

# WASHTENAW COMMUNITY COLLEGE

Bulletin 1985-87

September 1985

Volume 15-Number 1

# TELEPHONE ASSISTANCE

Main Campus: (313) 973-3300

4800 E. Huron River Drive Ann Arbor, Michigan 48106

Automotive Services Building: (313) 434-1555

5115 Carpenter Road Ypsilanti, Michigan 48197

Adult Resources Center	973-3528
Apprenticeship and Trade Related Programs	973-3533
Automotive Services Center	434-1555
Bookstore (Ulrich's)	973-3594
Business Office	973-3507
Cafeteria (Manimark)	973-3585
Career Development Center	973-3558
Cashier	973-3485
Children's Center	973-3538
Continuing Education/Community Services	973-3352
Continuing Education Services	973-3493
Counseling Center	973-3464
Dental Clinic	973-3337
Drama Group	973-3625
Emeritus Program	973-3526
Enrollment Services (Admissions)	973-3543
Enrollment Services (Financial Aids)	973-3524
Extension Programs	973-3408
FOCUS (Student Newspaper)	973-3376
Immigrant and Refugee Education Program	973-3315
Information Center (College Events, Resources)	973-3622
Learning Resource Center	973-3429
Lost and Found	373-3502
Math Center	973-3392
Office of College Advancement	973-3665
Office of Cooperative Education	973-3656
President's Office	973-3491
Publications Office	973-3376
Public Service Training Program	973-3323
Reading Center	973-3301
Registration	973-3548
Security	973-3502
Special Services Program	973-3342
<b>Switchboard (General Information)</b>	<b>(313) 973-3300</b>
Technical Job Training Programs	973-3533
Telecourse Hotline	973-3671
Testing Center	973-3634
Veterans Certification	973-3545
Veterans Counseling	973-3479
Women's Studies	973-3361
Writing Center	973-3647

The Washtenaw Community College Bulletin (USPS 897-820) is issued four times a year, in April, July, September and December by Washtenaw Community College, Ann Arbor, Michigan 48106. Second Class postage paid at Ann Arbor, Michigan. POSTMASTER: Send Form 3579 to Washtenaw Community College, P.O. Box D-1, Ann Arbor, Michigan 48106.

WASHTENAW COMMUNITY COLLEGE LRC  
ANN ARBOR, MI

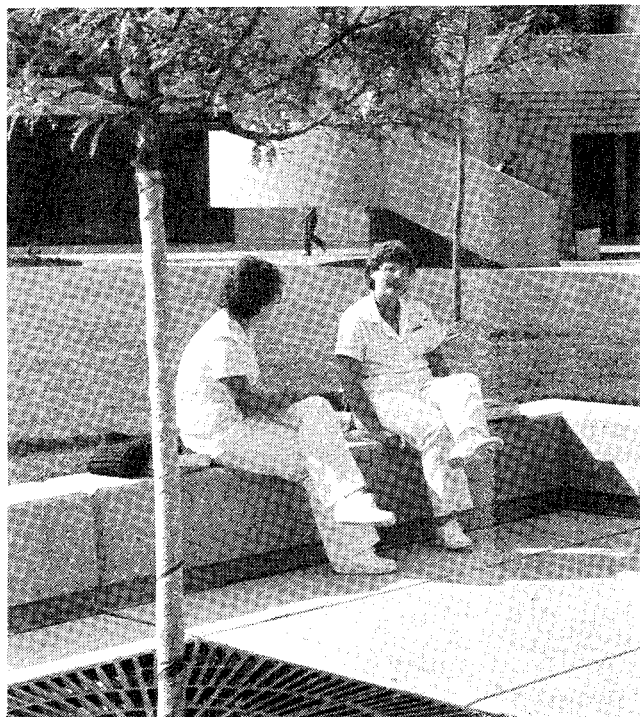
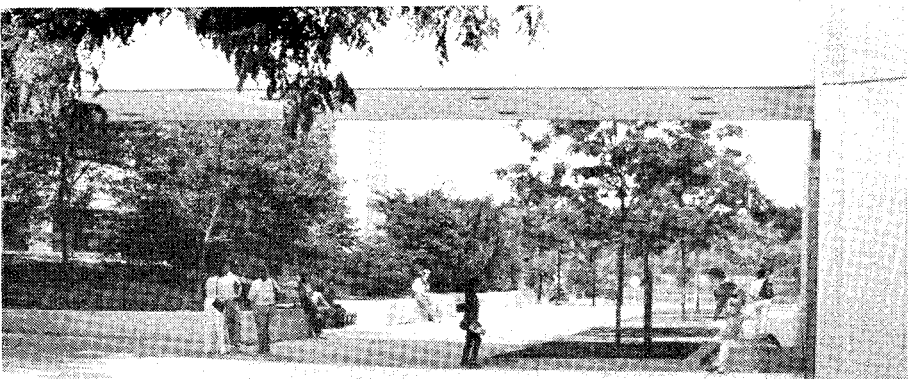


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# Continuing a Tradition Of Educational Progress



**Washtenaw Community College**  
4800 E. Huron River Drive, P.O. Box D-1  
Ann Arbor, Michigan 48106



# 1985–87 College Bulletin

Volume 15 Number 1

# Greetings from President Gunder Myran



**Dedicated to student and community success** — that is Washtenaw Community College's motto as we celebrate 20 years of excellence in service to students and the citizens of the Washtenaw County area.

We are dedicated to student success in getting jobs and advancing in careers after taking occupational education courses at Washtenaw Community College. We are dedicated to student success in graduating from Eastern Michigan University, the University of Michigan, Cleary College, or another four-year college or university after taking college transfer courses at Washtenaw Community College. We are dedicated to student success in handling the costs of attending college and in being able to attend college while also carrying out work and family responsibilities — hence our low-cost tuition policy and our offering of courses on weekdays, evenings, and weekends on our main campus and at

extension centers throughout the Washtenaw County area. We are dedicated to student success in taking college courses, whether semester-length or short-term, which lead to creating or improving a small business, creating works of art, improving reading or writing skills, becoming knowledgeable about an area of science or literature, or other outcomes for which quality educational experiences can be designed.

One of the most striking characteristics of Washtenaw Community College is the warm caring environment for learning that exists here. This environment has been created by people: faculty, administrators, clerical staff, custodians, and maintenance personnel. The College has been molded by the philosophy that the individual student is respected and valued regardless of his or her educational or occupational background.

There is a real love here for the teaching-learning process and for the students of all ages and backgrounds that we serve.

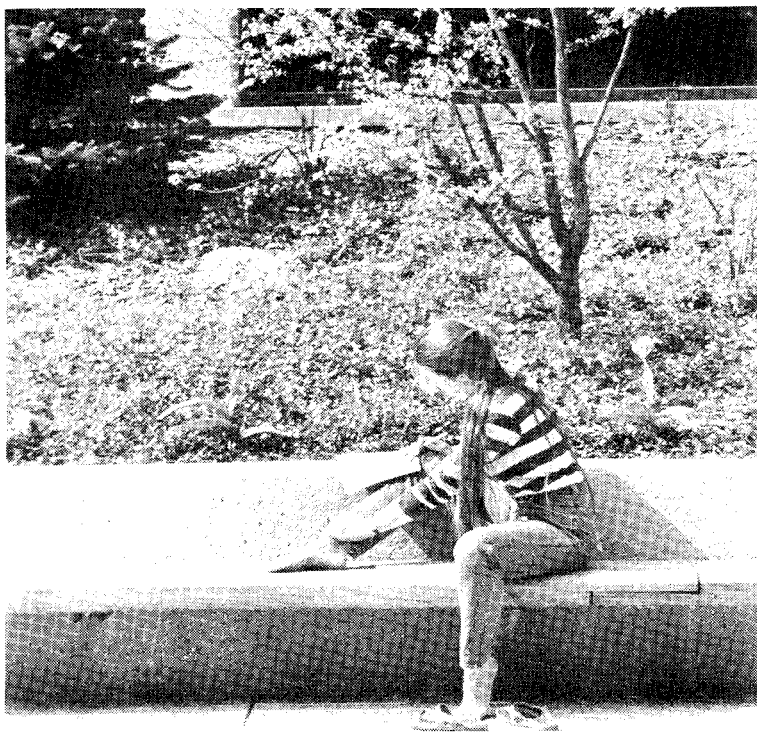
This is **your** College, we invite you to use it. We want to help you be successful in achieving your career and life goals through education.

A handwritten signature in cursive script that reads "Gunder A. Myran".

Gunder A. Myran  
President  
Washtenaw Community College

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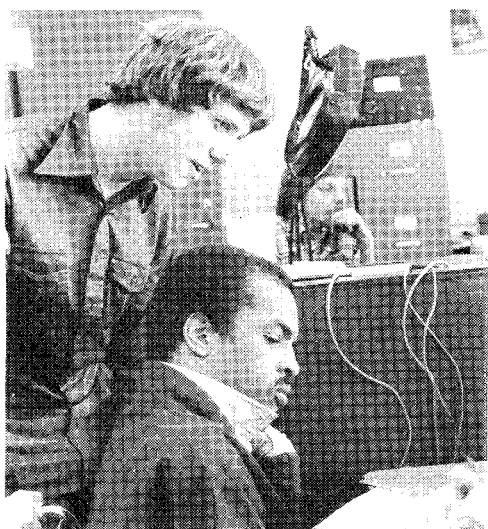
## College's Special Services



Special services at Washtenaw Community College include a wide range of extras. These include everything from special financial aid programs to programs and services for veterans to a Center devised to help adults returning to school. It includes a program for community senior citizens, a career placement center, a bookstore, a child care center for children of students, well developed counseling programs and laboratories for math, reading and writing help.

Washtenaw Community College is a College with many services to make your educational experiences here good ones.





Provide Extras...



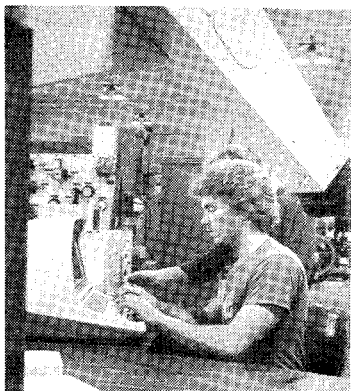


## Classes Arranged To Meet Community's Needs

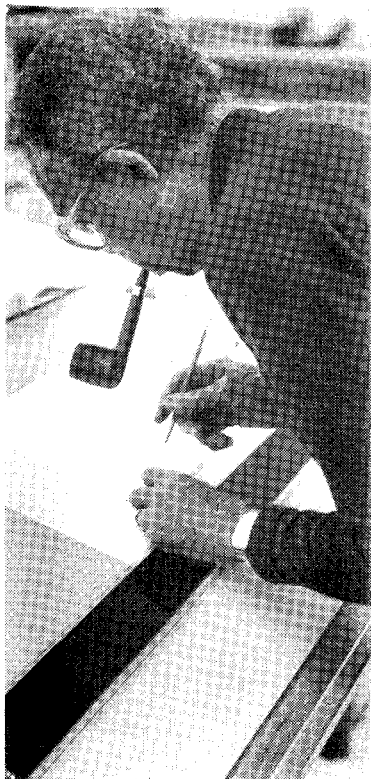
Activity is large part of learning in classes at Washtenaw Community College. The curriculum for many of the classes is centered around and requires mastering various skills needed for employment in the community or for further educational pursuits. The College faculty members want students to be successful; they exert their skills and helpfulness in assisting students to achieve.



# Career Programs Offer Keys to Brighter Future



Career programs at Washtenaw Community College offer students specific technical instruction and education for productive employment in a wide range of more than 60 occupational areas. Technical courses along with general study subjects provide the breadth and balance needed for well rounded career preparation. College laboratories are well equipped to give students experiences they will find on the job.

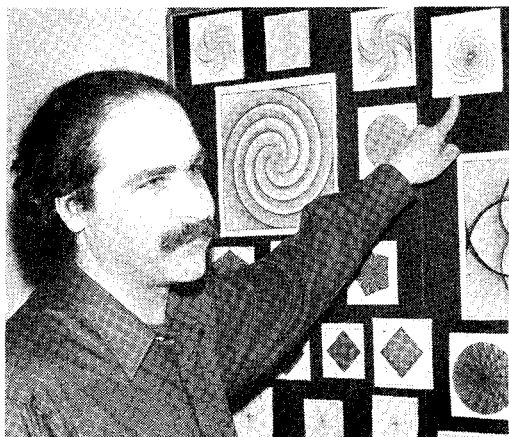






## A Caring Faculty Provides

Faculty at Washtenaw Community College has earned its fine reputation as one devoted to quality teaching and concern for students. Whether in the health sciences, in the technical training areas, in general education programs or in other special classes, faculty excel in meeting student educational needs and in providing up-to-date material taught using the most modern methods. The teaching combined with coordinated services in counseling, financial aid and student services makes for a community college in which Michigan can be proud.



# Quality Course Work...



# **ACCREDITATION**

Approved by the  
STATE DEPARTMENT OF EDUCATION  
STATE OF MICHIGAN

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

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

Emergency Medical Technology Program  
Approved by  
EMERGENCY MEDICAL SERVICES DIVISION,  
MICHIGAN DEPARTMENT OF PUBLIC HEALTH

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

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

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

An Institutional Member of  
AMERICAN ASSOCIATION OF  
COMMUNITY AND JUNIOR COLLEGES

A Member of  
MICHIGAN COMMUNITY COLLEGE ASSOCIATION

*An Affirmative Action/Equal Opportunity, Title IX Institution*





# **INSTRUCTION AT WASHTENAW COMMUNITY COLLEGE**



# STATEMENT OF VALUES AND MISSION

## **Values of the College:**

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.

**Mission of the College:**

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 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.

