prerequisite: GDT 100

6 hours per week (2-4)

This class provides study of art production mechanics and techniques including keylining, page formatting, and camera ready art preparation. It focuses on industry related assignments.

**GDT 201. GRAPHIC ILLUSTRATION..... 4 credit hours**

Prerequisite: GDT 103 or consent

6 hours per week (2-4)

This course includes illustration projects utilizing perspective and parallel projection and mechanical art aids; information for problems obtained from blueprints, written communication and other sources. Assignments deal with the presentation of assemblies, exploded views, and section and phantom drawings used by automotive, aircraft and electronics industries.

**GDT 214. PUBLICATION LAYOUT ..... 4 credit hours**

Prerequisite: GDT 112, GDT 113

6 hours per week (2-4)

This course involves production of varied media comprehensives for advertising, typography and graphic design including page formatting, posters and newspaper/magazine advertisements. Marker sketches to highly refined presentation works constitute coursework.

**GDT 215. TYPOGRAPHY II..... 2 credit hours**

Prerequisite: GDT 112, GDT 113

4 hours per week (1-3)

This course involves the study of continuation of principles of typography with greater concentration on typographic layout, implementation and expressive/explorative design solutions.

**GDT 216. GRAPHIC REPRODUCTION ..... 2 credit hours**

Prerequisite: ART 112

4 hours per week (1-3)

This class, for photography majors, covers basic printing processes and terminology of the various stages required for producing printed materials. Students concentrate on hands-on execution and take projects through printing preparation to the final printed piece.

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**GDT 217. COMPUTER-AIDED PUBLISHING II ..... 2 credit hours**

Prerequisite: GDT 102 or consent

4 hours per week (1-3)

This course is a continued exploration into desktop publishing, software applications and principles of fundamental publication design using a microcomputer. Emphasis is placed on computer layout techniques for industry related assignments.

**GDT 222. ADVANCED ILLUSTRATION ..... 4 credit hours**

Prerequisite: GDT 103 or consent

6 hours per week (2-4)

This class further explores various media and illustration techniques used by the graphic illustrator. Renderings of commercial illustrations are done with watercolors, acrylics, pastels, colored pencils, and pen and ink.

**GDT 226. COMPUTER AIDED PUBLISHING III ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This course explores advanced desktop publishing techniques and software applications using a microcomputer. Using provided software and workbooks, students complete step-by-step exercises followed by a variety of design and communication problems.

**GDT 227. GRAPHIC TECHNOLOGY ..... 4 credit hours**

Prerequisite: GDT 216. Corequisite: GDT 230

6 hours per week (2-4)

This class provides further investigation into offset printing preparation, paper characteristics, inks, darkroom procedures and bindery. Emphasis is placed on hands-on experience with graphic arts equipment including the operation of small format offset printing presses.

**GDT 228. AIRBRUSH TECHNIQUES ..... 4 credit hours**

Prerequisite: ART 111 or consent

6 hours per week (2-4)

This class provides an introduction to various rendering techniques using an airbrush and various associated materials. Assignments deal with illustrative and graphic design solutions to industry related projects.

**GDT 229. SCREENPRINTING TECHNIQUES ..... 4 credit hours**

Prerequisite: GDT 216 or consent

6 hours per week (2-4)

This is an introductory course in screen process printing (known as silkscreen printing). Through projects, students acquire knowledge of screen image make-ready and printing. The four basic methods to be studied are: 1) tusche, 2) hand-cut film, 3) hand-made photo, and 4) direct image photography. Students are given hands-on experience in hand-screen and machine printing.

**GDT 230. PROFESSIONAL PRACTICES ..... 2 credit hours**

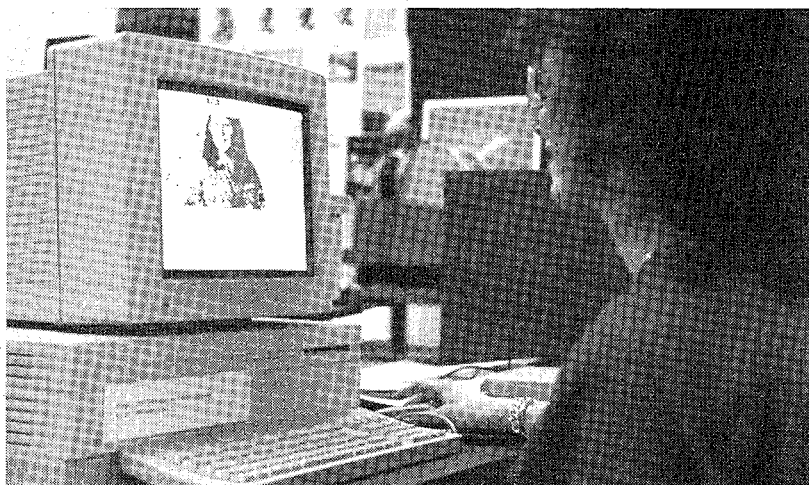
Prerequisite: GDT 101

4 hours per week (2-2)

This class provides an overview of various professional design operations, career options, media services, freelancing, resume and portfolio preparation/presentation procedures. Lectures also touch on the fundamentals for operating a small design office.

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**GDT 232. ILLUSTRATION..... 2 credit hours**

Prerequisite: ART 111, GDT 214

4 hours per week (1-3)

The course is an investigation of conceptual and technical skills required for communication of ideas. Exercises and projects aim to develop visual awareness and accuracy of illustrative drawing using various media.

**GDT 236. SPECIALIZED STUDY..... Variable credit**

Prerequisite: GDT 113, GDT 214

This class provides an opportunity for students to work independently with faculty on projects related to industry. Students are encouraged to concentrate on study in areas of interest and subjects not fully covered in the curriculum such as computer typesetting.

**GDT 237. AIRBRUSH TECH II..... 4 credit hours**

Prerequisite: GDT 228

6 hours per week (2-4)

A further study of materials, strategies and techniques utilized in airbrush projects and the execution and evaluation of several such projects.

**GDT 238. COMPUTER-AIDED ILLUSTRATION..... 4 credit hours**

Prerequisite: GDT 102 or consent

6 hours per week (2-4)

This course explores advanced computer graphic illustration and graphic design techniques using a microcomputer. Software emphasis includes image scanning and digitizing, electronic darkroom, advanced typography and object oriented drawing programs.

**GDT 239. SPECIALIZED STUDY  
(COMPUTER GRAPHICS)..... Variable credit**

Prerequisite: GDT 238 or consent

This class provides an opportunity for students to work independently with faculty on color computer graphics software programs.

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## HEALTH SCIENCE \_\_\_\_\_(HS)

### **HS 039. ANATOMY AND PHYSIOLOGY REVIEW**

**FOR PATHOPHYSIOLOGY..... 1 credit hour**

Prerequisite: BIO 111 or equivalent. Corequisite: HS 220

2 hours per week (2-0)

This course is a review of anatomy and physiology principles for students in HS 220. The course does not teach basic anatomy and physiology; it presents a review that corresponds with systems taught in HS 220.

### **HS 113. INTRODUCTION TO MEDICAL SCIENCE..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course provides an overview of the health professions, how and why diseases occur, vital signs, death and dying. Course content may vary according to student interest.

### **HS 115. MEDICAL OFFICE AND LABORATORY**

**PROCEDURES ..... 3 credit hours**

Prerequisite: HS 113 or equivalent

3 hours per week (3-0)

This course consists of lecture on office examining room procedures, sterile techniques, medical emergencies, specimen collection and minor surgery. Laboratory experience applies course material from the lectures.

### **HS 117. NUTRITION..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course presents normal nutrition and its relation to health. It includes nutritional needs for various age groups and introduces therapeutic nutrition. The importance of nutrition in the growth and functioning of the human body is emphasized.

### **HS 147. GROWTH AND DEVELOPMENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The physical, psychological and social growth of the individual from birth to death and the role of the family in society are studied.

### **HS 211. ADVANCED CARDIAC LIFE SUPPORT**

**PROVIDER ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This course trains and certifies health care providers in the delivery of emergency cardiopulmonary care to persons who have had a cardiopulmonary arrest and to persons at high risk for cardiopulmonary arrest, e.g., after myocardial infarction. Upon successful completion of the course, students are awarded certification by the American Heart Association.

### **HS 212. ADVANCED CARDIAC LIFE SUPPORT**

**INSTRUCTOR ..... 1 credit hour**

Prerequisite: None

1½ hours per week (1½-0)

This course trains and certifies Advanced Cardiac Life Support (ACLS)

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Providers as ACLS Instructors. Students must be able to complete CPR and ACLS cognitive knowledge and performance skills testing. Successful ACLS instructor candidates must be able to organize and present an ACLS lecture, manage the didactic materials, test and manage all performance skills stations. Successful candidates are recertified in CPR and ACLS Provider and certified by the American Heart Association as ACLS instructors.

**HS 220. PATHOPHYSIOLOGY..... 4 credit hours**

Prerequisite: LPN, RN or consent

4 hours per week (4-0)

The focus of this course is the study of disease processes in humans. The course includes identification of the etiology and pathogenesis of disease, alterations in normal body function, and the reaction and adaptation of the body to disease.

**HS 244. MEDICAL ETHICS..... 2 credit hours**

Prerequisite: Nursing students or consent of faculty

2 hours per week (2-0)

Various philosophies of ethics (Kantian, utilitarian, natural law) are introduced. Models for decision making using a multifaceted approach and incorporating philosophy, values clarification, and legal aspects, are used to examine current ethical issues. Among topics discussed are: patient rights, confidentiality, informed consent, abortion, genetic manipulation, experimental procedures, treatment of defective newborns, and euthanasia.

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**HEATING.....(HTG)**

**HTG 100A. BOILER OPERATIONS..... 3 credit hours**

Prerequisite: Employment working with boilers or consent

3 hours per week (3-0)

This is the first in a series of courses to aid students in passing examinations to obtain low pressure and high pressure operator's license. Boiler terminology, construction and function, as well as the fundamental application of physics; heat, steam, water, pressures, etc. is studied. Safety is included, along with basic codes governing the operation of boilers.

**HTG 100B. ADVANCED BOILER OPERATIONS ..... 3 credit hours**

Prerequisite: HTG 100A or consent

3 hours per week (3-0)

This course provides more detail on modern steam boilers and today's environmental considerations. It covers, in greater depth, physics, feedwater treatment, and steam for high pressure boilers. This is an advanced course where students learn how to use various fossil fuels in modern furnaces safely and economically.

**HTG 101. BOILER ACCESSORIES..... 3 credit hours**

Prerequisite: 100B or consent

3 hours per week (3-0)

This class is devoted to boiler settings, combustion equipment, fuels, heating surfaces, stokers, pumps, safety valves, steam traps, separators, and other accessories. Includes keeping of records, logs and inspection preparation.

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**HTG 102. BOILER AUXILIARIES..... 3 credit hours**

Prerequisite: HTG 101 or consent

3 hours per week (3-0)

This course provides continuing study of accessories and auxiliaries covering injectors, feedwater heaters, deaerators and evaporators, economizers, air preheaters, cooling towers, etc.

**HTG 103. POWER PLANT ENGINE AND TURBINES..... 3 credit hours**

Prerequisite: HTG 102 or consent

3 hours per week (3-0)

Principles of operation and maintenance practices of steam engines and turbines are presented. Construction, mechanisms, engine indicators, governors, engine rating and efficiency are other topics.

**HTG 104. POWER PLANT REFRIGERATION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a basic refrigeration course for Boiler Operators and Power Plant Engineers covering fundamentals of refrigeration including: terminology, cycle, mechanics of compression, fundamentals of energy, elementary thermo-dynamics, refrigerators and lubricating oils.

**HTG 105. POWER PLANT AIR CONDITIONING SYSTEMS.. 3 credit hours**

Prerequisite: HTG 104

3 hours per week (3-0)

This course is a continuation of Heating 104 devoted to Power Plant cooling systems covering centrifugal, reciprocating cascade and absorption systems, evaporators, controls and metering devices, cooling towers, water problems and treatment.

**HTG 106. POWER PLANT ELECTRICITY I ..... 3 credit hours**

Prerequisite: Employed Operating Boilers or consent

3 hours per week (3-0)

This class introduces operators to basic electricity and the basic application of electrical measuring instruments including basic terms, volts, ohms, amps, power factors, AC and DC principles, single and 3-phase circuits, motor protectors (fuses, heaters, breakers) sub-stations, transformers, etc.

**HTG 107. POWER PLANT ELECTRICITY II ..... 3 credit hours**

Prerequisite: HTG 106 or consent

3 hours per week (3-0)

A continuation of Heating 106, this course studies types of motors and generators employed in Power Plants to generate electricity. It also looks at the application and maintenance of motors, induction, synchronous, single and 3 phase; power transmission, transformer lines, breakers, start and run capacitors; and control of plant power factors. Safety and appropriate codes are discussed.

**HTG 109. REVIEW FOR BOILER EXAMINATIONS..... 3 credit hours**

Prerequisite: Employed operating boilers or consent

3 hours per week (3-0)

This class reviews major units of boiler operations and refrigeration which will assist operators in passing the licensing examination for Boiler Operator, High Pressure, Third Class, and for Third Class refrigeration operator.



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*Note: Basically HTG 111 through HTG 215 are trade-related instruction program courses. Their purpose is to upgrade persons currently employed in the industry; however, students who are not currently employed in the industry are welcome. Membership in the Educational Society of the Refrigeration Service Engineers (RSES) is required. Initiation fee and dues are \$53. Consent of advisor is required for registration.*

**HTG 111. HEATING FUNDAMENTALS..... 5 credit hours**

Prerequisite: Refrigeration Service Engineers Society membership required  
5 hours per week (5-0)

This is the first in a series of courses introducing heating and air conditioning service personnel to the fundamentals of heating fuels, heating equipment and systems.

**HTG 122. HEATING SYSTEMS ..... 5 credit hours**

Prerequisite: HTG 111 or consent and Refrigeration Service Engineers Society membership

5 hours per week (5-0)

Building upon Heating 111, Heating Systems covers applications, installation and start-up of heating equipment, oil, gas, electric warm air and hydronic.

**HTG 213. HEATING CONTROLS ..... 5 credit hours**

Prerequisite: HTG 122 and consent

5 hours per week (5-0)

The third course focuses on controls and troubleshooting heating equipment and systems.

**HTG 214. HEATING CODES..... 3 credit hours**

Prerequisite: 2 years experience or HTG 213

3 hours per week (3-0)

National and local codes, covering materials, installation and operation of heating equipment and systems are discussed and interpreted.

**HTG 215. HEAT PUMP SERVICING ..... 5 credit hours**

Prerequisite: RSES membership and demonstrated knowledge of basic refrigeration, air conditioning and electricity.

5 hours per week (5-0)

This course includes a review of fundamentals, understanding heat loss/gain, heat pump principles, heat pump application and installation, compressors, refrigerant reversing components, wiring, auxiliary heaters, defrost controls, electrical controls, air distribution, equipment performance, troubleshooting, and customer relations. Upon examination students are awarded a certificate of completion, with the stipulation that they are required to reappear for the examination every three years.

**HTG 228. PNEUMATIC TEMPERATURE CONTROLS ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This class develops an understanding of the installation, maintenance and function of pneumatic temperature control systems. It covers pneumatic controls, applications and functions, plus air compressors and maintenance, variation of applied control system, room stat., master stat., damper motors, automatic water and steam valves, return and fresh air damper blades.

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## **HISTORY** \_\_\_\_\_ **(HST)**

### **HST 101. WESTERN CIVILIZATION TO 1500..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines the development of the cultures and institutions of the ancient Near East and Classical, Medieval and Renaissance civilizations.

### **HST 102. WESTERN CIVILIZATION FROM 1500 TO THE PRESENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course studies cultural developments and the growth of institutions from the Renaissance to the present. Emphasis is on the expansion of European civilizations.

### **HST 105. WOMEN IN HISTORY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

(See WS 104)

An analysis is provided of the role of American women from the colonial period through the 20th century. The course explores the work role of women in domestic and public economics, women in the family, the women's political involvement and debates within the sphere of women's political participation.

### **HST 150. AFRO-AMERICAN HISTORY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class surveys and analyzes the literature and some of the problems and interpretations of the history of the Afro-American from the Revolutionary War to the present.

### **HST 160. AMERICAN FILM ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

(See HUM 160)

The development of American cinema from its beginnings in 1896 to the present is studied. The films, viewed in class, are discussed in terms of film techniques as well as in terms of content. The course relates cinema to themes in American culture.

### **HST 189. STUDY PROBLEMS IN HISTORY ..... Variable credit**

Prerequisite: Consent

This course involves individualized directed activities in History. A specific problem/issue is studied, or a special project is assigned.

### **HST 200. MICHIGAN HISTORY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course focuses on the history of the State of Michigan, including its geographical, economic, social, and political development. Particular emphasis is placed on the state's industrial growth, especially the automobile industry and the rise of industrial unions. More emphasis is placed on

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events and personalities in the 20th century.

**HST 201. UNITED STATES HISTORY, 1500-1865 ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The American peoples and their growth from early colonization to the close of the Civil War, this class re-examines the dominant themes in American life as well as the conflicts oppressed minorities faced in seeking their needs and ambitions in America. This course is also taught as a television course using the program series "The American Adventure."

**HST 202. UNITED STATES HISTORY, 1865-PRESENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

American society and politics since the Civil War are studied including an examination of social and cultural unrest of growing America to better understand and deal with stresses of the present. It is a continuation of HST 201.

**HST 204. ORAL HISTORY/FAMILY HISTORY:  
TECHNIQUES FOR GATHERING FAMILY HISTORY ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This class gives students techniques for gathering the memoirs of the people around them. Students are taught how to organize oral histories, interpret family photographs and memorabilia, and how to create a family cookbook, capturing the family's special recipes.

## **HOTEL-RESTAURANT MANAGEMENT \_\_\_\_\_ (HRM)**

**HRM 100. HOSPITALITY INDUSTRY ACCOUNTING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The course provides basic information of bookkeeping and accounting skills and orientation to office procedures related to the hospitality industry.

**HRM 104. FRONT OFFICE PROCEDURES ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The class provides an introduction to a systematic approach to front office operations as well as an overview of the flow of business through the hotel organization.

**HRM 222. LODGING MARKETING AND PROMOTION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to zero in on both front office and back of the house management. A special emphasis is placed on sales and promotion of the Hotel operation dealing with related activities such as banquet sales, convention planning and holiday packages. Includes official Certificate of Completion from Institute of Hotel/Motel Management.

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**HRM 223. PRACTICUM IN LODGING MANAGEMENT..... 3 credit hours**

Prerequisite: 30 credit hours in the program or consent

3 hours per week (3-0)

This course provides students with the opportunity to earn 3 credit hours while working under supervised conditions in a hotel or country club. A minimum of 300 hours of work is required.

**HRM 230. HOSPITALITY LAW ..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

Contract Law as a foundation for anticipating legal difficulties and making the best use of legal advice is the focus of this course. Functional hotel or restaurant problems, policy problems, and the legal resolution are studied. Also includes the origin and development of common statutory and constitutional law and of the functioning of the judicial system.

**HUMANITIES \_\_\_\_\_ (HUM)**

**HUM 101. INTRODUCTION TO HUMANITIES I..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course explores the humanities considering the creative nature of humanity. It focuses on art, literature, music, philosophy, human thought and people's relationship to their culture. From ancient times to the end of the high middle ages.

**HUM 102. INTRODUCTION TO HUMANITIES II..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course explores the humanities considering the creative nature of humanity. Its focus on art, literature, music, philosophy, human thought and people's relationship to their culture from the Renaissance to current times.

**HUM 150. INTERNATIONAL CINEMA ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides a survey of important foreign films and film makers (primarily, though not exclusively, European). The films viewed in class are discussed in terms of film techniques as well as in terms of content. No foreign language ability is assumed.

**HUM 160. AMERICAN FILM ..... 3 credit hours**

(See HST 160)

Prerequisite: None

3 hours per week (3-0)

This course examines the development of American cinema from its beginning in 1896 to the present. The films, viewed in class, are discussed in terms of film techniques as well as in terms of content. It relates American cinema to themes in American culture.

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**HUM 189. STUDY PROBLEMS IN HUMANITIES ..... Variable credit**

Prerequisite: Consent of instructor

This class provides individualized directed activities in Humanities. A specific problem or special project is assigned.

**INDUSTRIAL DRAFTING ..... (ID)**

**ID 100. TECHNICAL DRAWING ..... 4 credit hours**

Prerequisite: None

6 hours per week (2-4)

An introduction to the graphic language and the use of drafting materials and instruments. Drawings include geometry, orthographic views, auxiliary views, section views, pictorial drawings and developments, electrical block diagrams, logic diagrams and schematics.

**ID 105. PICTORIAL DRAWING ..... 2 credit hours**

Prerequisite: ID 100 or equivalent

3 hours per week (1-2)

The development of perspective and isometric drawings suitable for engineering studies, parts catalogs, and assembly and service manuals is the focus of this course. Emphasis is on rapid methods of drawing development using typical manufactured parts as subjects.

**ID 107. MECHANISMS ..... 4 credit hours**

Prerequisite: MTH 152 or equivalent

4 hours per week (1-3)

Principles of gears, cams, pulleys and other mechanical means to transmit motion and energy are studied. Included are graphic and mathematical techniques to solve force, displacement and motion application problems.

**ID 111. INDUSTRIAL DRAFTING ..... 4 credit hours**

Prerequisite: ID 100 or 2 years of high school drafting

6 hours per week (2-4)

Examined in this course are standard drafting practices and procedures in the areas of material specifications, drawing numbering systems, preparation of tabulated drawings, auxiliary views, sectioning, screw threads and fasteners. Dimensioning, tolerancing and the use of drafting materials for the preparation of assembly drawings, detail drawings and parts lists are also included.

**ID 112. DESCRIPTIVE GEOMETRY ..... 4 credit hours**

Prerequisite: ID 100 or consent

6 hours per week (2-4)

Points, lines and planes and their relationships in space are studied, with emphasis on practical application of principles to actual problems in industry.

**ID 114. INDUSTRIAL DRAFTING ..... 4 credit hours**

Prerequisite: ID 111 or equivalent

6 hours per week (2-4)

Practices and procedures for preparing assembly drawings from given details. An introduction to principles of design is included with emphasis on the use of standard part catalogs.

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**ID 121. THEORY OF JIGS AND FIXTURES..... 2 credit hours**

Prerequisites: ID 100, MT 111

3 hours per week (1-2)

The various types of jigs and fixtures and their combined use are studied. Development of skills in the proper location and clamping of a part is included, with emphasis on the application principles and presentation of a practical design. The use of standard parts catalogs is also covered.

**ID 123. TOLERANCING: CONVENTIONAL AND GEOMETRICAL ..... 2 credit hours**

Prerequisite: ID 111 or equivalent

3 hours per week (1-2)

This course is an analysis of tolerancing in both the conventional and geometrical systems of dimensioning. Emphasis is placed upon definitions, terminology, and practical application of principles to typical problems in industry.

**ID 212. THEORY OF DIES ..... 2 credit hours**

Prerequisite: Apprentice in Tool and Die Making or ID 111

3 hours per week (1-2)

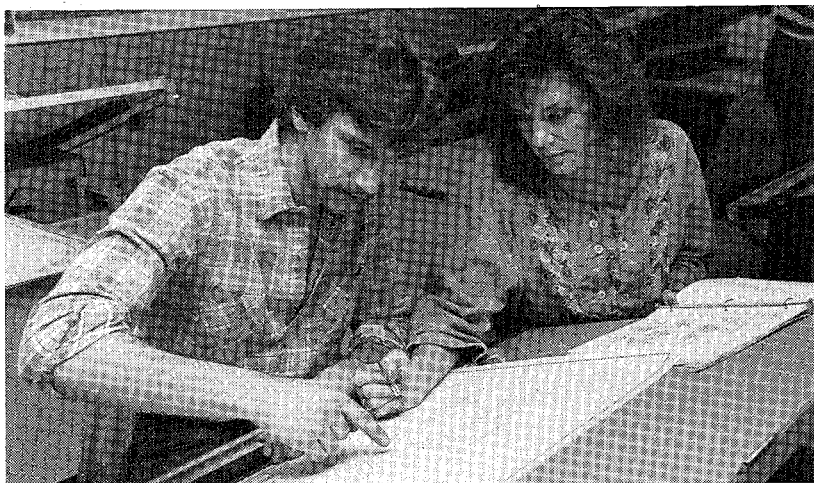
The nomenclature and the basic types, principles and standards used in the design of dies are studied. Special attention is given to the use of standard parts catalogs and the standard die detailing and assembly drawing practices.

**ID 216. INTRODUCTION TO COMPUTER AIDED DRAFTING..... 2 credit hours**

Prerequisite: ID 100

4 hours per week (1-3)

The principles and applications of computer-aided drafting systems and familiarity with the hardware components of the CAD system are emphasized. Use of the interactive graphic software, development of input and output skills, and familiarity with software, languages and systems hierarchy. AutoCAD software is featured.



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**ID 217. INTRODUCTION TO 3-D CAD..... 2 credit hours**

Prerequisites: ID 112 and ID 216

4 hours per week (1-3)

Using CADKEY software the student is introduced to three axis creation of parts. The drafting of auxiliary views, details, assemblies and solid models are included.

**ID 218A. INTERACTIVE COMPUTER-AIDED DRAFTING..... 2 credit hours**

Prerequisite: ID 216 or consent

4 hours per week (1-3)

Advanced autocad techniques and functions are introduced with special emphasis on 3-D and solid model development. Basic use of AutoLISP is also introduced.

**ID 219. 2-D CAD PLANNING AND DRAWING ..... 4 credit hours**

Prerequisite: ID 217 or equivalent

6 hours per week (2-4)

This class is an introduction to the operation of a large CAD/D system. Emphasis is on the startup, input and output skills as applied to typical 2-D drawings. Planning and flow processes are stressed. Computervision 4-4X and Personal Systems software are used to develop transferable skills for employment.

**ID 220. CAD APPLICATION - ELECTRONIC ..... 4 credit hours**

Prerequisite: ID 219 and ID 251 or consent

6 hours per week (2-4)

The course examines the principles of electronic layout including the application of CAD to develop block diagrams, electronic symbolization, component and hardware representations. Types of layout and assemblies are included. ORCAD software is featured for problem completion.

**ID 221. CAD APPLICATION - MECHANICAL ..... 4 credit hours**

Prerequisite: ID 219

6 hours per week (2-4)

Using Computervision 4-4X and Personal Designer software, the creation of 3-D models is studied. Details and assemblies are generated from a 3-D database.

**ID 222. INTRODUCTION TO ELECTRONIC DESIGN ..... 4 credit hours**

Prerequisite: ID 220

6 hours per week (2-4)

Emphasized are the design principles or laying out single and double sided printed circuit assemblies, wireless, and harness drawings for electronic unit interfacing. ORCAD and TANGO software are featured for problem solution.

**ID 223. INTRODUCTION TO MECHANICAL DESIGN..... 4 credit hours**

Prerequisite: ID 221

6 hours per week (2-4)

3-D surfaces and solid models are created using advanced 3-D techniques. The course includes full color shading techniques to present an engineering model. Determining the mass properties of 3-D models and presenting the data in an engineering format is included.

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**ID 230. ADVANCED PRODUCT DRAFTING..... 4 credit hours**

Prerequisite: ID 107, ID 111 or consent

6 hours per week (2-4)

Students study the development of a machine from concept design and layout stages to the preparation of working drawings. Emphasis is on preparation of a layout drawing incorporating a maximum of commercially available components, fastening techniques, use of standard and special methods, keeping maintenance of the machine as a design criteria.

**ID 251. FUNDAMENTALS OF ELECTRONIC DRAFTING ..... 3 credit hours**

Prerequisite: ID 100 or equivalent

4 hours per week (1-3)

This class involves the principles of preparing basic electronic block diagrams, logic diagrams, schematic diagrams and electrical ladder diagrams. The correlation of the electronic symbol to the actual component configuration. Basic component board layouts are generated from schematic drawings.

**ID 252. FUNDAMENTALS OF ELECTRONIC DRAFTING ..... 4 credit hours**

Prerequisite: ID 251 or equivalent

4 hours per week (1-3)

This class involves principles of laying out and preparing single and double sided printed circuit boards, preparing printed circuit assemblies, preparation of wire lists and cable harness drawings for electronic unit interfacing.

**INTEGRATED MANUFACTURING \_\_\_\_\_ (IM)**

**IM 111. CIM FUNDAMENTALS ..... 4 credit hours**

Prerequisite: None

5 hours per week (3-2)

The purpose of this course is to provide an overview of the various components which make up Computer Integrated Manufacturing systems. Students experience guided laboratory exercises in Computer Aided Design (CAD), Robotics, and Computer Aided Manufacturing (CAM). Topics of discussion include manufacturing planning, data base preparation, packaging, quality assurance, and new manufacturing methods.