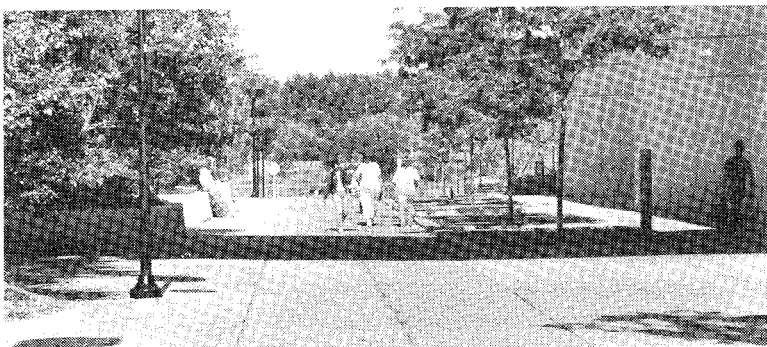
**General and Transfer Education:** The College offers courses in various academic disciplines which are transferable to four-year colleges and universities, general education courses which complement occupational education programs, and courses which enhance the personal growth of the student.

**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 insure that the College remains attuned to the area's educational needs.



# INSTRUCTION AT WASHTENAW COMMUNITY COLLEGE

The College's Division of Instruction is responsible for all teaching and learning activities in general education and occupational areas through courses of study and career program opportunities. General education and occupational education are available. Brief descriptions of each follow. Program listings and course descriptions are also included in this catalog.

**General Education:** Instruction is provided in the areas of Behavioral Science, English and Writing, Humanities, Life Science, Mathematics, Music, Physical Science, Reading, and Social Science. A Mathematics Center, Reading Center, Testing Center, and Writing Center offer students a wide range of services from individualized and programmed instruction to diagnostic skill testing and tutoring.

Principal objectives of studies in general education include the development of reading, writing, thinking, listening and speaking skills. In addition to studies in humanities, exact sciences and social sciences, the College provides general education to enable students to:

- Complete the first two years of college studies acceptable for transfer to four-year institutions;
- Develop support skills required in studies leading to specific career occupations;
- Pursue studies of general enrichment;
- Obtain a basic knowledge of the world, the environment, and the means used to understand and alter man's environment;
- Grasp the significance of modern life with its technological foundation;
- Study the science of humanity and machines to promote an appreciation of the limitations and potential of the technology on which people depend;
- Obtain introductory pre-professional education;
- Gain insights into and develop skills for meaningful and rewarding experiences with people in society;
- Obtain responsible citizenship training;
- Engage in relevant educational experiences.

For specific category requirements and more general education information, and transfer facts, see pages 22 and 260.

**Occupational Education:** Washtenaw Community College offers a wide range of fully developed occupational, technical, and para-professional career programs. Programs are designed to meet individual educational and training requirements for job-entry, career upgrading, and career change. One- and two-year programs are offered, as well as special certificate programs and short-term courses.

Occupational Education career programs include studies in Accounting, Computer Information Systems, Business, Food and Hospitality Service, Public Service, Secretarial and Office, Electronics, Welding, Auto

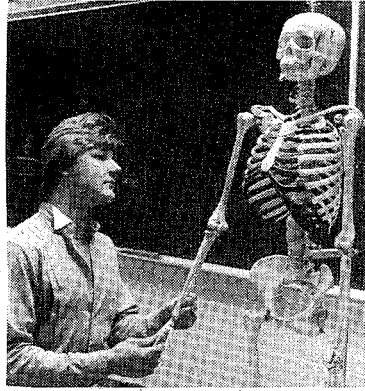


Service, Drafting, Computer Aided Drafting, Numerical Control, Robotics, Fluid Power Technology, Dental Assisting, Nursing, Radiologic Technology, Respiratory Therapy, Emergency Medical Technology, Pharmacy Technology, Graphic Design Technology, and Photography. In addition, Trade Related Instruction and Apprentice Training are offered.

Programs of study in Occupational Education enable individuals to:

- Pursue theory and skill training for a specific career;
- Prepare for career entry;
- Obtain on-the-job training for a specific career;
- Gain the practical knowledge and experience needed for handling everyday mechanical and technological situations and problems;
- Do pre-apprenticeship study as preparation for apprenticeship examination;
- Receive instruction in apprenticable trades;
- Enroll employees in training programs designed to upgrade the skills of manufacturing and construction firm workers.

For information on credits and grades, please turn to page 250.



## **PROGRAMS AND CAREER TRAINING**



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# GENERAL EDUCATION

## General Studies Transfer Programs

### General Studies Programs

Students who intend to transfer to a four-year college or university after acquiring the necessary earned credits at Washtenaw Community College should review the general requirements presented in the following programs.

The curricula as outlined are to serve as guidelines only. Each college and university has developed its specific criteria for the many programs of study. The student is advised to review the particular college catalogue with a counselor to determine course schedules. A file of both state and out-of-state catalogues is available in the Student Services Area. Proper selection of courses is requisite to the orderly transfer of credits from Washtenaw Community College to the baccalaureate degree-granting institution.

### ARTS

The following pattern of courses for students intending to concentrate in the Liberals Arts, Education, or Business Administration is one which meets the requirements of the first two years of work in most four-year colleges and universities.

#### First Year

<b>First Semester</b>	<b>Hours</b>	<b>Second Semester</b>	<b>Hours</b>
English Composition <sup>1</sup> . . . . .	3	English . . . . .	3
History . . . . .	3	History . . . . .	3
Foreign Language . . . . .	4	Foreign Language . . . . .	4
Political Science <sup>2</sup> . . . . .	3	Social Science . . . . .	3
Art Appreciation . . . . .	3	Music Appreciation . . . . .	3
<b>Total . . . . .</b>	<b>16</b>	<b>Total . . . . .</b>	<b>16</b>

#### Second Year

<b>First Semester</b>	<b>Hours</b>	<b>Second Semester</b>	<b>Hours</b>
Literature . . . . .	3	Literature . . . . .	3
Mathematics . . . . .	3	Mathematics . . . . .	3
Foreign Language <sup>3</sup> . . . . .	3	Foreign Language <sup>3</sup> . . . . .	3
Biological Science or Physical Science . . . . .	3 or 4	Biological Science or Physical Science . . . . .	3 or 4
Elective <sup>4</sup> . . . . .	3	Elective <sup>4</sup> . . . . .	3
<b>Total . . . . .</b>	<b>15 or 16</b>	<b>Total . . . . .</b>	<b>15 or 16</b>

<sup>1</sup>College graduation requirement

<sup>2</sup>College graduation requirement

<sup>3</sup>Many liberal arts curricula require the completion or the equivalent of two years college credit in a foreign language

<sup>4</sup>Speech, science, mathematics, psychology, sociology, and art





## SCIENCE

The following pattern of courses for students intending to concentrate in the Sciences, Mathematics, or Education is one which meets the requirements of the first two years of work in most four-year colleges and universities.

### First Year

First Semester	Hours	Second Semester	Hours
English Composition <sup>1</sup> .....	3	English .....	3
Mathematics .....	3	History .....	3
Science (Laboratory) .....	4	Science (Laboratory) .....	4
Political Science <sup>2</sup> .....	3	Social Science .....	3
Speech .....	3	General Psychology .....	3
Total .....	16	Total .....	16

### Second Year

First Semester	Hours	Second Semester	Hours
Mathematics .....	3 or 4	Mathematics .....	3 or 4
Science (Laboratory) .....	4	Science (Laboratory) .....	4
Foreign Language <sup>3</sup> or Literature .....	4 or 3	Foreign Language or Literature .....	4 or 3
Elective <sup>4</sup> .....	3	Elective .....	3
Social Science .....	3	Social Science .....	3
Total .....	16 or 17	Total .....	16 or 17

<sup>1</sup>College graduation requirement

<sup>2</sup>College graduation requirement

<sup>3</sup>If foreign language is required, the completion of two years of college credit or its equivalent is suggested.

<sup>4</sup>Art appreciation and music appreciation

## GENERAL EDUCATION

The general education program is especially suitable for those students who wish to gain broad understanding in various content fields and are not concerned specifically with acquiring job-entry skills, or securing college-parallel credit. The basic purpose of the following guidelines is the intellectual, cultural, and personal development of an individual.

### First Year

First Semester	Hours	Second Semester	Hours
Mathematics or Science .....	3 or 4	Mathematics or Science .....	3 or 4
English <sup>1</sup> .....	3	English .....	3
Political Science <sup>2</sup> .....	3	Social Science .....	3
Foreign Language <sup>3</sup> or Elective <sup>4</sup> .....	4 or 3	Foreign Language <sup>3</sup> or Elective <sup>4</sup> .....	4 or 3
Music or Art Appreciation .....	<u>3</u>	Music or Art Appreciation .....	<u>3</u>
Total .....	15 or 16	Total .....	15 or 16

### Second Year

First Semester	Hours	Second Semester	Hours
Literature .....	3	Literature .....	3
Social Science .....	6	Social Science .....	6
Art or Music .....	3	Art or Music .....	3
Foreign Language <sup>3</sup> or Elective <sup>4</sup> .....	<u>3</u>	Foreign Language <sup>3</sup> or Elective <sup>4</sup> .....	<u>3</u>
Total .....	15	Total .....	15

For information on transfer requirements and arrangements, please turn to page 260.

<sup>1</sup>College graduation requirement

<sup>2</sup>College graduation requirement

<sup>3</sup>Many liberal arts curricula require the completion or the equivalent of two years college credit in a foreign language

<sup>4</sup>Essentially, any course in the general education division

## Engineering

### Pre-Engineering Two-Year Program

**Advisors: Ralph Bottorff (Math), George Kapp (Physics)**

A two-year program for the student desiring a career in engineering. Graduates of the pre-engineering program will qualify to transfer into the engineering programs at four-year colleges and universities meeting the minimum requirements for placement at the Junior level.

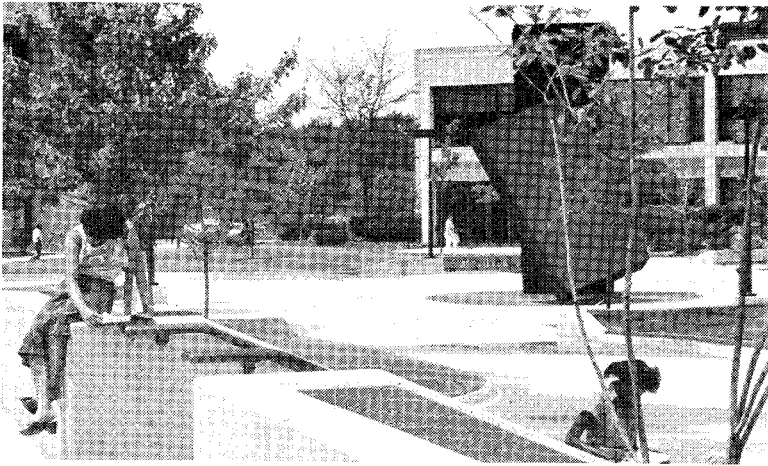
As the requirements vary slightly from one engineering field to another, two curricula have been developed for the program. Students should select Curriculum I or Curriculum II depending on the field in which they are interested. Further, it is important that students meet with one of the program advisors and clarify the options available.

### Curriculum I

All fields except Chemical Engineering and Materials Engineering

Description	Course	Hrs.										
<b>First Term (Fall)</b>												
Calculus I .....	MTH 191	5										
FORTAN Programming .....	CPS 187	4										
English Composition I .....	ENG 111	4										
General Chemistry I .....	CEM 111	4										
First Semester Total: 17												
<b>Second Term (Winter)</b>												
Calculus II .....	MTH 192	4										
Linear Algebra .....	MTH 197	4										
General Chemistry II .....	CEM 122	4										
Government	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 2em; vertical-align: middle;">{</td> <td>Government and Society .....</td> <td>PLS 108</td> <td rowspan="3" style="font-size: 2em; vertical-align: middle;">}</td> </tr> <tr> <td></td> <td>Intro. to Am. Gov't .....</td> <td>PLS 112</td> </tr> <tr> <td></td> <td>State and Local Gov't .....</td> <td>PLS 150</td> </tr> </table>	{	Government and Society .....	PLS 108	}		Intro. to Am. Gov't .....	PLS 112		State and Local Gov't .....	PLS 150	3
{	Government and Society .....	PLS 108	}									
	Intro. to Am. Gov't .....	PLS 112										
	State and Local Gov't .....	PLS 150										
Elective <sup>1</sup>	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 2em; vertical-align: middle;">{</td> <td>Industrial Drafting .....</td> <td>ID 100</td> <td rowspan="3" style="font-size: 2em; vertical-align: middle;">}</td> </tr> <tr> <td></td> <td>Technical Writing* .....</td> <td>ENG 107</td> </tr> <tr> <td></td> <td>English Composition II .....</td> <td>ENG 122</td> </tr> </table>	{	Industrial Drafting .....	ID 100	}		Technical Writing* .....	ENG 107		English Composition II .....	ENG 122	3 or 4
{	Industrial Drafting .....	ID 100	}									
	Technical Writing* .....	ENG 107										
	English Composition II .....	ENG 122										
Second Semester Total: 18 or 19												





### Third Semester (Fall)

Calculus III <sup>3</sup>	MTH 293	4
Analytical Physics I	PHY 211	5
Elective	{ Introductory Psychology . . . . . PSY 100	3
	{ Principles of Economics I* <sup>2</sup> . . . . . EC 211	
	{ Western Civilization to 1600 . . . . . HST 101	
Elective	{ Introduction to Philosophy . . . . . PHL 101	3
	{ World Literature I* . . . . . ENG 213	
	{ Art Appreciation . . . . . ART 130	

Third Semester Total: 15

### Fourth Semester (Winter)

Differential Equations <sup>3</sup>	MTH 295	4
Analytical Physics II	PHY 222	5
Elective	{ Principles of Sociology . . . . . SOC 100	3
	{ Principles of Economics II* . . . . . EC 222	
	{ Western Civilization from 1600 . . . . . HST 102	
Elective	{ Shakespeare . . . . . ENG 200	3
	{ World Literature II* . . . . . ENG 224	
	{ Introduction to Humanities . . . . . HUM 101	

Fourth Semester Total: 15

### Total Credit Hours for Program: 65 or 66

\*Indicates the recommended elective.

<sup>1</sup>Industrial Drafting is required for Civil, Mechanical, and Naval Engineering at the University of Michigan. Some engineering schools may require English 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 usually better to take Differential Equations before Analytical Physics II. Therefore, students may want to consider taking Calculus III, the prerequisite for Differential Equations, during the Spring-Summer Term following the Second Semester. Differential Equations would then be taken in the Third Semester.

## Curriculum II

### Chemical Engineering and Materials Engineering

Description	Course	Hrs.									
<b>First Term (Fall)</b>											
Calculus I .....	MTH 191	5									
FORTTRAN Programming .....	CPS 187	4									
English Composition I .....	ENG 111	4									
General Chemistry I .....	CEM 111	4									
First Semester Total: 17											
<b>Second Semester (Winter)</b>											
Calculus II .....	MTH 192	4									
Linear Algebra .....	MTH 197	4									
General Chemistry II .....	CEM 122	4									
Principles of Economics I <sup>4</sup> .....	EC 211	3									
Government	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">}</td> <td>Government and Society .....</td> <td>PLS 108</td> </tr> <tr> <td></td> <td>Intro. to American Government .....</td> <td>PLS 112</td> </tr> <tr> <td></td> <td>State and Local Government .....</td> <td>PLS 150</td> </tr> </table>	}	Government and Society .....	PLS 108		Intro. to American Government .....	PLS 112		State and Local Government .....	PLS 150	3
}	Government and Society .....	PLS 108									
	Intro. to American Government .....	PLS 112									
	State and Local Government .....	PLS 150									
Second Semester Total: 18											
<b>Third Semester (Fall)</b>											
Calculus III <sup>5</sup> .....	MTH 293	4									
Analytical Physics I .....	PHY 211	5									
Organic Chemistry I .....	CEM 211	3									
Elective	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">}</td> <td>Introduction to Philosophy .....</td> <td>PHL 101</td> </tr> <tr> <td></td> <td>World Literature I* .....</td> <td>ENG 213</td> </tr> <tr> <td></td> <td>Art Appreciation .....</td> <td>ART 130</td> </tr> </table>	}	Introduction to Philosophy .....	PHL 101		World Literature I* .....	ENG 213		Art Appreciation .....	ART 130	3
}	Introduction to Philosophy .....	PHL 101									
	World Literature I* .....	ENG 213									
	Art Appreciation .....	ART 130									
Third Semester Total: 15											
<b>Fourth Semester (Winter)</b>											
Differential Equations <sup>5</sup> .....	MTH 295	4									
Analytical Physics II .....	PHY 222	5									
Organic Chemistry II .....	CEM 222	5									
Elective	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">}</td> <td>Shakespeare .....</td> <td>ENG 200</td> </tr> <tr> <td></td> <td>World Literature II* .....</td> <td>ENG 224</td> </tr> <tr> <td></td> <td>Introduction to Humanities .....</td> <td>HUM 101</td> </tr> </table>	}	Shakespeare .....	ENG 200		World Literature II* .....	ENG 224		Introduction to Humanities .....	HUM 101	3
}	Shakespeare .....	ENG 200									
	World Literature II* .....	ENG 224									
	Introduction to Humanities .....	HUM 101									
Fourth Semester Total: 17											

**Total Credit Hours for Program: 67**

\*Indicates the recommended elective.

<sup>4</sup>Some engineering schools may require English Composition II in place of a Social Science, or Humanities. It is always a good idea to check with the engineering school about their specific requirements.

<sup>5</sup>It is usually better to take Differential Equations before Analytical Physics II. Therefore, students may want to consider taking Calculus III, the prerequisite for Differential Equations, during the Spring-Summer Term following the Second Semester. Differential Equations would then be taken in the Third Semester.

# OCCUPATIONAL EDUCATION

## Business and Management Career Programs

### Accounting

**Two-Year Program: Code 521**

**Advisors: Paul C. Kokkales, Norma Meyers and Clifford M. Bellers**

A two-year program providing career training as an accounting technician. Accounting technicians perform relatively 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 technician 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 Course	Sequence Description	Hrs.
<b>First Term</b>			
1	BUS 140	Introduction to Business	3
1	ACC 111	Principles of Accounting	3
2	CIS 111	Computer Concepts*	3
2	CIS 112	Computer Functions*	3
1	MTH 163	Business Mathematics or	
	MTH 181	Finite Mathematics or	
		Mathematics Elective	4
2	ENG 111	Composition I	4
			20
<b>Second Term</b>			
2	ACC 122	Principles of Accounting	3
3	ACC 131	Computerized Accounting	3
3	ENG 122	Composition II	3
4	SPH 101	Fundamentals of Speaking	3
6	PLS 150	State and Local Government and Politics	3
			15
<b>Third Term</b>			
3 Fall	ACC 213	Intermediate Accounting	3
5	BUS 111	Business Law	3
4	EC 211	Principles of Economics	3
5	BUS 207	Business Communications	3
7	MGT 230	Supervisory Management	3
			15
<b>Fourth Term</b>			
4 Wtr	ACC 225	Managerial Cost Accounting	3
6	MGT 200	Human Relations in Business and Industry	3
5	EC 222	Principles of Economics	3
7	FIN 220	Principles of Finance	3
7	IE 200	Internship-Externship or Business Elective <sup>2</sup>	3
			15
<b>Total Credit Hours for Program: 65</b>			

- \*Meets 6 hours per week for 7½ weeks.
- ²BUS 122 Business Law
- ³ACC 200 Personal Tax Accounting
- ⁴Other Electives with Program Advisor Consultation

**Management**  
**Two-Year Program: Code 541**  
**Advisors: Gwen Arnold, Robert C. McNally, Frank Ross, Ronald Zeeb**

A two-year program providing career training in management. This person provides services to customers of manufacturing establishments by rendering technical, marketing, and other advice: supplies information regarding handling, contents, and technical uses of product; consults with department managers concerning problems of packaging, customer specifications, and competitive product information; assists sales force in promotional activities, submits reports on product consumption; investigates consumer complaints and attempts to remedy situation; surveys potential markets and new uses of products; usually specializes in servicing customers of one product or a group of closely related products. *Average employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
	<b>First Term</b>		
1	BUS 140	Introduction to Business	3
4	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting	3
2	MGT 160	Principles of Salesmanship	3
1	ENG 111	Composition I	4
1	MTH 163	Business Mathematics or	
		Mathematics Elective	3
			16
	<b>Second Term</b>		
2	MGT 208	Principles of Management	3
4	CIS 100	Introduction to Computers or	
	CIS 111	Computer Concepts*	3
2	ENG 122	Composition II	3
5	ACC 092	Fundamentals of Accounting or	
5	ACC 122	Principles of Accounting	3
5	BUS 111	Business Law	3
8	SPH 101	Fundamentals of Speaking	3
			18
	<b>Third Term</b>		
3	MGT 150	Labor Management Relations	3
7	BUS 207	Business Communication	3
2	EC 211	Principles of Economics	3
8	PLS 150	State and Local Government	3
		Business Elective**	3
			15
			29

### Fourth Term

6	MGT 200	Human Relations in Business and Industry	3
6	MGT 240	Personnel Management	3
3	EC 222	Principles of Economics	3
2	MGT 250	Principles of Marketing	3
	FIN 220	Principles of Finance	3
			<u>15</u>

### Total Credit Hours for Program: 64

\*Meets 6 hours per week for 7½ weeks.

### \*\*RECOMMENDED ELECTIVES:

BUS 107	Women in the Workplace	1
BUS 122	Business Law	3
IE 200	Internship/Externship	3
MGT 230	Supervisory Management	3
MGT 220	Women in Management	3

## Marketing

### Two-Year Program: Code 542

Advisors: Gwen Arnold, Frank Ross, Ronald Zeeb

A two-year program developing students for career opportunities in the field of marketing. Such opportunities may be in any one of the marketing activities that involves the moving of products or services from producer to consumer. This program provides students with a basic education in the marketing discipline, leading to entry or mid-level positions, ranging from industrial sales to retail buying. It will emphasize such skills as sales technique, advertising, sales management, human relations, distribution, administrative and record management. *Average employability.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
		<b>First Term</b>	
1	BUS 140	Introduction to Business	3
1	MTH 163	Business Mathematics or Mathematics Elective	3
2	ENG 111	Composition I	4
7	MGT 160	Principles of Salesmanship	3
3	SPH 101	Fundamentals of Speaking	3
2	CIS 100	Introduction to Computers or	
	CIS 111	Computer Concepts*	3
			<u>19</u>
		<b>Second Term</b>	
2	CIS 112	Computer Functions*	3
1	MGT 150	Labor Management Relations	3
	ENG 122	Composition II	3
6	BUS 111	Business Law	3
	PLS 150	State and Local Government and Politics	3
			<u>15</u>



<b>Third Term</b>			
5	MGT 200	Human Relations in Business and Industry	3
3	BUS 207	Business Communications	3
5	EC 211	Principles of Economics	3
3	MGT 250	Principles of Marketing	3
4	MGT 208	Principles of Management	3
5	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting	<u>3</u>
			18
<b>Fourth Term</b>			
7	MGT 260	Sales Management	3
8	MGT 270	Advertising Principles	3
6	EC 222	Principles of Economics	3
8	IE 200	Internship-Externship or Business Elective	3
5	ACC 092	Fundamentals of Accounting or	
	ACC 122	Principles of Accounting	<u>3</u>
			15

**Total Credit Hours for Program: 67**

\*Meets 6 hours per week for 7½ weeks.

**Sales**

**One-Year Program: Code 543**

**Advisors: Gwen Arnold, Frank Ross, Ronald Zeeb**

A one-year program offering 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 may include display preparation, inventory analysis and basic market research. *Average employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	BUS 140	Introduction to Business	3
1	MTH 163	Business Mathematics or Mathematics Elective	3
2	ENG 100	Communication Skills or	
	ENG 111	Composition I	4
3	SPH 101	Fundamentals of Speaking	3
4	PSY 100	Introductory Psychology	<u>3</u>
			16
<b>Second Term</b>			
4	MGT 250	Principles of Marketing	3
3	MGT 160	Principles of Salesmanship	3
5	MGT 200	Human Relations in Business and Industry	3
5	BUS 111	Business Law	3
2	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting	3
6	IE 200	Internship-Externship or Business Elective	<u>3</u>
			18

**Total Credit Hours for Program: 34**

# Secretarial and Office Career Programs

## Clerk Typist

**One-Year Program: Code 562**

**Advisors: Wanda Burch, Eleanor Charlton, Marie Juster, Jerry Patt**

This certificate 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	Description	Hrs.
<b>First Term</b>		
SO 101 <i>or</i>		
SO 102 <i>or</i>		
SO 203	Typewriting**	3
CIS 100	Introduction to Computers	3
MTH 163	Business Mathematics	3
ENG 100	Communication Skills	4
	Business-Related Elective	3
		16
<b>Second Term</b>		
SO 102	(or 203) Typewriting**	3
SO 152	Information Processing Transcription Skills	3
SO 130	Business Machines	3
SO 107	Clerical Methods and Procedures	4
SO 153	Information Processing Applications/Basic Practice***	2
		15

### Recommended Business-Related Electives

SO 151	Information Processing Principles
SO 131	Shorthand
ACC 091	Fundamentals of Accounting <i>or</i>
ACC 111	Principles of Accounting
MGT 200	Human Relations in Business and Industry
SPH 101	Fundamentals of Speaking

### Total Credit Hours for Program: 31

\*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.)

\*\*\*Meets 4 hours per week for 7½ weeks.

## Information Processing Specialist

**Two-Year Program: Code 564**

**Advisors: Wanda Burch, Eleanor Charlton, Marie Juster, and Jerry Patt**

This associate degree 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.

**Full-Time Sequence\***

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>		
SO 151	Information Processing Principles	3
SO 102 <i>or</i>		
SO 203	Typewriting**	3
MTH 163	Business Mathematics	3
ENG 100	Communication Skills	4
CIS 100	Introduction to Computers	3
		<u>16</u>
<b>Second Term</b>		
SO 152	Information Processing Transcription Skills	3
SO 153	Information Processing Applications/Basic Practice***	2
SO 203	Typewriting	3
SO 107	Clerical Methods and Procedures	4
BUS 140	Introduction to Business	3
		<u>15</u>
<b>Third Term</b>		
SO 214	Information Processing Applications/Advanced Practice	3
SO 250	Office Systems and Procedures	4
ACC 091	Fundamentals of Accounting <i>or</i>	
ACC 111	Principles of Accounting	3
PLS 108	Government and Society	3
IE 200	Intern-Externship <i>or</i>	
	Business-Related Elective	3
		<u>16</u>
<b>Fourth Term</b>		
SO 225	Information Processing Systems and Procedures	3
SPH 101	Fundamentals of Speaking	3
SO 130	Business Machines	3
MGT 200	Human Relations in Business and Industry	3
IE 200	Internship/Externship <i>or</i>	
	Business-Related Elective	3
		<u>15</u>
<b>Recommended Business-Related Electives</b>		
MGT 230	Supervisory Management	
CIS 111	Computer Concepts <i>or</i>	
CIS 105	Microcomputer Programming	
ACC 092	Fundamentals of Accounting <i>or</i>	
ACC 122	Principles of Accounting	
BUS 111	Business Law	
RDG 115	Medical Terminology	

**Total Credit Hours for Program: 62**

\*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.)

\*\*\*Meets 4 hours per week for 7½ weeks.

## Medical Secretary

Two-Year Program: Code 731

Advisors: Wanda Burch, Eleanor Charlton, Marie Juster, Jerry Patt

This associate degree 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	Description	Hrs.
<b>First Term</b>		
SO 101 <i>or</i>		
SO 102 <i>or</i>		
SO 203	Typewriting**	3
CIS 100	Introduction to Computers	3
ENG 100	Communication Skills	4
HS 113	Introduction to Medical Science	2
RDG 115	Medical Terminology	2
MTH 163	Business Mathematics	3
		17
<b>Second Term</b>		
SO 102 <i>or</i>		
SO 203	Typewriting**	3
BIO 111	Anatomy and Physiology <i>or</i>	
BIO 102	Human Biology	4
PSY 100	Introduction to Psychology	3
SO 152	Information Processing Transcription Skills	3
SO 153	Information Processing	
	Applications/Basic Practice***	2
		15
<b>Third Term</b>		
SO 210	Medical Transcription	3
SO 107	Clerical Methods and Procedures	4
PLS 108	Government and Society	3
IE 200	Intern/Externship <i>or</i>	
	Business-Related Elective	3
SO 130	Business Machines	3
		16
<b>Fourth Term</b>		
SO 224	Information Processing for Medical Specialist	2
SO 223	Medical Office Procedures	3
SPH 101	Fundamentals of Speaking	3
HS 115	Medical Office Procedures (Clinical)	2
MGT 200	Human Relations in Business and Industry	3
IE 200	Internship/Externship <i>or</i>	
	Business-Related Elective	3
		16

## Recommended Business-Related Electives

SO 131	Shorthand
SO 151	Information Processing Principles
ACC 091	Fundamentals of Accounting <i>or</i>
ACC 111	Principles of Accounting

### Total Credit Hours for Program: 64

\*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.)