**IM 121. ROBOTICS I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory course exposing students to automated manufacturing systems. Emphasis is placed on applications of flexible automation, types of programming, sensors, and feedback devices. Open and closed loop systems are studied. Good safety practices along with the sociological impact of robots in the work place are among other topics covered. Field trips to local users or manufacturers of robotic equipment are an integral part of this course.

**IM 212. ROBOTICS II ..... 4 credit hours**

Prerequisite: IM 111 or 121

6 hours per week (2-4) plus open lab time

This class concentrates on programming techniques. Students learn to

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program different types of robots incorporating inputs and outputs into their programs. The course is based on a series of student projects that, step by step, introduce each new command or concept. Students spend most of the class time in the lab and are expected to spend extra hours during scheduled open labs.

**IM 223. ROBOTICS III ..... 4 credit hours**

Prerequisite: IM 212

6 hours per week (2-4) plus open lab time

Students learn to work with peripheral devices in various robotic workcells. Experiments include part recognition, counting, distance measuring, sorting, and palletizing. Programmable controllers are interfaced with robots in an integrated manufacturing cell. Automated welding, (GMAW) Gas-Metal Arc Welding, using an industrial robot is also developed in this course.

**IM 224. ROBOTICS IV ..... 4 credit hours**

Prerequisite: IM 223

6 hours per week (2-4) plus open lab time

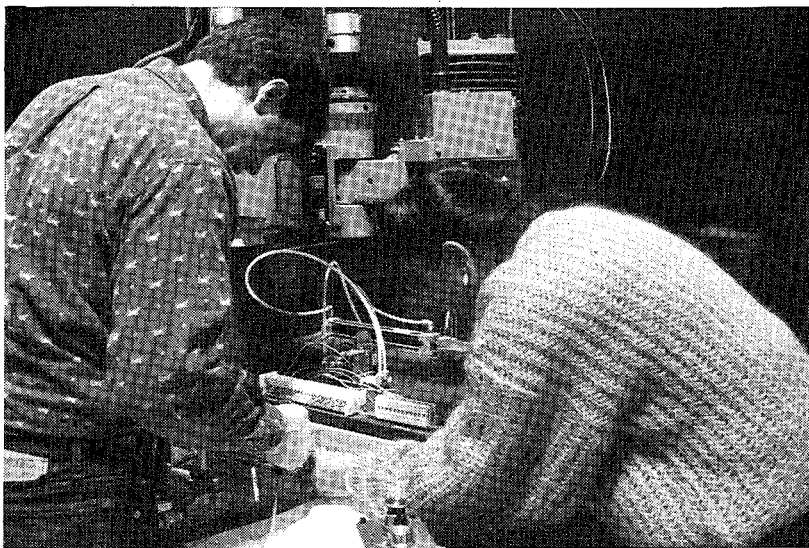
This course involved advanced programming of robots and programmable controllers in an integrated workcell. Problems related to maintenance and trouble-shooting constitute a major segment of the course. A group project involving the design and construction of a workcell that simulates some industrial process is an enjoyable conclusion to this program.

**IM 260. CIM APPLICATIONS ..... 4 credit hours**

Prerequisite: Consent

4 hours per week (4-0) plus open lab time

In this course a team of students from CAD, NC, and Integrated Manufacturing are assigned a product. Course activities require the development of a suitable design identification of manufacturing techniques, and the assembly and testing of the completed product utilizing a "work cell" model.



**MTH 015. SELECTED TOPICS FOR INDUSTRY ..... Variable credit**

Prerequisite: Consent

This course is designed to meet the math needs of on-the-job work groups as identified by labor groups or management. The content of a particular class is intended to meet the specific outcomes which have been identified by the group requesting the course. Specific math topics would be prepared to meet the needs of the class. Math topics may be selected from: basic arithmetic skills, percent and interest, geometry, trigonometry, metric and English systems of measurement, ratio and proportion, simple equations, hand-held calculator, measurement, graphs, and statistics. The method of instruction is individualized as in a math lab setting. This course is not intended to transfer or satisfy mathematics course requirements for WCC occupational programs.

**MTH 033. HOUSEHOLD MATH..... 4 credit hours**Prerequisite: Member of a special grant program which requires this course  
4 hours per week (4-0)

This course is intended for students enrolled in certain special grant programs. It reviews whole numbers, fractions, decimals and percents, with emphasis on mental arithmetic and estimation. It also includes rounding, measurements, bills, menus and recipes, banking, budgeting, interest and sales, and comparisons.

**MTH 036. MATH ANXIETY ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This course is designed for students who find themselves excluded from certain career choices because they are afraid to take math classes. Fear of mathematics is combated through the analysis of anxiety and the development of mathematical study skills. The course also explores the origin of math anxiety and gives help in reducing such anxiety and changing attitudes toward mathematics. This is a service course which may not be used as a substitute for a required mathematics course.

**MTH 037. INDEPENDENT STUDY ..... Variable credit**

Prerequisite: Consent

This course allows students to improve specific mathematical skills according to their individual needs, with an instructor of their choice. It is not intended as a substitute for any other formal math course. The content, time and meeting location, and the number of credit hours must be approved by the chosen instructor. Grading uses the satisfactory/unsatisfactory system. (Also see the listing for MTH 114.)

**MTH 038. BUILDING MATH CONFIDENCE..... 1 credit hour**

Prerequisite: None

2 hours per week (2-0)

This course is designed to increase confidence levels in math-anxious people by providing instruction in problem solving techniques. Topics covered include: calculator skills, story problem techniques, graphing, logic, and spatial relationships. Grading uses the satisfactory/unsatisfactory system.

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**MTH 039. BASIC MATHEMATICS ..... 3 credit hours**

Prerequisite: None

3 hours per week (0-3)

This course is a review of the basic arithmetic operations common in everyday situations. Topics covered include: whole numbers, fractions, decimals, and percents. This course is currently offered both in a self-paced format and the standard lecture format. Grading uses the satisfactory/unsatisfactory system.

**MTH 045. MATH REVIEW FOR HEALTH STUDENTS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

A study of whole numbers, fractions, decimals and percentages with mental arithmetic and estimation development. Accuracy and speed of calculations are emphasized with timed tests. Ratio and proportion with applications to health are emphasized. Taught with a lecture mode of instruction. Designed for students preparing for nursing and pharmacology courses.

**MTH 053. MATHEMATICAL THINKING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to help students organize their thinking and improve retention. Topics covered include: organization, orientation in space, analytical perception, comparisons, following instructions, and categorizing.

**MTH 090. OCCUPATIONAL MATHEMATICS ..... 3 credit hours**

Prerequisite: MTH 039 or placement test equivalent

3 hours per week (0-3)

This course provides the computational skills needed to solve problems commonly encountered in various general occupational fields. Students with an interest in business should consider MTH 163, Business Mathematics. Students with an interest in health fields should consider MTH 165, Health Science Mathematics. Topics covered include: sets, whole and integer number systems, practical algebra, geometry, measurements, the metric system, ratio and proportion problems, graphs, and statistics. This course is currently offered only in the self-paced format.

**MTH 097. INTRODUCTORY ALGEBRA ..... 4 credit hours**

Prerequisite: MTH 039 or placement test equivalent

5 hours per week (5-0)

This is a first-year high school algebra course. Topics include: the whole, integers, rational and real number systems, algebraic operations, solving equations, practical applications, inequalities, graphing, systems of equations, polynomials, rational expressions, roots and radicals, and quadratic equations. This is a standard lecture format course. The content of this course is offered in the self-paced format as MTH 097A and MTH 097B.

**MTH 097A. INTRODUCTORY ALGEBRA (first half) ..... 3 credit hours**

Prerequisite: MTH 039 or placement test equivalent

3 hours per week (0-3)

This course is the first semester of first-year high school algebra. Topics include: the rational number system, algebraic operations, solving equations, ratio and proportion, and practical applications. This course is the first half of MTH 097, and is currently offered only in the self-paced format.

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**MTH 097B. INTRODUCTORY ALGEBRA (second half)..... 3 credit hours**

Prerequisite: MTH 097A or placement test equivalent

3 hours per week (0-3)

This course is the second semester of first-year high school algebra. Topics include: inequalities, graphing, systems of equations, polynomials, rational expressions, roots and radicals, the real number system, and quadratic equations. This course is the second half of MTH 097, and is currently offered only in the self-paced format.

**MTH 099. THE METRIC SYSTEM OF MEASUREMENT ..... 2 credit hours**

Prerequisite: MTH 039

2 hours per week (2-0)

This course teaches the metric system. (Offered irregularly.)

**MTH 110. HANDHELD CALCULATOR ..... 2 credit hours**

Prerequisite: MTH 097 or Consent

3 hours per week (0-3)

This course provides instruction in the use of handheld calculators. Topics covered include: exact and approximate numbers, addition and subtraction, multiplication and division, algebraic expressions, memory, scientific notation, powers and radicals, simple equations and formulas, and the  $y = u^2x$  function. This course currently offered only in the self-paced format.

**MTH 114. COMPUTER ASSISTANCE FOR STUDENTS WITH SPECIAL NEEDS..... Variable credit**

Prerequisite: Consent

This course provides assistance to students with special needs, especially those wishing to strengthen particular areas or handicapped students, using microcomputers and terminals. The course is project-oriented with activities centered primarily around mathematics classes. Typical projects would be: typing notes and homework assignments, word-processing, writing computer programs, solving mathematical problems, using Data Base Management systems. This course may not be used as a substitute for a required mathematics course.

**MTH 148. FUNCTIONAL MATH FOR ELEMENTARY SCHOOL TEACHERS..... 4 credit hours**

Prerequisite: MTH 097

4 hours per week (4-0)

This course presents the mathematical concepts and problem solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for teachers of mathematics, rather, it provides the general mathematical background for teachers on all subjects. Topics covered include: problem solving, sets, whole numbers, integers, rational numbers, decimals, number theory, geometry, probability and statistics, and measurement. This course transfers to some four-year institutions.

**MTH 150. PRECISION MEASUREMENT ..... 4 credit hours**

Prerequisite: None

5 hours per week (2-2)

This course provides the skills required to use various precision measuring devices commonly encountered in a shop setting. Topics covered include: basic arithmetical operations, the metric system, the micrometer, vernier calipers, the bevel protractor, the sine bar, and measurement by comparison.

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**MTH 151. APPLIED ALGEBRA..... 4 credit hours**

Prerequisite: MTH 039 or placement test equivalent

5 hours per week (hours variable depending on self-paced or lecture format)  
This course introduces algebraic and geometric concepts in an applied setting and is primarily for trade and technical students. Topics, which emphasize applications, include: percents, ratio and proportion, operating with algebraic expressions, formulas and equations, area, volume, and right triangle trigonometry. This course is currently offered in both a self-paced format and the standard lecture format.

**MTH 152. APPLIED GEOMETRY AND TRIGONOMETRY ..... 4 credit hours**

Prerequisite: MTH 097 or MTH 151

4 hours per week (4-0)

This course provides students with the geometric and trigonometric concepts needed to solve problems commonly encountered in technical and trade fields. Topics, which emphasize applications, include: basic theorems of geometry, formulas for areas and volumes, trigonometric functions, solution of right triangles, law of sines and law of cosines, and the solution of oblique triangles.

**MTH 154. LAYOUT MATHEMATICS ..... 3 credit hours**

Prerequisite: MTH 039

3 hours per week (3-0)

This course applies basic mathematics to problems of job layout and is primarily for skilled tradesmen. (Offered irregularly.)

**MTH 155. PLANE GEOMETRY ..... 4 credit hours**

Prerequisite: MTH 097 or MTH 151

4 hours per week (4-0)

This course provides instruction in plane Euclidean geometry. (Offered irregularly.)

**MTH 158. MATHEMATICS FOR  
ELEMENTARY TEACHERS..... 4 credit hours**

Prerequisite: MTH 039

4 hours per week (4-0)

This course emphasizes teaching aids and methods of teaching mathematics for education students. (This course is offered irregularly and intended as an enrichment not a transfer course.)

**MTH 160. BASIC STATISTICS ..... 4 credit hours**

Prerequisite: MTH 097

4 hours per week (4-0)

This course provides students with a general understanding of statistical concepts dealing with the processing and interpretation of numerical information. Topics covered include: describing a numerical data set, central tendency, variability, probability distributions, inference, and hypothesis testing. This course transfers to many four-year institutions.

**MTH 163. BUSINESS MATHEMATICS..... 3 credit hours**

Prerequisite: MTH 039 or placement test equivalent

3 hours per week (0-3)

This course provides the mathematical skills needed to solve business applications problems, and satisfies the math requirements of several one- and two-year WCC business programs. The topics, which emphasize busi-

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ness applications, include: operations with whole numbers, fractions, decimals, and percents; measurement or computer mathematics; the metric system; signed numbers; solving equations; ratio and proportion; percent applications; circle, bar, and line graphs; savings and loans; taxes and payroll; and an introduction to statistics. This course is currently offered only in the self-paced format.

**MTH 165. HEALTH SCIENCE MATHEMATICS..... 3 credit hours**

Prerequisite: MTH 039 or placement test equivalent

3 hours per week (0-3)

This course provides the mathematical skills needed to solve problems encountered in health-related fields, and satisfies the math requirements of several one- and two-year WCC occupational programs. The topics, which emphasize health science applications, include: basic mathematics; operations with percents; fractions and decimal fractions; geometry; the metric system; the apothecary and household systems; signed numbers; solving equations; ratio and proportion; instrumentation; circle, bar, and line graphs; an introduction to statistics; and exponents and logarithms. This course is currently offered only in the self-paced format.

**MTH 169. INTERMEDIATE ALGEBRA ..... 4 credit hours**

Prerequisite: MTH 097 or placement test equivalent

4 hours per week (4-0)

This course is second-year high school algebra. Topics include: the real number system, polynomials, linear equations, inequalities, absolute value, exponents, complex numbers, quadratic equations and inequalities, linear and quadratic functions, inverse functions, linear and non-linear systems of equations and inequalities, and determinants and matrices. This course is offered in standard lecture format. The content of this course is offered in the self-paced format as MTH 169A and MTH 169B. This course transfers to some four-year institutions.

**MTH 169A. INTERMEDIATE ALGEBRA (first half) ..... 3 credit hours**

Prerequisite: MTH 097 or placement test equivalent

3 hours per week (0-3)

This course is the third semester of high school algebra. Topics include: the real number system, polynomials, linear equations, inequalities, absolute value, radicals, and exponents. This course is the first half of MTH 169, and is currently offered only in the self-paced format. The combination of MTH 169A and MTH 169B transfers to some four-year institutions as MTH 169.

**MTH 169B. INTERMEDIATE ALGEBRA (second half) ..... 3 credit hours**

Prerequisite: MTH 169A or placement test equivalent

3 hours per week (0-3)

This course is the fourth semester of high school algebra. Topics include: rational exponents, complex numbers, quadratic equalities and inequalities, linear and quadratic functions, inverse functions, lines and linear systems, non-linear systems, systems of inequalities, and determinants and matrices. This course is the second half of MTH 169, and is currently offered only in the self-paced format. The combination of MTH 169A and MTH 169B transfer to some four-year institutions as MTH 169.

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**MTH 177. TRIANGLE TRIGONOMETRY ..... 3 credit hours**

Prerequisite: MTH 097 or placement test equivalent

3 hours per week (0-3)

This course is an introduction to the trigonometric concepts of the triangle. Topics covered include: triangles and the basic trigonometric ratios, solving right triangles, law of sines, law of cosines, trigonometric ratios of any angle, degrees and radians, and vectors. This course is currently offered only in the self-paced format. Students with very limited math experience may wish to take this course in preparation for MTH 178.

**MTH 178. GENERAL TRIGONOMETRY ..... 3 credit hours**

Prerequisite: MTH 169A or placement test equivalent

3 hours per week (3-0)

This course provides a rigorous background in trigonometry necessary for students intending to study calculus. Topics include: circular functions, graphs, inverse circular functions, trigonometric functions, solution of triangles, identities, vectors, complex numbers, and polar coordinates. This course transfers to many four-year institutions. (MTH 178 and MTH 179 may be taken concurrently. It is recommended that MTH 179 be taken first if the two are not taken concurrently.)

**MTH 179. PRECALCULUS ..... 4 credit hours**

Prerequisite: MTH 169 or placement test equivalent

4 hours per week (4-0)

This course provides the necessary background in college-level algebra for calculus. Topics include: set theory and set operations, relations, and functions, manipulations of rational and non-rational functions, graphing, factoring, properties of exponents and logarithms, and the conic sections, sequences, binomial theorem, and mathematical induction. This course is currently offered only in the standard lecture format. Transfers to most four-year institutions.

**MTH 181. MATHEMATICAL ANALYSIS I ..... 4 credit hours**

Prerequisite: MTH 169 or placement test equivalent

4 hours per week (4-0)

This course teaches the methods and applications of finite mathematics to social science and business. Topics covered include: solution to linear equations and inequalities, vectors and matrices, linear programming, sets, and probability. This course transfers to many four-year institutions.

**MTH 182. MATHEMATICAL ANALYSIS II ..... 4 credit hours**

Prerequisite: MTH 179 or 181

4 hours per week (4-0)

This course teaches the elementary methods of calculus applied to social science and business. Topics covered include: functions, differentiation of algebraic functions, optimization, exponential and logarithmic functions and their derivatives, and an introduction to integration. Some four year institutions accept this course as the calculus requirement of certain of their business and social science programs.

**MTH 184. DISCRETE MATHEMATICS I ..... 4 credit hours**

Prerequisite: MTH 179

4 hours per week (4-0)

This course provides the necessary mathematical skills and ideas needed to formulate and solve problems, primarily those encountered in the computer

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science and engineering fields. Topics covered include: set theory, logic, discrete number systems, and algorithms. This course transfers to some four-year institutions and provides support for computer science majors.

**MTH 185. DISCRETE MATHEMATICS II..... 4 credit hours**

Prerequisite: MTH 184, 191 also encouraged

4 hours per week (4-0)

This course is a continuation of the topics and ideas presented in MTH 184. Topics covered include: polynomial algebra, graph theory and combinations. This course transfers to some four-year institutions.

**MTH 191. CALCULUS I..... 5 credit hours**

Prerequisite: MTH 178 and 179

5 hours per week (5-0)

This is first-semester college calculus of one variable. Topics include: limits, continuity, derivatives, applications of derivatives, and elementary integration. This course transfers to four-year institutions.

**MTH 192. CALCULUS II..... 4 credit hours**

Prerequisite: MTH 191

4 hours per week (4-0)

This is second-semester college calculus of one variable. Topics include: application of the integral, the calculus of transcendental functions, techniques of integration, indeterminate forms and improper integrals, numerical approximation techniques, and sequences and series. This course transfers to four-year institutions.

**MTH 197. LINEAR ALGEBRA..... 4 credit hours**

Prerequisite: MTH 191. MTH 192 also encouraged

4 hours per week (4-0)

This is an introductory college course in linear algebra. Topics include: linear systems of equations, properties of vectors and matrices, determinants, vector spaces, linear transformations, eigenvalues, and applications. This course transfers to four-year institutions.

**MTH 243. INTRODUCTORY NUMERICAL ANALYSIS..... 3 credit hours**

Prerequisite: MTH 192 and knowledge of FORTRAN

3 hours per week (3-0)

This course teaches mathematical methods of numerical approximations that are applicable to computer programming. (Offered irregularly.)

**MTH 293. CALCULUS III..... 4 credit hours**

Prerequisite: MTH 192 and 197

4 hours per week (4-0)

This is the third-semester college calculus of more than one variable. Topics include: polar coordinates, geometry in n-space, vector-valued functions, the derivative in n-space, the integral in n-space, and an introduction to vector calculus. This course transfers to four-year institutions.

**MTH 295. DIFFERENTIAL EQUATIONS..... 4 credit hours**

Prerequisite: MTH 197 and 293

4-0 hours per week (4-0)

This is a first college course in elementary differential equations. Topics include: techniques for solving ordinary differential equations of order one, techniques for solving linear equations, applications, the Laplace transform,



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and solving linear systems of equations using eigenvalues. This course transfers to four-year institutions.

## **MECHANICAL TECHNOLOGY \_\_\_\_\_ (MT)**

### **MT 100. MACHINE SHOP THEORY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class is designed to teach machine shop theory to those who have had or are presently receiving hands on or practical experience in the machining field. Precision and semi-precision measuring instruments, layout tools and procedures, proper use of hand tools, and the basic principles of machine tool operations are covered. Films supplement classroom instruction.

### **MT 101. MILLWRIGHT THEORY ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course includes millwright practices encompassing major units such as millwright fundamentals, fiber and steel rope, hoisting, structural woods and steels, scaffolding, strengths of timber and metal beams, cranes and derricks, rigging, transporting heavy shop equipment, accident prevention, standards, laws and codes. Maintenance of bearings, belts, chain drives and conveyors included.

### **MT 103. INTRODUCTION TO MATERIALS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course includes an introduction to the basic terms, processes and structures of materials. Hardness testing, classification systems and demonstrations of testing equipment are studied. Principles of heat treatments are studied and demonstrated.

### **MT 111. MACHINE SHOP THEORY AND PRACTICE..... 4 credit hours**

Prerequisite: None

6 hours per week (1-5)

This beginning machine shop class is for those with little or no machine shop experience. Much emphasis is placed on safety. Precision and semi-precision measuring instruments, layout tools and procedures, reading drawings, and the proper use of hand tools are areas covered. Lab time is used to gain experience and learn basic operations on the five basic machine tools; drill press, saws, engine lathes, milling machines and grinders.

### **MT 122. MACHINE TOOL OPERATIONS AND SET-UP I ..... 4 credit hours**

Prerequisite: MT 111 or consent

6 hours per week (1-5)

This is a machine shop class for those who have either completed the beginning level machine shop or have gained equivalent experiences elsewhere. Each of the five basic machine tools are studied in depth. The projects are designed to facilitate more advanced set-ups and operations so that the cutting of spur gears, multiple threads, tapers and internal grinding operations can be performed.



**MT 123. MACHINE TOOL OPERATIONS AND SET-UP II ..... 4 credit hours**

Prerequisite: None

6 hours per week (0-6)

A continuation of MT 122, this class is designed for mechanical technology students or for those who simply want to gain more machining experiences. Students experience new advanced operations on familiar machines along with new operations on entirely new machine tools, the new operations include spiral milling, taper grinding, and tracing techniques. New machine tools include the electrical discharge machine, optical comparater, turret lathe, and cutter grinder. Projects are designed to facilitate the completion of these operations and to gain experience on these machine tools.

**MT 201. MACHINE TOOL TECHNOLOGY ..... 4 credit hours**

Prerequisite: MT 122

6 hours per week (0-6)

The last and most advanced machine shop class, this course emphasizes students' individual goals and proficiencies of specific machining operations. Student choose a challenging product to manufacture using several advanced machining techniques to meet student goals.

**MT 240. PLANT LAYOUT AND MATERIAL HANDLING SYSTEMS ..... 4 credit hours**

Prerequisite: ID 100

4 hours per week (4-0)

This class includes blueprint Reading and simplified drawing of typical free and power type conveyor systems as well as plant layout drawing of machinery, foundations, exhaust systems, heat treat furnaces, hoists, catwalks and platforms.

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## MUSIC \_\_\_\_\_ (MUS)

### **MUS 100. CONCERT BAND..... 1 credit hour**

Prerequisite: None

2 hours per week (0-2)

This is a course in performance open to all students and the public upon registration for the class. It may be repeated for credit up to a maximum of four times.

### **MUS 102. STRING ENSEMBLE..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is a course in performance open to all students and public upon registration for class. It may be repeated for credit up to a maximum of four times.

### **MUS 103. WCC JAZZ ORCHESTRA ..... 1 credit hour**

Prerequisite: Audition

2 hours per week (0-2)

This course in performance is open to those who desire to read, improvise and perform. An audition is necessary for registration; the course may be repeated for credit up to a maximum of four times.

### **MUS 106. JAZZ COMBO ..... 1 credit hour**

Prerequisite: None

2 hours per week (0-2)

The Jazz Combo is designed for the musician with some degree of competency to gain experience and skill in performance and improvisation of different styles of jazz and blues. This is a performing group which offers concerts in the community.

### **MUS 109. BRASS ENSEMBLE..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is an ensemble course designed for brass quartets and quintets, depending on class instrumentation. This class is a performing group.

### **MUS 135. CHORUS..... 1 credit hour**

Prerequisite: None

2 hours per week (0-2)

A course in performance covering traditional choral music. This group is open to all students. It may be repeated for credit up to a maximum of three times.

### **MUS 136. GOSPEL CHORUS ..... 1 credit hour**

Prerequisite: None

2 hours per week (0-2)

This course in gospel choral performance is open to all students. It may be repeated up to a maximum of six times.

### **MUS 140. BASIC MUSICIANSHIP ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to give students, prospective teachers and others a foundation in music theory and reading, concepts of rhythm, tonality, music

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composition, and other techniques, with the aim of developing musical skills and understanding. No musical experience is necessary.

**MUS 143. COMPOSITION: THEORY AND ARRANGEMENT ..... 2 credit hours**

Prerequisite: None

Prerequisite: None

2 hours per week (2-0)

This class is designed to enable students to develop skills and techniques in music composition, orchestration and arranging for all musical mediums.

**MUS 146. CREATIVE IMPROVISATION: SONGWRITING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

For the prospective song writer, this class deals with lyric writing and musical accompaniment. Students collaborate using their talents to produce songs and also become acquainted with musical styles through recordings and demonstrations. Music industry procedures concerning how to get a song published and recorded is discussed. Other areas of study include recording, the recording studio, record pressing and copyright procedures.

**MUS 147. ENTERTAINMENT LAW ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This is a music course for the serious music student and professional musician covering basic agreements, contracts, royalties, copyrights and other legal aspects in the music industry.

**MUS 149. SIGHT SINGING/EAR TRAINING ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course provides an approach to listening to and reading music designed to develop composing and listening skills. It also offers an introduction in training the ear to identify intervals, chords, scales and chord progressions.

**MUS 152. MUSIC THEORY I ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course includes an in-depth study of melodic, harmonic and rhythmic aspects of tonal music related to various styles: European, rock, jazz, ballads and the Blues. The class equips students with a theoretical knowledge to extend and cultivate musical understanding and creativity while giving primary emphasis to the harmonic aspects of music.

**MUS 157. JAZZ IMPROVISATION ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course in jazz theory provides students with techniques of melody, harmony and rhythm that would excite spontaneous creativity in the jazz style.

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**MUS 158. BLACK MUSIC, CREATIVE IMPROVISATION ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Students create music through improvisation which is an integral part of Black music. Skills in basic musicianship are used depending on students' musical proficiency. The course focuses on the development of Black music from Africa to the Americas.

**MUS 159. SOUTH INDIAN MUSIC..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The theory and practice of South Indian music are the focus of this course. Sacred and secular roles of music in the Indian culture are examined. The course includes basic notes and their variations; definition of terms; the analysis of the basic melody; musical terms; instruments of South India, such as the veena, flute, tamboura and table. Also included are a brief history of Indian music, and short biographies of noted Indian musicians such as Purandara Dasa and Gayama Sastri and their contributions to South Indian Music.

**MUS 161. CONDUCTING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course deals with various styles and techniques of conducting ensembles and covers styles of all music periods. Hand position, metric conducting, dynamics and other techniques such as score reading and musical phrasing techniques are discussed.

**MUS 170. AUDIO RECORDING TECHNOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to provide students with the fundamentals necessary for a career-oriented study in creative audio recording. Audio-visual and hands-on experience (professional recording studio access) is provided, as is lecture and studio experience on automated recording techniques and multitrack.

**MUS 180. MUSIC APPRECIATION..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introduction to music, using innovative techniques on how to listen to music after becoming acquainted with the socio-cultural values of the people who produced the many kinds of music in our world. All music styles are covered. Presentations deal with the growth and development of musical forms and different styles through recordings and demonstrations.

**MUS 181. JAZZ HISTORY ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Jazz History is a study in the development of jazz, starting from African roots and continuing to 20th century developments.

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**MUS 182. DEVELOPMENT OF AMERICAN MUSIC..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

An introduction to American music from the 20th century, this course features the music of William Billings, the pioneering approach of Charles Ives, music after WWII and the avant-garde contribution.

**MUS 183. AFROMUSICOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Afromusicology is a relatively new discipline of musical studies which combines the areas of Anthropology (Egyptology), Organology, World and Social History, and Musicology to explain the creative and artistic developments of Africa and Africa-American peoples of the world. The mode of presentation deals with an ethnomusicological approach, focusing on the lifestyle, traditions and mores to define the visual and musical arts.