\*\*\*Meets 4 hours per week for 7½ weeks.

## Secretarial Technician

### Two-Year Program: Code 561

**Advisors: Wanda Burch, Eleanor Charlton, Marie Juster, and Jerry Patt**

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

#### Full-Time Sequence\*

Course	Description	Hrs.
<b>First Term</b>		
SO 102	Intermediate Typewriting**	3
BUS 140	Introduction to Business	3
MTH 163	Business Mathematics	3
ENG 100	Communication Skills	4
CIS 100	Introduction to Computers	3
		<u>16</u>
<b>Second Term</b>		
SO 203	Advanced Typewriting**	3
SO 131	Beginning Shorthand	4
SO 130	Business Machines	3
PLS 108	Government and Society	3
SPH 101	Fundamentals of Speaking	3
		<u>16</u>
<b>Third Term</b>		
SO 132	Intermediate Shorthand	3
SO 152	Information Processing Transcription Skills	3
SO 107	Clerical Methods and Procedures	4
SO 153	Information Processing Applications/Basic Practice***	2
ACC 091	Fundamentals of Accounting <i>or</i>	
ACC 111	Principles of Accounting	3
		<u>15</u>
<b>Fourth Term</b>		
SO 231	Advanced Shorthand	3
SO 250	Office Systems and Procedures	4
IE 200	Internship/Externship <i>or</i> Business-Related Electives	3

SO 214	Information Processing Applications/Advanced Practice	3
MGT 200	Human Relations in Business and Industry	3
		<u>16</u>

### Recommended Business-Related Electives

SO 151	Information Processing Principles
EC 211	Principles of Economics
BUS 111	Business Law
MGT 230	Supervisory Management
CIS 111	Computer Concepts
ACC 092	Fundamentals of Accounting <i>or</i>
ACC 122	Principles of Accounting

### Total Credit Hours for Program: 63

\*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.)

\*\*\*Meets 4 hours per week for 7½ weeks.

## Computer and Electronic Career Programs

### Computer Information Systems Career Programs

#### Business Computer Programmer Two-Year Program

**Advisors: Charles Finkbeiner, Usha Jindal, Larry Krieg  
Arlene Paup, John Rinn, Bob Wotring**

A two-year program intended for the preparation of entry-level or trainee computer programmers who will work in an applications environment to support the general, administrative and organizational information processing function of industry, commerce, business and government service.

Graduates should be able to work with a systems analyst in the programming environment usually found in a medium to large installation.

Course	Description	Hrs.
<b>First Term (Fall)</b>		
CIS 111	Computer Concepts	3
CIS 112	Computer Functions	3
MTH 169	Intermediate Algebra	4
ACC 111	Principles of Accounting	3
ENG 100	Communication Skills	4
		<u>17</u>
<b>Second Term (Winter)</b>		
CIS 115	Programming Logic	3
CIS 130	Pascal for Business and Industry	3
ACC 122	Principles of Accounting	3
MTH 160	Basic Statistics	4
ENG 107	Technical Communications	3
		<u>16</u>

**Spring Half-Term**

SPH 101	Fundamentals of Speech	3
MGT 200	Human Relations in Business and Industry	3
		<u>6</u>

**Third Term (Fall)**

CIS 170	COBOL I	4
CIS 240	Career Practices	2
CIS 286	Operating Systems	3
CIS 288	Systems Analysis and Design	3
CIS	Approved CIS Elective	3
		<u>15</u>

**Fourth Term (Winter)**

PLS 108	Government and Society	3
MGT 215	Small Business Management	3
CIS 270	COBOL II	4
CIS 283	Large System Data Base	4
CIS	Approved CIS Elective	3
		<u>17</u>

**Approved CIS Electives**

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

**Total Credit Hours for Program: 71****Computer Science****Two-Year Transfer Program****Advisors: Roger Palay, Janet Remen, Martha Showalter**

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

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
	<b>First Term</b>		
1	CPS 188	Introduction to ALGOL Programming <i>or</i>	
	CPS 186	Introduction to Pascal Programming	4
2	MTH 191	Calculus I	5
1	PLS 108	Government and Society <i>or</i>	
	PLS 112	Introduction to American Government <i>or</i>	
	PLS 150	State and Local Government	3
4	ENG 111	English Composition I	4
			<u>16</u>
	<b>Second Term</b>		
2	CPS 288	Advanced ALGOL Programming <i>or</i>	
	CPS 286	Advanced Pascal Programming	4
3	MTH 192	Calculus II	4
5	PHY 211	Analytical Physics I	5
3	PSY 100	Introduction to Psychology	3
			<u>16</u>
			37

<b>Third Term</b>			
6	CPS 290	Program Design Methodologies	4
5	EE 137	Switching Logic	3
4	MTH 293	Calculus III	4
6	PHY 222	Analytical Physics II	5
			<u>16</u>
<b>Fourth Term</b>			
		Choice of two courses from:	
7	CPS 291	File Structures	
8	CPS 292	Assembler Language Programming	8
	CPS 294	Comparative Languages	
		6 credits of approved electives in Humanities;	6
7		recommended that ENG 122 English	
		Composition	
8		be included	
			<u>14</u>

**Total Credit Hours for Program: 62**

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

### **Computer Systems Operator**

#### **One-Year Program: Code 531**

**Advisors: Charles Finkbeiner, Usha Jindal, Larry Krieg  
Arlene Paup, John Rinn, Bob Wotring**

A one-year program designed to develop skills and knowledge necessary to meet 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 large, small and microcomputers.

<b>Part-Time Sequence**</b>	<b>Full-Time Course</b>	<b>Full-Time Sequence Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
1	CIS 111	Computer Concepts	3
1	CIS 112	Computer Functions	3
1	CIS 141	Computer Operations I	3
2	MTH 163	Business Math	3
2	ENG 100	Technical Communications	4
			<u>16</u>
<b>Second Term (Winter)</b>			
3	CIS 142	Computer Operations II	3
3	CIS	*Choose one approved Elective	3
4	MGT 200	Human Relations in Business and Industry	3
4	PLS 108	Government and Society	3
	CIS	*Choose one approved Elective	3
			<u>15</u>
<b>*Approved Electives</b>			
	CIS 130	Pascal for Business and Industry	3
	CIS 136	BASIC for Business and Industry	3



CIS 137	RPG	3
CIS 199	On-the-Job-Training	3
EE 137	Switching Logic	3
EE 105	Intro to Telecommunications	3

**Total Credit Hours for Program: 31**

## Small Business Computer Systems Programmer

### Two-Year Program

**Advisors: Charles Finkbeiner, Usha Jindal, Larry Krieg  
Arlene Paup, John Rinn, Bob Wotring**

A two-year program designed to meet the special needs of expanding microcomputer applications to business data processing. The student will be exposed to microcomputer systems, several languages and will analyze and design small business systems. This curriculum prepares the student for employment as a programmer/operator for an installation using small systems.

#### Full Time Sequence

Course	Description	Hrs.
<b>First Term (Fall)</b>		
CIS 111	Computer Concepts	3
CIS 112	Computer Functions	3
MTH 169	Intermediate Algebra	4
ACC 111	Principles of Accounting	3
ENG 100	Communication Skills	4
		17
<b>Second Term (Winter)</b>		
CIS 115	Programming Logic	3
CIS 130	Pascal for Business and Industry	3
ACC 122	Principles of Accounting	3
MTH 160	Basic Statistics	4
ENG 107	Technical Communications	3
		16
<b>Spring Half-Term</b>		
SPH 101	Fundamentals of Speaking	3
MGT 200	Human Relations in Business and Industry	3
		6
<b>Third Term (Fall)</b>		
CIS 230	Advanced Pascal for Business and Industry	3
CIS 240	Career Practices	2
CIS 275	C Language	3
CIS 288	Systems Analysis and Design	3
CIS	Approved CIS Elective	3
		14
<b>Fourth Term (Winter)</b>		
PLS 108	Government and Society	3
MGT 215	Small Business Management	3
CIS 238	Assembler	3
CIS 282	Small System Data Base	3
CIS	Approved CIS Elective	3
		15

**Approved CIS Electives**

CIS 136	BASIC for Business and Industry	3
CIS 199	On-the-Job-Training	3
CIS 280	Computer File Design	3
CIS 284	Data Communications	3
CIS 286	Operating Systems	3

**Total Credits: 68****Digital and Electronics Career Programs****Digital Equipment Technology****Two-Year Program: Code 835****Advisors: Gary Downen, Phil Mullins and Arlene Paup**

The Digital Equipment Technology Program at the College trains technicians to install, service and maintain digital computer systems, word processing systems, numerical control equipment, industrial robots security systems and instrumentation systems. Students in this program learn the basic electronic skills needed to install and service this wide range of electronic systems.

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
8	EE 101	Servicing Techniques	4
1	EE 123	Fundamentals of Electricity	8
1	EE 137	Switching Logic	3
			<u>15</u>
<b>Second Term (Winter)</b>			
2	EE 139	Computer Systems I	4
2	EE 140	Software Concepts for Hardware Technicians	3
4	EE 211	Basic Electronics	4
3	ENG 100	Communication Skills or English Composition I	4
			<u>15</u>
<b>Spring Term</b>			
2	EE 221	Computer Peripherals	3
4	ENG 107	Intermediate Composition	3
			<u>6</u>
<b>Third Term (Fall)</b>			
7	EE 222	Digital Electronics I	4
3	EE 230	Computer Systems II	4
9	EE 240	Career Practices Seminar	2
7	EE 241	Digital Electronics II	4
9	PLS 108	Government and Systems	3
			<u>17</u>
<b>Fourth Term (Winter)</b>			
6	EE 234	VAX/VMS for Hardware Technicians	3
5	EE 235	Computer Systems III	4
5	EE 238	Electronic Analog Circuits	4
8	EE 250	Microprocessors	4
9		Approved Non-Technical Elective	3
			<u>17</u>

**Total Credit Hours for Program: 70**

## Electronic Control Systems Technology

**Two-Year Program: Code 831**

**Advisors: Dean Russell, William Cleary, Lawrence Kramer, Gary Downen,  
Dave Weyant, Phil Mullins, Ken Wheeler**

A two-year program designed to provide career training as an industrial electronics and automation technologist. The technologist will do much of the traditional work of an industrial electrician but also much more. He or she will assemble and fabricate prototype equipment; install and calibrate new equipment to manufacturer's specifications; recommend modifications to equipment; modify both written and drawn documentation; install electrical and pneumatic instrumentation. He/she may expect to 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 graduate of this program will be well versed in technical communications, digital and analog electronics, information processing, motors and solid state controls, and systems level troubleshooting.

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
1	EE 123	Electrical Fundamentals	8
1	EE 137	Switching Logic	3
2	PHY 110	Applied Physics	4
			15
<b>Second Term (Winter)</b>			
2	EE 211	Basic Electronics	4
3	EE 139	Computer Systems I	4
3	EE 134	Motors and Controls	4
4	ENG 100	Communication Skills	4
			16
<b>Spring Term</b>			
4	EE 101	Servicing Techniques	4
5	ENG 107	Technical Communication or approved non-technical Elective	3
			7
<b>Third Term (Fall)</b>			
5	EE 241	Digital Electronics II	4
6	EE 250	Microprocessors	4
6	EE 224	Programmable Controllers	4
7	EE 244	Electronic Control Systems	4
7	EE 240	Career Practices Seminar	2
			18
<b>Fourth Term (Winter)</b>			
4	EE 204	National Electric Code	2
8	EE 264	Microprocessor Systems or approved technical Elective	4
8	EE 254	Programmable Controller Systems or approved technical Elective	4
9	EE 238	Electronic Analog Circuits	4
9	PLS 108	Government and Society	3
			17
<b>Total Credit Hours for Program: 73</b>			

## Telecommunication Technology

Two-Year Program: Code 831

Advisors: William Cleary, Larry Kramer, Phillip G. Mullins,  
Dean Russell, Gary Downen, Dave Weyant, Ken Wheeler

A two-year program designed to train entry-level technicians for the telecommunications industry. A Telecommunications Technologist will find employment in companies and institutions that have telephone and data communications systems. The graduates will install, maintain and troubleshoot telecommunication systems after an on-the-job-training program.

Part-Time Sequence	Full-Time Course	Description	Hrs.
<b>First Term (Fall)</b>			
1, 2	EE 123	Fundamentals of Electricity	8
3	EE 137	Switching Logic	3
1	EE 101	Servicing Techniques I	4
			<u>15</u>
<b>Second Term (Winter)</b>			
3	EE 105	Introduction to Telecommunications	3
4	EE 211	Basic Electronics	4
4	EE 139	Computer Systems I	4
2	ENG 100	Communication Skills	4
3	EE 140	Software Concepts I	3
			<u>18</u>
<b>Spring-Summer Term</b>			
5		Non-Technical Elective	3
5	EE 241	Digital Electronic II	4
			<u>7</u>
<b>Third Term (Fall)</b>			
5	EE 205	Basic Telephony	4
6	EE 215	Digital Communications I	3
7	EE 238	Electronic Analog Circuits	4
6	EE 250	Microprocessors	4
9	EE 240	Career Practices Seminar	2
			<u>17</u>
<b>Fourth Term (Winter)</b>			
8	EE 225	Digital Communications II	4
8	EE 245	Transmission Systems	4
9	EE 275	Switching Systems	4
9	PLS 108	Government and Society	3
			<u>15</u>

**Total Credit Hours for Program: 72**

# Health Occupations Career Programs

## Dental Auxiliary Career Programs

### Dental Assisting

Certificate Program: Code 711

Advisor: Betty Finkbeiner

A one-year program (three or four term options available) providing career training as a dental assistant. There are two types of educated dental assistants: the Certified Dental Assistant (C.D.A.) and the Registered Dental Assistant. The assistant is a second pair of hands at chairside for the dentist, thus the term four-handed dentistry. 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.*

Course	Description	Hrs.
<b>First Term</b>		
DA 110	Introduction to Dental Assisting—First 7 weeks	3
DA 114	Clinical Dental Assisting—Second 7 weeks	3
DA 113	Dental Materials—last 10 weeks	3
DA 111	Dental Science—14 weeks	4
DA 120	Oral Diagnosis	2
*BIO 102	Human Biology	4
*ENG 091	Writing Fundamentals <i>or</i>	
ENG 111	Composition I	<u>4</u>
		23
<b>Second Term</b>		
DA 122	Advanced Dental Science—14 weeks	4
DA 124	Advanced Clinical Dental Assisting—First 7 weeks	3
DA 121	Oral Diagnosis Practicum	1
DA 126	Dental Laboratory Procedures—First 10 weeks	4
DA 125	Dental Roentgenology	2
SO 101	Typewriting**	<u>3</u>
		17
<b>Third Term</b>		
DA 200	Clinical Practice	3
DA 202	Advanced Clinical Practice	3
DA 201	Dental Specialties	3
DA 215	Advanced Dental Roentgenology	2
DA 212	Dental Office Procedures	4
DA 103	Nutrition & Prevention	2
PSY 100	Psychology	<u>3</u>
		20
<b>Total Credit Hours for Certificate Program: 59</b>		

\*It is recommended that the student 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 Assistant  
and  
Associate Degree Program  
Two-Year Program: Code 712**

**Fourth Term**

DA 224	Expanded Duties	3
PLS 150	State and Local Government <i>or</i>	
PLS 108	Government and Society	3
MTH 090	Occupational Mathematics <i>or</i>	
MTH 165	Health Science Mathematics	3
	Elective	3-4
		12-13

**Total Credit Hours for Registered Dental Assistant Program: 71-72**

**Dental Office Manager  
and  
Associate Degree Program  
Two-Year Program: Code 713**

**Alternate Fourth Term**

CIS 100	Introduction to Computers <i>or</i>	
CIS 111	Computer Concepts	3
PLS 150	State and Local Government <i>or</i>	
PLS 108	Government and Society	3
ACC 111	Principles of Accounting	3
DA 222	Advanced Dental Practice Management	3
BUS 111	Business Law <i>or</i>	
MGT 209	Small Business Management <i>or</i>	
	Elective	3-4
		15-16

**Total Credit Hours for Dental Office Manager Program: 74-75**

**Emergency Medical Technology Career  
Programs**

**Emergency Medical Technology  
One-Year Program: Code 751  
Advisor: Craig Dunham**

A one-year program providing career training as an Emergency Medical Technician. Emergency Medical Technicians work on ambulance crews, in hospitals, for police and fire departments, and in the military, providing first aid. After arriving on the scene of an emergency or accident, an EMT first determines the nature and extent of victims' illnesses or injuries, then establishes priorities for emergency medical care. Patients receive appropriate medical care such as opening and maintaining an airway, restoring breathing, controlling bleeding, treating for shock, immobilizing fractures, bandaging, assisting in childbirth, managing mentally-disturbed patients, and giving initial care to poison and burn victims. They may transport patients to a hospital and perform necessary medical attention during the trip. EMTs are responsible for maintaining a clean, well-equipped ambulance.

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>		
EMT 101	EMT Principles I	3
EMT 102	EMT Techniques I	3
EMT 105	Patient Care Procedures	3
		<u>9</u>
<b>Second Term</b>		
EMT 103	EMT Principles II	3
EMT 104	EMT Techniques II	3
EMT 106	EMT Clinical Practicum	3
		<u>9</u>

**Total Credit Hours for Program: 18**

High school graduation or G.E.D. Valid, current certification of courses in Advanced First Aid and Emergency Care and Cardiopulmonary Resuscitation are required before admission. Completion of a course in Medical Terminology and Anatomy and Physiology highly desirable. A physical is also required. This program is conducted in conjunction with: St. Joseph Mercy Hospital, University of Michigan Medical Center, Beyer Memorial Hospital, and Huron Valley Ambulance Service.

Program has special application procedures. Contact Admissions Office for details. Only 25 students accepted per section.

**Advanced Emergency Medical Technology  
Two-Year Program: Code 751  
Advisor: Craig Dunham**

The Advanced Emergency Medical Technician training program consists of three academic semesters taken sequentially. Successful completion of the program will qualify the student to write the state licensing exam for advanced Emergency Medical Technicians.

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>		
BIO 111	Anatomy and Physiology	5
RDG 115	Medical Terminology	2
		<u>7</u>
<b>Second Term</b>		
EMT 201	Advanced EMT Lecture and Practice	6
RTH 148	Pharmacology for Resp. Therapists	3
		<u>9</u>
<b>Third Term</b>		
EMT 202	Advanced Cardiac Life Support Procedures	8
EMT 206	Advanced Clinical Experience	4
		<u>12</u>

**Total Credit Hours for Program: 46**

Prerequisites: high school graduate or G.E.D.; licensed EMT with minimum 6 months current, full-time ambulance experience as a licensed EMT; current cardiopulmonary resuscitation card from the American Red Cross or the American Heart Association; EMT Challenge Exam (waived for WCC graduates); a physical is also required.

This is a limited enrollment program and has special application procedures. Contact Admissions Office for details.

# Nursing Career Program

## Nursing

**One-Year Practical Nurse Program: Code 761**

**Two-Year Associate Degree Program: Code 762**

**Advisors: Barbara Goodkin, Judith Vanderveen, Gladys Knoll**

The Washtenaw Community College Nursing Program is a career mobility, ladder-concept program. It consists of a one-year 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. Basic students are admitted in the Fall Term only. Advanced standing students (Licensed Practical Nurses) are admitted in both the Fall and Winter semesters. 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. This program has a special application procedure and limited enrollment. Contact the Counseling Office for details. (Please note: high school chemistry and algebra or equivalent, with a grade of "C" or better, are required for admission to all of the nursing programs.) A "D" in any program course is considered unsatisfactory. A 2.0 average is required for graduation from the program. **Priority is given to Washtenaw County residents.**

### Level I—Practical Nursing First Level of Associate Degree Nursing

A one-year program providing career training as a licensed practical nurse. 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. In hospitals, licensed practical nurses provide much of the bedside care needed by patients. They take and record blood pressure and temperatures, change dressings, administer certain prescribed medicines, and help bed patients with bathing and other personal hygiene. They assist physicians and registered nurses in examining patients and in carrying out nursing procedures. They assist in the care and feeding of infants, and help registered nurses in recovery rooms. Some help supervise hospital attendants. Licensed practical nurses who work in private homes provide day-to-day patient care. They may teach family members how to perform simple nursing tasks. In doctors' offices and in clinics, licensed practical nurses prepare patients for examination and treatment. They also record information, make appointments, and teach clients about self-care. *High employability.*

Course	Description	Hrs.
<b>First (Fall) Term</b>		
*BIO 111	Anatomy and Physiology	5
NUR 100	Nursing Fundamentals with Laboratory	5
NUR 110	Nursing Clinical Experience	1
*ENG 100	Communication Skills or	
*ENG 111	Composition I	4
*HS 117	Nutrition	2
NUR 111	Pharmacology I	1
NUR 118	Personal and Community Health	1
		<u>19</u>



**Second (Winter) Term**

NUR 125	Basic Medical-Surgical Nursing (first 7½ weeks)	3
NUR 120	Basic Medical-Surgical Nursing Practice (first 7½ weeks)	3
NUR 126	Intermediate Medical-Surgical Nursing (second 7½ weeks)	3
NUR 121	Intermediate Medical-Surgical Nursing Practice (second 7½ weeks)	3
NUR 122	Pharmacology II	2
*PSY 100	Introduction to Psychology	3
		<hr/> 17

**Third (Spring-Summer) Semester**

NUR 135	Parent-Child Nursing (first 8 weeks)	3
NUR 130	Parent-Child Nursing Practice (first 8 weeks)	3
NUR 145	Advanced Medical Surgical Nursing (second 6 weeks)	2
NUR 140	Advanced Medical Surgical Nursing Practice (second 6 weeks)	3
*HS 147	Growth and Development	3
NUR 133	Pharmacology III	2
		<hr/> 16

**Total Credit Hours for Level I: 52**

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

### Level II—Associate Degree Completion (Fall Admission)

A two-year program providing career training as registered nurse. 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. Acute care includes emergency nursing, major surgery and skilled operating room nursing, coronary and general intensive care, intensive specialty care, such as trauma, medical-surgical, pediatric, cardiac, and respiratory, and natural and civil disaster nursing. Acute 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.*

**First (Fall) Semester**

+ HS 220	Pathophysiology	4
*BIO 237	Microbiology	4
*CEM 105	Fundamentals of Chemistry	4
NUR 200	Nursing Role Transition	4
		<hr/> 16

**Second (Winter) Term**

NUR 255	Mental Health Nursing Theory	3
NUR 250	Mental Health Nursing Practice (12 hours per week—7½ weeks)	2
NUR 235	Advanced Parent-Child Nursing Theory	3
NUR 230	Advanced Parent-Child Nursing Practice (12 hours per week—7½ weeks)	2
+ HS 244	Medical Ethics	2
*SOC 100	Principles of Sociology	3
		<hr/> 15

**Third (Spring) Half-Semester**

NUR 245	Complex Medical-Surgical Theory	3
NUR 240	Complex Medical-Surgical Practice (20 hours per week—7½ weeks)	3
*PLS 260	Political Science Requirement (108, 122 or 150)	3
NUR 260	Nursing Management and Trends	2
		<u>11</u>

\*May be taken before acceptance and/or entry into the nursing program  
 + Some medical or nursing experience is required to enroll in these courses

### Level II—Associate Degree Completion (Winter Admission)

Course	Description	Hrs.
<b>First (Winter) Semester</b>		
+ HS 220	Pathophysiology	4
*BIO 237	Microbiology	4
*CEM 105	Fundamentals of Chemistry	4
NUR 200	Nursing Role Transition	4
		<u>16</u>
<b>Second (Spring) Half-Semester</b>		
NUR 255	Mental Health Nursing Theory	3
NUR 250	Mental Health Nursing Practice	2
+ HS 244	Medical Ethics	2
*SOC 100	Principles of Sociology	3
		<u>10</u>
<b>Third (Fall) Semester</b>		
NUR 235	Advanced Parent-Child Nursing Theory	3
NUR 230	Advanced Parent-Child Nursing Practice (12 hours per week—7½ weeks)	2
NUR 245	Complex Medical-Surgical Theory	3
NUR 240	Complex Medical-Surgical Practice (20 hours per week—7½ weeks)	3
*PLS	Political Science Requirement (108, 112 or 150)	3
NUR 260	Nursing Management and Trends	2
		<u>16</u>

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

**Program Total: 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 Technician One-Year Program: Code 770 Advisor: Phyllis Grzegorzcyk

A one-year certificate Pharmacy Technician program combining 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. *Good employability.*

**Full-Time Sequence**

Course	Description	Hrs.
<b>First Term (Winter)</b>		
*CEM 105	Fund. of Chemistry <i>or</i> CEM 111	4
*RDG 115	Medical Terminology	2
*MTH 165	Health Science Mathematics	3
PHT 100	Introduction to Hospital & Community Pharmacy	3
PHT 101	Drug Products & Nomenclature	3
		<u>15</u>
<b>Second Term (Spring-Summer)</b>		
PHT 102	Drug Distribution Systems & Procedures	4
PHT 105	Preparation of Medications	2
*SO 101	Typing**	3
		<u>9</u>
<b>Third Term (Fall)</b>		
*CIS 100	Introduction to Computers	3
PHT 198	Pharmacy Field Experience	8
*ENG	English requirement for a certificate program (ENG 100 recommended)	4
		<u>15</u>

**Total Credit Hours for Program: 36-39**

\*These courses may be taken before entering the program.

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

High school chemistry, and algebra required for entrance.

Program has special application procedure. Contact Admissions Office or Counseling Office for details. Limited number of students accepted each year. One entrance date—WINTER.

## Radiography Career Program

### Radiography

Two-Year Program: Code 741

Advisors: Robert Nelson, Gerald Baker

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

Course	Description	Hrs.
<b>First (Summer) Term—7 weeks</b>		
RAD 100	Introduction to Radiography	2

RAD 101	Methods of Patient Care	2
MTH 165	Health Science Math	3
		<u>7</u>

**Second (Fall) Term—15 weeks**

RAD 110	Clinical Education (second 7 weeks)	1
RAD 111	Fundamentals of Radiography (first 7½ weeks)	2
RAD 112	Radiographic Positioning	2
RAD 113	Radiographic Processing (second 7½ weeks)	2
BIO 111	Anatomy and Physiology	5
BIO 105	Medical Terminology	2
		<u>14</u>

**Third (Winter) Term—15 weeks**

RAD 120	Clinical Education	2
RAD 123	Radiographic Positioning	2
RAD 124	Principles of Radiographic Exposure	3
RAD 125	Radiologic Procedures and Anatomy	3
RAD 127	Principles of Radiographic Exposure Laboratory	1
ENG	English Elective	4
		<u>15</u>

**Fourth (Spring) Term—7 weeks**

RAD 135	Pathology for Radiographers	2
RAD 130	Clinical Education	2
		<u>4</u>

**Fourth (Summer) Term—7 weeks**

RAD 140	Clinical Education	2
PLS	Political Science Elective	3
		<u>5</u>

**SECOND YEAR**

**Fifth (Fall) Term—15 weeks**

RAD 217	Clinical Education	3
RAD 215	Radiography of the Skull	2
RAD 218	Radiation Biology (first 7½ weeks)	2
RAD 219	Radiation Protection (second 7½ weeks)	2
CIS 111	Computer Concepts	3
PSY	Psychology Elective	3
		<u>15</u>

**Sixth (Winter) Term—15 weeks**

RAD 225	Clinical Education	3
RAD 220	Management of Rad. Environment	2
PHY 142	Radiologic Physics II	4
SOC	Sociology Elective	3
		<u>12</u>

**Seventh (Spring) Term—7 weeks**

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

**Total Credit Hours for Program: 75**

Admission Criteria: 1) Application by January 15 to Admissions Office; 2) High school graduation of G.E.D.; 3) One year of high school biology or BIO 101–Concepts of Biology at WCC with a grade of “C” or better; 4) One year of high school algebra or MTH 097–Introductory Algebra at WCC with a grade of “C” or better; 5) One year of high school physics of PHY 105–Introductory Physics at WCC with a grade of “C” or better; 6) Applicants will be screened using the following criteria: a) Completion of all pre-entry courses (Biology, Algebra and Physics) by January 1st,

- b) Priority is given to Washtenaw County residency, c) Date of application to the program, d) The remaining applicants will be alternates for admission and will be granted priority for admission to the next class. Alternates must update their application by contacting the Admissions Office; 7) When selected for the program, a student must pass a physical examination taken at his/her expense not more than three months before entering the clinical training phase of the program; 8) Students must maintain personal health coverage.