**MUS 186. PIANO LITERATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This lecture-demonstration course surveys piano literature from the 18th to the 20th Century. Teaching skills are emphasized to help the piano teacher.

**MUS 187. HISTORY OF OPERA ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The purpose of this course is to acquaint students with the development of opera in European history. Presentations include operas of Monteverdi, Mozart, Wagner, Verdi, Puccini, Strauss, Britten and many others. Assignments include listening during class and attending professional opera performances.

**MUS 189. STUDY PROBLEMS..... Variable credit**

Prerequisite: Consent

This course features individualized directed activities in a selected music area. A specific problem/issue is studied or a special project is assigned.

**MUS 203. INTRODUCTION TO VOICE..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Students learn techniques in performing songs. Opportunities to work with musicians and sound equipment are available.

**MUS 204. VOICE ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course is an extension of Introduction to Voice and is an in-depth study of vocal techniques.

**MUS 206. VOCAL PERFORMANCE ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Students learn techniques in performing songs. Community and public concerts are held. Sound system and recorded band tracks are used for accompaniment. Students may also accompany themselves.

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**MUS 210. FUNCTIONAL PIANO ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This piano class is aimed to give non-piano majors and those who just want to play the piano the ability to read keyboard music harmonically and melodically. The course covers piano technique fundamentals, basic musicianship, elementary keyboard harmony, sight reading, pedal technique, aids to memorization and keyboard application of subjects studied in music classes.

**MUS 213. INTERMEDIATE PIANO..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

A continuation of MUS 210, this course provides piano studies beyond the elementary or beginning stage. It is for those with some experience in piano playing.

**MUS 216. PIANO: JAZZ AND BLUES..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This piano course is designed to cover such styles as Blues and elementary jazz improvisation techniques. Music theory in terms of chord progression and improvisational techniques are part of the course of study.



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**MUS 220. APPLIED MUSIC: BRASS..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Instruction in this course is geared to students' level of expertise in this introductory group instruction in brass instruments.

**MUS 225. BEGINNING JAZZ DRUM ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Rudimentary skills in jazz drumming are learned; study includes historical styles such as Swing, Be-Bop, and South American and African rhythms.

**MUS 226. STEEL DRUM MUSIC..... 3 credit hours**

Prerequisite: None

3 hours per week (0-3)

This is an applied laboratory demonstration course in the making and performance of the steel drum.

**MUS 230. FOLK GUITAR ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Students learn techniques necessary to play folk music and folk songs. The course is for those with some experience in guitar playing, and is keyed to students' interests and needs.

**MUS 231. CLASSICAL GUITAR..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is a course in performing and teaching skills for the classical guitar for students with a strong background in reading music and playing the guitar. Course emphasis includes the history of classical guitar as well as the playing and teaching of classical guitar.

**MUS 233. BEGINNING GUITAR..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Designed for those with limited or no experience playing the guitar, this course teaches basic chords and techniques as well as folk and Blues songs. Class is keyed to students' interests and needs.

**MUS 236. INTERMEDIATE GUITAR ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course is for students with a basic knowledge of guitar playing. There are opportunities to learn more advanced techniques as well as learning about song arrangements and theory. Class is keyed to students' interests and needs.

**MUS 239. JAZZ GUITAR..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

Designed to enable students to develop skills necessary to play the guitar in different jazz styles, this course includes improvisation work and chording. It requires basic guitar playing experience.

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**MUS 242. BASS GUITAR..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course in applied music (bass) is designed specifically for jazz enthusiasts who want to learn jazz bass performance techniques. Melodic, harmonic and rhythmic theory is used to develop jazz bass performance styles. Students must have their own instrument.

**MUS 243. INTRODUCTION TO JAZZ BASS..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This introductory course in jazz bass teaches students technically how to create good bass lines, good bass ostinatos, chord interpretation, good solo techniques and concepts of big band and small ensemble playing.

**MUS 246. BEGINNING BANJO ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course provides group instruction for beginners in banjo to provide the necessary skills for performing elementary banjo music.

**MUS 249. INTRODUCTION TO JAZZ FLUTE ..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This is an introductory course in jazz flute for students with varying abilities.

**MUS 250. BEGINNING FLUTE/SAX..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This beginning class familiarizes students with primary musical jargon and the basics of flute and saxophone playing. Basic instruction includes sound production, reading musical notation, learning flute and saxophone fingering, performing basic major scales and a combination of reading and performing simple tunes involving both classical and jazz music.

**MUS 266. SAXOPHONE (CLASSICAL)..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This applied music course in saxophone technique and performance of classical literature for saxophone requires basic playing experience and auditions.

**MUS 269. SAXOPHONE (JAZZ)..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course offers introductory group instruction in jazz saxophone in which techniques and various styles are emphasized. Requires basic saxophone playing experience.

**MUS 270. APPLIED VIOLIN..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This group instruction course is designed for community people who like to further their talents on the violin, learning more technical and musical skills to develop their abilities.

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## **NUMERICAL CONTROL \_\_\_\_\_ (NC)**

### **NC 100. INTRODUCTION TO NUMERICAL CONTROL..... 3 credit hours**

Prerequisite: None

3 hours per week (2-1) plus open lab time

This course involves the principles, history and applications of numerical control with special emphasis on tape formats and programming techniques. Point to point and continuous path programs written, studied and demonstrated.

### **NC 111. MANUFACTURING PROCESSES FOR NUMERICAL CONTROL ..... 4 credit hours**

Prerequisite: NC 121

4 hours per week (3-1)

Industrial techniques and processes used for product manufacture are studied. Planning of machining operations and routing of parts through all stations needed to complete the part are examined. Cost estimating, specialized tooling, fixturing, speeds and feeds, and unconventional machining methods are major topics explored. Effects of flexible manufacturing and the future trends of industry are discussed.

### **NC 121. MANUAL PROGRAMMING AND NC TOOL OPERATION..... 4 credit hours**

Prerequisite: NC 100, MT 111, MTH 169

6 hours per week (3-3) plus open lab time

This is the first in a two-course study of manual programming of CNC milling and turning machines. Students experience the entire process of part manufacture by processing blueprints of sample parts, writing and editing of programs, set up and operation of the machine tool, inspection of finished product. Feeds and speeds, fixed cycles, program editing, set up procedures, and tape preparation are major topics presented. Laboratory time is required outside of class time.

### **NC 122. ADVANCED MANUAL PROGRAMMING AND NC TOOL OPERATION ..... 4 credit hours**

Prerequisite: NC 121, MTH 177

6 hours per week (3-3) plus open lab time

This is the second of a two-course study of Manual Programming and CNC Machine Tool Operation. Complex cutter path generation, cutter compensation, repetitive programming, multi-quadrant circular interpolation, three axis interpolation, threading, and other advanced programming techniques are practiced. The class format is similar to that of NC 121, and laboratory time outside of class is required.

### **NC 125. COMPUTER OPERATION AND PROGRAMMING FOR NUMERICAL CONTROL..... 3 credit hours**

Prerequisite: NC 100

3 hours per week (2-1) plus open lab time

This provides an introduction to computers for COMPACT II and APT II Numerical Control programming courses and PC based CAM systems. The course teaches the basic vocabulary, historical development, cycle of operation, information storages and input and output devices of computers. Students gain hands on experiences using COMPACT II, APT III, QED and EDT editing software and PC operating system software. Laboratory time is required outside of class time.

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**NC 213. COMPACT II COMPUTER PROGRAMMING ..... 4 credit hours**

Prerequisite: NC 122, not concurrent with NC 224 or 225

4 hours per week (2-2) plus open lab time

The COMPACT II computer assist Numerical Control language is studied and practiced on an in house system. Students generate NC programs by the input of part geometry, tooling, feeds and speeds, set-up data and cutter path information into the system using COMPACT II language. Verification of information is obtained using plotters and NC tool operation. Emphasis on part processing, geometry statements, editing, verification of data.

**NC 224. APT III COMPUTER PROGRAMMING..... 4 credit hours**

Prerequisite: NC 122, not concurrent with NC 213

4 hours per week (2-2) plus open lab time

The APT III computer assist language is studied on an in house system. Geometry, cutter path, post processor statements are studied and practiced. Program verification is completed by the use of plotters, and NC tool operation.

**NC 225. NUMERICAL CONTROL GRAPHICS..... 3 credit hours**

Prerequisite: NC 213, NC 224

3 hours per week (2-1) plus open lab time

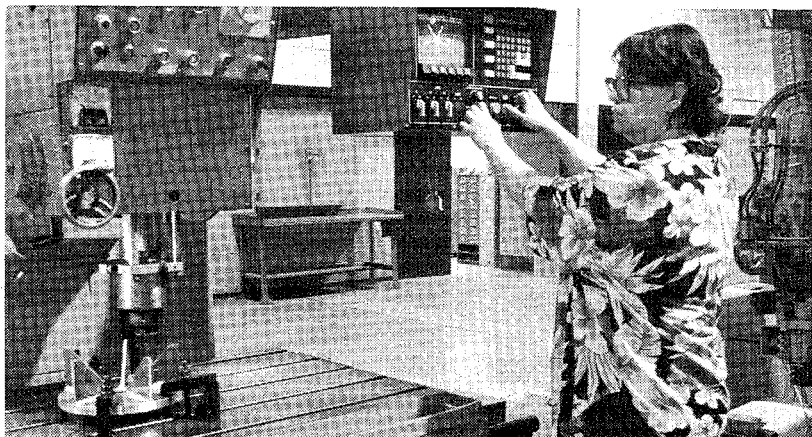
Students complete working programs using COMPACT II and APT III computer assist NC languages for turning, drilling, and milling applications. Programs and tape verification is completed by the use of plotters, graphic screens and the NC machine tools located in the NC laboratory. Complex part geometry and cutter paths are studied. The connection between computer assist programming and actual machine setup and operation is stressed.

**NC 229. TOOLING FOR NUMERICAL CONTROL..... 3 credit hours**

Prerequisite: NC 121

3 hours per week (2-1)

Selection of tooling for numerical controlled milling and turning centers is studied. Availability, costs, tool wear analysis and tooling file organization are major topics presented. Coding of inserts, tool holders and coatings and the effects of coolants are presented.



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**NC 236. CAM MACHINE TOOL PROGRAMMING..... 4 credit hours**

Prerequisite: NC 100, 121 and 125

3 hours per week (2-1) plus open lab time

Students generate tool paths for milling, turning and welding machines which are N/C controlled, using Computer Aided Manufacturing systems and software. Part programs are constructed by defining the part geometry and then defining the tools and the tool path required to manufacture the part using a "PC" based CAM system. Tool path generation on CAD produced databases are included as part of the class activities. Program editing and transfer of part programs to the N/C machine tool from the CAM system are included course material. Students are provided time outside class to use the CAM workstations in order to complete assignments.

**NC 247. ADVANCED CAM MACHINE TOOL PROGRAMMING ..... 4 credit hours**

Prerequisites: NC 236, ID 219

3 hours per week (2-1) plus open lab time

This course is a continuation of NC 236. Students are required to generate tool paths on parts containing complex geometry, and which are often considered to be problem situations in industry. Tool paths are generated on data-bases developed on separate CAD systems, which have been transferred to the CAM workstation. Students are required to select the proper order of machining operations, the tooling required, and work holding devices needed to complete the machining of parts assigned. Milling, turning, and plasma arc N/C machining applications are included. Students are provided time outside of class to use the CAM workstations in order to complete assignments.

**NURSING \_\_\_\_\_ (NUR)**

*Enrollment for these courses is granted to students admitted to this program. Courses must be taken in the sequence outlined in the curriculum unless consent is obtained from the nursing division after review of previous transcripts.*

**NUR 039. STATE BOARD PREPARATION..... 1 credit hour**

Prerequisite: Consent

15 hours to be arranged

This course assists Nursing Program graduates in preparing for the State Board of Nursing Examinations. Emphasis is placed on reviewing learned materials and on taking national competitive examinations.

**NUR 100. NURSING FUNDAMENTALS..... 5 credit hours**

Prerequisite: None

10 hours per week (3-7)

Principles of nursing are presented with emphasis on social, psychological, and physical needs of the client. Included are units on first aid, history, and nursing organizations. Laboratory practice is a major component of this course.

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**NUR 110. GERIATRIC NURSING..... 1 credit hour**

Prerequisite: None

6 weeks, 30 hours total (6-24 to be arranged)

The natural aging process is presented, with emphasis on the health care needs of the geriatric population. Included is supervised clinical experience in a long term health care facility applying basic nursing skills in geriatric nursing situations.

**NUR 111. PHARMACOLOGY I..... 1 credit hour**

Prerequisite: None

2 hours per week (2-0)

This course includes the study of metric and apothecary systems, drug classification and legislation. Extensive practice is provided in solving drug dosage problems. Principles of safe drug administration are introduced.

**NUR 118. PERSONAL AND COMMUNITY HEALTH ..... 1 credit hour**

Prerequisite: None

1 hour per week (1-0)

This course reviews resources available in the community for the promotion of health. It includes a survey of current public health problems and concepts of personal health.

**NUR 122. PHARMACOLOGY II..... 2 credit hours**

Prerequisite: NUR 111

2 hours per week (2-0)

This class is a study of drug action, uses and effects in the administration of drug therapy.

**NUR 125. BASIC MEDICAL-SURGICAL NURSING ..... 6 credit hours**

Prerequisite: First semester courses

7½ weeks, 29 hours per week (6-23)

This course includes study of the adult with common medical-surgical problems. Included are principles and skills that assist the student in meeting the needs of the client in the clinical situation. Pharmacology and diet therapy are interrelated with the study of disease conditions. The practice portion of this course provides laboratory experience with commonly encountered medical-surgical procedures and CPR. Supervised clinical experience in caring for adults with medical problems is included.

**NUR 126. INTERMEDIATE MEDICAL-SURGICAL NURSING ..... 6 credit hours**

Prerequisite: NUR 125

7½ weeks, 29 hours per week (6-23)

This course provides continued study of the adult with common medical-surgical problems. The practice portion provides supervised clinical experience in caring for adults with medical-surgical problems. Observation experiences may include operating room, recovery room, emergency room and the outpatient department. Also included is clinical experience in the administration of medications.

**NUR 133. PHARMACOLOGY III..... 2 credit hours**

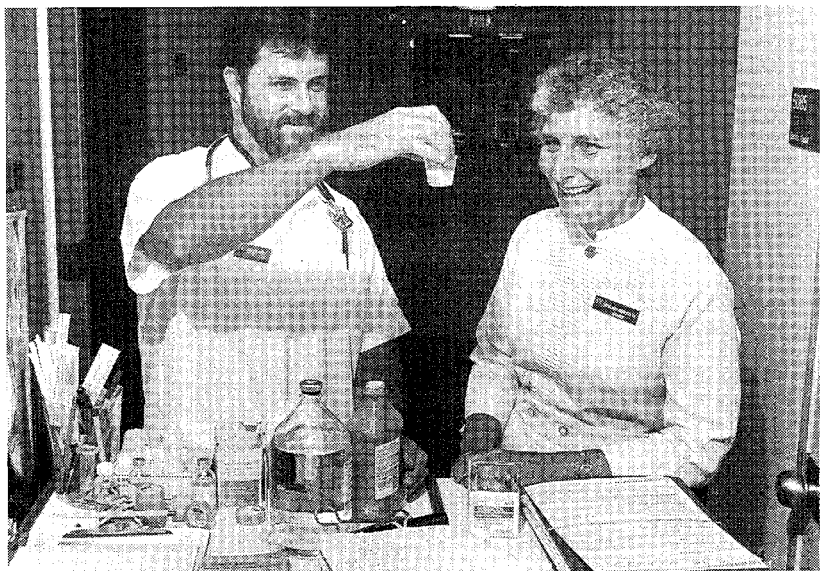
Prerequisite: NUR 111 and 122

2 hours per week (2-0)

This course continues the study of drug action, uses and effects, with emphasis on body systems. A unit on drug abuse is included.

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**NUR 135. PARENT-CHILD NURSING ..... 6 credit hours**

Prerequisite: NUR 125

8 weeks, 24 hours per week (6-18)

The nursing care of parents during the reproductive cycle, the care of newborn and ill children is studied. Clinical experience is provided in obstetric and pediatric units of the hospital to develop skills in caring for parents and children.

**NUR 144. PHARMACOLOGY FOR NURSES ..... 5 credit hours**

Prerequisite: LPN, RN, GPN, GN, or consent

5 hours per week (5-0)

This course is designed for currently practicing nurses. Included is a study of safe drug administration, drug actions, uses and effects of drug therapy, as well as drug abuses. The student also receives laboratory practice in preparing and administering medicines. LPNs may take NAPNES exam at end of course.

**NUR 145. ADVANCED MEDICAL-SURGICAL NURSING ..... 5 credit hours**

Prerequisite: NUR 126.

6 weeks, 29 hours per week (6-23)

Medical-surgical problems in the specialty areas are studied. The student is prepared for the role of the practical nurse, including ethical implications and employment procurement. Also provided is the practice of nursing skills including the administration of medications and assisting in the preparation for discharge from the health care agency.

**NUR 200. NURSING ROLE TRANSITION..... 4 credit hours**

Prerequisite: Successful completion of all Nursing 100 level courses or LPN accepted into Level II of the program

6 hours per week (3-3)

This course includes study of nursing history and development of associate

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degree nursing programs, nursing roles, change theory and individual reactions to change. Also included are an introduction to general systems theory and advanced study of the nursing process. The laboratory components include nursing skills review/update, CPR update and nursing assessment practice.

**NUR 235. ADVANCED PARENT-CHILD NURSING..... 5 credit hours**

Prerequisite: Successful completion of all Nursing Level I courses or LPN accepted into Level II of the program, all first semester Level II courses

7½ weeks, 18 hours per week (6-12)

This course provides further study of the family with parent-child health related needs begun in NUR 135. Focus is on emotional aspects of parenting, pregnancy, and health problems related to these processes. Family structure, function, and health teaching, including concepts of nutrition and normal growth and development are discussed. Parent-child nursing concepts are applied in hospital situations. Students have experience with high and low-risk families across the childbearing cycle, including antepartum, intrapartum, and postpartum periods. Experience with the childrearing family includes opportunities for health teaching.

**NUR 245. COMPLEX MEDICAL-SURGICAL NURSING..... 6 credit hours**

Prerequisite: Successful completion of all first semester Level II courses and Mental Health Nursing

7½ weeks, 26 hours per week (6-20)

This course emphasizes the theoretical base of nursing care aimed at meeting the common bio-psycho-social needs of individual adult clients who are experiencing complex medical-surgical problems with predictable outcomes in an acute care setting. The course is designed around six concepts, with the nursing process being the integrating thread. An application of the nursing process is emphasized in meeting these needs in an acute care setting.

**NUR 255. MENTAL HEALTH NURSING ..... 5 credit hours**

Prerequisite: Successful completion of all first semester Level II courses

7½ weeks, 18 hours per week (6-12)

This course develops an understanding of common mental health problems and skills necessary to provide basic mental health nursing care to selected clients in hospital or community settings. The central focus is to help the student become more sensitive to human behavior and to use himself/herself in a therapeutic manner. Prevention of mental illness, and maintenance and restoration of mental health are discussed. Mental health nursing concepts are applied in hospital and community situations. The student has experience with current methods of prevention, maintenance and treatment.

**NUR 260. NURSING MANAGEMENT AND TRENDS ..... 2 credit hours**

Prerequisite: Successful completion of all first semester Level II courses and Mental Health Nursing. Corequisite: NUR 245

2 hours per week (2-0)

This course includes leadership and management concepts in relation to organizing care of groups of clients. Emphasis is placed on communication, decision making and motivation as it relates to entry level nursing responsibilities. Legal aspects of supervision are studied, as well as trends and current problems in the nursing profession. Clinical practice of management skills is integrated into Complex Medical-Surgical Nursing.

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**OFFICE SPECIALTIES \_\_\_\_\_ (OS)****OS 101. BEGINNING TYPEWRITING ..... 3 credit hours**

Prerequisite: None

4 hours per week (1-3)

This beginning typewriting course is designed to develop keystroking skill. Students learn to use the parts of the typewriter efficiently and format materials attractively by centering the copy horizontally and vertically. Students complete tabulation problems; format and type personal/business letters and memoranda, as well as simple tables, outlines and manuscripts. Opportunity is also given to compose on the typewriter, and proofreading skill is developed by comparing and verifying.

**OS 102. INTERMEDIATE TYPEWRITING ..... 3 credit hours**

Prerequisite: OS 101 or equivalent (Minimum of 35 wpm with 5 errors or fewer for 5 minutes)

4 hours per week (1-3)

This course is designed to develop students' expertise in solving a wide variety of communication problems. Development of speed and control is stressed in typing letters in basic styles with special features, simplified forms of business correspondence, tables, business forms, and technical and statistical reports.

**OS 107. CLERICAL METHODS AND PROCEDURES ..... 4 credit hours**

Prerequisite: Typewriting proficiency of 45 wpm or concurrent enrollment in OS 102

4 hours per week (3-1)

In this course students perform a variety of general office duties: the typing of forms and business correspondence, the processing of office mail, the handling of telephone and telegraph services. Concepts of word processing and reprographics are included. Two extensive practice sets cover filing and payroll activities. In addition, students learn job-hunting procedures and prepare for employment in the clerical field through an understanding of the changing business world.

**OS 130. BUSINESS MACHINES ..... 3 credit hours**

Prerequisite: MTH 163 or equivalent

3 hours per week (1-2) plus a minimum of 6 practice hours

This course emphasizes the use of electronic business calculators in problem-solving activities. Students give serious attention to efficient machine operation, verifying techniques, machine programming, and the concepts of business mathematics widely used in both business and personal situations. The emphasis given to business mathematics helps students to understand and perform many office jobs successfully and to manage personal matters effectively.

**OS 131. BEGINNING SHORTHAND ..... 4 credit hours**

Prerequisite: None

5 hours per week (5-0)

This is a course in Gregg theory principles designed for students to develop shorthand skills in reading, writing and transcription. Students learn to use Gregg shorthand to take dictation in the office and/or to take notes quickly

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in any other environment such as the classroom or the library or the meeting room. In addition, there is emphasis on vocabulary building, spelling, punctuation, and the application of the rules of grammar.

**OS 132. INTERMEDIATE SHORTHAND..... 3 credit hours**

Prerequisites: OS 101, OS 131 or equivalent

4 hours per week (3-1)

This intermediate shorthand course is designed to review Gregg theory and strengthen students' grasp of major shorthand principles in order to develop dictation and transcription skills. Emphasis is placed on the building of dictation speed with 95 percent accuracy in transcription.

**OS 150. OFFICE PROOFREADING ..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

This course is designed for the office worker or for students preparing to work in an office to develop skills in proofreading and editing. Students learn the proper techniques for checking the accuracy of business materials and for making changes to improve the written message. Topics include formatting, grammar review, use of abbreviations, word usage, punctuation, spelling, capitalization, use of numbers, tables and charts, clarity, conciseness and other content considerations.

**OS 151. INFORMATION PROCESSING**

**PRINCIPLES..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course covers the basic principles and concepts of the information processing function in modern business/industrial enterprises. The development of basic insights into the growth, objectives and methods of information processing is discussed. Included are basic terminology and concepts of information processing applications, systems design, basic memory and storage types.

**OS 152. INFORMATION PROCESSING**

**TRANSCRIPTION SKILLS ..... 3 credit hours**

Prerequisite: High school typewriting proficiency or concurrent enrollment in OS 102 or equivalent.

4 hours per week (1-3)

This course applies the current dictation/transcription practices found in the modern business office. Students transcribe from tapes of realistic office-style dictation representing a variety of business fields and voices. Mastery of the equipment as well as mastery of transcription skills essential to quality correspondence are emphasized. These skills are stressed in the attainment of acceptable productivity standards. (4 contact hours per week)

**OS 153. INFORMATION PROCESSING APPLICATIONS/**

**BASIC PRACTICE..... 2 credit hours**

Prerequisite: High school typewriting proficiency or concurrent enrollment in OS 102 or equivalent. (Minimum 35 wpm with 5 errors or fewer)

7½ weeks, 4 hours per week (2-2)

An application approach is provided to the study of modern word processing designed to acquaint students with dedicated word processing equipment. Skill development in creating, editing and printing documents is emphasized.

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**OS 154. WORD PROCESSING - WORDSTAR 2000 ..... 2 credit hours**  
Prerequisite: OS 153 or comparable word processing skills

7½ weeks, 4 hours per week (2-2)

This is a course for the experienced office worker who needs word processing skills as they relate to the personal computer. The Wordstar 2000 software program is used in learning basic skills in creating, editing and printing documents. This course is an alternative to OS 155 or 156.

**OS 155. WORD PROCESSING - MICROSOFT WORD ..... 2 credit hours**  
Prerequisite: OS 153 or comparable word processing skills

7½ weeks, 4 hours per week (2-2)

This is a course for the experienced office worker who needs word processing skills as they relate to the personal computer. The Microsoft Word software program is used in learning basic skills in creating, editing and printing documents. This course is an alternative to OS 154 or 156.

**OS 156. WORD PROCESSING - WORDPERFECT ..... 2 credit hours**  
Prerequisite: OS 153 or comparable word processing skills

7½ weeks, 4 hours per week (2-2)

This is a course for the experienced office worker who needs word processing skills as they relate to the personal computer. The WordPerfect software program is used in learning basic skills in creating, editing and printing documents. This course is an alternative to OS 154 or 155.

**OS 200. INDEPENDENT DIRECTED STUDY ..... Variable credit**  
Prerequisite: Consent

This course includes a planned program of studies under the guidance and direction of a regular staff member.

**OS 203. ADVANCED TYPEWRITING ..... 3 credit hours**  
Prerequisite: OS 102 or equivalent. (Minimum of 45 wpm with 5 errors or fewer for 5 minutes)

4 hours per week (1-3)

This course is designed to build on the foundation of earlier training in correspondence, reports and tables. Students have a variety of increasingly difficult specialized office typing tasks and business forms to complete. Students make decisions regarding attractive placement or layout of materials. Students do independent work, matching employment conditions. Significant amounts of edited and longhand materials are included.

**OS 210. MEDICAL TRANSCRIPTION ..... 3 credit hours**  
Prerequisite: OS 102 or equivalent

4 hours per week (1-3) plus a minimum of 4 machine hours

This introductory course in medical terminology and medical transcription is for students who are proficient in typewriting. Emphasis is placed on basic transcription techniques so that students may acquire a thorough knowledge of dictation/transcription equipment. The course familiarizes students with a broad base of medical terms and the basic types of medical reports.

**OS 214. INFORMATION PROCESSING APPLICATIONS/  
ADVANCED PRACTICE ..... 3 credit hours**  
Prerequisite: OS 153, (154 or 155 or 156)

4 hours per week (1-3)

This is an advanced course in information processing applications relating to

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business and industry and other specialized fields such as law. Skill development and speed building in revising and printing completed information processing assignments and list processing are emphasized.

**OS 223. MEDICAL OFFICE PROCEDURES ..... 3 credit hours**

Prerequisite: OS 102 or equivalent

4 hours per week (3-1) plus a minimum of 4 practice hours

This course covers secretarial responsibilities in a medical office or hospital including appointments, patient records, pegboard bookkeeping, telephone procedures, credit and collection procedures and medicolegal considerations. Medical insurance is studied. Students complete forms for Blue Cross/Blue Shield, Medicare, Medicaid, Workers' Compensation, CHAMPUS and private insurances using the proper coding system.

**OS 224. INFORMATION PROCESSING FOR MEDICAL SPECIALISTS..... 2 credit hours**

Prerequisite: OS 152 or 210, OS 153

2 hours per week (1-1)

This course provides advanced practice in information processing applications related to medical offices, hospitals and other medical related fields. Skill development in document formatting, revising, printing and list processing is emphasized.

**OS 225. INFORMATION PROCESSING SYSTEMS AND PROCEDURES..... 3 credit hours**

Prerequisite: OS 151, 152, 153, (154 or 155 or 156), 214

4 hours per week (1-3)

This course provides practical study of the fundamental systems and procedures comprising the information processing center. Emphasis is placed on developing insights into the responsibilities of the information processing center staff, personnel qualifications, human relations and the effective integration of the information processing system(s) with other business systems. The course also includes information processing alternatives, equipment and needs surveys, organization and implementation of information processing, and management and control of the information processing function.



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**OS 250. OFFICE SYSTEMS AND PROCEDURES..... 4 credit hours**

Prerequisite: Two-year high school typewriting proficiency or concurrent enrollment in OS 203 or equivalent. OS 107 is recommended.

4 hours per week (3-1)

As the capstone of the Secretarial Program, this course covers most of the secretarial functions that have been changed by technology. Emphasis is placed on the responsibilities of the executive secretary or administrative assistant: decision-making activities, time management, prioritizing, and the exercise of effective human relations. Because competent secretaries must become word specialists, continuing importance is placed on the area of oral/written communications. Students prepare travel itineraries, agendas and minutes of meetings, investment records, and statistical data in proper graphic form to correlate with written reports. The significance of visibility and networking is included in career advancement.

**PHARMACY TECHNOLOGY \_\_\_\_\_(PHT)**

**PHT 100. INTRODUCTION TO HOSPITAL AND COMMUNITY PHARMACY ..... 3 credit hours**

Prerequisite: Admission to Pharmacy Technician Program

3 hours per week (3-0)

The student is familiarized with the functions and services provided by both hospital and community pharmacies. Hospital organization is presented. The role of the pharmacist and technician is studied. Discussion includes legal and ethical responsibilities.

**PHT 101. DRUG PRODUCTS AND NOMENCLATURE..... 3 credit hours**

Prerequisite: PHT 100 or consent

3 hours per week (3-0)

Drugs are studied by therapeutic classification with special attention on dosage forms, commonly used names and manufacturers. Study is limited to commonly used drug standards of reference in each classification that are used in community and hospital practice.

**PHT 102. DRUG DISTRIBUTION SYSTEMS AND PROCEDURES ..... 3 credit hours**

Prerequisite: PHT 100 or consent

5 hours per week (2-3)

Methods of drug preparation, packaging and distribution in the hospital and community pharmacy setting are presented. The specific duties and responsibilities of the technician are emphasized.

**PHT 105. PREPARATION OF MEDICATIONS ..... 2 credit hours**

Prerequisite: PHT 100 or consent

3 hours per week (1-2)

Dosage forms and routes of drug administration are discussed, including the rationale, techniques and potential problems of each. The course also includes the basic principles, equipment and techniques involved in the preparation of sterile products.

**PHT 189. STUDY PROBLEMS..... Variable credit**

Prerequisite: Consent

This is a directed study in the pharmacy technician program.

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**PHT 198. PHARMACY FIELD EXPERIENCE..... 8 credit hours**

Prerequisite: All first and second semester courses

16 hours per week (0-16)

Skills and knowledge acquired in the first two semesters of the program are put into practice in both hospital and community settings. Students spend 16 hours a week in a practice setting. All experience is under the supervision of a registered pharmacist.

**PHILOSOPHY \_\_\_\_\_ (PHL)**

**PHL 101. INTRODUCTION TO PHILOSOPHY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The course introduces the general nature of philosophical thought, its basic methods, problems and goals. It includes representative philosophers and such classic philosophical problems as the meaning of existence, the nature of reality, criteria of morality and the nature of the human mind. The class also uses philosophical concepts to help understand oneself, other people and the world around us, and focuses on formulating and defending individual viewpoints and developing personal skills in abstract thinking.

**PHL 111. PHILOSOPHY OF LIFE..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Learning to look at fundamental beliefs and assumptions (about life, the world, yourself, other people) from a philosophical point of view is the focus of this course. It emphasizes expressing and developing the philosophy you live by and includes a discussion of various approaches that may be helpful in the process of personal growth and development.

**PHL 189. STUDY PROBLEMS IN PHILOSOPHY..... Variable credit**

Prerequisite: Consent

This class provides individualized directed activities in Philosophy. A specific problem/issue is studied, or a special project is assigned.

**PHL 200. EXISTENTIALISM..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

A general introduction to the existentialist tradition of philosophy is provided as it is presented in the works of such representative thinkers as Nietzsche, Kierkegaard, Heidegger, Sartre and Camus. Special attention is paid to major existentialist themes; for example, authentic existence, integrity, freedom, anxiety, non-being, melancholy, death, guilt, conscience and values.

**PHL 205. VALUES: ETHICS AND AESTHETICS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

An introduction to the analysis of value behaviors is provided. The course deals with social values and aesthetic values. Some writing is required in which students give evidence of their increased capacity to make distinctions in these areas.

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**PHL 250. LOGIC..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course offers an introduction to the nature of logical reasoning, especially as found in examples of everyday thought, and studies the role of language in reasoning and communication, the influence of emotions on logical thinking and the nature of inductive as well as deductive reasoning. Emphasis is on developing habits of good reasoning, as well as the ability to recognize and avoid bad reasoning.

**PHOTOGRAPHY \_\_\_\_\_ (PHO)**

**PHO 090. GENERAL PHOTOGRAPHY..... 2 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a course for students wishing to understand basic photography and its processes. No darkroom work is included in this course. Primary emphasis is on understanding and using the camera and related equipment, picture taking, composition, lighting, film, etc. Students should own or have the use of some type of camera.

**PHO 101. PHOTOGRAPHY AND ENVIRONMENT ..... 3 credit hours**

Prerequisite: None

4 hours per week (2-2)

This is a study of the methods of documenting various types of environments with the camera. This includes the recording of current environmental situations as well as presenting suggestions for improving undesirable conditions. Students must have their own 35mm or roll film camera and previous photo experience.

**PHO 103. HISTORY OF PHOTOGRAPHY ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Designed to introduce students to the history of photography, this class studies the development of the important processes for making photographs and the philosophy of the most significant photographers of the 19th and 20th centuries.

**PHO 111. PHOTOGRAPHY ..... 4 credit hours**

Prerequisite: None

6 hours per week (2-4)

This is a first-term course in basic photography including darkroom work. Areas of study include: camera and meter usage, film, lighting and composition, laboratory equipment and procedures, chemical mixing and handling, black and white film and print processing, etc. Students must have an adjustable camera.

**PHO 112. DARKROOM TECHNIQUES..... 5 credit hours**

Prerequisite: PHO 111; Corequisite: PHO 113

7 hours per week (1-6)

This class features development of skills needed by technicians in commercial and other types of darkrooms used in business and industry. All

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major phases of darkroom work including film processing, print making, photographic supplies, handling and equipment maintenance are practiced.

**PHO 113. STUDIO TECHNIQUES..... 3 credit hours**

Prerequisite: PHO 111. Corequisite: PHO 112

4 hours per week (1-3)

This course includes specialized instruction in large format photography and studio lighting techniques. Emphasis is on view camera use with various studio lighting set-ups. Students must have a hand-held light meter.

**PHO 114. BASIC COLOR PHOTOGRAPHY..... 3 credit hours**

Prerequisite: PHO 111

4 hours per week (1-3)

An introduction to the various color photography processes in common use today is provided. Emphasis is placed on the production of color transparencies, color negatives and color prints and off-easel color print correction techniques.

**PHO 115. PHOTO RETOUCHING..... 2 credit hours**

Prerequisite: PHO 111

3 hours per week (0-3)

Manual spotting techniques and associated materials as applied to the retouching and processing of photographic prints and negatives are learned.

**PHO 116. PORTRAIT PHOTOGRAPHY..... 2 credit hours**

Prerequisite: PHO 113

3 hours per week (1-2)

This is a study in basic lighting and posing techniques used in creating studio portraits. Areas of study include: children, families, seniors, wedding and executive portraiture.

**PHO 216. INTRODUCTION TO FASHION PHOTOGRAPHY..... 3 credit hours**

Prerequisite: PHO 116

4 hours per week (1-3)

This class expands students' knowledge of formal portraiture in order to create professional fashion photographs. Areas of study include: model portfolios, fashion advertising, hi-key/low-key lighting, creating unique backgrounds, outdoor lighting and location photography.

**PHO 219. PHOTOGRAPHIC DESIGN..... 3 credit hours**

Prerequisite: PHO 111

4 hours per week (1-3)

This is an intensive review of photographic composition and design techniques with emphasis on design in the photographic image through lecture, demonstration, critique, and darkroom practices. Included is a survey of contemporary photographers and new directions in modern photographic images and design.

**PHO 220. ADVANCED STUDIO TECHNIQUES..... 3 credit hours**

Prerequisite: PHO 113

4 hours per week (1-3)

A detailed study of the various types of cameras and their uses. This course emphasizes roll and sheet film cameras, as well as the more unusual applications of the medium format camera. Color film use is stressed.

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**PHO 221. ADVANCED DARKROOM TECHNIQUES ..... 3 credit hours**

Prerequisite: PHO 112

6 hours per week (1-5)

This course focuses on specialized instruction in various advanced techniques used and problems faced by the darkroom technician. How to produce acceptable results under difficult situations is the major emphasis.

**PHO 222. ADVANCED COLOR PHOTOGRAPHY ..... 3 credit hours**

Prerequisite: PHO 114

6 hours per week (2-4)

This is a continuation of the studies begun in Basic Color Photography 114. Emphasis is placed on color correction from unusual situations and color distortion to achieve special effects and experience in automated color production techniques and equipment.

**PHO 223. PHOTOGRAPHIC OPERATIONS..... 3 credit hours**

Prerequisite: PHO 113

4 hours per week (2-2)

Students study photographic operations in business and industry through guest lecturers and field trips. Students use skills gained in basic and studio classes to complete freelance assignments on a professional client/photographer basis.

**PHO 224. PHOTOGRAPHY QUALITY CONTROL**

**TECHNOLOGY..... 2 credit hours**

Prerequisite: PHO 112, 113, 114

4 hours per week (2-2)

Students, through lecture, demonstration, and lab practice, utilize a variety of photographic quality control techniques and related equipment, specifically the use of the densitometer; study of development variation, contrast control, and plotting; identifying individual variation through experimentation; analysis of the C-41/K-2 processes and comparisons; study of the elimination process of contaminants.

**PHO 230. SPECIALIZED STUDIES IN PHOTOGRAPHY ..... Variable credit**

Prerequisite: Consent

This course offers students the opportunity to work independently with faculty consultation in major areas of photography.

**PHO 231. PORTFOLIO SEMINAR..... 2 credit hours**

Prerequisite: Consent

4 hours per week (2-2)

This covers development of materials and samples to be presented for employment. Professional critiques conducted and evaluations are made; the course is offered Spring term only.

**PHYSICAL EDUCATION ACTIVITIES \_\_\_\_\_(PEA)**

**PEA 105. NAUTILUS WEIGHT TRAINING..... 2 credit hours**

Prerequisite: None

2 hours per week (0-2)

This course provides opportunities for students to acquire skills which will be a source of healthful and recreational exercise.

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## PHYSICS \_\_\_\_\_ (PHY)

### OPEN PHYSICS LABORATORY

Physics courses 105, 111, 122, 131, 143 utilize an open laboratory format. Under this format the laboratory is open with an instructor present about twenty-five hours per week. Students perform assigned experiments at specified stations when the laboratory is open. Computer software is used for data analysis and simulations.

#### **PHY 105. INTRODUCTORY PHYSICS ..... 4 credit hours**

Prerequisite: MTH 090

6 hours per week (3-3)

Designed for both transfer and vocational students with no physics experience, but desiring a working knowledge of physics, PHY 105 surveys the major topics of motion, heat, waves, electricity, magnetism, light, and atomic energy using a conceptual approach with a minimum of mathematics.

#### **PHY 110. APPLIED PHYSICS ..... 4 credit hours**

Prerequisite: MTH 090

6 hours per week (3-3)

Technical-Vocational students with no previous experience with physics should take this course to fulfill their program requirements. Topics covered are: properties of matter, motion, force, energy, machines, fluids, heat, electricity, and wave motion. Laboratory exercises give students an opportunity to test theoretical principles.

#### **PHY 111. GENERAL PHYSICS I ..... 4 credit hours**

Prerequisite: MTH 169. Corequisite: MTH 177

6 hours per week (3-3)

The topics of mechanics, heat, and wave motion are presented using the principles of algebra to pre-professional and liberal arts students in PHY 111. Open Physics Laboratory exercises supplement students' understanding of the topics covered. PHY 111 usually represents the first part of a two-semester sequence in algebra-based physics required by many programs.

#### **PHY 122. GENERAL PHYSICS II ..... 4 credit hours**

Prerequisite: PHY 111

6 hours per week (3-3)

As the second part of a two-semester sequence in algebra-based physics, PHY 122 includes the topics of electricity, magnetism, light, and atomic physics. Appropriate Open Physics Laboratory exercises are included to assist students' understanding of these topics.

#### **PHY 131. PHYSICS FOR RESPIRATORY THERAPY ..... 3 credit hours**

Prerequisite: MTH 165

4 hours per week (2-2)

Designed to meet the needs of students in the respiratory therapy program, PHY 131 presents students with: basic mechanics, energy in the human body, properties of fluids and gases, molecular phenomena, heat, and the physical principles of selected respiratory therapy equipment.

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**PHY 143. RADIOLOGIC PHYSICS..... 4 credit hours**

Prerequisite: MTH 165, High School Physics, or PHY 105

6 hours per week (4-2)

Radiology students should take this course which covers the topics of: basic mechanics, structure of matter, wave motion, electromagnetism, the X-ray circuit, production of X-rays, interactions with matter, radioactive decay, ultrasound, and nuclear magnetic resonance.

**PHY 211. ANALYTICAL PHYSICS I ..... 5 credit hours**

Prerequisite: MTH 191, High School Physics or PHY 105 or 111

7 hours per week (4-3)

The first of a two-course sequence in calculus-based physics for students intending to major in science or engineering, PHY 211 develops the concepts of mechanics, heat, and wave motion.

**PHY 222. ANALYTICAL PHYSICS II ..... 5 credit hours**

Prerequisite: PHY 211

7 hours per week (4-3)

This second part of a two-course sequence in calculus-based physics covers the concepts of electromagnetism, light, and modern physics extending the student's knowledge of physics learned in PHY 211.

**POLITICAL SCIENCE \_\_\_\_\_ (PLS)**

*Political Science 108, 112, and 150 all meet the minimum requirements for the Associate Degree.*

**PLS 108. GOVERNMENT AND SOCIETY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory course on the American political system: executive, legislative, and judicial functions; processes and machinery of popular control (public opinion, media, interest groups, parties, and elections). It is designed to help students to more clearly define and express their own political ideas.

**PLS 112. INTRODUCTION TO AMERICAN GOVERNMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class studies the forms and functions of American government with emphasis on national government. The decision-making process in Congress, the Presidency and the federal court system are studied. The course also examines the relationship of political parties and public opinion to the electoral process.

**PLS 150. STATE AND LOCAL GOVERNMENT AND POLITICS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Forms and functions of state and local governments in the United States are studied. The relationships of urban community development to the politics of

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metropolitan areas are analyzed. Theories of studying community decision-making are evaluated.

**PLS 189. STUDY PROBLEMS IN POLITICAL SCIENCE..... Variable credit**

Prerequisite: Consent

This class offers individualized directed activities in Political Science. A specific problem/issue is studied, or a special project is assigned.

**PLS 200. INTRODUCTION TO INTERNATIONAL POLITICS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The instruments of world politics are studied from the perspective of current international issues with emphasis on major power relations and attempts at international organization.

**PLS 211. INTRODUCTION TO COMPARATIVE GOVERNMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class surveys the political systems of Great Britain, France, Italy, Germany, the Soviet Union and China. The importance of ideologies to the development of political systems are emphasized.

**PSYCHOLOGY \_\_\_\_\_ (PSY)**

**PSY 100. INTRODUCTORY PSYCHOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class provides an introduction to the scientific study and interpretation of human behavior surveying such topics as psychological development, learning, thinking, motivation, emotion, perception, intelligence, aptitudes and personality. Basic principles and their practical application discussed. This course also is taught as a television course using the program series "Understanding Human Behavior."

**PSY 106. PSYCHOLOGY OF AGING..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

An overview of the psychology of aging is presented, including: study of personality traits, emotional problems and adjustments common in the process of aging; general psychological theories related to the problems experienced by the aged.

**PSY 107. BLACK PSYCHOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is organized around the premise that there is a distinctive Afro-American psychological frame of reference that is evident in the behavior and lifestyles of Black Americans. This is an attempt to build a conceptual model to help understand and explain the psychosocial behavior of Black Americans.

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**PSY 109. PSYCHOLOGY OF MID-LIFE CAREERS..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course involves discussion of the following: finding your interests and aptitudes; life review and 300 job options; multiple career planning to meet present and future manpower needs; goals for mid-life and pre-retirement; life-time learning and creativity; group interaction; individual counseling.

**PSY 111. AGING PARENTS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This class provides an exploration into the problems of the adult child and his/her relationship with aging parents. Emphasis is placed on intergenerational living, role reversals and problem solving.

**PSY 114. LEARNING TO LEARN ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a course in applied psychology. Emphasis is placed on learning styles and learning strategies. Students are provided with a variety of techniques for analyzing their learning style. Next, they are given information on learning strategies and practice in developing and using various strategies.

**PSY 115. MODERN PARENTING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to help develop an understanding of modern times, high technology and the demands of parenting. Parents, caregivers and anyone interested in children are given information and techniques modern thinkers offer to provide the emotional and intellectual stimulation children need to survive in contemporary society.

**PSY 130. ALCOHOLISM: ITS EFFECTS,  
IMPACT AND TREATMENT ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a presentation of information concerning most aspects of alcoholism and how it affects the afflicted physically, socially, psychologically, vocationally and spiritually. Also, its effect on the significant others in his/her life is discussed.

**PSY 150. INDUSTRIAL PSYCHOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course involves discussion of human relations in business and industry. Special attention is given to occupational information, personnel selection, training and development and employee appraisal. This is a practical introduction to the psychological dimensions and implications of the modern working world.

**PSY 160. COPING WITH STRESS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course studies the recent developments in stress reduction and personal growth using materials from humanistic psychology, psychiatry, nutrition and exercise.

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**PSY 170. HIGH TECHNOLOGY:  
IMPACT ON PERSONALITY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course focuses on some of the key technological developments of modern times and the changes they have caused in the social, economic and political structures of our society. Various technologies are isolated to evaluate the demand they have made on human adjustment. This course makes a psychological assessment of both positive and negative influences hi-tech has made on child development, family structures, workers, male/female relations, the aged, health care and redefinition of humanity.

**PSY 189. STUDY PROBLEMS IN PSYCHOLOGY..... Variable credit**

Prerequisite: Consent

This class provides individualized directed activities in Psychology. A specific problem/issue is studied, or a special project is assigned.

**PSY 200. CHILD PSYCHOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course stresses the child as an individual, his or her original nature and temperament and position as part of the group. Introduction of social raw materials is considered. In addition, such topics as the conditioning and reconditioning of behavior patterns and the individuality and similarity of responses are developed.

**PSY 201. THE BLACK CHILD..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course focuses on the Black child as a human being and a member of a Black subculture of American society. A study of the common pattern of growth stages and developmental tasks that the Black child shares with Euro-American children is done. Also, study is done on unique historical and current patterns of oppression in the American color caste system and the challenge this presents to Black families and the broader society in building a positive self-concept in the Black child.

**PSY 207. SOCIAL PSYCHOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed to give students an understanding of the influence of social interaction upon the development of personality. Interaction between the individual and society is stressed. Includes emphasis on group dynamics and sensitivity training.

**PSY 209. PSYCHOLOGY OF ADJUSTMENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a study of the processes involved in the adjustment of the individual to the problems of everyday living. Emphasis is given to the study of the development of techniques or adjustment to meet conflict situations in the social environment. It includes consideration of adjustment mechanisms of major societal institutions.

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**PSY 222. LOSSES AND GRIEVING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course, concerned with losses and the therapeutic process of grieving, examines people's reactions to unexpected losses. Losses due to death are treated as well as losses naturally accompanying everyday life and the growth process. Also examined is grief resulting from disillusionment, divorce, unemployment, role change, the empty nest and the loss of material possessions. The class focuses on the way people react to their own losses and the role of friends and professionals in helping complete the grieving process. Problems resulting from incompleting grieving and the nature of grief work is considered in depth. The class blends theory with practice.

**PSY 257. ABNORMAL PSYCHOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a course dealing with the abnormalities of certain types of personalities, their origin, symptoms, developments and treatment, short of psychiatric competence. Main topics include: simple maladjustment; disturbances of emotional nature, of perception, memory, judgment, thought, disorders of mobility, speech, etc.; early symptoms of schizophrenia.

**RADIOGRAPHY \_\_\_\_\_ (RAD)**

*Enrollment priority for these courses is granted students admitted to this program. Courses must be taken in sequence outlined in the curriculum unless consent is obtained from the Radiography division after review of previous transcripts.*

**RAD 097. REGISTRY REVIEW ..... 1 credit hour**

Prerequisite: None

2 hours per week (2-0)

This course assists graduates of the Radiography Program to prepare for the Registry Examination.

**RAD 100. INTRODUCTION TO RADIOGRAPHY ..... 2 credit hours**

Prerequisite: Admission to the Radiography Program

7 weeks, 4.2 hours per week (4.2-0)

This course includes the history of radiography, medical specialties, health care delivery, organizational structure of a radiology department, professional development and ethics. It is an introductory course for the beginning radiographer with emphasis on acquainting students with the goals, philosophies and organizations of the radiography program and radiology department.

**RAD 101. METHODS OF PATIENT CARE..... 2 credit hours**

Prerequisite: Admission to the Radiography Program

7 weeks, 4.2 hours per week (4.2-0)

This course is designed to teach the radiographer how to interact with the patient, to provide for his or her physical and emotional needs and how to assist in moving patients by using various transfer methods. Included is some lab practice in basic techniques such as taking vital signs, blood pressure and airway management.

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**RAD 110. CLINICAL EDUCATION ..... 1 credit hour**

Corequisite: RAD 112

7½ weeks, 16 hours per week (0-16)

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper extremity, chest and abdomen; and the demonstration of knowledge concerning professional ethics, courtesy and empathy in handling patients, film processing and darkroom procedures.

**RAD 111. FUNDAMENTALS OF RADIOGRAPHY ..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

Imaging is the key to the primary responsibility of a radiographer. The intent of this course is to describe the various imaging modalities so that application of principles to produce optimum diagnostic radiographic images are understood.

**RAD 112. RADIOGRAPHIC POSITIONING I ..... 2 credit hours**

Prerequisite: None

3 hours per week (1-2)

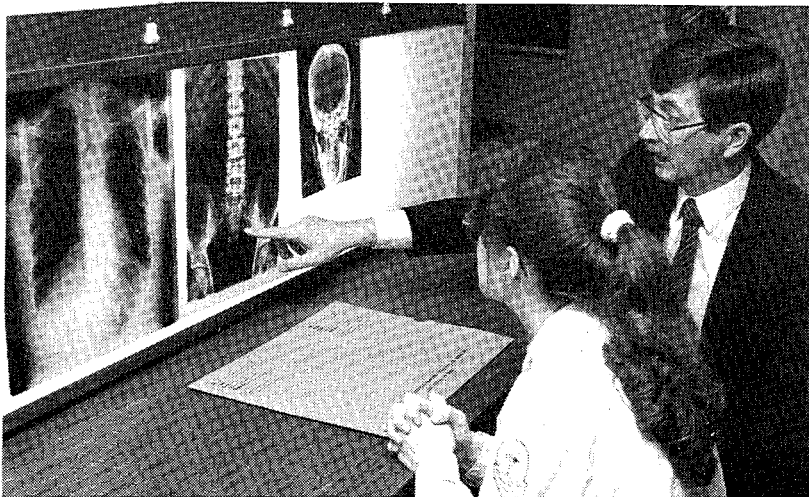
This course includes pertinent nomenclature for radiographic positioning, preliminary steps in radiography, operation of the radiographic control panel, processing the radiograph and positioning of the chest, abdomen and upper extremity.

**RAD 113. RADIOGRAPHIC PROCESSING ..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

This course covers the principles of processing including discussion on darkroom design, radiographic film characteristics, processing chemistry, trouble shooting, maintenance, evaluation of radiographic films to determine diagnostic inadequacies resulting from artifacts and to correct or compensate for the cause.



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**RAD 120. CLINICAL EDUCATION ..... 2 credit hours**

Corequisite: RAD 123

16 hours per week (0-16)

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine and selected contrast studies, and the demonstration of knowledge on the design and operational characteristics of equipment and accessories in a general radiographic room.

**RAD 123. RADIOGRAPHIC POSITIONING II..... 2 credit hours**

Prerequisite: RAD 112

3 hours per week (1-2)

This course covers proper positions for radiography of the lower extremity, trunk and spine. Critiques on positioning and the anatomical appearance of structures on the radiograph are an essential function of the course.

**RAD 124. PRINCIPLES OF RADIOGRAPHIC EXPOSURE.... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course includes a comprehensive study of radiographic exposure techniques, radiographic quality, the use of radiographic accessories and how to select and apply this equipment to various situations.

**RAD 125. RADIOGRAPHIC PROCEDURES AND RELATED ANATOMY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course covers radiographic procedures in which a contrast medium is used for demonstrating structures which are not well visualized on routine radiographs.

**RAD 127. PRINCIPLES OF RADIOGRAPHIC EXPOSURE LABORATORY ..... 1 credit hour**

Corequisite: RAD 124

2 hours per week (0-2)

This course provides structured laboratory experience designed to illustrate film response to various exposure techniques. Emphasis is on evaluation of exposure techniques used in obtaining diagnostic information on x-ray film.

**RAD 130. CLINICAL EDUCATION ..... 2 credit hours**

Prerequisite: None

7 weeks, 32 hours per week (0-32)

Structured clinical experience is provided in the application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine, procedures requiring the use of a contrast medium and in the demonstration knowledge of the components and operational characteristics of the fluoroscopic unit.

**RAD 135. PATHOLOGY FOR RADIOGRAPHERS ..... 2 credit hours**

Prerequisite: None

4.2 hours per week (4.2-0)

This course is a survey of basic pathology and includes a study of the disease process and how various diseases alter the appearance and function of human organisms, including infectious diseases, tumors, chemical injuries and the conditions of illness involving the systems of the body.



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**RAD 140. CLINICAL EDUCATION ..... 2 credit hours**

Prerequisite: None

7 weeks, 32 hours per week (0-32)

This course is a continuation of Clinical Education 130. Students demonstrate a knowledge of orthopedic radiography.

**RAD 215. RADIOGRAPHY OF THE SKULL..... 2 credit hours**

Prerequisite: None

3 hours per week (1-2)

Anatomy and radiography of the skull are studied so that students can correlate the relationship of external landmarks and positioning lines to specific internal structures. The course includes laboratory experience in skull positioning.

**RAD 217. CLINICAL EDUCATION ..... 3 credit hours**

Corequisite: RAD 215

24 hours per week (0-24)

Structured clinical experience is provided in the components and operational characteristics of radiographic equipment used in radiography of the skull. Student apply knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine and skull and in procedures requiring the use of a contrast medium.

**RAD 218. RADIATION BIOLOGY ..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

This course is designed to acquaint students with the effects of ionizing radiation on the cells which form human tissue.

**RAD 219. RADIATION PROTECTION..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

The interaction of radiation with matter and the effect of exposure factors on radiation dose, biological effects, unit of measurement, maximum permissible dose and exposure monitoring are covered in this course.

**RAD 220. MANAGEMENT OF RADIOLOGICAL ENVIRONMENT ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Designed to acquaint students with various aspects of managing the modern radiology department, this course includes: department organization and operations, equipment specifications, quality assurance guidelines, patient education, planning and design.

**RAD 225. CLINICAL EDUCATION ..... 3 credit hours**

Prerequisite: None

24 hours per week (0-24)

Structured clinical experience is provided in all areas of radiography. Electives in specialized areas are explored (i.e., ultrasound, C.T. Scanner, mobile and surgical radiography).

**RAD 240. CLINICAL EDUCATION ..... 2 credit hours**

Prerequisite: None

7 weeks, 32 hours per week (0-32)

Internship in Clinical Education is provided.

**READING LAB**

The Reading Lab (SC 301) is available to improve students' reading and learning skills. Students enrolled in reading classes are encouraged to use the facility regularly during the semester. Those not enrolled in reading classes may be referred for individual help.

**RDG 040. READING..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This course provides the remedial reader with basic reading skills. A program of instruction is individually designed for each student based upon his/her diagnostic reading test and a personal interview. The course includes work assigned in the RDG 040 classroom and, in addition, a continuation of individualized instruction is given in the reading lab. Students enrolled in this course must satisfactorily complete the work in this course before enrolling in a higher level reading course. (Students enrolled in ENG 050 are encouraged to take Reading 040 at the same time.)

**RDG 090. CHILDREN'S READING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed for parents, child-care workers, and future teachers who are concerned about children's reading. Emphasis is on preparing preschoolers for reading. Attention is also given to any reading related problem brought to class. Methods and materials to help students at any reading level, preschool through high school, are available. Attention can also be given to any reading related problem brought to class.