Program has special application procedure. Contact Admissions Office or Counseling Office for details. Limited number of students accepted each year. One entrance date—SUMMER.

## **Respiratory Therapy Career Program**

**Respiratory Therapy**  
**Two-Year Program: Code 721**  
**Advisors: Carl Hammond, Martin Redick**

A two-year (also a one-year technician transfer program) program providing career training as a respiratory therapist. Respiratory therapists treat persons with respiratory problems, and 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. *High employability.*

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First (Fall) Term</b>		
*BIO 111	Anatomy and Physiology	5
*PHY 131	Physics for Respiratory Therapy	3
*RDG 115	Medical Terminology	2
*RTH 106	Chemistry for Respiratory Therapy	3
RTH 121	Basic Equipment and Procedures	4
		17
<b>Second (Winter) Term</b>		
RTH 148	Pharmacology	2
RTH 122	Respiratory Physiology	2
RTH 123	Respiratory Pathophysiology	3
RTH 149	Pathology for Respiratory Therapy	3
RTH 198	General Clinical Practice I	3
		13
<b>Third (Spring/Summer) Term</b>		
RTH 213	Intensive & Rehabilitative Respiratory Care	3
RTH 212	Ventilators & Diagnostic Tests	3
RTH 214	Cardiodiagnostics	3
RTH 199	General Clinical II	3
		12
		51

**Fourth (Fall) Term**

BIO 237	Microbiology	4
PSY	Psychology Elective (PSY 100, 107 or 108)	3
PLS	Political Science Elective (PLS 108, 112 or 150)	3
RTH 219	Pediatric Respiratory Therapy	3
RTH 200	Advanced Clinical Practice	4
		<u>17</u>

**Fifth (Winter) Term**

*ENG	Eng. Comp. Elective (ENG 091, 100, 107, 111 or 122)	4
*SOC	Sociology Elective (SOC 100, 201, 202, 207 or 250)	3
RTH 217	Seminar—Respiratory Therapy	2
RTH 201	Specialty Clinical Practice	2
RTH 202	Pediatric Clinical Practice	2
		<u>13</u>

**Total Credit Hours for Program: 72**

Three prerequisite courses must be completed before admission to the program: Math 165, Chemistry 105, and Biology 102. This program in Respiratory Therapy 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.

Program has special application procedure. Contact advisor for details. Only forty students accepted each year.

## Human Service Career Programs

### Food and Hospitality Career Programs

**Culinary Arts Technician****Two-Year Program: Code 641**

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

A two-year program providing career training as a culinary arts technician. This technician supervises and coordinates activities of workers engaged in preparing, cooking, serving food, cleaning premises, and washing dishware; 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; may participate in preparing and cooking meals; may choose to assume responsibilities in the "front of the house," (This means supervising food service and dining room employees.); may choose to enter the field of food and equipment wholesale and retail. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
	<b>First Term (Fall)</b>		
1	CUL 100	Introduction to Hospitality Industry Management	3
1	CUL 110	Sanitation and Hygiene	3

3	CUL 118	Principles of Nutrition	3
4	CUL 111	Elementary Food Preparation <i>or</i>	
4	CUL 150	Dining Room Management	6
			<u>15</u>
	<b>Second Term (Winter)</b>		
5	CUL 222	Quantity Food Production	6
8	CUL 220	Organization and Management	3
6	HMT 100	Hospitality Industry Accounting	3
2	PLS 108	Government and Society	3
			<u>15</u>
	<b>Third Term (Spring)</b>		
9	CUL 227	Advanced Culinary Arts Technique	6
	<b>Fourth Term (Fall)</b>		
12	ENG 100	Communication Skills	4
2	CUL 150	Dining Room Management	6
10	CUL 228	Layout and Equipment	4
			<u>14</u>
	<b>Fifth Term (Winter-Spring)</b>		
7	CUL 224	Principles of Cost Control	4
13	CUL 199	On-The-Job-Training— 20 hours per week, 15 weeks (Must have completed 30 hours in program)	3
12	DP 100	Introduction to Computers	3
11	CUL	Electives (Choose 2)	7-8
	CUL 219	Elementary Baking	(4)
	CUL 210	Garde-Manger	(4)
	CUL 225	Advanced Baking and Pastry	(4)
	CUL 250	Advanced Service Technique	(3)
			<u>17-18</u>

**Total Credit Hours for Program: 68-69**

### Food Services

#### One-Year Program: Code 642

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

A one-year program providing training as a Food Service Specialist. This specialist assists workers engaged in preparing foods for hotel, restaurants, or institutional establishments by performing any combination of the following tasks: preparing such foods as vegetables, fruits, meat, poultry and seafood for consumption by either cutting, washing, peeling, or grinding, or any other task required for cooking; stores foods in designated areas, utilizing knowledge of temperature requirements and food spoilage; cleans work areas and equipment; may distribute supplies; and makes soups and sauces. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
	<b>First Term (Fall)</b>		
1	CUL 100	Introduction to Hospitality Industry Management	3
4	CUL 111	Elementary Food Preparation	6
1	CUL 110	Sanitation and Hygiene	3
2	CUL 118	Principles of Nutrition	3
			<u>15</u>

53

<b>Second Term (Winter)</b>			
5	CUL 222	Quantity Food Preparation	6
3	ENG 100	Communication Skills	4
2	MTH	Mathematics Elective	3
6	CUL	Electives (Choose 1)	3-4
	CUL 219	Elementary Baking	(4)
	CUL 210	Garde-Manger	(4)
	CUL 224	Principles of Cost Control	(4)
	CUL 225	Advanced Baking and Pastry	(4)
	HMT 100	Service Industry Accounting	(3)
			16-17
<b>Third Term (Spring)</b>			
6	CUL 227	Advanced Culinary Arts Techniques	6

**Total Credit Hours for Program: 37-38**

**Hotel-Restaurant Management Technician**  
**Two-Year Program: Code 661**  
**Advisors: James Beaton, Don Garrett, Jillaine Beauchamp**

A two-year program providing career training as a hotel-motel management technician. Hotel-motel managers are responsible for satisfying guests and operating their establishments profitably. They direct the operation of the kitchen and dining rooms and manage the housekeeping, accounting, and maintenance departments of the hotel. They will also handle unexpected problems. Managers who work in small hotels or motels may do much of the front office clerical work, such as taking room reservations and assigning rooms. *Average employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
1	CUL 100	Introduction to Hospitality Industry Management	3
4	CUL 111	Elementary Food Preparation <i>or</i>	
	CUL 150	Dining Room Management	6
2	CUL 110	Sanitation and Hygiene	3
1	CUL 118	Principles of Nutrition	3
			<u>15</u>
<b>Second Term (Winter)</b>			
5	CUL 222	Quantity Food Production	6
2	HMT 100	Service Industry Accounting	3
4	CUL 224	Principles of Cost Control	4
3	HMT 104	Front Office Procedures	3
			<u>16</u>
<b>Third Term (Spring)</b>			
9	PSY 150	Industrial Psychology	3
8	CUL 250	Advanced Service Technique	3
			<u>6</u>



<b>Fourth Term (Fall)</b>			
7	CUL 220	Organization and Management	3
7	CUL 150	Dining Room Management	6
10	DP 100	Introduction to Computers	3
	ENG 100	Communication Skills	4
			<u>16</u>
<b>Fifth Term (Winter)</b>			
8	HMT 230	Hospitality Law	3
8	HMT 222	Lodging Management and Promotion	3
10	HMT 223	Practicum in Lodging Management	3
9	PLS 108	Government and Society	3
			<u>12</u>

**Total Credit Hours for Program: 65**

## **Public Service Career Programs**

### **Child Care**

**Two-Year Program: Code 640**

**Advisor: Phillip A. Ludos, Patricia Travis**

A two-year program providing 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 them simple painting, drawing, handiwork, songs, and similar activities; directs children in eating, resting, and toileting; helps children develop habits of caring for 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. *Average employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	CCW 101	Child Development	3
1	CCW 108	Educational Experiences in Expressive Arts*	3
1	CCW 105	Practicum I*	3
2	ENG 100	Communication Skills <i>or</i>	
	ENG 111	Composition I	4
2	SPH 101	Fundamentals of Speaking	3
			<u>16</u>
<b>Second Term</b>			
2	CCW 103	Alternative Programs in Child Care	3
2	CCW 110	Social/Emotional Development	3
4	PSY 200	Child Psychology	3
4	ENG 210	Children's Literature	3
4	**	Elective	3
			<u>15</u>
<b>Third Term</b>			
3	CCW 107	Educational Experiences in Science and Math*	3
3	CCW 106	Practicum II*	3

3	CCW 200	Staff/Parent Interpersonal Relations	3
5	PLS 150	State and Local Government <i>or</i>	
5	PLS 108	Government and Society	3
	**	Elective	3
			<u>15</u>

#### Fourth Term

6	CCW 100	Exceptional Pre-School Child	3
6	CCW 114	Practicum III*	4
6	CCW 111	Day Care Administration <i>or</i>	
	CCW 116	Seminar in Infant Care*	3
8	CUL 118	Principles of Nutrition	3
7	EM 120	American Red Cross First Aid	2
			<u>15</u>

#### Total Credit Hours for Program: 61

\*These courses must be taken concurrently.

\*\*ELECTIVES APPROVED: Consult with program advisor before selecting electives

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

### Criminal Justice

#### Two-Year Program: Code 651

Advisor: Phillip A. Ludos

A two-year program providing career training as a criminal justice technician. Upon completion of the criminal justice program, a student has laid the groundwork to further his/her studies toward a bachelor's degree in criminal justice. In addition, he/she may be employed in such fields as police work, probation and parole, and juvenile work. The studies involve a combination of sociological theory and pragmatic application which is required of all those in the system of criminal justice. Law enforcement, police and community relations, psychology, and other aspects of criminal law are also studied. *High employability.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
	<b>First Term</b>		
1	ENG 100	Communication Skills <i>or</i>	
	ENG 107	Technical Communications <i>or</i>	
	ENG 111	Composition I	4
2	PSY 100	Introductory Psychology	3
3	PLS 150	State and Local Government	3
1	CJ 100	Introduction to Criminal Justice*	3
3	SOC 100	Introductory Sociology	3
			<u>16</u>

<b>Second Term</b>			
4	PSY 108	Dynamics of Behavior <i>or</i>	3
	PSY 209	Psychology of Adjustment	3
6	CJ 111	Police Community Relations	3
5	SOC 250	Juvenile Delinquency <i>or</i>	
	CJ 223	Juvenile Justice	3
5	SOC 202	Criminology	3
2	SOC 205	Racial and Ethnic Relations <i>or</i>	
	SOC 207	Social Problems	3
			<u>15</u>
<b>Third Term</b>			
7	CJ 208	Evidence and Procedure	3
7	CJ 122	Correction Systems	3
6	CJ 205	Applied Psychology for Police <i>or</i>	
	PSY 257	Abnormal Psychology	3
4	SPH 101	Fundamentals of Speech	3
		<i>One of the following:</i>	
		History	
		Political Science	
		Economics	
		Math, Statistics	3
			<u>15</u>
<b>Fourth Term</b>			
7	CJ 210	Introduction to Criminalistics	3
7	CJ 224	Criminal Investigation	3
8	CJ 225	Seminar in Criminal Justice	3
8	CJ 209	Criminal Law	3
		Elective (open choice)	3
			<u>15</u>

**Total Credit Hours for Program: 61**

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

\*\*ELECTIVES APPROVED: Consult with program advisor prior to selecting electives

EC 110	Consumer Economics	3
FP 213	Fire Investigation/Arson	3
MGT 208	Principles of Management	3
MTH 160	Basic Statistics	4
PHO 111	Photography	4
PSY 207	Social Psychology	3
SPN 111	First Year Spanish	3

**Fire Protection  
Two-Year Program: Code 631  
Advisor: Phillip A. Ludos**

A two-year program providing career training as a fire protection technician. Under completion of the fire protection technician program, the student will be familiar with the various aspects of fire protection and fire prevention. This will include studies of industrial and public buildings, homes, and other properties. Factors such as water supplies and delivery will be discussed. Students in this program may seek employ-

ment in both the public and private sector involving fire protection training and other related areas. There is some training in the chemistry of combustibles. *Average to high employability.*

<b>Part-Time Sequence</b>	<b>Full Time Course</b>	<b>Sequence Description</b>	<b>Hrs</b>
<b>First Term</b>			
1	FP 100	Introduction to Fire Protection	3
1	FP 101	Hydraulics I	3
2	FP 109	Fire Operation Strategy	3
2	FP 103	Fire Chemistry and Hazardous Materials	3
1	MTH 090	Occupational Mathematics	3
			<u>15</u>
<b>Second Term</b>			
2	FP 122	Fire Prevention Theory and Application	3
4	FP 124	Fire Protection Systems I	3
3	FP 112	Fire Company Supervision	3
3	FP 116	Building Construction for Fire Service	3
2	ENG 100	Communication Skills	4
7		Elective	3
			<u>19</u>
<b>Third Term</b>			
4	FP 209	Advanced Strategy/Fire Ground Command	3
4	FP 211	Hydraulics II	3
4	FP 213	Fire Investigation and Arson Detection	3
3	FP 099	Labor Relations in the Public Sector	3
5	PSY 100	Introduction to Psychology	3
			<u>15</u>
<b>Fourth Term</b>			
6	FP 210	Introduction to Fire Administration	3
6	FP 224	Fire Protection Systems II	3
7	FP 216	Legal Aspects of Fire Protection	3
5	PLS 150	State and Local Government	3
8		Electives	6
			<u>18</u>

**Total Credit Hours for Program: 67**

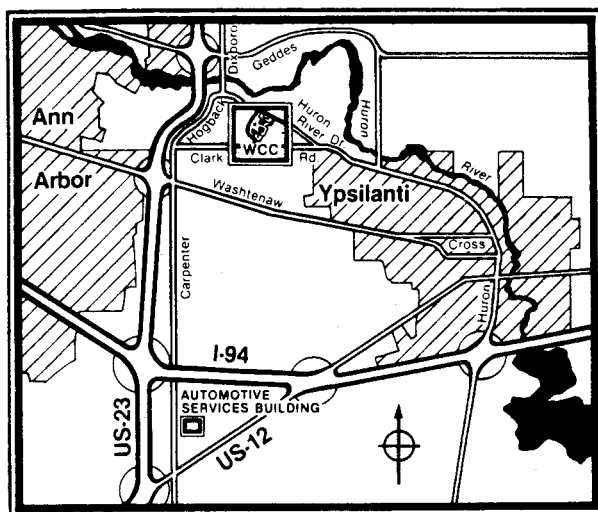
\*An advisor can suggest a part-time sequence.