**RDG 100. VOCABULARY AND SPELLING POWER..... 2 credit hours**

Prerequisite: None

7½ weeks, 4 hours per week (4-0)

This course is designed for students interested in strengthening spelling skills and expanding vocabulary. Emphasis is placed on meeting the individual student's needs. This is not a remedial course; students in need of basic spelling and/or vocabulary skills should elect RDG 040.

**RDG 103. STUDY SKILLS..... 3 credit hours**

Prerequisite: High school reading ability

3 hours per week (3-0)

This course is designed for students interested in improving study and note taking skills. Reading and note taking techniques appropriate to specific course materials are stressed. It is essential that students electing this course be concurrently enrolled in an English, Humanities, Social or Exact Science course so that they can apply their newly learned study skills in other disciplines.

**RDG 104. STUDY SKILLS..... 2 credit hours**

Prerequisite: High school reading ability

7½ weeks, 4 hours per week (4-0)

This course is designed for students interested in improving study and note taking skills. Reading and note taking techniques appropriate to academic materials are stressed. It is essential that students electing this course be

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concurrently enrolled in an English, Humanities, Social or Exact Science course so that they can apply their newly learned study skills.

**RDG 105. VOCABULARY AND SPELLING POWER..... 3 credit hours**

Prerequisite: High school reading ability

3 hours per week (3-0)

This course is designed for students interested in improving spelling skills and expanding vocabulary. Emphasis is placed on meeting the individual student's needs. This is not a remedial course; students in need of basic spelling and/or vocabulary skills should elect Reading 040.

**RDG 106. SPEED READING..... 2 credit hours**

Prerequisite: High school reading ability

7½ weeks, 4 hours per week (4-0)

This course is designed for students interested in becoming more flexible readers. Student learn techniques to vary reading speeds and techniques appropriate to their material and purposes.

**RDG 107. SPEED READING..... 3 credit hours**

Prerequisite: High school reading ability

3 hours per week (3-0)

This course is designed for competent students interested in becoming faster and more flexible readers. Students learn techniques to vary reading speeds appropriate to their material and purposes. Class meets for a full semester, allowing time for students to master each successive reading technique before learning a new one.

**RDG 115. MEDICAL TERMINOLOGY..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course acquaints students with the origin and structure of medical terms. It is designed to help students interpret and understand requests for radiographic and other examinations and to read and to understand medical articles and reports.

**RDG 189. STUDY PROBLEMS IN READING ..... Variable credit**

Prerequisite: Consent

This course provides individualized directed activities in Reading.

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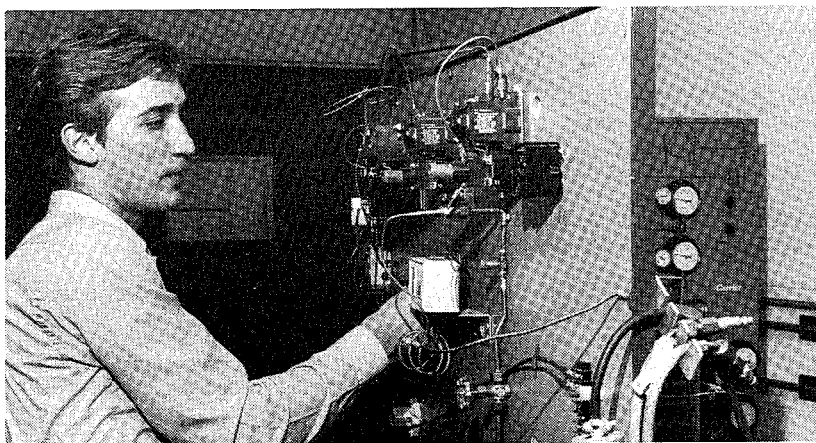
**REAL ESTATE \_\_\_\_\_ (RE)**

**RE 100. REAL ESTATE PRINCIPLES ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is an introductory course in real estate principles, practices and concepts. Students are exposed to a broad overview of the real estate field including the nomenclature, documents, legal aspects and licensure, property descriptions, appraisal, financing, title insurance, construction, builders, property management, condominiums, buying and selling, realtor functions, and the Board of Realtors. This course provides an opportunity for students to explore the field of real estate as a possible career choice or for investment purposes.



## **REFRIGERATION/AIR CONDITIONING \_\_\_\_\_ (RAC)**

*Basically, RAC 111 through RAC 216 are trade-related instruction program courses. Their purpose is to upgrade persons currently employed in this industry; however, students who are not currently employed in the industry are welcome. Presently, courses are only offered in the evenings. Membership in the Educational Society of the Refrigeration Service Engineers (RSES) is required. Initiation fee and dues are approximately \$50. Consent of advisor is required for registration.*

### **RAC 111. REFRIGERATION I..... 5 credit hours**

Prerequisite: consent; RSES membership required

5 hours per week (4-1)

This is the foundation course in a series of courses presented with a practical approach to servicing refrigeration air conditioning systems. Major units covered include mathematics, principles of refrigeration, refrigerants and refrigerant tables, refrigerant oils, contaminants and dryers, moisture in the air, food preservation, basic electric wiring and insulation.

### **RAC 122. REFRIGERATION II..... 5 credit hours**

Prerequisite: RAC 111 and consent; RSES membership required

5 hours per week (4-1)

Emphasis in this course is on the functional principles and servicing of the following units: compressors, condensers (air and water-cooled), cooling towers, evaporator selection, metering devices (expansion valves, capillary tubes), motors and accessories, defrost systems, supermarket refrigeration, fresh meats, soda fountains and ice cream dispensers, ice making machines, beer cooling, milk cooling, estimating heat loads, commercial refrigeration.

### **RAC 123. REFRIGERATION AND AIR CONDITIONING SYSTEMS..... 5 credit hours**

Prerequisite: RAC 124 and consent; RSES membership required

6 hours per week (5-1)

Sketching and constructing refrigeration systems are the focus of this class.

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Calibration and efficiency balance of these units are stressed. Troubleshooting electrical controls and additional study in thermodynamics are included.

**RAC 124. BASIC CONTROLS ..... 5 credit hours**

Prerequisite: RAC 111 and consent; RSES membership required  
5 hours per week (3-2)

This is the first in a series of courses designed to provide a sound understanding of the principles and applications of electricity in refrigeration and air conditioning service, providing the essentials of the major objectives; reading and understanding complex electrical drawing, wiring diagrams and the schematics associated with refrigeration/air conditioning controls. Safety is included and emphasized.

**RAC 213. AIR CONDITIONING ..... 5 credit hours**

Prerequisite: RAC 122 or consent; RSES membership required  
5 hours per week (3-2)

This course covers the operating principles of modern mechanical equipment and troubleshooting approaches to these systems. Units covered are: air conditioning (general), psychrometric charts, insulation in air conditioning, thermostatic and pneumatic controls, heat pumps, room air conditioning units, heating and cooling systems and equipment, ducts and grills, blowers and fans, air filters, safety, first aid and codes.

**RAC 214. CONTROL SYSTEMS ..... 5 credit hours**

Prerequisite: RAC 124 and consent; RSES membership required  
5 hours per week (3-2)

This course presents further study and practice in reading electronic wiring diagrams and schematics as applied to the electrical controlling systems of refrigeration and air conditioning, including alternating current, motors, starters, capacitors, transformers, motor protectors, standard service techniques and troubleshooting industrial controls.

**RAC 215. TROUBLESHOOTING CONTROLS ..... 5 credit hours**

Prerequisite: RAC 214 and consent; RSES membership required  
5 hours per week (3-2)

This is an advanced, comprehensive study of the theory and applications of refrigeration and air conditioning control systems and devices; electro-mechanical, electronic and solid state. Problem-solving experiences are offered through operational sequencing examples and wiring diagrams on name brand systems such as Carrier, Trane, Climatrol, Honeywell, Penn, Westinghouse, Allen-Bradley, etc.

**RAC 216. SYSTEMS LABORATORY ..... 5 credit hours**

Prerequisite: RAC 123  
6 hours per week (2-4)

Advanced troubleshooting experiences are provided in refrigeration/air conditioning remote control systems. Calibrating and efficiency-balancing of commercial systems continues as the major thrust.

**RAC 240. REFRIGERATION CODES ..... 2 credit hours**

Prerequisite: Consent  
2 hours per week (2-0)

American National Standard B9 ASHRAE Standard and City of Ann Arbor Reciprocal Council. Offered infrequently.

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## RESPIRATORY THERAPY \_\_\_\_\_ (RTH)

### **RTH 097. RESPIRATORY THERAPY REVIEW..... 1 credit hour**

Prerequisite: None

5 3-hour sessions

This course is designed to assist graduates of Respiratory Therapy Programs studying for their certification or registry exams. It is offered the five Saturday mornings preceding the exam. Emphasis placed on sample examinations.

### **RTH 106. CHEMISTRY FOR RESPIRATORY THERAPISTS.. 3 credit hours**

Prerequisites: CEM 057, 058

3 hours per week (3-0)

This course is intended primarily for students in the Respiratory Therapy Program. It is a study of the chemical and physiochemical behavior of gases, solutions, acids, bases, pH and electrolytes, encompassing topics in organic chemistry and biochemistry related to metabolism and respiration.

### **RTH 120. INTRODUCTION TO RESPIRATORY THERAPY ... 3 credit hours**

Prerequisite: Admission to the Respiratory Therapy Program

3 hours per week (3-0)

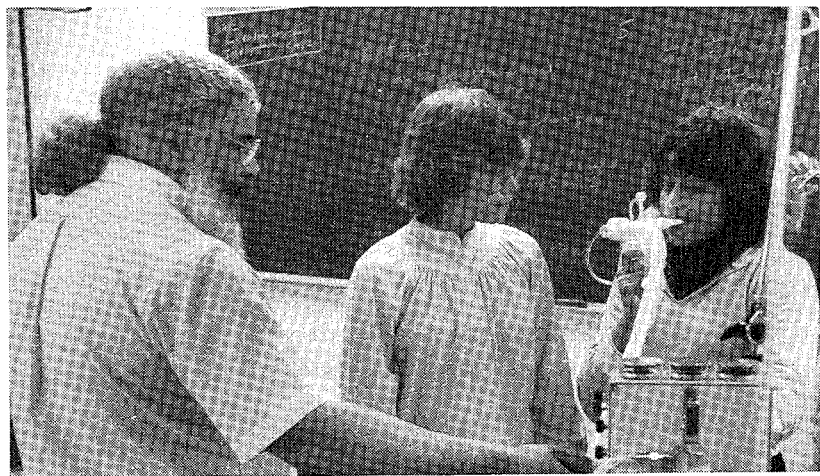
This lecture course orients students to the respiratory therapy program and the profession. Topics include an overview of respiratory anatomy, terminology, equipment, history, diseases, and treatment. Methods of studying the topics are emphasized.

### **RTH 121. BASIC EQUIPMENT AND PROCEDURES ..... 4 credit hours**

Prerequisite: Admission to the Respiratory Therapy Program

4 hours per week (2-2)

This is an introductory course dealing with the instruments and techniques used by the respiratory therapist; principles of operation and maintenance repair of various analyzers, humidifiers, masks, catheters, respirators, tents and regulators.



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**RTH 122. RESPIRATORY PHYSIOLOGY ..... 3 credit hours**

Prerequisites: BIO 111, RTH 106

3 hours per week (3-0)

For respiratory therapy students only, this course is an in-depth study of the anatomy and physiology of the respiratory system and the diseases that affect it.

**RTH 123. RESPIRATORY PATHOPHYSIOLOGY ..... 2 credit hours**

Prerequisites: BIO 111. Corequisite: RTH 122

2 hours per week (2-0)

This course should be taken concurrently with RTH 122. It is intended for respiratory therapy students only. It is the study of the causes, treatment and assessment of respiratory disorders and other diseases treated by the respiratory therapist.

**RTH 148. PHARMACOLOGY FOR RESPIRATORY THERAPISTS ..... 2 credit hours**

Prerequisite: BIO 111

2 hours per week (2-0)

The course provides a survey of drugs used to treat disease, with emphasis on drugs commonly used to treat cardiopulmonary disorders.

**RTH 149. PATHOLOGY FOR RESPIRATORY THERAPISTS ..... 3 credit hours**

Prerequisite: BIO 111

3 hours per week (3-0)

The course provides a survey of anatomical pathology including inflammation, infection, tuberculosis, viral disease, poisons, tumors, cardiovascular disease, shock and diabetes.

**RTH 198. GENERAL CLINICAL PRACTICE I ..... 3 credit hours**

Prerequisite: RTH 121

16 hours per week (0-16)

This course provides bedside practice of general respiratory therapy techniques such as intermittent positive pressure breathing, oxygen therapy, humidity therapy, cardiopulmonary resuscitation, sputum induction and equipment rounds. It meets in a cooperating hospital. Experience is coordinated with topics covered in RTH 121.

**RTH 199. GENERAL CLINICAL PRACTICE II ..... 3 credit hours**

Prerequisite: RTH 198

16 hours per week (0-16)

Continued bedside practice of general respiratory therapy techniques developed in RTH 198.

**RTH 200. ADVANCED CLINICAL PRACTICE ..... 4 credit hours**

Prerequisite or Corequisite: RTH 121, 122, 123, 198, 199, 212, 213 and successful completion of qualification exam

16 hours per week (0-16)

Structured, at-the-bedside, practice of respiratory therapy techniques involved with the care of acutely ill patients and patients with chronic obstructive pulmonary disease is provided. Students are assigned to intensive care units of cooperating hospitals. Two eight-hour sessions per week are involved.

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**RTH 222. PULMONARY FUNCTION TESTING..... 2 credit hours**

Prerequisite: BIO 122

2 hours per week (2-0)

This course presents principles of lung function testing as currently practiced in hospitals and clinics. In addition to other areas of respiratory therapy, students learn to interpret spirometry and diffusion studies.

**RTH 224. RESPIRATORY SCIENCE REVIEW ..... 3 credit hours**

Prerequisite: 1 year RTH experience

3 hours per week (3-0)

This course is a review of Anatomy and Physiology, Physics and Chemistry for the practicing Respiratory Therapy technician. This is a required course for the Advanced Standing Program.

**RTH 225. RESPIRATORY THERAPY TECHNOLOGY REVIEW ..... 3 credit hours**

Prerequisite: 1 year RTH experience

3 hours per week (3-0)

This course reviews and reinforces respiratory therapy theory and applies it to the clinical setting. It covers oxygen therapy, acid-base balance, humidity therapy, IPPB and alternative therapy, and pulmonary function studies.

**RTH 201. SPECIALTY CLINICAL PRACTICE ..... 2 credit hours**

Prerequisite: Completion of third semester of Respiratory Therapy Program

7½ weeks, 16 hours per week (0-16)

Experience is provided in one of the following specialty areas; management, teaching, cardiopneumology, burn medicine, home care, research, pulmonary function testing.

**RTH 202. PEDIATRIC CLINICAL PRACTICE..... 2 credit hours**

Prerequisites: RTH 200, 212, 213, 219, successful completion of Pediatric Qualification Exam

7½ weeks, 16 hours per week (0-16)

Structured, at the bedside, practice of respiratory therapy is provided in the neonatal intensive care unit and pediatric units.

**RTH 212. VENTILATORS ..... 3 credit hours**

Prerequisite: RTH 121

4 hours per week (2-2)

This course gives an in-depth study of the use, classification, operation, advantages, modifications, maintenance repair and troubleshooting of medical ventilators, pulmonary function testing devices and other respiratory therapy equipment.

**RTH 213. INTENSIVE RESPIRATORY CARE..... 4 credit hours**

Prerequisites: RTH 106, 212

5 hours per week (3-2)

A detailed study is provided emphasizing the treatment of acute and chronic respiratory failure; the treatment of overwhelming pneumonias, adult respiratory distress syndrome, post-operative problems, poisonings and the rehabilitation of patients with chronic pulmonary disease. Medical specialists discuss the respiratory care of their patients.



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**RTH 214. CARDIODIAGNOSTICS ..... 3 credit hours**

Prerequisite: BIO 111 or equivalent

3 hours per week (3-0)

A survey is provided of invasive and noninvasive methods of studying the heart and cardiovascular system. Swan Gantz catheterization, echocardiography, stress tests, EKG interpretation, etc. are discussed. This course is open to students other than those in Respiratory Therapy.

**RTH 217. SEMINAR - RESPIRATORY THERAPY ..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

This course is a discussion of current problems, credentialing systems, job attainment skills, psychological assessment of patients, teaching and management techniques.

**RTH 219. PEDIATRIC RESPIRATORY THERAPY ..... 3 credit hours**

Prerequisites: RTH 121, and 122

3 hours per week (3-0)

This is a study of the physiology of children explaining modes of therapy used to treat cardiopulmonary diseases of children, infants and neonates.

**RTH 220. EXERCISE TECHNOLOGY ..... 4 credit hours**

Prerequisite: CPR provider card, successful completion of e.c.g. test

3 hours per week (3-0)

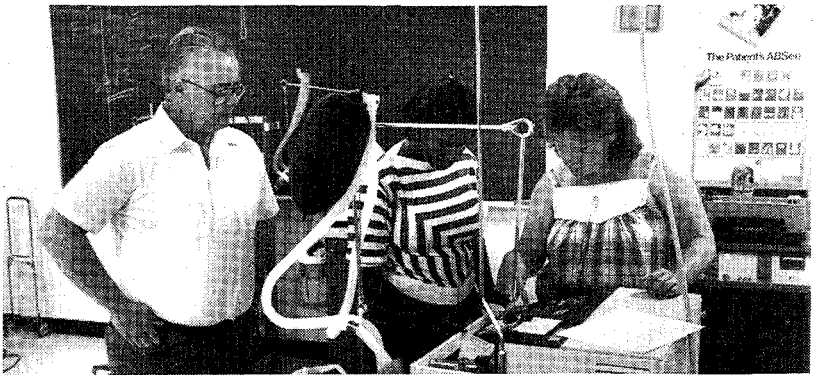
This course is a study of equipment, techniques and medications employed in graded exercise testing of patients with suspected heart disease. It includes units on physiology, anatomy, emergency procedures and psychology.

**RTH 221. PULMONARY REHABILITATION ..... 2 credit hours**

Prerequisite: RTH 212

1 hour per week (1-0)

This course is an overview of the pulmonary rehabilitation of people with chronic lung disease. Major topic areas to be addressed are pulmonary exercise testing, patient education, pulmonary rehabilitation techniques, organization of a pulmonary rehabilitation program, home oxygen, ventilator and infant respiratory care. In addition, several aspects of respiratory home care are reviewed.



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## **SOCIOLOGY** \_\_\_\_\_ **(SOC)**

### **SOC 100. PRINCIPLES OF SOCIOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines human interaction and the products of that interaction which include social structure and institutions, culture, social order, conflict and change. Emphasis is placed on the connection between self and society: that we think, feel and act as we do largely because of social forces (power, sanctions, needs, values) that pressure us to conform or to deviate from social expectations. Some issues to be examined include ethics and applications of social research, social responsibility and management of change. This course is also taught as a television course using the series "Focus on Society."

### **SOC 102. BLACK WOMEN..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Inner and outer aspects of Black women throughout history are discussed. The role of the Black woman is examined in areas of society: the family, the church, politics, community, education, etc. All these factors are considered in determining how Black women's roles differ from those of other women.

### **SOC 150. MARRIAGE AND THE FAMILY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines the principles, practices and problems of mate selection, marriage, family and singleness. Emphasis is placed on how socio-cultural changes are reshaping lifestyle choices, parenting, communication, building and maintaining relationships. Some issues to be examined pertain to family planning, sexuality, sex education, single-parenting, divorce, child and spouse abuse.

### **SOC 154. THE BLACK FAMILY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Structure and functions of the Black family as a dynamic social organization are discussed in this class. An analysis is made of African roots, the impact of the slave experience on Black families in the Americas, an assessment of family strengths and the implications for the present and future struggle for survival.

### **SOC 189. STUDY PROBLEMS IN SOCIOLOGY ..... Variable credit**

Prerequisite: Consent

Individualized directed activities in Sociology make up this course. A specific problem/issue is studied, or a special project is assigned.

### **SOC 201. MEDICAL SOCIOLOGY..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines social and behavioral factors that account for the social differences in getting sick, getting care, getting well and staying well. Emphasis is placed on the socio-cultural definitions and distributions of illness, lifestyle, stress and illness, taking the sick role, seeking and using

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health care services, socialization of health workers, consumer-provider interaction, organization and distribution of services. Some issues which are examined pertain to the cost of care and health insurance, prevention, self-help movement, underserved groups, bio-medical technology and the quality of life.

**SOC 202. CRIMINOLOGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

An examination is provided of the theories which attempt to explain criminal behavior. Punishment versus rehabilitation schools of thought is dealt with as well as capital punishment. Attention also given to the functioning of police and court systems.

**SOC 203. AGING AND SOCIETY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines social and personal responses to the aging process. Emphasis is placed on social attitudes, preparation for the adaptive challenges of retirement, role changes in midlife, youth and aged interaction, problems of housing, family bonds, illness, victimization, substance abuse, finances, and community services and personnel. Also examined are issues such as caring for elderly relatives, ageism, senior power, medicare and social security, substance abuse and meeting the needs of the aging population.

**SOC 205. RACIAL AND ETHNIC RELATIONS..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course provides an examination of the basic concepts of racial and ethnic relations and the concept of race. It examines and analyzes the course of oppression and suppression, superiority and inferiority, majorities and minorities in racial subgroups.

**SOC 207. SOCIAL PROBLEMS ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course uses sociological concepts to explain how social forces can create and maintain as well as prevent major social problems that result from man's effort to meet his needs for survival and growth. Emphasis is placed on the institutional, social-structural, technological and social psychological reasons for: (a) global and environmental problems (population, energy, environmental depletion and pollution); (b) inequalities (poverty, sexism, racism, ageism, handicapism); (c) deviance and social control (crime, war and the arms race, interpersonal violence, substance abuse, mental and physical illness); (d) institutional crises (family and divorce, work, education, media, economy and government).

**SOC 210. BLACKS IN THE CITY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The social forces that played a role in developing the urban setting, with particular emphasis on the role of the Afro-American are examined in this course. The focus is on the migration movement as the first stage in the development of urban and racial crises as factors in the urbanization of

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Blacks. Detroit is examined as a case study with references to Chicago, Washington, St. Louis and others. The course treats and analyzes social, political and economic forces that created the urban ghettos. The organizing conceptual framework is Black urban history as a protracted struggle. The emphasis is on Black ideological and institutional development.

**SOC 211. DEATH AND DYING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines social and social-psychological aspects of death and dying. Topics focus on social arrangements and practices in caring for the dying, professional care-givers' attitudes and roles, burial practices and the funeral industry, personal coping and the dying experience, family and survivor's grief and coping strategies. Some issues to be examined include hospice care, home care, protracted dying, living will and euthanasia, cost of dying, suicide and other unusual deaths.

**SOC 250. JUVENILE DELINQUENCY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The growing-up process of late childhood and adolescence from a sociological and cultural viewpoint is a focus of this class. Problems of the individual in his/her social environment, group forces which lead to maladjustment and sociological principles for working with youth from the viewpoint of parent, teacher, police and youth organization leader are analyzed.

**SOC 263. HEALTH CARE ISSUES ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is a practical study of the legal and ethical responsibility of health care providers. Course coverage includes: malpractice, negligence, medical ethics, federal and state laws governing medical practice, patient informed consent, medical experimentation, FDA and HEW guidelines and the consumer health movement.

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**SPANISH \_\_\_\_\_ (SPN)**

**SPN 111. FIRST YEAR SPANISH I ..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This is a beginning course in Spanish using the conversational approach. Spoken language is mastered through classroom and laboratory practice. Cultural aspects of Spain and Latin America are highlighted.

**SPN 112. SPANISH LABORATORY I..... 1 credit hour**

Prerequisite: Current enrollment in SPN 111

2 hours per week (0-2)

This course is intended to augment SPN 111. Students work in a supervised language lab with taped materials which correlate to the lessons in their texts and workbooks. Students are provided with supplemental listening aids that include both music and literature.

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**SPN 118. FOCUS LATIN AMERICA/SPAIN..... 1 credit hour**

Prerequisite: None

2 hours per week (2-0)

No knowledge of Spanish is required for this audio-visual introduction to the cultures, sights, sounds and handicrafts of Spain and various Latin American countries. The course involves students' individual experiences, expertise and research, and utilizes a bilingual approach.

**SPN 119. SPANISH LANGUAGE ADVENTURES ..... 1 credit hour**

Prerequisite: None

This course of independent study can be undertaken during any of the college field trip "Adventures" to Spanish-speaking countries. Students live in the host country for the duration of the Adventure, visit and study first-hand the outstanding cultural attractions, and practice Spanish throughout their stay.

**SPN 120. BEGINNING CONVERSATIONAL SPANISH..... 2 credit hours**

Prerequisite: None

2 hours per week (2-0)

Conversational in approach, this course assumes no previous knowledge of the language. It is designed for students interested in practicing the fundamentals of spoken Spanish to enhance their travel enjoyment in Spain and Latin America as well as to promote an appreciation of these exciting cultures. This course may be taken as a review for students already enrolled in the first year course.

**SPN 121. INTERMEDIATE CONVERSATIONAL SPANISH ... 2 credit hours**

Prerequisite: SPN 120 or equivalent

2 hours per week (2-0)

A continuation of SPN 120, this flexibly structured course provides vocabulary expansion and cultural insights through total student involvement in the conversation practice sessions.

**SPN 122. FIRST YEAR SPANISH II ..... 4 credit hours**

Prerequisite: SPN 111 or equivalent

4 hours per week (4-0)

A continuation of SPN 111. Emphasis is on the spoken form and on the cultures of Latin American countries and Spain.

**SPN 123. SPANISH LABORATORY II..... 1 credit hour**

Prerequisite: Current enrollment in SPN 122

2 hours per week (0-2)

This course is intended to augment SPN 122. Students work in a supervised language lab with taped materials which correlate to the lessons in their texts and workbooks. Students are provided with supplemental listening aids that include both music and literature.

**SPN 213. SECOND YEAR SPANISH I ..... 3 credit hours**

Prerequisite: SPN 122, or equivalent or consent

3 hours per week (3-0)

This is an intermediate course in Spanish that covers all of the basic grammar. Emphasis is on the written form through composition. Culture and conversation are reviewed.

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**SPN 224. SECOND YEAR SPANISH II..... 3 credit hours**

Prerequisite: SPN 213, or equivalent or consent

3 hours per week (3-0)

This is a continuation of SPN 213 with special attention to Latin American and Spanish literature.

**SPN 225. INTRODUCTION TO BUSINESS SPANISH ..... 3 credit hours**

Prerequisite: SPN 213 or equivalent or consent

3 hours per week (3-0)

This course is designed to introduce students to business concepts and vocabulary through both written and oral forms. Students write business letters in Spanish and apply Spanish conversational skills to discussion of and participation in various business situations.

**SPEECH\_\_\_\_(see Communications and Theatre Arts)**

**STATISTICAL PROCESS CONTROL\_\_\_\_\_(SPC)**

**SPC 101. PROCESS QUALITY CONTROL..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The concepts of variation and methods of measuring, evaluating and interpreting industrial data are discussed. An in-depth working knowledge of process control is imparted through the use of capability analysis and statistical control charts. Industrial applications are presented and class participation is used extensively in workshops.

**SPC 122. SAMPLING QUALITY CONTROL..... 3 credit hours**

Prerequisite: MTH 169 or consent

3 hours per week (3-0)

This course involves the theory of probability and basic concepts of statistical sampling; the development of sampling plans, the effect of sample size and acceptance number on the probability of acceptance, and the use of interpretation of sampling acceptance plans are discussed. Military 105D, sequential and variable sampling are introduced and their effectiveness and industrial applications are analyzed.

**SPC 213. QUALITY CONTROL BY STATISTICAL METHODS..... 3 credit hours**

Prerequisites: SPC 101, 122

3 hours per week (3-0)

This is an introduction to statistical testing for differences in sample means, variability and fraction defectives. The concepts of linear correlation and regression analysis are introduced. Practical problems encountered in industrial quality control are solved in the classroom to illustrate the techniques presented.

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**SPC 224. QUALITY CONTROL PROBLEM SOLVING..... 3 credit hours**

Prerequisites: SPC 213 and knowledge of basic algebra

3 hours per week (3-0)

This course provides students with a synopsis of the material presented in the previous three courses (Process, Sampling, and Statistical Methods). The material is developed with a minimal amount of mathematical jargon which often does more to confuse than clarify. Course work stresses how to perform specific studies or techniques and does not merely inform the student. Generally, it provides a simplified procedure for applying the statistical tools which are most often used by the quality control practitioner.

**SPC 225. QUALITY CONTROL MANAGEMENT..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

The total quality control concept in planning, organizing and implementing an effective system is the focus of this course. Details of how to plan a quality system, set up the organizational structure, integrate support activities, install controls and measure results are discussed. The work of quality information equipment engineering is outlined. The main jobs of quality control are defined in terms of design control, material control, product control and special studies such as GMP manual development and compliance.

**SPC 226. DIMENSIONAL METROLOGY AND TESTING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This is a general introduction into the more important aspects of nondestructive testing as related to inspection and quality control. Included are the scientific techniques and instrument applications used in determining dimensional measurement as practiced by skilled tradesmen, inspectors and quality control technicians.

**STUDENT DEVELOPMENT \_\_\_\_\_ (SD)**

**SD 100. CAREER PLANNING SEMINAR..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course is designed for persons undecided about a career goal or program of study or interested in making a career change. Students complete a self-assessment of interests, work values, skills, and abilities through exercises and vocational inventories. They also learn how to research careers and become more knowledgeable of careers, career alternatives, and employment trends through course materials, class activities and in-class guest speakers. Other topics include decision-making skills, time management, and job hunting techniques (resumes, job interviews, job leads, correspondence). Students complete a personal career plan at the end of the course.

**SD 101. STUDENT SUCCESS SEMINAR ..... 1 credit hour**

Prerequisite: None

1 hour per week (seminar)

This is a college survival, college success course. It is recommended for all

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WCC students, particularly those entering college for the first time, returning after an absence, or interested in improving class performance. Topics include an introduction to the library (LRC), student support services, and good study habits (reading, writing, outlining, notetaking, test taking, and time management). Career and academic goal-setting also are addressed.

**SD 102. INDEPENDENT STUDY - CAREER PLANNING ..... 1 credit hour**

Prerequisite: None

The Independent Study in Career Planning is designed for those undecided about their career and life goals and unable to come to campus regularly for a group course (see SD 100). At their own pace, participants complete a series of exercises, activities, and vocational tests. With these tools, they learn about their goals, interests, values, skills, and abilities, and they research occupations and learn decision-making techniques. Participants write a summary career plan upon completion and meet for consultation with the instructor during the period of independent study. (Hours are arranged on an individual basis with the instructor; an initial course orientation is held on campus; students should notify the instructor after enrolling in the class).

**TRADE RELATED INSTRUCTION \_\_\_\_\_(TRI)**

**TRI 092. REVIEW FOR APPRENTICE TEST ..... 4 credit hours**

Prerequisite: None

4 hours per week (4-0)

This course is offered for those individuals who would like to review the various facets which one encounters when taking the examinations for apprenticeship selection. Offered infrequently.

**WELDING AND FABRICATION \_\_\_\_\_(WF)**

**WF 091. WELDING PROCEDURES FOR ROBOTICS..... 1 credit hour**

Prerequisite: None

3 hours per week (1-2)

This course gives students a thorough knowledge of the arc welding processes used in Robotic Manufacturing. Selection of weldments, procedure development, safety, along with brief training in G.M.A.W., G.T.A.W. and S.M.A.W. is also presented.

**WF 100. FUNDAMENTALS OF WELDING..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This is a basic combination welding course dealing with oxy-acetylene and arc welding designed to meet the needs of students enrolled in Auto Body Repair, Auto Mechanics, Detailer Draftsman, etc. Typical applications are made in a laboratory setting.

**WF 101. ACETYLENE WELDING ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

Designed for students who need a knowledge of oxy-acetylene welding and

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a degree of skill required by industry. Primarily for students whose occupations are associated with welding.

**WF 102. ARC WELDING ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This introductory course in arc welding covers theory and practice, and proper procedures for various welding positions. Both A.C. and D.C. welding is covered, electrode identification, classification and proper applications to typical operations.

**WF 103. HELI-ARC WELDING..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

Instruction is given in tungsten, inert gas, and shielded arc welding. Manually operated torches are used on such metals as aluminum, stainless and mild steels; includes theory directly related to the composition and properties of these metals.

**WF 104. SOLDERING AND BRAZING ..... 2 credit hours**

Prerequisite: None

4 hours per week (1-3)

This course is designed to provide basic knowledge of soft soldering, brazing, silver soldering, copper tubing and fittings, brazing of steel, silver soldering of copper and stainless. Practical application included.



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**WF 105. FUNDAMENTAL WELDING FOR ART/  
ENGINEERING SCHOOLS ..... 2 credit hours**

Prerequisite: None  
4 hours per week (1-3)

This is a basic welding class. No welding experience is necessary. Oxyacetylene (welding and cutting), arc welding and soldering and brazing are explored with hands-on training provided. Students work on class competencies, at their own pace, beginning with safety practices and set-up in each area. The welding lab has individual work stations for a no waiting to work and a safe atmosphere. Students are given personalized instruction on every class objective to help with their mastery of the art of welding.

**WF 111. WELDING (BASIC OXY-ACETYLENE) ..... 4 credit hours**

Prerequisite: None  
8 hours per week (2-6)

This course focuses on the use of oxy-acetylene equipment to perform such operations as butt, lap, and fillet welds using filler rods; flame cutting, brazing and silver soldering. Safety procedures and practices of gas welding are emphasized.

**WF 112. WELDING (BASIC ARC) ..... 4 credit hours**

Prerequisite: None  
8 hours per week (2-6)

This course involves the use of arc welding equipment both A.C. and D.C. to perform such operations as butt, lap and fillet welds using bare and shielded electrodes, all-purpose and special electrodes. Study of electrical welding, power supplies and electrodes is included. Safety procedures stressed.

**WF 123. WELDING (ADVANCED OXY-ACETYLENE) ..... 4 credit hours**

Prerequisite: WF 111  
8 hours per week (2-6)

Advanced instruction is provided in oxy-acetylene welding with emphasis on out of position welded joints. Procedures are covered and put in practice for fabricative welded joints on steel plate and pipe. Related theory included.

**WF 124. ADVANCED ARC WELDING ..... 4 credit hours**

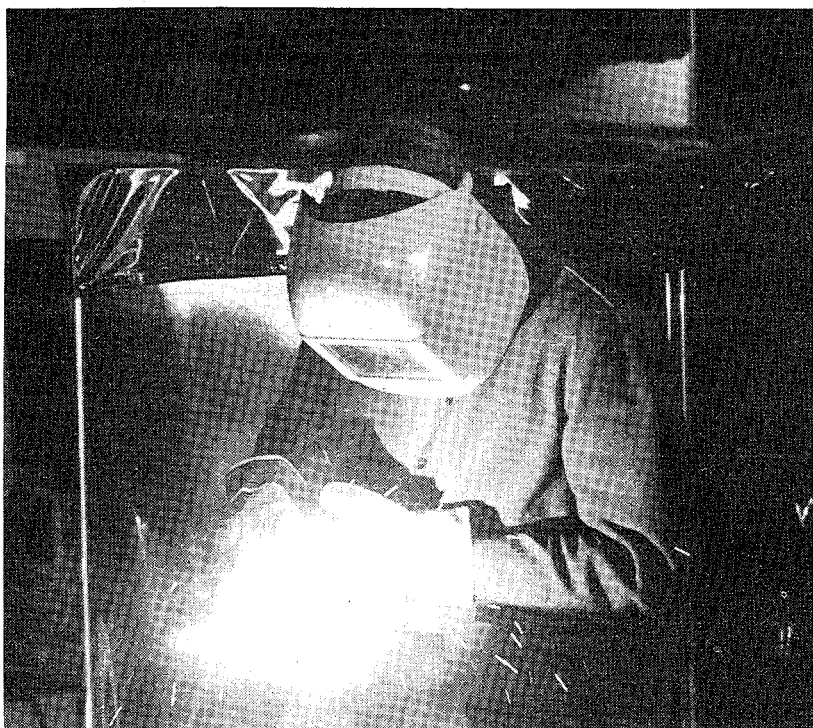
Prerequisite: WF 112  
8 hours per week (2-6)

Advanced instruction is provided in arc welding using both A.C. and D.C. arc welding equipment. Emphasis is on out of position welded joints in mild steel, alloy steels and procedures covered for cutting, beveling and fabricating various welded joints. Related theory, codes and standards are included.

**WF 200. LAYOUT FOR WELDERS ..... 2 credit hours**

Prerequisite: None  
3 hours per week (1½-1½)

This course involves layout problem solving for the welder including techniques using layout die, combination squares, protractors, center heads trammel, points, dividers and straight edges. Template making for pipe cutting and joining is emphasized. A basic math review and the properties of a circle such as radius, chords, and degrees of angularity for jobs done in the field are included.



**WF 210. WELDING METALLURGY ..... 3 credit hours**

Prerequisite: None

3 hours per week (1½-1½)

This course focuses on metal properties and identification properties through testing, effects of alloying element, specification use and application of mild steel, low steel alloys, stainless steels, principles of electricity as they apply to different welding applications heat treatment of metals.

**WF 215. ADVANCED T.I.G. AND M.I.G. WELDING ..... 4 credit hours**

Prerequisite: None

8 hours per week (2-6)

This course involves tungsten-inert gas shield arc welding with manually operated torch on such metals as aluminum, mild steel and stainless steel. Technical theory directly related to T.I.G. welding including the composition and properties of metals.

**WF 226. SPECIALIZED WELDING PROCEDURES..... 4 credit hours**

Prerequisite: Consent

8 hours per week (2-6)

This course involves specialized oxy-acetylene welding, inert gas-shield arc and consumable carbon dioxide welding. Emphasis is given to aluminum, stainless steel, high alloy steels and cast iron. Procedures for welding of the exotic metals such as titanium, columbium, zirconium, and molybdenum are included.

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**WF 227. BASIC FABRICATION..... 3 credit hours**

Prerequisite: Consent

3 hours per week (1-2)

For advanced welders planning to use their welding skills in manufacturing, this class teaches the skills necessary to design, cut and fit pieces to be welded. Welders are trained in the use of modern machines for bending, punching, cutting and shaping. Each student takes a self-chosen project and carries it through from blueprints to actual assembly. Estimation of material and labor costs is included.

**WF 229. SHAPE CUTTING OPERATIONS..... 3 credit hours**

Prerequisite: Consent

3 hours per week (1½-1½)

Students learn the shape-cutting process with oxy-acetylene and plasma cutting torches. With the use of the optical eye and Burny IV N.C. control, students learn how to cut mild steel, aluminum and stainless steel parts.

**WOMEN'S STUDIES \_\_\_\_\_(WS)**

**WS 102. GROWTH EXPERIENCES FOR WOMEN..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

This course is a consciousness-raising, support, therapy group emphasizing the personal ego growth of women rather than academic attainment. However, as issues are discussed (divorce, feelings of helplessness, child-rearing, contraception), specific studies, data and psychological principles are cited in support of the principles of behavior being discussed and/or analyzed. Topics vary depending upon the personal needs of individuals in the group.

**WS 103. PSYCHOLOGY/BIOLOGY OF WOMEN..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course examines the current experiences of women in our society through the exploration of history and theory and their cultural interpretation. Focus is on how and why women see themselves the way they do with emphasis on positive growth. Topics discussed include: history of sex-role stereotyping, rape and pornography; jobs, pay and inequity; marriage and divorce; motherhood and personhood; religion and women. Course includes readings, discussions and lectures.

**WS 104. WOMEN IN HISTORY ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

An analysis is provided of the role of American women from the colonial period through the 20th century. The course explores the work role of women in domestic and public economies; women in the family; the women's political involvement and debates within the sphere of women's political participation.

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**WS 105. WOMEN AND THE LAW I ..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

This course provides a look at the topics of credit, discrimination, employment, insurance, ERA. Emphasis is on individual cases and the law making process.

**WS 109. WOMEN'S HEALTH ISSUES..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Discussions in this course include: patient's rights, malpractice, natural childbirth, menopause, birth control research, medical experimentation, prescription drugs, doctor/patient relationship, breast self-exam, unnecessary surgery and other issues relating to medical care for women. This course is also taught as a television course using the program series Contemporary Health Issues.

**WS 111. WOMEN AND THE LAW II ..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

A more in-depth look is provided at the topics covered in Women and the Law. Discussions of credit, discrimination, employment, insurance, and ERA. Emphasis is on individual cases and the law making process.

**WS 112. ASSERTIVENESS TRAINING FOR NURSES..... 1 credit hour**

Prerequisite: Involved in Nursing career

7 weeks, 2 hours per week (2-0)

Participants learn to differentiate between assertive, aggressive and non-assertive behavior. They become familiar with several assertiveness techniques and learn how to apply these techniques to nursing situations.

**WS 115. ASSERTIVENESS TRAINING..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

This course teaches non-aggressive means of reducing fears, resolving conflicts, expressing likes and dislikes more fully, experiencing personal rights, and increasing self-respect.

**WS 116. CONTEMPORARY WOMEN'S MOVEMENTS..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

This course examines basic cultural values that determine how and why women assume various roles in society and explore factors which influence cultural change. It compares women's lives in North American, Western European, and African nations. Topics discussed include: access to education, health care, marriage and motherhood, women's legal status, employment and earning power, and government policies and participation by women.

**WS 121. WOMEN AND RELIGION..... 1 credit hour**

Prerequisite: None

7 weeks, 2 hours per week (2-0)

A study is provided of the Judeo-Christian tradition and how that tradition affects both the liberation and oppression of women. The many options women are exploring in spirituality are examined.

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**WS 122. CONCEPTS OF THE FEMININE  
IN CLASSICAL LITERATURE ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

Participants have the opportunity to investigate how women are depicted in classical literature to gain a better understanding of how attitudes and concepts of women have shaped modern concepts. This is achieved through the exploration of the writings of Homer, Sappho, Sophocles, Euripides, Plato and others.

**WS 203. ADVANCED WOMEN'S STUDIES SEMINAR ..... 2 credit hours**

Prerequisite: WS 103 or equivalent

2 hours per week (2-0)

A more in-depth theoretical examination is provided of specific experiences of women in society through the continued exploration of history, theory and their cultural interpretation. Course includes readings, discussions and lectures with special emphasis on recent feminist research and literature.

**WS 215. ADVANCED ASSERTIVENESS TRAINING ..... 3 credit hours**

Prerequisite: None

3 hours per week (3-0)

A continuation of WS 115, stressing effective communication styles. Special emphasis is placed on work-related issues and situation role-playing. Applications are used to express feelings, thoughts and belief systems.



# Organizational Charts

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**DIVISION: BUSINESS**

**UNIT:**

BUSINESS/  
ACCOUNTING

**DISCIPLINES:**

Accounting (ACC)  
Business Management (BMG)  
Real Estate (RE)

**PROGRAMS:**

\*Accounting (121)  
\*Business Management (141)  
\*Business Marketing (142)  
\*\*Business Sales (143)

**UNIT:**

COMPUTER  
INSTRUCTION

**DISCIPLINES:**

Computer Information  
Systems (CIS)  
Computer Science (CPS)

**PROGRAMS:**

\*Business Computer  
Programming (133)  
\*\*Computer systems  
Operations (135)  
\*\* Small Business Computer  
Systems (134)

**UNIT:**

FOODS AND  
HOSPITALITY

**DISCIPLINES:**

Culinary Arts (CUL)  
Hotel-Restaurant Management  
(HRM)

**PROGRAMS:**

\*Culinary Arts Technology (117)  
\*\*Food Production Speciality  
(118)  
\*Hotel-Restaurant  
Management Technology (119)

**UNIT:**

OFFICE  
SPECIALTIES

**DISCIPLINE:**

Office Special ties (OS)

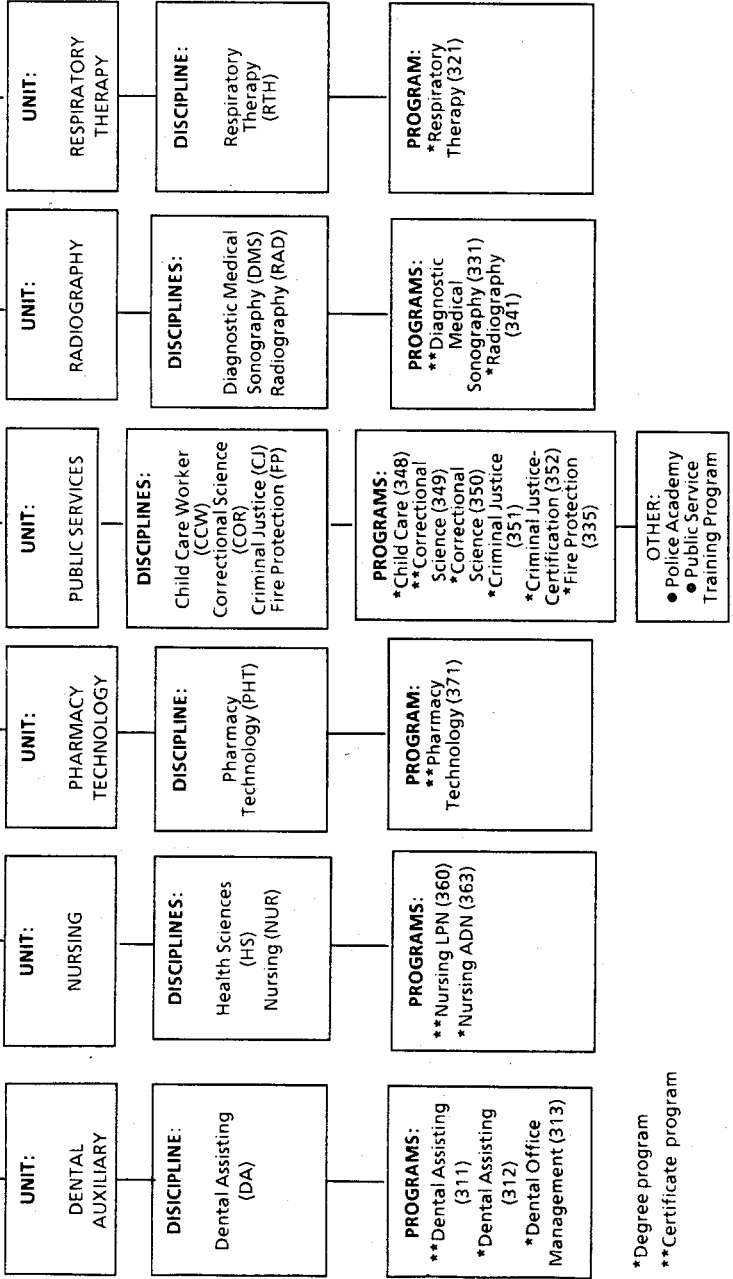
**PROGRAMS:**

\*\*Clerical/Typing (162)  
\*Information Processing  
Speciality (164)  
\*Medical Secretarial (165)  
\*Secretarial Technology (161)

\*Degree program  
\*\*Certificate program



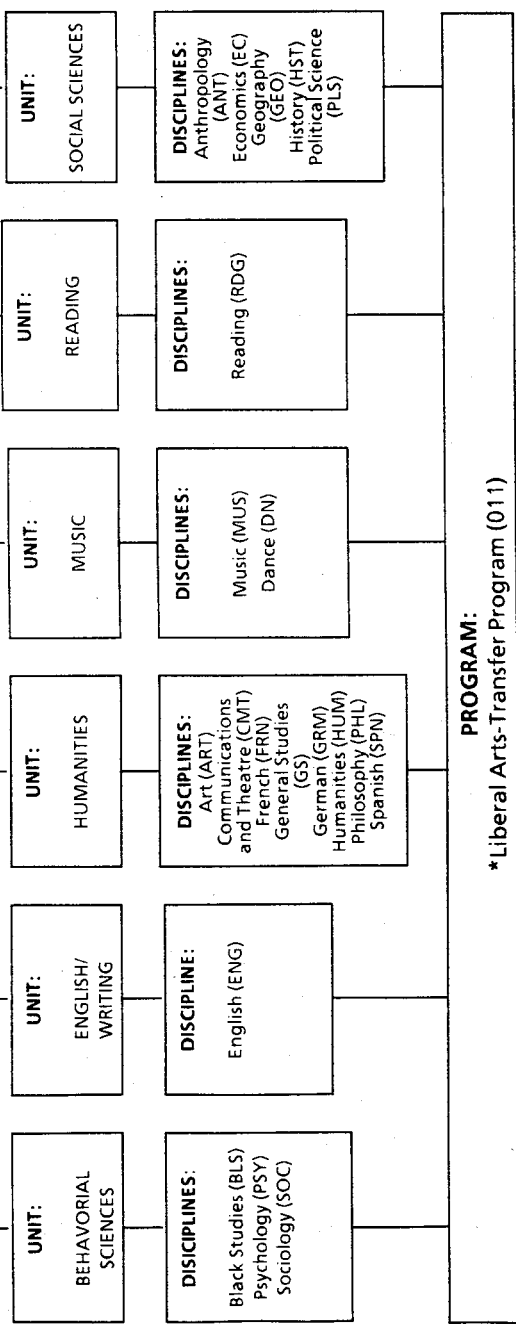
## DIVISION: HEALTH AND PUBLIC SERVICES



\*Degree program

\*\*Certificate program

**DIVISION: HUMANITIES AND SOCIAL SCIENCES**



\*Degree program

**DIVISION: MATH AND NATURAL SCIENCES**

**UNIT:**  
LIFE SCIENCES

**DISCIPLINES:**  
Biology (BIO)  
Physical Education Activities  
(PEA)

\* Degree program

**UNIT:**  
MATHEMATICS

**DISCIPLINE:**  
Mathematics (MTH)

**PROGRAM:**  
\*Computer Science-Transfer  
Program (220)

**UNIT:**  
PHYSICAL SCIENCES

**DISCIPLINES:**  
Astronomy (AST)  
Chemistry (CEM)  
Geology (GLG)  
Physics (PHY)

**PROGRAMS:**  
\*Pre-Engineering Science-  
Transfer Program (221)  
\*Pre-Engineering Science-  
Chemical and Materials Option-  
Transfer Program (222)

**PROGRAM:**  
Liberal Arts-Transfer Program (223)

# DIVISION: TECHNOLOGY

<b>UNIT: AUTOMOTIVE SERVICE</b>	<p><b>DISCIPLINES:</b> Automotive Body Repair (ABR) Automotive Service (AS)</p> <p><b>PROGRAMS:</b> ** Automotive Body Repair (414) * Automotive Body Service (411) ** Automotive Mechanics (418) * Automotive Service Technology (455) ** Automotive Spray Painting (413)</p>	<b>UNIT: DRAFTING</b>	<p><b>DISCIPLINES:</b> Architectonics Blueprint Reading (BPR) Industrial Drafting and Design (ID)</p> <p><b>PROGRAMS:</b> * Architectural Drafting (421) ** Architectural Drafting (422) * Computer Aided Drafting - Electronic (423) * Computer Aided Drafting - Mechanical (424) ** Drafting Detailing (427) * Industrial Drafting Technology (419)</p>	<b>UNIT: ELECTRICITY/ ELECTRONICS</b>	<p><b>DISCIPLINES:</b> Electricity/ Electronics (EE)</p> <p><b>PROGRAM:</b> * Digital Equipment Technology (438) * Electronic Control Systems Technology (437) * Telecom- munication Technology (436)</p>	<b>UNIT: INDUSTRIAL TECHNOLOGY</b>	<p><b>DISCIPLINES:</b> Fluid Power (FLP) Integrated Manufacturing (IM) Mechanical Technology (MT) Numerical Control (NC)</p> <p><b>PROGRAMS:</b> * Computer Aided Manufacturing Technology (473) * Electro- Mechanical Technology (454) * Fluid Power Technology (441) ** Hydraulic Assembly (442) * Mechanical Engineering Technology (451) ** Numerical Control Machine Operations (472) * Robotic Technology (444) * Toolroom Machine Operation (453)</p>	<b>UNIT: VISUAL ARTS TECHNOLOGY</b>	<p><b>DISCIPLINES:</b> Graphic Design Technology (GDT) Photography (PHO)</p> <p><b>PROGRAMS:</b> * Graphic Design Technology (483) ** Photographic Assisting (486) * Photographic Technology (485) * Photographic Technology - Marketing Option (487) * Technical Illustration (484)</p>	<b>UNIT: WELDING AND FABRICATION</b>	<p><b>DISCIPLINE:</b> Welding and Fabrication (WF)</p> <p><b>PROGRAMS:</b> * Welding Maintenance (492) * Welding Technology (491)</p>	<b>UNIT: TECHNICAL JOB TRAINING</b>	<p><b>DISCIPLINES:</b> Apprentice- Plumbers (App) Intern/Extern (IE) Heating (HTG) Journeyman Upgrade (JUG) Refrigeration and Air Conditioning (RAC) Statistical Process Control (SPC) Trade-Related Instruction (TRI)</p> <p><b>PROGRAM:</b> * Journeyperson Industrial (490) * Refrigeration and Air Conditioning (443) * Statistical Process Control - Electronics Option (447) * Statistical Process Control - Management Option (446) * Statistical Process Control - Specialty Option (448) * Statistical Process Control - Science and Engineering Option (449)</p>
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\* Degree program

\*\* Certificate program

**DIVISION: CONTINUING EDUCATION/COMMUNITY SERVICES**

**UNIT:**  
BUSINESS  
AND INDUSTRY

**UNIT:**  
JOB TRAINING SCHOOL

- JTPA Training
- MJOB Training
- Michigan Job Opportunity Card

**UNIT:**  
BUSINESS DEVELOPMENT/  
PROFESSIONAL SERVICES

- Contact Education
- Public Seminars
- Small Business Administration Programs
- Plant Site Extension

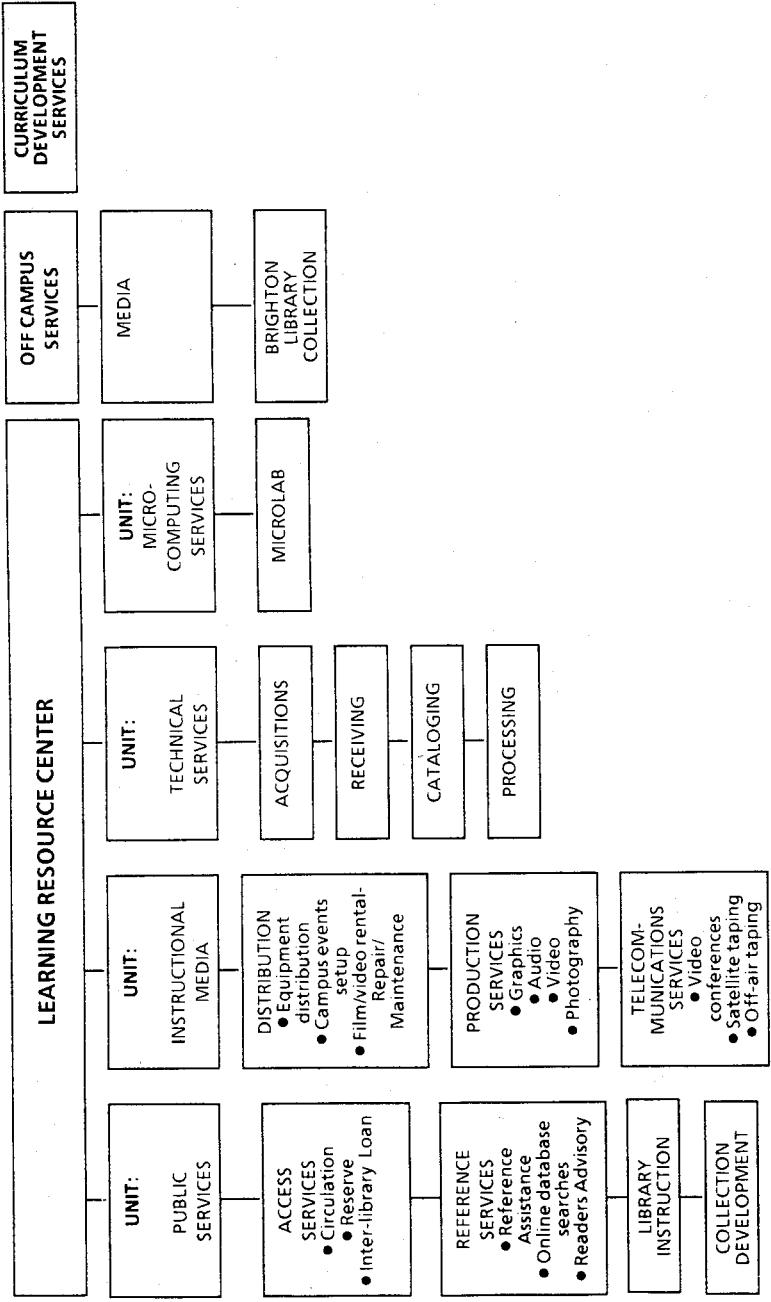
**UNIT:**  
CONTINUING EDUCATION AND  
EXTENSION PROGRAMS