**ELECTIVES**

FP 150	F.F.T.C.—240 Hour Course	3
FP 208	Emergency Medical Technician	6
FP 108	Fire Fighter First Responder	3
FP 250	Educational Methodology	3
SOC 100	Principles of Sociology	3
PHY 105	Introductory Physics	4
CIS 100	Introduction to Computers	3

# Technical and Industrial Career Programs

## Automotive Service Career Programs



Automotive Service classes are held at the Auto Center, 5115 Carpenter Road, Ypsilanti.

### Automotive Body Repair

**One-Year Program: Code 812**

**Advisors: Edward Cammet, Lester Jordan**

A one-year program providing career training as an auto body repairer. Auto body repairers are the workers who straighten bent frames, remove dents, and replace crumpled 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 such tools 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 Course	Sequence Description	Hrs.
<b>First Term (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
1	WF 101	Acetylene Welding	2
2	MTH 090	Occupational Mathematics	3
			<b>15</b>

<b>Second Term (Winter)</b>			
3	ABR 123	Auto Body Repair Applications	4
4	ABR 124	Auto Refinishing Applications	4
3	ABR 127	Major Repair Fundamentals	2
4	WF 102	Arc Welding	2
3	ENG 100	Communication Skills	4
			<u>16</u>
<b>Spring/Summer</b>			
5	ABR 125	Flat Rate Estimating	2
5	ABR 126	Fundamentals Frame and Body Alignment	2
			<u>4</u>

**Total Credit Hours for Program: 35**

### **Automotive Body Service**

#### **Two-Year Program: Code 811**

**Advisors: Edward A. Cammet, Lester Jordan**

A two-year program providing 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 one becomes a master technician. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>		<b>Hrs.</b>
	<b>Course</b>	<b>Description</b>	
<b>First Term (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
1	WF 101	Acetylene Welding	2
2	MTH 090	Occupational Mathematics	3
			<u>15</u>
<b>Second Term (Winter)</b>			
3	ABR 123	Body Repair Applications	4
3	ABR 124	Auto Refinishing Applications	4
4	ABR 127	Major Repair Fundamentals	2
4	WF 102	Arc Welding	2
4	AS 110	Automotive Service Fundamentals	2
			<u>14</u>
<b>Spring/Summer</b>			
5	ABR 125	Flat Rate Estimating	2
5	ABR 126	Fundamentals Frame & Body Alignment	2
			<u>4</u>
<b>Third Term (Fall)</b>			
6	ABR 219	Major Repair Applications	4
7	ABR 220	Enamel Refinishing Practices	4
7	AS 124	Wheel Balancing and Alignment	2
6	ENG 100	Communication Skills	4
			<u>14</u>
<b>Fourth Term (Winter)</b>			
8	ABR 230	Specialized Study	4
9	ABR 199	On-The-Job Training	4*
8	AS 227	Heating and Air Conditioning	2

**Total Credit Hours: 60**

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

**Automotive Spray Painting****One-Year Program: Code 813**

**Advisors: Edward Cammet, Lester Jordan**

A one-year program providing 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.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
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
2	WF 101	Acetylene Welding	2
3	MTH 090	Occupational Mathematics	3
			<u>15</u>
<b>Second Term (Winter)</b>			
2	ABR 124	Auto Refinishing Applications	4
3	ABR 230	Specialized Study	4
4	ABR 199	On-The-Job Training	2*
4	ENG 100	Communication Skills	4
			<u>14</u>
<b>Spring/Summer</b>			
4	ABR 125	Flat Rate Estimating	2

**Total Credit Hours for Program: 31**

\*Additional two hours ABR 230 Specialized Study or approved elective may be substituted for ABR 199 On-The-Job Training.

**Automotive Mechanics****One-Year Program: Code 816**

**Advisors: Ken Barron, Eugene Brown, Scott Fisher, John Mann, Richard Weid**

A one-year program providing 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, he/she will be prepared

to take the following certification tests: Engine Repair, Brakes, and Manual Drive Train and Axle. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
1	AS 110	Automotive Service Fund.	2
1	AS 111	Engines	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
			<u>14</u>
<b>Second Term (Winter)</b>			
2	AS 121	Engine Repair	2
2	AS 215	Brake Systems Service	2
4	AS 126	Electrical Systems	2
4	AS 128	Fuel System Service	2
5	AS 129	Diagnosis and Repair I	2
5	ENG 100	Communication Skills	4
			<u>14</u>
<b>Spring/Summer</b>			
6	AS 219	Diagnosis and Repair II	3
6	AS 124	Wheel Balance and Alignment	2
			<u>5</u>

**Total Credit Hours in Program: 33**

## **Automotive Service Technology**

**Two-Year Program: Code 815**

**Advisors: Ken Barron, Eugene Brown, Scott Fisher, John Mann, Richard Weid**

A two-year program providing training as an automotive technician. Upon completion, students have the knowledge to pass the state and national exams to become a certified Master Automotive Technician. The following is a list of tests one would be prepared to take: 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.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
1	AS 110	Automotive Service Fund.	2
1	AS 111	Engines	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
			<u>16</u>



<b>Second Term (Winter)</b>			
2	AS 121	Engine Repair	2
5	AS 125	Brake Systems	2
4	AS 126	Electrical Systems	2
4	AS 128	Fuel System Service	2
5	AS 129	Diagnosis and Repair I	2
3	ENG 100	Communication Skills	4
			<u>14</u>
<b>Spring/Summer</b>			
6	AS 219	Diagnosis and Repair II	3
7	AS 124	Wheel Balance and Alignment	2
			<u>5</u>
<b>Third Term (Fall)</b>			
9	AS 212	Automatic Transmissions — Mechanical	2
8	AS 214	Steering and Suspension	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
			<u>13</u>
<b>Fourth Term (Winter)</b>			
10	AS 222	Automatic Transmissions — Hydraulic	2
9	AS 228	Driveability	2
10	AS 229	Diagnosis and Repair III	4
12	AS 250	New Car Products	2
5		Approved Elective	3
			<u>13</u>
<b>Spring/Summer</b>			
12	AS 230	Practical Field Experience	2
11	AS 227	Heating and Air Conditioning	2
11	AS 232	Auto. Trans. and Overdrive Trans. <i>or</i>	
	AS 238	Computer Engine Controls	2
			<u>6</u>

**Total Program Credit Hours: 67**

Approved List of Electives: PSY 150 Industrial Psychology; MGT 160 Principles of Sales; MGT 209 Small Business Management; EC 150 Labor Relations.

## Drafting Careers

### Architectural Drafting

**Two-Year Program: Code 821**

**Advisors: David Byrd, Michael Pogliano**

A two-year program providing 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 followed, and other information to carry out 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.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>		<b>Hrs.</b>
	<b>Course</b>	<b>Description</b>	
<b>First Term</b>			
1	ARC 111	Architectural Drawing	6
4	SO 090	Fundamentals of Typewriting	1
1	ARC 117	Construction Materials	3
5	MTH 152	Applied Geometry and Trigonometry	4
6	ENG 091	Writing Fundamentals <i>or</i>	
	ENG III	Composition I	4
			<u>18</u>
<b>Second Term</b>			
2	ARC 122	Architectural Drawing	6
2	ARC 120	Mechanical and Electrical Systems	3
6	ARC 109	Site Layout <i>or</i>	
	ARC 209	Surveying	3
3	ARC 100	Specifications	1
5	ARC 150	Presentation Drawings and Models	4
			<u>17</u>
<b>Third Term</b>			
3	ARC 213	Architectural Drawing	6
4	ARC 210	Structure in Architecture	2
5	ARC 207	Estimating Construction Costs	2
3	PHY 111	Introductory Physics	4
2	ENG 100	Communication Skills	4
			<u>18</u>
<b>Fourth Term</b>			
4	ARC 224	Architectural Drawing	6
6	ARC 208	Estimating Construction Costs	2
7	PLS 108	Government and Society	3
7	PSY 150	Industrial Psychology	3
			<u>14</u>

**Total Credit Hours for Program: 67**

**Architectural Drafting Detailing**  
**One-Year Program: Code 822**  
**Advisors: David Byrd, Michael Pogliano**

A one-year program providing 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 giving 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>Hrs.</b>
	<b>Course</b>	<b>Description</b>	
<b>First Term</b>			
	ARC 111	Architectural Drawing	6

3	SO 090	Fundamentals of Typewriting	1
2	ARC 117	Construction Materials	3
4	MTH 169	Intermediate Algebra	4
5	ENG 091	Writing Fundamentals <i>or</i>	
	ENG 111	Composition I	4
			<u>18</u>

### Second Term

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

**Total Credit Hours for Program: 35**

## Computer Aided Drafting Technician (CAD)

A two-year program providing career training as a CAD Operator/Technician. This drafter prepares 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. His/her drawings usually provide a number of different views of the object, must be exact and accurate and include information concerning the materials to be used. Technicians in this occupation often specialize in a particular field such as the electronic option or mechanical (machine drafting and related) option. Advanced operators perform product manufacturing preparation for CAM and computer integrated manufacturing.

### Computer Aided Drafting Technician (CAD)

#### Mechanical Option

Two-Year Program: Code

Advisors: August Stager, Andrew F. Ford

Part-Time Sequence	Full-Time Sequence Course	Description	Hrs.
	<b>First Term (Fall)</b>		
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
5	ENG 100	Communication Skills	3
			<u>17</u>
	<b>Second Term (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 123	Tolerancing: Conventional and Geometrical	2
7	CPS 187	FORTAN Programming	4
			<u>14</u>
	<b>Spring/Summer</b>		
3	ID 218	Interactive Computer Aided Drafting	2
			<u>2</u>

<b>First Term (Fall)</b>			
4	ID 107	Mechanisms	4
4	ID 219	2-D CAD Planning and Drawing	3
4	MTH 179	Precalculus	4
7	PSY 150	Industrial Psychology	3
			<u>14</u>
<b>Second Term (Winter)</b>			
5	ID 221	CAD Application — Mechanical	4
3	MT 103	Introduction to Materials	3
5	ID 230	Advanced Product Drafting	4
7	PLS 108	Government and Society	3
			<u>14</u>
<b>Spring/Summer</b>			
6	ID 260	Introduction to CIM	2-5
6	ID 223	Introduction to Mechanical Design	4
			<u>6</u>

**Total Credit Hours for Program: 67**

### **Computer Aided Drafting Technician (CAD) Electronic Option**

**Two-Year Program: Code**

**Advisors: Augustus Stager, Andrew F. Ford**

<b>Part-Time Sequence</b>	<b>Full-Time Sequence</b>		<b>Hrs.</b>
	<b>Course</b>	<b>Description</b>	
<b>First Term (Fall)</b>			
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	2
6	ENG 100	Communication Skills	4
			<u>16</u>
<b>Second Term (Winter)</b>			
2	ID 114	Industrial Drafting	4
2	ID 105	Pictorial Drawing	2
2	ID 217	Introduction to 3-D CAD	2
2	ID 252	Fundamentals of Electronic Drafting	4
6	PSY 150	Industrial Psychology	3
			<u>15</u>
<b>Spring/Summer</b>			
3	ID 218	Interactive Computer Aided Drafting	2
			<u>2</u>
<b>First Term (Fall)</b>			
4	ID 107	Mechanisms	4
4	ID 219	2-D CAD Planning and Drawing	3
4	MTH 179	Precalculus	4
4	EE	Elective	3-4
			<u>14</u>

<b>Second Term (Winter)</b>			
5	ID 220	CAD Application — Electronics	4
5	CPS 187	FORTTRAN Programming	4
3	MT 103	Introduction to Materials	3
6	PLS 108	Government and Society	3
			<hr/> 14
<b>Spring/Summer</b>			
5	ID 222	Introduction to Electronic Design	4
			<hr/> 4

**Total Credit Hours for Program: 65**

### **Drafting Detailer**

**One-Year Program: Code 827**

**Advisors: Gary R. Hentz, Andrew F. Ford, R. James Packard, Augustus Stager**

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

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs</b>
<b>First Term (Fall)</b>			
1	ID 111	Industrial Drafting	4
2	ID 112	Descriptive Geometry	4
3	MT 111	Machine Shop Theory and Practice	4
4	MTH	Mathematics Elective	4
			<hr/> 16
<b>Second Term (Winter)</b>			
3	ID 105	Pictorial Drawing	2
2	ID 114	Industrial Drafting	4
3	ID 121	Theory of Jigs and Fixtures	2
4	ID 123	Tolerancing: Conventional and Geometric	2
3	MT 103	Introduction to Materials	3
4	ENG	English Elective	4
			<hr/> 17

### **Industrial Drafting Technician**

**Two-Year Program: Code 825**

**Advisors: Gary R. Hentz, Andrew F. Ford, R. James Packard, Augustus Stager**

A two-year program providing 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. He/she 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.