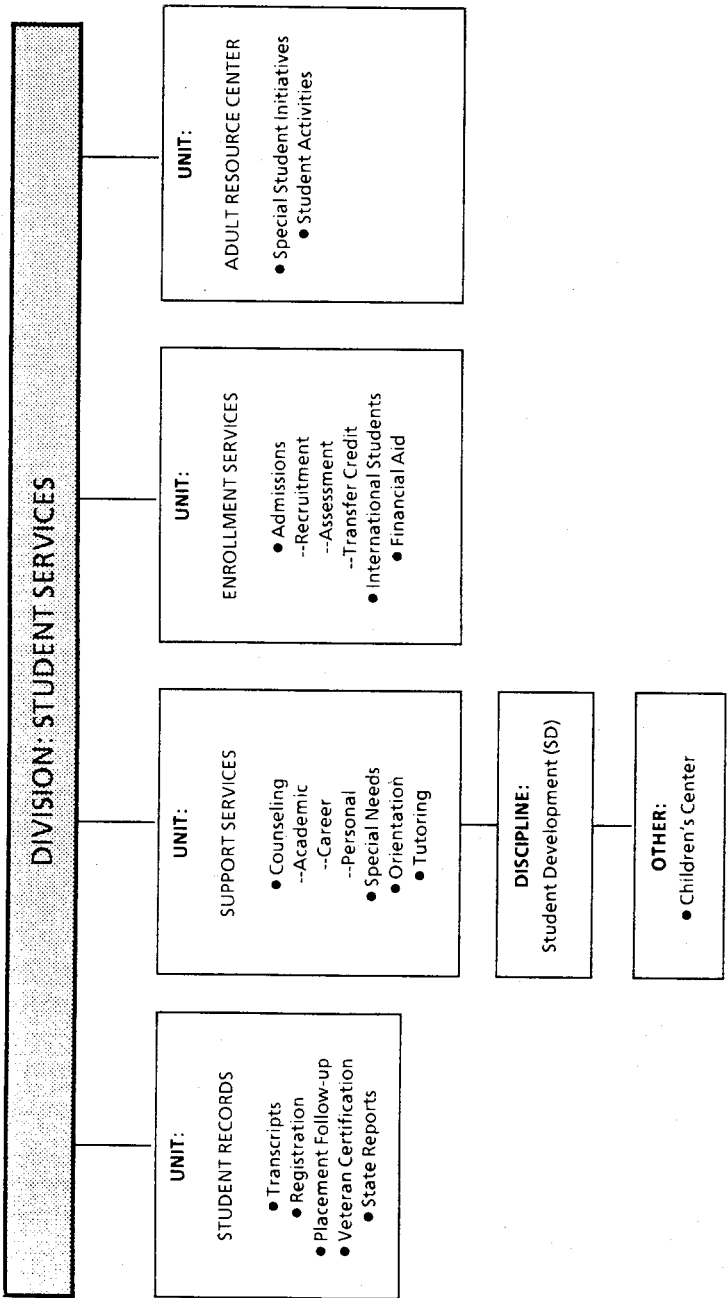
- Public/Community Extension Sites
- Emeritus
- Televised Instruction

**DISCIPLINE:**

Women's Studies (WS)

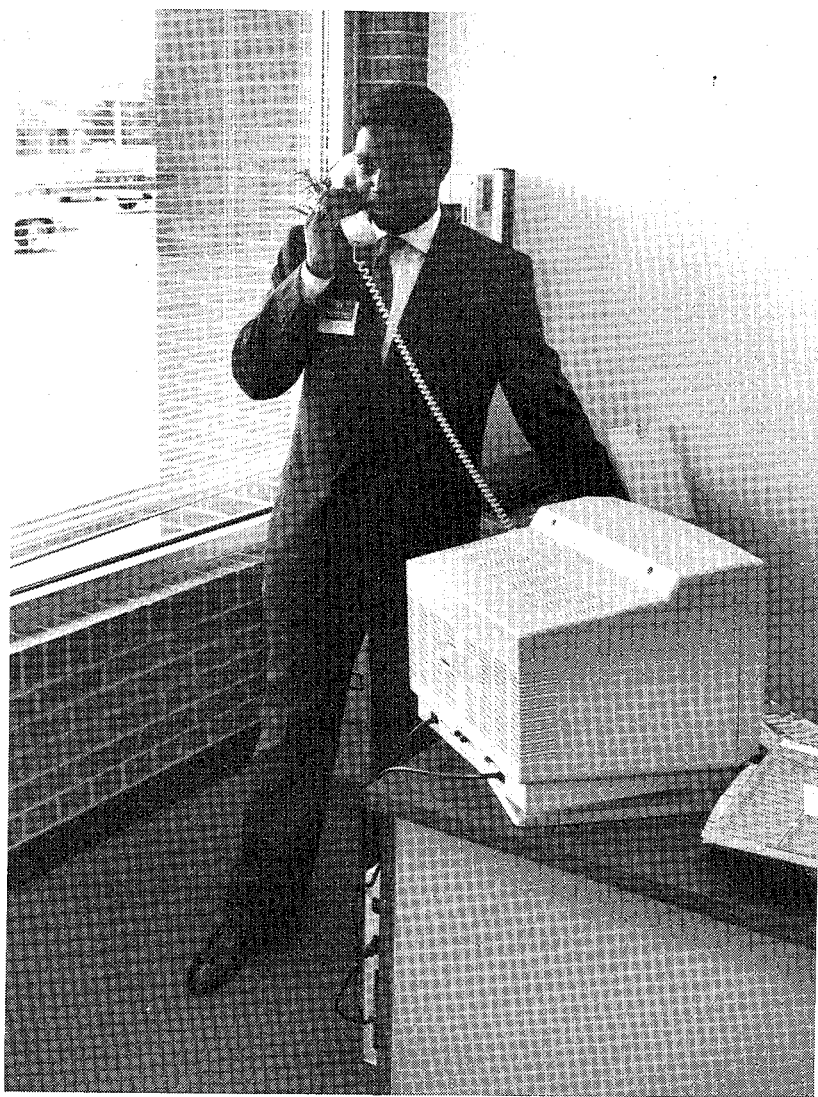
# DIVISION: LEARNING RESOURCES











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# Personnel

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## BOARD OF TRUSTEES

Member	Term Expires
Richard W. Bailey, <i>Chair</i> .....	December 31, 1990
Ann Arbor	
Vanzetti M. Hamilton, <i>Vice Chair</i> .....	December 31, 1992
Ypsilanti	
James W. Anderson, Jr., <i>Secretary</i> .....	December 31, 1990
Ann Arbor	
Marcia D. Harrison, <i>Trustee</i> .....	December 31, 1990
Ypsilanti	
Nancy N. Margolis, <i>Trustee</i> .....	December 31, 1994
Ann Arbor	
R. Griffith McDonald, <i>Trustee</i> .....	December 31, 1994
Ann Arbor	
Anthony J. Procassini, <i>Trustee</i> .....	December 31, 1992
Ann Arbor	

## EXECUTIVE OFFICERS

<b>Myran, Gunder A., President</b> .....	1975
B.S. - Mankato State University	
M.A. - University of Iowa	
Ed.D. - Michigan State University	
<b>Altieri, Guy, Vice President of Instruction and Student Services</b> .....	1987
B.A. - Glassboro State College	
M.A. - Glassboro State College	
M.A. - West Chester University	
M.A. - Columbia University	
Ed.D. - Columbia University	
<b>Konschuh, Harry J., Vice President of Administration and Finance</b> ..	1972
B.Ed. - University of Alberta	
M.A. - Michigan State University	

## ACADEMIC DEANS

<b>Bertoia, Roger R.</b> .....	1966
Dean of Technology	
B.S. - The University of Michigan	
M.S. - The University of Michigan	
<b>Blain, Adella</b> .....	1975
Dean of Learning Resources	
A.B. - The University of Michigan	
M.A.L.S. - The University of Michigan	

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<b>Galant, Richard L.</b> .....	1978
Dean of Humanities and Social Sciences	
A.B. - The University of Michigan	
A.M. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Grzegorzcyk, Phyllis</b> .....	1978
Dean of Health and Public Services	
Diploma - Mercy School of Nursing	
B.S.N. - The University of Michigan	
M.S. - The University of Michigan	
<b>Jacques, Edith N.</b> .....	1976
Dean of Continuing Education/Community Services	
B.A. - D'Youville College	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Parker, Bella</b> .....	1989
Dean of Business	
B.B.A. - St. Augustine College	
M.S. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Roberts, Shirley</b> .....	1968
Dean of Enrollment and Student Services	
B.A. - The University of Michigan	
M.A. - The University of Michigan	
<b>Vacant</b>	
Dean of Math and Natural Sciences	

## FACULTY AND PROFESSIONAL STAFF

<b>Agin, George C.</b> .....	1968
Instructor: Mechanical Technology, Fluid Power, Robotics	
B.S. - Wayne State University	
M.A. - Eastern Michigan University	
<b>Allison, Iralynn M.</b> .....	1988
Instructor: Secretarial Studies	
A.D. - Washtenaw Community College	
B.B.A. - Eastern Michigan University	
M.B.E. - Eastern Michigan University	
<b>Alloway, Mary</b> .....	1972
Supervisor: Purchasing	

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<b>Amaru, Augustine</b> .....	1966
Instructor: Political Science	
B.A. - Boston University	
M.A. - Michigan State University	
<b>Amundsen, Jack</b> .....	1975
Instructor: Physics	
B.A. - The University of Michigan	
M.A. - The University of Michigan	
<b>Andresen, Mary</b> .....	1988
Advancement Specialist: College Advancement	
<b>Andrews, Jacqueline Parks</b> .....	1984
Director: Business and Industry Research and Development	
B.A. - University of Minnesota	
M.A. - Eastern Michigan University	
Ph.D. - The University of Michigan	
<b>Arnold, Gwen</b> .....	1966
Instructor: Management, Intern-Extern	
A.D. - Washtenaw Community College	
B.B.A. - Cleary College	
M.A. - The University of Michigan	
<b>Avery, Dean</b> .....	1981
Instructor: Mechanical Technology	
B.S. - Ferris State College	
M.S. - Wayne State University	
<b>Baker, Gerald A.</b> .....	1975
Instructor: Radiologic Technology	
A.D. - Wayne County Community College	
B.S. - Ferris State University	
R.T. - The American Registry of Radiologic Technologists	
<b>Barron, Kenneth E.</b> .....	1966
Instructor: Automotive Service	
B.S. - Central Michigan University	
A.S.E. - Certified Master Automotive Technician	
State of Michigan - Licensed Master Mechanic	
<b>Batell, Mark F.</b> .....	1984
Instructor: Mathematics	
B.A. - Knox College	
M.A. (Mathematics) - The University of Michigan	
M.A. (Psychology) - The University of Michigan	
<b>Beaton, James</b> .....	1976
Instructor: Culinary & Hospitality Management	
Wayne County Community College	
Eastern Michigan University	
Wayne State University	

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- Beauchamp, Jillaine** ..... 1977  
 Instructor: Culinary & Hospitality Management  
 Culinary Institute of America  
 B.S. - Eastern Michigan University  
 M.S. - The University of Michigan
- Bellers, Bob** ..... 1968  
 Instructional Assistant: Electricity/Electronics  
 A.D. - Washtenaw Community College  
 Electronics Engineering Technician Trade School  
 Grantham Electronics School  
 F.C.C. License  
 Journeyman Electrician
- Bellers, Clifford** ..... 1969  
 Instructor: Business, Accounting  
 B.B.A. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Biederman, Rosalyn L.** ..... 1967  
 Instructor: Spanish, E.S.L.  
 B.A. - Ohio State University  
 M.A. - Ohio State University
- Bila, Dennis W.** ..... 1969  
 Instructor: Mathematics  
 B.S. - Central Michigan University  
 M.A. - Wayne State University
- Blakey, Linda S.** ..... 1988  
 Director: Student Records  
 B.S. - The University of Michigan  
 M.S. - The University of Nevada
- Bogue, Robert A.** ..... 1984  
 Instructional Assistant: Automotive Services  
 A.D. - Washtenaw Community College  
 B.S.,Ed. - The University of Michigan
- Bosch, Barbara J.** ..... 1966  
 Coordinator: Technical Services, Learning Resource Center
- Bostwick, Phyllis M.** ..... 1966  
 Director: HRD and Support Services  
 A.A. - Flint Junior College  
 B.G.S. - Wayne State University
- Bottorff, Ralph S.** ..... 1966  
 Instructor: Mathematics  
 B.A. - University of Northern Iowa  
 M.A. - University of Illinois  
 Ph.D. - The University of Michigan
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- Burghardt, Lance** ..... 1988  
 Instructor: Photography  
 Washtenaw Community College  
 The University of Michigan
- Butcher, Kathleen** ..... 1989  
 Instructor: Physical Science  
 B.S. - St. Mary's College  
 M.S. - Wayne State University
- Bylsma, Donald, Jr.** ..... 1966  
 Instructor: Sociology  
 B.S. - Wayne State University  
 M.S. - Wayne State University  
 Ph.D. - The University of Michigan
- Cain, Ronald L.** ..... 1986  
 Director: Instructional Media  
 B.S. - University of Minnesota  
 M.A. - University of Minnesota
- Cammet, Edward** ..... 1975  
 Instructor: Automotive Body Repair  
 Army Mechanic School  
 Ford Motor Institute  
 Bear Frame School  
 Ditzler Paint Instructors School  
 Martin Senour Refinishing School
- Carnegie, Mary Ann** ..... 1987  
 Coordinator: Community Relations  
 A.A. - Washtenaw Community College  
 B.S. - Eastern Michigan University
- Cash, Marjorie O.** ..... 1980  
 Coordinator: Special Needs  
 B.A. - Prairie View A.M. College of Texas  
 M.Ed. - University of North Dakota
- Cessna, Ellen** ..... 1988  
 Instructor: Nursing  
 B.A. - Ohio State University
- Chambers, JoAnn** ..... 1983  
 Analyst: Personnel Services
- Charlton, Eleanor** ..... 1966  
 Instructor: Secretarial Studies  
 B.S. - Central Michigan University  
 M.A. - Central Michigan University
- Chisholm, Arnett** ..... 1988  
 Coordinator: WCC Ypsilanti Regional Center  
 B.S. - The University of Michigan
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- Clark, William G.** ..... 1968  
 Counselor  
 B.R.E. - Grand Rapids Baptist College  
 M.A. - Western Michigan University
- Cleary, William T., Jr.** ..... 1983  
 Instructor: Electricity/Electronics  
 A.S.E.E.T. - University of Maine  
 B.E.E.T. - University of Maine  
 M.B.A. - University of Maine  
 F.C.C. - License, Radar Endorsement  
 E.I.T. - Professional Licensing Board, Maine
- Commet, Eileen**..... 1989  
 Collection's Analyst: Office of the Controller  
 B.S. - Ferris State College
- Cox, Cynthia M.** ..... 1986  
 Coordinator: Job Training School  
 B.S. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Croake, Edith M.** ..... 1966  
 Instructor: English  
 B.A. - The University of Michigan  
 M.A.T. - Northwestern University  
 M.A. - Northwestern University  
 D.A. - The University of Michigan
- Cross, Karen D.** ..... 1988  
 Assistant to the President  
 B.S. - Mercy College
- Culver, Rosalyn**..... 1989  
 Instructor: Office Specialties  
 B.S. - Michigan State University  
 M.A. - Michigan State University
- Davisson, Cheryl**..... 1989  
 Instructor: Business/Accounting  
 B.B.A. - Eastern Michigan University  
 M.B.A. - Eastern Michigan University  
 J.D. - University of Oregon
- Dedhia, Hiralal**..... 1987  
 Clinical Associate Professional Faculty: Respiratory Therapy  
 A.D. - Washtenaw Community College  
 B.S. - University of Poona
- Dick, Roger** ..... 1979  
 Instructor: Mechanical Technology/Numerical Control  
 B.S. - Western Michigan University  
 M.A. - Eastern Michigan University  
 Ferris State College - Machine Tool
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<b>Donahey, Jeffrey</b> .....	1984
Instructor: Numerical Control	
B.S.M.E. - The University of Michigan	
<b>Downen, Gary W.</b> .....	1983
Instructor: Electricity/Electronics	
B.G.S. - The University of Michigan	
M.A. - Eastern Michigan University	
<b>Egan, James</b> .....	1989
Instructor: Mathematics	
B.A. - Case Western Reserve University	
B.S. - Case Western Reserve University	
M.S. - The University of Michigan	
<b>Emerling, Martha L.</b> .....	1986
Associate Professional Faculty: Special Needs Office	
B.A. - Fredonia State University	
M.A. - School for International Training	
<b>Ennes, Steven M.</b> .....	1987
Instructor: Business: Accounting	
A.A.S. - Macomb Community College	
B.S. - Western Michigan University	
<b>Erickson, Lorene F.</b> .....	1981
Instructor: English	
B.A. - Wayne State University	
M.Ed. - Wayne State University	
<b>Evans, Kay</b> .....	1966
Clinical Associate Professional Faculty: Nursing	
B.S.N. - The University of Michigan	
<b>Fantini, Susan</b> .....	1988
Executive Secretary: President's Office	
B.A. - The University of Michigan	
<b>Fauri, Greta</b> .....	1977
Associate Professional Faculty: Children's Center	
B.A. - Adrian College	
<b>Figg, William</b> .....	1972
Instructor: Welding and Fabrication	
A.D. - Washtenaw Community College	
<b>Finkbeiner, Betty Ladley</b> .....	1969
Instructor: Dental Assisting	
A.A. - Grand Rapids Junior College	
C.D.A. - American Dental Assisting Association	
B.S. - The University of Michigan	
M.S. - The University of Michigan	
R.D.A. - Michigan State Board of Dentistry	

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- Finkbeiner, Charles A.** ..... 1975  
 Instructor: Computer Information Systems  
 A.D. - Washtenaw Community College  
 B.S. - The University of Michigan  
 M.S. - The University of Michigan
- Ford, Andrew F.** ..... 1966  
 Instructor: Industrial Drafting/Psychology  
 B.S. - Wayne State University  
 M.Ed. - Wayne State University  
 Ed.D. - Wayne State University
- Fosselman, John R.** ..... 1987  
 Director: Computer Services  
 B.A. - University of South Florida
- Fracker, Ronald**..... 1989  
 Grants Coordinator: College Advancement  
 B.M. - The University of Michigan  
 M.M. - The University of Michigan
- French, Gargi**..... 1974  
 Instructor: Chemistry  
 B.Sc. - University of Bombay  
 Ph.D. - Radcliffe College
- Frye, Iota H.** ..... 1975  
 Financial Aids Officer  
 B.S. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Galvin, Ralph H.** ..... 1984  
 Director: Public Service Training Programs  
 B.S. - Nazareth College
- Garrett, Don L.** ..... 1975  
 Instructor: Culinary & Hospitality Management  
 A.D. - Washtenaw Community College  
 B.S. - Mercy College of Detroit
- Gaughan-Mickelson, Joan M.** ..... 1969  
 Instructor: History, Humanities  
 B.A. - St. Teresa College  
 M.A. - Eastern Michigan University  
 Ph.D. - The University of Michigan
- Gaughan, John T.** ..... 1968  
 Instructor: English  
 B.A. - St. Mary's College  
 B.S. - St. Mary's College  
 M.A. - Eastern Michigan University
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- Gerhardt, Laura J.** ..... 1985  
 Director: Job Training School  
 B.A. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Glowski, Susan K.** ..... 1988  
 Instructor: English  
 B.A. - Beloit College  
 M.A. - San Francisco State University
- Glusac, Ivan C.** ..... 1966  
 Instructor: Political Science  
 B.S. - Wayne State University  
 M.A. - The University of Michigan
- Goldberg, David** ..... 1977  
 Instructor: Mathematics/Computer Science  
 B.S. - The University of Michigan
- Goodkin, Barbara H.** ..... 1975  
 Instructor: Nursing  
 B.S.N. - The University of Michigan  
 M.S. - The University of Michigan
- Greiner, Margaret E.** ..... 1981  
 Counselor: Career Development Center  
 B.A. - The University of Michigan  
 M.A. - The University of Michigan
- Grisowld, George H.** ..... 1966  
 Instructor: Chemistry  
 B.A. - College of Wooster  
 M.S. - Eastern Michigan University
- Grossman, Esta** ..... 1975  
 Instructor: Biology, Health Science  
 B.A. - Pembroke College in Brown University  
 M.A. - The City College of the City University of New York  
 M.S.W. - The University of Michigan
- Grotrian, Paulette** ..... 1980  
 Admissions Officer: Enrollment Management  
 B.A. - Valparaiso University  
 M.A. - Valparaiso University
- Guastella, C. Dennis** ..... 1980  
 Instructor, Commercial Art  
 A.D. - Macomb County Community College  
 B.F.A. - Wayne State University  
 M.F.A. - Eastern Michigan University  
 M.S.O.E. - Ferris State College
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<b>Hall, Clyde</b> .....	1978
Instructor: Welding and Fabrication	
A.D. - Washtenaw Community College	
B.S. - The University of Michigan	
Eastern Michigan University	
<b>Hamilton, Nancy</b> .....	1975
Technical Assistant: Reprographics	
A.D. - Washtenaw Community College	
<b>Hammond, Carl F.</b> .....	1967
Instructor: Respiratory Therapy	
A.S. - Jackson Junior College	
B.S. - Eastern Michigan University	
M.S. - The University of Michigan	
R.R.T. - National Board for Respiratory Therapy	
<b>Hammond, Linda</b> .....	1984
Coordinator: Job Skills Education-Business	
B.A. - The University of Michigan	
M.A. - The University of Michigan	
<b>Hann, David F.</b> .....	1986
Coordinator: Accounting Services	
B.S. - Brigham Young University	
<b>Harris, Sally D.</b> .....	1981
Associate Professional Faculty: Adult Resource Center	
A.D. - Washtenaw Community College	
B.A. - Concordia College	
<b>Hastings, Janet G.</b> .....	1967
Instructor: Mathematics/Computer Science	
B.A. - The University of Michigan	
M.A. - Cornell University	
<b>Hatcher, Ruth</b> .....	1981
Instructor: English	
A.B. - Earlham College	
M.A. - The University of Michigan	
A.B.D. - The University of Michigan	
<b>Hawkins, Janet L.</b> .....	1974
Publications Assistant: College Advancement	
A.D. - Washtenaw Community College	
B.B.A. - Eastern Michigan University	
<b>Heator, Martin G.</b> .....	1985
Coordinator: Publications	
B.S. - Eastern Michigan University	
<b>Hentz, Gary R.</b> .....	1967
Instructor: Industrial Drafting	
B.S. - Eastern Michigan University	
M.A. - Eastern Michigan University	

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- Hill, Birgitte** ..... 1986  
 Accountant for Cash Management and Development:  
 Office of the Controller  
 B.A. - The University of Michigan
- Hinds, Dwight D.** ..... 1968  
 Instructor: Physics  
 B.S. - Eastern Michigan University  
 M.S. - Michigan State University
- Ho, Leo C.** ..... 1975  
 Media Librarian: Learning Resource Center  
 B.A. - National Cheng Chi University  
 M.L.S. - Atlanta University  
 Ph.D. - Wayne State University
- Hoag, Todd H.** ..... 1983  
 Instructional Assistant: Industrial Technology  
 A.D. - Washtenaw Community College
- Hogue, Cheryl** ..... 1985  
 Instructional Assistant: Photography  
 A.D. - Washtenaw Community College  
 B.F.A. - The University of Michigan
- Holmes, George H., III** ..... 1968  
 Instructor: History  
 B.A. - University of North Carolina  
 M.A. - Xavier University
- Horowitz, Frederick A.** ..... 1968  
 Instructor: Art  
 B.A. - Yale University  
 B.F.A. - Yale University  
 M.F.A. - The University of Michigan
- Horowitz, Marian S.** ..... 1985  
 Director: Business Development and Professional Services  
 B.A. - The University of Michigan, Dearborn  
 M.A. - The University of Michigan
- Hower, Guy W.** ..... 1966  
 Financial Aid Officer  
 B.B.A. - The University of Michigan  
 M.A. - The University of Michigan
- Hunt, Barbara** ..... 1968  
 Instructor: English  
 B.A. - University of Toledo  
 M.A. - The University of Michigan  
 D.A. - The University of Michigan
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<b>Jindal, Usha R.</b> .....	1982
Instructor: Computer Information Systems	
B.S. - Delhi University	
B.S. - Pennsylvania State University	
M.S. - Pennsylvania State University	
<b>Johnson, Claudia Sullens</b> .....	1984
Clinical Associate Professional Faculty: Dental Assisting	
A.D. - Washtenaw Community College	
C.D.A. - American Dental Assisting Association	
R.D.A. - Michigan State Board of Dentistry	
B.S. - Madonna College	
<b>Jordan, Cole L.</b> .....	1978
Custodial Supervisor: Plant Operations	
A.D. - Washtenaw Community College	
B.A. - Wayne State University	
<b>Jordan, Lester</b> .....	1979
Instructor: Automotive Body Repair	
B.A. - Eastern Michigan University	
M.Ed. - Wayne State University	
<b>Juster, Marie S.</b> .....	1982
Instructor: Secretarial Studies/Accounting/English	
B.S. - The William Paterson College	
M.A. - New York University	
<b>Kapp, George</b> .....	1970
Instructor: Physics	
A.D. - Washtenaw Community College	
B.S.E. - The University of Michigan	
<b>Kibens, Maija</b> .....	1976
Instructor: Philosophy	
B.A. - Mount Holyoke College	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Kirkland, Robert W.</b> .....	1988
Instructor: Humanities	
B.A. - The University of Michigan	
M.A. - The University of Michigan	
<b>Knoll, Gladys</b> .....	1981
Instructor: Nursing	
Diploma - Henry Ford Hospital School of Nursing	
B.S.N. - The University of Michigan	
M.S. - The University of Michigan	
R.N.C. - Certified Inpatient Obstetric Nurse	

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<b>Kollen, Michael</b> .....	1969
Instructor: Psychology	
B.A. - Knox College	
M.S. - New Mexico Highlands University	
M.A. - The University of Michigan	
<b>Kooi, Lucy A.</b> .....	1977
Systems Coordinator: Computer Services	
A.B. - The University of Michigan	
<b>Kornacki, Elizabeth A.</b> .....	1987
Coordinator: Academic Services	
B.S., Ed. - Eastern Michigan University	
M.A.T. - Saginaw Valley State University	
<b>Kramer, Lawrence</b> .....	1977
Instructor: Electricity/Electronics	
B.S.E.E. - The University of Michigan	
<b>Krieg, Laurence J.</b> .....	1983
Instructor: Computer Information Systems	
B.A. - College of Wooster	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Kupa, Ann</b> .....	1989
Assistant: Human Resources Management	
B.B.A. - Eastern Michigan University	
<b>Larson, Barbara A.</b> .....	1987
Director: Management and Budget	
B.S. - Rutgers University	
M.A. - The University of Wisconsin	
<b>Lawrence, Morris J.</b> .....	1969
Instructor: Music	
Certificate - Straight Business College	
B.S.M.E. - Xavier University	
M.M. - The University of Michigan	
Ph.D. - Bernadean University	
<b>Leach, Juliette</b> .....	1985
Coordinator: Special Student Initiatives	
B.A. - The University of Michigan	
M.A. - Eastern Michigan University	
<b>Lee, Arthur A.</b> .....	1984
Instructor: Mathematics	
B.A. - Aquinas College	
M.A. - The University of Michigan	
<b>Levy, Mary L.</b> .....	1981
Programmer Analyst I: Computer Services	
B.A. - College of Wooster	
M.A. - The University of Michigan	

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- Lewis, William A.** ..... 1969  
 Instructor: Mathematics  
 B.S. - North Carolina Central University  
 M.A. - The University of Michigan
- Little, Patrick J.** ..... 1986  
 Supervisor: Security and Plant Services  
 A.D. - Washtenaw Community College  
 Licensed GMT - State of Michigan  
 Certificate - F.B.I. National Academy  
 Detroit Police Academy
- Lockard, Jon M.** ..... 1970  
 Instructor: Art  
 Certificate - Meinzinger Art School  
 Certificate - Obleton Advertising Company  
 Wayne State University
- Lowe, Burton C.** ..... 1968  
 Instructor: Mechanical Technology: Blueprint Reading  
 Journeyman Industrial Machinist, Machine Repairman  
 Ford Motor Company Apprenticeship School  
 Wayne State University
- Ludos, Phillip**..... 1978  
 Instructor: Public Service Careers/Police Academy  
 A.D. - Schoolcraft College  
 B.S. - Madonna College  
 M.A. - University of Detroit
- Lutz, Geoffrey A.** ..... 1986  
 Programmer Analyst I: Computer Services  
 B.S. - The University of Michigan
- Lynch, John T.** ..... 1987  
 Executive Director: Business and Industry Services  
 B.A. - University of Detroit
- Mann, John B.** ..... 1971  
 Instructor: Automotive Service  
 B.S. - Eastern Michigan University  
 M.A. - The University of Michigan  
 A.S.E. and State of Michigan - Certified Mechanic
- Martin, Herbert L.** ..... 1967  
 Instructor: Psychology  
 B.A. - Eastern Michigan University  
 M.A. - Eastern Michigan University  
 M.S.W. - The University of Michigan
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<b>Martin, John W.</b> .....	1968
Instructor: Commercial Art/Technical Illustration	
Certificate - Miensinger Art School	
Certificate - Arts and Crafts School	
A.A. - Macomb County Community College	
<b>Martin, LaRuth E.</b> .....	1974
Instructor: Medical Terminology/Dental Assisting, Health Science	
C.D.A. - American Dental Assisting Association	
B.S. - Shaw College at Detroit	
M.A. - The University of Michigan	
E.F.D.A. - University of Indiana Dental School	
R.D.A. - Michigan State Board of Dentistry	
Gerontology Specialist - The University of Michigan	
<b>McGee, Sophie</b> .....	1969
Instructor: Reading	
A.B. - The University of Michigan	
M.G. - The University of Michigan	
<b>McGill, John B.</b> .....	1966
Instructor: Mathematics/Computer Science	
B.S. - Eastern Michigan University	
<b>McGuire, Belinda G.</b> .....	1988
Instructor: Industrial Drafting	
A.S. - Monroe County Community College	
B.F.A. - Eastern Michigan University	
<b>McNally, Robert C.</b> .....	1966
Instructor: General Business	
Four Year Graduate - General Motors Institute	
B.B.A. - The University of Michigan	
M.B.A. - The University of Michigan	
M.A. - University of Detroit	
<b>Mealing, Percy</b> .....	1966
Instructor: Mathematics	
B.A. - Talladega College	
M.A. - The University of Michigan	
<b>Medeiros, Neil O.</b> .....	1980
Maintenance Supervisor: Buildings and Grounds	
R.E.T.S. Electronics Engineering School	
<b>Meeks, Sandra S.</b> .....	1969
Orientation Advisor: Counseling	
B.S.N. - The University of Michigan	
Registered Nurse	
M.S. - The University of Michigan	
Ph.D. - Harvard University	

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<b>Meyers, Norma</b> .....	1980
Instructor: Accounting	
B.B.A. - The University of Michigan	
M.B.A. - Eastern Michigan University	
<b>Miller, Louis R.</b> .....	1969
Instructor: Political Science	
B.S. - Eastern Michigan University	
M.A. - The University of Michigan	
<b>Minock, Daniel W.</b> .....	1983
Instructor: English	
Ph.D. - Ohio State University	
<b>Moulton, Maxine</b> .....	1989
Clinical Associate Prof. Faculty: Nursing	
B.S.N. - The University of Michigan	
<b>Moy, William</b> .....	1968
Instructor: Psychology	
A.B. - Valparaiso University	
<b>Mullen, Marjorie</b> .....	1980
Payroll Supervisor: Office of the Controller	
<b>Mullins, Philip G.</b> .....	1982
Instructor: Electricity/Electronics	
Air Force Community College	
Ventura Junior College	
University of Maryland, European Division	
Eastern New Mexico University	
<b>Nagel, Rosemarie E.</b> .....	1967
Instructor: Reading	
A.B. - The University of Michigan	
M.A. - The University of Michigan	
<b>Nair, Damodaran</b> .....	1980
Director: Continuing Education and Extension Programs	
B.A. - Gandhigram University	
M.A. - Gandhigram University	
M.S. - Michigan State University	
Ph.D. - Michigan State University	
<b>Nelson, James</b> .....	1986
Technical Assistant: Publications	
A.D. - Washtenaw Community College	
<b>Nelson, Robert</b> .....	1966
Instructor: Radiologic Technology	
A.A. - Fort Scott Community Junior College	
A.D. - Washtenaw Community College	
B.S.Ed. - The University of Michigan	
M.S. - The University of Michigan	

<b>Nevers, William B.</b> .....	1975
Instructor: Dental Assisting	
B.S. - Wayne State University	
D.D.S. - The University of Michigan School of Dentistry	
<b>Niehaus, Paul J.</b> .....	1966
Instructor: Biology	
B.A. - Eastern Michigan University	
M.S. - The University of Michigan	
<b>Nowak, Margaret R.</b> .....	1986
Coordinator: Job Skills Education	
B.A. - Michigan State University	
<b>O'Rear, Katherine</b> .....	1988
Instructor: English	
B.A. - Washington State University	
M.A. - Eastern Michigan University	
<b>Packard, R. James</b> .....	1969
Instructor: Industrial Drafting	
A.D. - Washtenaw Community College	
B.S.M.E. - University of Wisconsin	
M.A.Ed. - Wayne State University	
<b>Palay, Roger M.</b> .....	1975
Executive Director: Management Information Systems	
B.S. - University of Chicago	
M.S. - University of Wisconsin	
<b>Patrick, Marjory</b> .....	1989
Instructor: Humanities	
B.S. - Eastern Michigan University	
M.A. - Western Michigan University	
<b>Paup, Arlene M.</b> .....	1982
Instructor: Computer Information Systems, Electricity/Electronics	
B.A. - Temple University	
M.S. - Drexel University	
<b>Peoples, Gregory A.</b> .....	1985
Director: Enrollment Management	
B.A. - Allegheny College	
M.Ed. - Kent State University	
<b>Pequinot, Mary</b> .....	1981
Associate Professional Faculty: Enrollment Data	
B.A. - Michigan State University	
<b>Phibbs, John</b> .....	1969
Supervisor: Reprographic Services	
A.D. - Washtenaw Community College	
B.B.A. - Eastern Michigan University	

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- Pierce, Leslie E.** ..... 1984  
 Director: Technical Job Training Programs  
 A.A. - Polk Community College  
 B.A. - University of Florida-Gainesville  
 B.A.E. - University of Florida-Gainesville  
 M.A.E. - University of Florida-Gainesville
- Pitsenbarger, Susan**..... 1989  
 Instructional Assistant: Foods & Hospitality  
 A.D. - Washtenaw Community College
- Pogliano, Michael F.** ..... 1969  
 Instructor: Architectonics  
 B.Arch. - The University of Michigan  
 Registered Architect - State of Michigan  
 N.C.A.R.B. Certified
- Poliner, Merrill Loughheed**..... 1987  
 Systems Programmer/Analyst: Computer Services  
 B.S. - Northwestern University  
 M.B.A. - The University of Michigan
- Powell, Lula**..... 1988  
 Coordinator: Educators' Collaborative for Unemployment Services  
 A.D. - University of Wisconsin
- Radick, Lawrence J.** ..... 1966  
 Instructor: French, Russian, German  
 B.A. - Michigan State University  
 M.A. - Michigan State University
- Redick, Martin** ..... 1978  
 Instructor: Respiratory Therapy  
 B.S. - The University of Michigan  
 M.S. - The University of Michigan  
 R.R.T. - National Board for Respiratory Therapy
- Reeves, Robert A.** ..... 1968  
 Associate Vice President: Human Resources Management  
 B.A. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Remen, Janet M.** ..... 1982  
 Instructor: Mathematics/Computer Science  
 B.Sc. - University of Durham  
 M.S. - The University of Michigan
- Reps, Flavia P.** ..... 1966  
 Instructor: History/Western Civilization  
 B.A. - St. Joseph College  
 M.A. - Georgetown University
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- Rinn, John**..... 1980  
 Instructor: Computer Information Systems  
 A.A. - Port Huron Junior College  
 A.B. - The University of Michigan  
 M.S. - The University of Michigan
- Rinn, Kim M.** ..... 1984  
 Systems Analyst: Computer Services  
 A.D. - Henry Ford Community College  
 B.B.A. - Eastern Michigan University  
 M.S. - Eastern Michigan University
- Ristenbatt, Philip**..... 1988  
 Microcomputer Technician: Computer Services  
 B.B.A. - Eastern Michigan University
- Roberts, Alvin**..... 1968  
 Instructor: Psychology  
 B.S. - Prairie View AM College  
 M.S.W. - Wayne State University
- Robinson, Albert**..... 1974  
 Instructor: Electricity/Electronics  
 B.A. - Indiana University  
 M.S. - Eastern Michigan University
- Russell, Dean A.** ..... 1966  
 Instructor: Electricity/Electronics  
 B.S. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Sabada, Mary L.** ..... 1966  
 Director: Personnel Services  
 Ohio University
- Salerno, Douglas** ..... 1969  
 Instructor: English, Speech  
 B.A. - Western Michigan University  
 M.A. - Western Michigan University  
 M.A. - The University of Michigan  
 Ph.D. - The University of Michigan
- Schultz, Gary L.** ..... 1984  
 Instructor: Fluid Power  
 A.D. - Washtenaw Community College  
 B.S. - Eastern Michigan University  
 DeVilbiss Robotics School  
 Unimation Puma Robotics School
- Schuster, William**..... 1989  
 Instructor: Automotive Services  
 B.A. - Wayne State University  
 M.A. - Eastern Michigan University
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<b>Scott, Kathleen</b> .....	1971
Librarian: Learning Resource Center	
B.A. - University of Iowa	
M.A. - University of Iowa	
<b>Showalter, Martha</b> .....	1980
Instructor: Mathematics, Computer Science	
B.S. - Ohio State University	
B.A. - Ohio State University	
M.S. - University of Houston	
<b>Sims, Donald L.</b> .....	1966
Director: Student Support Services	
B.S. - Wayne State University	
M.A. - The University of Michigan	
<b>Spickard, James F.</b> .....	1977
Director: Plant Operations and Security	
B.S. - Eastern Michigan University	
<b>Stallworth, Clarence A.</b> .....	1974
Director: Campus Development and Auxiliary Services	
B.S.E. - The University of Michigan	
M.S.E. - The University of Michigan	
<b>Steinbach, J. Raymond</b> .....	1969
Instructor: Photography	
B.S. - Michigan State University	
Brooks Institute, School of Photographic Art and Science	
The University of Michigan	
<b>Susnick, Stuart B.</b> .....	1969
Instructor: Anthropology/Political Science	
B.A. - Brooklyn College	
<b>Thomas, David</b> .....	1980
Instructor: Geology	
A.S. - Macomb Community College	
B.S. - Eastern Michigan University	
M.S. - Eastern Michigan University	
<b>Thomas, Ervin L.</b> .....	1969
Instructor: Anthropology/Philosophy/Sociology	
B.A. - Wayne State University	
M.A. - Wayne State University	
<b>Thompson, Doreen</b> .....	1975
Instructor: Sociology	
A.B. - Atlantic Union College	
Licence es Lettres - University of Paris	
M.P.H. - The University of Michigan	

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<b>Tom, Kimberly</b> .....	1988
Technical Assistant: Computer Services	
A.D. - Washtenaw Community College	
B.A. - The University of Michigan	
<b>Trame, John</b> .....	1989
Instructor: Electricity/Electronics	
B.S. - University of Houston	
M.S. - University of Houston	
<b>Travis, Patricia A.</b> .....	1974
Coordinator: Children's Center	
B.A. - The University of Michigan	
M.A. - Eastern Michigan University	
Certification - Early Childhood Specialist	
<b>VanderVeen, Sister Judith</b> .....	1976
Instructor: Nursing	
Diploma - Mercy Central School of Nursing	
B.S.N. - Mercy College of Detroit	
M.A. - The University of Michigan	
Specialist in Aging - The University of Michigan	
Specialist in Aging - Wayne State University	
<b>VanGenderen, Gary L.</b> .....	1982
Instructor: Chemistry	
B.S. - The University of Michigan	
M.S. - Eastern Michigan University	
<b>Vass, Steven T.</b> .....	1967
Instructor: Economics	
B.S. - Academy of Military Science	
B.S.Ed. - Black Hills State College	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Vrabel, George</b> .....	1969
Professional Service Faculty: Cooperative Education	
B.S. - Western Michigan University	
M.A. - Wayne State University	
<b>Walsh, Ruth Anne</b> .....	1987
Instructor: Public Service, Criminal Justice	
B.A. - University of Toledo	
J.D. - University of Toledo	
<b>Warner, Elizabeth</b> .....	1988
Instructor: Reading	
M.A. - California State University	
<b>Webster, Brenda J.</b> .....	1987
Clinical Associate Professional Faculty: Nursing	
B.S.N. - The University of Michigan	

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<b>Weid, Richard</b> .....	1979
Instructor: Automotive Service	
B.S. - Eastern Michigan University	
M.A. - Eastern Michigan University	
M.S. - Eastern Michigan University	
<b>Weidner, Hal R.</b> .....	1969
Instructor: English	
A.B. - Columbia College	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Westcott, Richard</b> .....	1984
Supervisor: Plant Operations	
<b>Weyant, David E.</b> .....	1983
Instructor: Electricity/Electronics	
B.S.E. (EE) - The University of Michigan	
M.S.E. (EE) - The University of Michigan	
<b>Whiteford, Priscilla S.</b> .....	1971
Instructor: Anthropology	
B.A. - Western Michigan University	
M.A. - The University of Michigan	
<b>Wilkins, Barry L.</b> .....	1982
Supervisor: Power Plant	
A.D. - Washtenaw Community College	
<b>Williams, Calvin E.</b> .....	1969
Counselor	
B.A. - Western Michigan University	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Williams, Thomas G.</b> .....	1971
Instructor: English	
B.S. - Eastern Michigan University	
<b>Wilson, John C.</b> .....	1988
Instructor: Business	
B.A. - Madonna College	
M.B.A. - University of Notre Dame	
<b>Wilson, Rosemary</b> .....	1986
Instructor: Management/Business	
B.S. - Milligan College	
M.B.A. - University of Notre Dame	
<b>Wirbel, Johanna V.</b> .....	1968
Counselor	
B.A. - Kent State University	
M.A. - The University of Michigan	

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<b>Wojnowski, Judith L.</b> .....	<b>1978</b>
Controller	
B.S. - Canisius College	
C.P.A.	
<b>Wood, John D.</b> .....	<b>1984</b>
Associate Professional Faculty: Career Development Center	
B.S. - Michigan State University	
<b>Young, Colette</b> .....	<b>1987</b>
Instructor: Business	
B.A - Michigan State University	
M.A. - Michigan State University	
<b>Young, Mary E.</b> .....	<b>1975</b>
Counselor	
B.R.E. - Detroit Bible College	
B.A. - Eastern Kentucky University	
M.A. - Eastern Kentucky University	
<b>Zaremba, Ernest</b> .....	<b>1969</b>
Instructor: Psychology	
B.A. - The University of Michigan	
M.A. - The University of Michigan	
Ph.D. - The University of Michigan	
<b>Zeeb, Ronald E.</b> .....	<b>1968</b>
Instructor: Marketing/General Business	
B.S. - Eastern Michigan University	
M.A. - Eastern Michigan University	
<b>Zenian, Paul</b> .....	<b>1968</b>
Instructor: Art	
B.S. - The University of Michigan	
M.F.A. - The University of Michigan	

## EMERITUS FACULTY

<b>Alexander, William E.</b> .....	<b>Biology</b>
B.S. - Hampton Institute	
M.S. - University of Wisconsin	
M.A. - The University of Michigan	
<b>Devereaux, William T.</b> .....	<b>Speech</b>
B.A. - Michigan State University	
M.A. - Michigan State University	
Ed.D. - Laurence University	
<b>Hanson, Charlotte</b> .....	<b>Speech</b>
A.B. - The University of Michigan	
M.A. - The University of Michigan	



- 
- Hopper, Thomas W.** ..... **Automotive Services**  
 Certificate - Army Mechanic School  
 Ford Motor Institute
- Kokkales, Paul C.** ..... **Accounting**  
 B.S. - Eastern Michigan University  
 M.A. - The University of Michigan
- Mitchell, W. Bede** ..... **English**  
 A.B. - Wayne State University  
 M.A. - Wayne State University
- Paulson, Robert** ..... **Business/Accounting**  
 B.S. - University of New Hampshire  
 M.S. - University of New Hampshire
- Prichard, Lawrence** ..... **Mathematics**  
 B.S. - Eastern Michigan University  
 M.A. - Eastern Michigan University
- Rees, Gerald** ..... **Physics**  
 B.S. - The University of Michigan  
 M.S. - The University of Michigan
- Ross, Donald** ..... **Mathematics**  
 B.S. Eastern Michigan University  
 M.A. - The University of Michigan  
 M.A.T.M. - The University of Detroit
- Slepsky, Lawrence** ..... **Life Sciences**  
 B.S. - Eastern Michigan University  
 M.A. - Eastern Michigan University  
 Ed.S. - Eastern Michigan University
- Wheeler, Kenneth** ..... **Electricity/Electronics**  
 B.S.E.E. - Detroit Institute of Technology
- Wotrang, J. Robert** ..... **Computer Information Systems**  
 B.A. - University of Philippines
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# Glossary

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## GLOSSARY

**Academic Honors:** Honors bestowed upon a student who has achieved a high level of academic success. Honors may be based upon one semester's performance (*Dean's Honor Roll*) or for cumulative performance at the time of graduation (*Graduation Honors, High Honors*).

**Accreditation:** Recognition that the College or a College program has met standards or requirements set up by a governing organization.

**Admission:** Acceptance of an applicant for enrollment in the College.

**Articulation:** The process of arranging instructional programs so that students may progress from high school programs to WCC programs.

**Assessment:** The process of determining a student's interests or level of competence.

**Associate Degree:** A degree issued to a student who has completed a prescribed curriculum/program of courses totaling a minimum of 60 semester hours of credit.

**Audit:** To enroll in a College academic credit-bearing course on a non-credit basis. Such credits as the course normally carries are included as part of the total credit load and tuition assessed accordingly. A Visitor ("V") grade is issued.

**College Certificate:** A certificate issued to a student who has completed a prescribed curriculum/program of courses totaling a minimum of 30 semester hours of credit.

**College Withdrawal:** The process by which a student discontinues enrollment in all courses.

**College Workstudy:** An award of employment (i.e., an opportunity to work for paid wages on the campus) given to a student based on financial need.

**Continuing Education Units (CEU's):** A nationally recognized recording device for substantive non-credit learning experiences. One (1) CEU is defined as ten contact hours of participation in an organized continuing education experience with responsible sponsorship, capable direction, and qualified instruction.

**Corequisite:** An additional course or instructional experience which is required to be taken simultaneously with certain courses. For example, a section of Writing Lab is required with certain English courses.

**Course Load/Overload:** The total number of credit hours a student is officially registered for in a given semester. A *Full-time Student* is one who enrolls in 12 or more credit hours per semester (6 or more spring or summer sessions); a *Part-time Student* is one who enrolls in less than 12 credit hours per semester (5 or less spring or summer sessions); a *Half-time Student* is a Part-time student enrolled in at least 6 credit hours per semester (at least 3 spring or summer sessions). Students enrolling in *more than 18 credit hours*

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per semester (or more than 6 spring or summer sessions) are considered to be carrying a *Course Overload*.

**Cumulative Grade-Point Average:** A measure of a student's scholastic success which includes all coursework attempted at the College. The average is obtained by dividing the total grade points by semester hours of credit attempted.

**Curriculum:** A group of courses, sequences of subjects, or planned experiences.

**Educational Intent:** A student's statement of the goal he/she intends to achieve by attending WCC. Educational intents include: to obtain a College Certificate; to obtain an Associate Degree; to obtain an Associate Degree for transfer to a four-year institution; to obtain credit hours for transfer to a four-year institution; to obtain new or improve existing job skills; to fulfill apprenticeship, journeyman, or other trade-related instruction coursework; to attend classes for personal interest/development; or other goals.

**Elective Course:** A course which a student may choose to take from a number of alternative courses in order to fulfill a program requirement.

**Emeritus Program:** A program for county residents who are at least sixty years of age which offers tuition-free participation in WCC credit and credit-free courses, workshops and seminars.

**Fees:** Charges assessed to students other than tuition charges.

**Financial Hold:** A student is placed on financial hold when he/she has not met their financial obligations to the College. Students placed on financial hold are not allowed to register for courses, cannot receive their College Certificate or Associate Degree, and are not eligible to receive College services of any kind.

**Freshman/First Year Student:** A student who has completed fewer than 28 credit hours.

**GED Examination:** The General Education Development examination is a comprehensive test used to appraise the educational development of adults who have not completed a high school education. By achieving satisfactory scores on the GED adults may earn a high school equivalency certificate.

**Grade Point Average:** The number of grade points earned divided by the semester hours of credit attempted. The grade point scale is: A=4.0, B=3.0, C=2.0, D=1.0.

**Grant:** An award of money given to a student based on financial need. Grants do not need to be repaid.

**Loan:** An award of money given to a student based on financial need. Loans must be repaid once a student leaves the College or does not continue at college on at least a half-time basis.

**Non-College Certificate:** A certificate denoting completion of a planned course or program of study, but not associated with the completion of a minimum of 30 semester hours of credit (i.e., College Certificate).

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**Orientation:** A presentation for new WCC students to acquaint them with College facilities, programs, services and procedures.

**Postsecondary Education:** Education beyond the high school level.

**Prerequisite:** Requirements that must be met or courses which must be successfully completed prior to enrolling in a specific course or program.

**Program:** A planned curriculum in a field of study which includes a list of specific requirements.

**Registration:** The process of officially enrolling in a course (or courses) and paying tuition. Upon registering, the course(s) are entered onto the student's permanent record.

**Residency:** The official home address of a student which is used to determine the tuition rate charged and, if applicable, program admission priority. Residency classifications are: *In-District, Out-District, Out-State, and Out-of-Country.*

**Self-paced Instruction:** Instruction using a workbook, textbook, or mechanical and/or electronic device which helps the student attain a specified level of performance. Students proceed at their own pace through a series of steps, working with the instructor as he/she finds necessary.

**Scholarship:** An award of money and/or special recognition given to a student for certain types of proficiency, such as academic, or because of financial need. Scholarship monies do not need to be repaid.

**Sophomore/Second Year Student:** A student who has completed 28 or more credit hours but has not received an Associate Degree or has not qualified for upper division classification in a four-year college or university.

**Transfer Agreements:** Written agreements between WCC and four-year institutions which specify transferring of WCC earned credits to the specific four-year institution.

**Transfer Credit:** Credit that has been taken at another accredited academic institution that is accepted by the College for use toward a College Certificate or Associate Degree.

**Transcript:** A transcript lists all courses taken by a student, showing the final grade received for each course. The official transcript is housed in the Student Records Office.

**Tuition:** The monetary charge a student must pay at the time of registration for each semester hour of academic credit. The tuition rate is based on the student's residency classification.

**Undergraduate:** A student in a higher education institution who has not yet achieved the Bachelor's, or first professional, degree in a field of study.

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## ARTICULATIONS AND TRANSFER AGREEMENTS

### Michigan Association of Collegiate Registrars and Admission Officers (MACRAO) Agreement \_\_\_\_\_

An Agreement between Michigan's two- and four-year colleges and universities has been developed to assist students who complete an associate degree at a Michigan public community college in transferring credit to a four-year institution. The agreement insures that students receiving Associate Degrees at Washtenaw Community College and meeting the requirements indicated below, will have satisfied the basic first two-year requirements of Michigan four-year institutions which have signed this agreement.

#### Basic Requirements of Agreement:

The basic requirements are designed to provide students with a broad intellectual experience in the major fields of knowledge. Basic two-year requirements include English Composition and the broad categories of Social Science, Natural Science, and Humanities. Specific courses in each category are determined by the institution offering the courses. Courses which may not be transferable, i.e., developmental and some technical or occupational courses, are not included in the basic requirement.

### CATEGORY REQUIREMENTS

#### I. English Composition

English Composition ..... ENG 100, 111, 222

#### II. Social Sciences (3 courses in more than one discipline)

Anthropology ..... ANT 201, 202  
Economics ..... EC 111, 211, 222  
Geography ..... GEO 111  
History ..... HST 101, 102, 201, 202  
Political Science ..... PLS 108, 112, 150  
Psychology ..... PSY 100, 150, 200, 209, 257  
Sociology ..... SOC 100, 150, 205, 207, 250

#### III. Natural Science (3 courses, one must be a laboratory course)

Biology ..... BIO 100, 102, 127, 128  
Chemistry ..... CEM 111, 122, 211, 222  
Physics ..... PHY 111, 122, 211, 222  
Geology ..... GLG 100, 114, 125  
Mathematics ..... MTH 179, 191, 192, 293, 295

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**IV. Humanities**  
**(3 courses in more than one discipline)**

Art.....	ART 101, 111, 112, 122, 130
Foreign Language.....	FRN/SPN 111, 120, 122, 213, 224
Humanities.....	HUM 101, 150, 160
Literature.....	ENG 160, 170, 200, 211, 212, 213, 222, 223, 224
English.....	ENG 225, 230, 270
Music.....	MUS 140, 146, 152, 158, 180, 183
Philosophy.....	PHL 101, 250
Religion.....	ANT 150
Communications.....	CMT 101, 102, 131, 152

**Public School Articulations**\_\_\_\_\_

Articulation agreements exist between WCC and more than 11 public school districts. The College will grant credit to articulated students for identified task competencies. Credit earned from public school articulations will not be awarded until the students has earned six or more credit hours at WCC.

Copies of specific Articulation Agreements are available at respective high school guidance counselors' offices and the WCC Admissions Office.

**Transfer Agreements**\_\_\_\_\_

Specific transfer agreements exist between WCC and several Michigan four-year colleges/universities (e.g., Cleary College, Eastern Michigan University); allowing WCC students in specific programs to apply credits toward another institution's bachelor's degree program.

Information on specific transfer agreements is available at the WCC Counseling Office.



## COLLEGE MEMBERSHIPS

American Association of  
Community and Junior Colleges

American Association of  
Community College Trustees

Community College Association for  
Instruction and Technology

The Institute of Electrical  
and Electronics Engineers, Inc.

Michigan Community College Association

Michigan Public Employer  
Labor Relations Association

Michigan Technology Council

National Association of College  
and University Business Officers

The National Center for Research  
in Vocational Education

North Central Association

The Professional Association in Computing  
and Information Technology  
in Higher Education

Southeast Michigan  
Council of Governments





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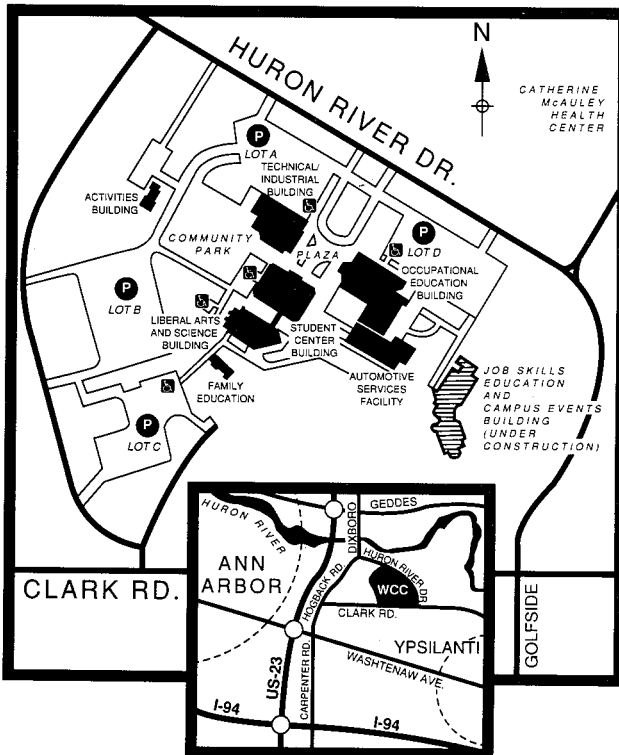
# CAMPUS MAP

## Parking

Washtenaw Community College has 1800 convenient parking spaces provided for students and staff. There are five designated parking areas:

- Lot A.....Located near the Technical and Industrial Building
- Lot B.....Located to the right of the Powerhouse and Liberal Arts Building
- Lot C.....Located near the Family Education Building
- Lot D.....Located near the Occupational Education Building
- Handicapped  
Parking.....Located outside the Student Center Building by the loading dock. Also located between the Powerhouse and Liberal Arts Building.

Parking stickers are available, but not required, for use of campus lots. There is no charge for parking.



**Catalog 1989-90**

Washtenaw Community College  
4800 East Huron River Drive, P.O. Box D-1  
Ann Arbor, Michigan 48106