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term (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 Term (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 102	Introduction to Materials	3
4	MTH 152	Applied Geometry and Trigonometry	4
			<u>15</u>
<b>Third Term (Fall)</b>			
4	ID 107	Mechanisms	4
3	ID 216	Introduction to Computer Aided Drafting	2
5	ID 251	Fundamentals of Electronic Drafting	2
5	CPS 133*	Basic Programming	4
5	ENG 100	Communication Skills	4
			<u>16</u>
<b>Fourth Term (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	PSY 150	Industrial Psychology	3
6	PLS 108	Government and Society	3
		**Technical Elective	2-4
			<u>17</u>

**Total Credit Hours for Program: 64**

\*May substitute CPS 186 or 187.

\*\*Suggested Electives: ID 218 CAD; ID 252 Fundamentals of Electronic Drafting; CPS 186, 187; NC 100; PHY 100, and WF 100

## **Industrial Technology Career Programs**

### **Electro-Mechanical Technology**

**Two-Year Program: Code 854**

**Advisor: George Agin**

A two-year program providing career training as an electro-mechanical technician. The 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 Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
3	EE 123A	Fundamentals of Electricity	5
1	MT 111	Machine Shop Theory and Practices	4
1	MTH 151	Applied Algebra	4
6	ENG 100	Communication Skills	
	ENG 111	English Composition I	4
			<u>17</u>
<b>Second Term</b>			
4	EE 123B	Fundamentals of Electricity	5
1	ID 111	Industrial Drafting	4
2	MT 122	Machine Tool Operation and Set-Up	4
2	MTH 152	Applied Geometry and Trigonometry	4
			<u>17</u>
<b>Third Term</b>			
2	NC 100	Introduction to Numerical Control	3
2	FLP 111	Fluid Power Fundamentals	4
1	EE 127	Industrial Electricity	4
6	PLS 108	Government and Society	3
5	MT 103	Introduction to Materials	3
			<u>17</u>
<b>Fourth Term</b>			
3	MT 123	Machine Tool Operation and Set-Up	4
5	EE 137	Switching Logic	3
5	WF 100	Fundamentals of Welding	2
5	NC 121	Manual Programming and NC Tool Operation	3
2	PHY 111	General Physics	4
			<u>16</u>

**Total Credit Hours for Program: 67**

**Fluid Power Technology**  
**Two-Year Program: Code 841**  
**Advisor: Gary Schultz**

A two-year program providing 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. *Very high employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	FLP 111	Fluid Power Fundamentals	4
1	MT 111	Machine Shop Theory and Practice	4
4	EE 123A	Fundamentals of Electricity	5
1	MTH 169	Intermediate Algebra	4
			<u>17</u>
<b>Second Term</b>			
2	FLP 213	Hydraulic Controls	3
2	FLP 226	Pneumatics	3
2	FLP 214	Hydraulic Circuits	3
3	WF 100	Fundamentals of Welding	2
7	SPH 101	Fundamentals of Speaking	3
			<u>14</u>
<b>Third Term</b>			
3	FLP 122	Hydraulic Pumps	3
2	NC 100	Introduction of Numerical Control	3
5	ID 100	Technical Drawing	4
6	PHY 110	Applied Physics	4
7	ENG 100	Communication Skills	4
			<u>18</u>
<b>Fourth Term</b>			
4	FLP 225	Advanced Hydraulic Circuits	3
		Elective in Industrial Technology	4
6	MT 122	Machine Tool Operation and Set-Up	4
8	PLS 108	Government and Society	3
8		Elective	3
			<u>17</u>

**Total Credit Hours for Program: 66**

**Hydraulic Assembly**  
**One-Year Program: Code 842**  
**Advisor: Gary Schultz**

A one-year program providing 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. *High employability.*



<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	FLP 111	Fluid Power Fundamentals	4
3	MT 100	Machine Shop Theory	3
3	WF 111	Welding and Fabrication	4
4	MTH 151	Applied Algebra	4
			<u>15</u>
<b>Second Term</b>			
2	FLP 122	Hydraulic Pumps	3
1	FLP 226	Pneumatics	3
2	BPR 101	Blueprint Reading	3
2	FLP 214	Basic Hydraulic Circuits	3
4	SPH 101	Fundamentals of Speaking	3
			<u>15</u>

**Total Credit Hours for Program: 30**

### **Mechanical-Engineering Technology**

**Two-Year Program: Code 851**

**Advisors: Dean Avery, Burton Lowe**

A two-year program providing career training as a mechanical engineering technician. The technician's duties include: applying theory and principles of mechanical engineering to develop and test machinery and equipment under the direction of an engineering staff; reviewing project instructions and blueprints to determine test specifications, procedures, and objectives; testing equipment and reviews problems involved to provide possible solutions; preparing detailed drawings or sketches for the drafting room or by request for fabrication by machine, wood, or sheet metal shops; setting up and conducting tests and experiments of complete units and components to investigate engineering theories regarding improvement in design or performance of equipment; analyzing indicated and calculated test results against design or rated specification and objectives of tests and modifies equipment to meet specifications; recording test procedures, results, and suggestions for improvement; preparing engineering drawings, charts, and graphs. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	MT 111	Machine Shop Theory and Practice	4
1	BPR 101	Blueprint Reading	3
1	MTH 151	Applied Algebra	4
5	PHY 110	Applied Physics	4
3	ENG 111	Composition I <i>or</i>	
	ENG 100	Communication Skills	4
			<u>19</u>
<b>Second Term</b>			
2	MT 122	Machine Tool Operation and Set-Up	4
2	ID 111	Industrial Drafting	4
2	MTH 152	Applied Geometry and Trigonometry	4
	NC 100	Introduction to Numerical Control	3
			<u>15</u>

<b>Third Term</b>			
3	MT 103	Introduction to Materials	3
5	EE 111	Electrical Fundamentals I	4
5	FLP 111	Fluid Power Fundamentals	4
3	MT 123	Machine Tool Operation and Set-Up	4
5	NC 121	Manual Programming for NC	3
			<u>18</u>

<b>Fourth Term</b>			
4	MT 201	Machine Tool Technology	4
4	WF 103	Heli-Arc Welding	2
4	FLP 214	Basic Hydraulic Circuits	3
	PLS 108	Government and Society	3
	NC 122	Numerical Control Machine Tool Operation	3
			<u>15</u>

**Total Credit Hours for Program: 67**

**Numerical Control Machine Operator**  
**One-Year Program: Code 872**  
**Advisors: R. Dick, Jeffery Donahey**

<b>Part-Time Sequence</b>	<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>			
2	NC 121	Manual Programming and NC Tool Operation	3
1	MT 111	Machine Shop Theory and Practice	4
1	ID 100	Technical Drawing <i>or</i>	
	ID 111	Industrial Drafting	4
1	MTH 151	Applied Algebra	4
			<u>15</u>
<b>Second Term</b>			
3	NC 122	Advanced Manual Programming and NC Tool Operation	3
3	MT 122	Machine Tool Operation and Set-Up I	4
2	ENG 100	Communication Skills	4
2	MTH 152	Applied Geometry and Trigonometry	4
4	MT 123	Machine Tool Operation and Set-Up II	4
			<u>18</u>

**Total Credit Hours for Program: 33**

**Numerical Control Technology**  
**Two-Year Program: Code 871**  
**Advisors: Roger Dick, Jeffery Donahey**

A two-year program designed to provide career training as a numerical control technician. The numerical control technician has to be able to perform all the duties of the numerical control machine operator and more, in that he/she must also be

able to program the machine to do its proper functions. He/she must be able to make minor repairs to the machine and maintain it. He/she also must have a knowledge of blueprints and be able to use precision measuring instruments. He/she is responsible for the part set up and the designing of the part holding fixture. The numerical control technician must be good with trigonometry and must be able to program the controls either manually or with the assistance of a computer. *Very high employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	NC 100	Introduction to Numerical Control	3
1	MT 111	Machine Shop Theory and Practice	4
1	ID 100	Technical Drawing <i>or</i>	
	ID 111	Industrial Drafting	4
2	MTH 151*	Applied Algebra	4
			<u>15</u>
<b>Second Term</b>			
2	NC 121	Manual Programming and NC Tool Oper.	3
2	MT 122	Machine Tool Operation and Set-Up	4
3	ID 122	Descriptive Geometry	4
3	MTH 152*	Applied Geometry and Trigonometry	4
5	CPS 187	FORTTRAN Programming	3
			<u>18</u>
<b>Third Term</b>			
4	NC 122	Advanced Manual Prog. and NC Tool Op.	3
6	NC 213	COMPACT II Computer Programming	4
3	ENG 100*	Communication Skills	4
5	ID 121	Theory of Jigs & Fixtures	2
4	PLS 108	Government and Society	3
			<u>16</u>
<b>Fourth Term</b>			
7	NC 224	APT III Computer Programming	4
7	NC 225	Numerical Control Graphics	4
6	NC 111	Manufacturing Processes for NC	4
		Elective	3
			<u>15</u>

**Total Credit Hours for Program: 64**

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

**Robotic Technology Curriculum**

**Two-Year Program**

**Advisor: G. Agin**

<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>		
EE 123A	Fundamentals of Electricity	5
FLP 111	Fluid Power Fundamentals	4
IM 121	Robotics I: Introduction	3
ID 102	Technical Drawing	4
		<u>16</u>
		73

**Second Term**

EE 123B	Fundamentals of Electricity	5
FLP 213	Hydraulic Controls	3
FLP 226	Pneumatics	3
FLP 214	Hydraulic Controls	4
		<u>15</u>

**Spring Term**

IM 212	Robotics II	4
EE 137	Switching Logic	3
		<u>7</u>

**Third Term**

EE 128	Programmable Controllers	3
ID 107	Mechanisms	4
IM 223	Robotics III	4
PSY 150	Industrial Psychology	3
	Elective	3
		<u>17</u>

**Fourth Term**

EE 139	Computer Systems Fundamentals	4
IM 224	Robotics IV	4
PLS 108	Government and Society	3
ENG 100	Technical Communications	4
		<u>15</u>

**Total Credit Hours for Program: 70**

**Toolroom Machine Operation**  
**One-Year Program: Code 853**  
**Advisors: Dean Avery, Burton Lowe**

A one-year program designed to provide career training as a toolroom machine operator. As a toolroom machine operator, the worker finds himself/herself in the largest group of the metalworking trades. Machine tools are stationary, power-driven machines which hold the metal that is to be cut, shaved, ground or drilled. Some of the more common are engine lathes, turret lathes, grinding machines, drilling machines, and milling machines. Machine tool operators use these tools to shape metal to exact dimensions. A semi-skilled worker operates a machine tool on which the speeds and operation sequence have been set by a more skilled employee. He/she places the metal stock in the machine and makes sure it is secured tightly. He/she then checks to make sure that the machine has done a proper job through the use of simple measuring devices. A skilled operator usually works with a single type of machine. He/she plans and sets up the correct sequence of operation based on blueprint information. He/she adjusts speed and other controls and selects the proper cutting tools or instruments for the operation. He/she must also know how to use all the special attachments for the machine, plus be able to use precision measuring instruments. *High employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	MT 111	Machine Shop Theory and Practice	4
1	BPR 101	Blueprint Reading	3

3	MT 103	Introduction to Materials	3
1	MTH 151	Applied Algebra	4
3	ENG 100	Communication Skills	4
			<u>18</u>
<b>Second Term</b>			
2	MT 122	Machine Tool Operation and Set-Up	4
2	NC 100	Introduction to Numerical Control	3
3	ID 100	Technical Drawing	4
2	MTH 152	Applied Geometry and Trigonometry	4
			<u>15</u>

**Total Credit Hours for Program: 33**

**Welding Technology**  
**Two-Year Program: Code 891**  
**Advisors: Daniel Gray, William Figg, Clyde Hall**

A two-year program designed to provide 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 learn all phases of welding: positioning, fitting, and welding 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; selecting equipment and planning layout, assembly and welding, applying knowledge of geometry, physical properties of metal, effects of heat, allowances for thicknesses, machining weld shrinkage, and welding techniques, laying out, positioning, aligning, and fitting components together; securing parts in position for welding; setting up equipment and welding parts using arc, gas-shielded arc, tig and mig, submerged arc, or gas-welding equipment; assembling/repairing parts or products; using cutting torch, straightening press and handbrake. Upon completion of this program, student can also be a foreman, sales representative, or specialist. *Very high employability.*

**Full-Time Sequence\***

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
<b>First Term</b>		
WF 111	Basic Oxy-Acetylene	4
WF 112	Basic Arc	4
MT 100	Machine Shop Theory	3
BPR 106	Blueprint Reading for Welders	3
ENG 091	Writing Fundamentals <i>or</i>	
ENG 100	Communication Skills <i>or</i>	
ENG 111	Composition I	4
		<u>18</u>
<b>Second Term</b>		
WF 123	Advanced Oxy-Acetylene	4
WF 124	Advanced Arc	4
WF 200	Layout and Theory for Welders	2
ID 100	Technical Drawing	4
MTH 177	Triangle Trig	4
		<u>18</u>

**Third Term**

WF 210	Welding Metallurgy	3
WF 215	Advanced TIG and MIG	4
PSY 150	Industrial Psychology	3
ID 112	Descriptive Geometry	4
WF 227	Basic Fabrication	3
		<u>17</u>

**Fourth Term**

WF 226	Welding and Fabrication (Specialized)	4
FLP 111	Fluid Power Fundamentals	4
WF 229	Shape Cutting	3
PLS 108	Government and Society	3
		<u>14</u>

**Total Credit Hours for Program: 68**

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

**Welding Maintenance Mechanic**  
**One-Year Program: Code 892**  
**Advisors: Daniel Gray, William Figg, Clyde Hall**

A one-year program designed to provide career training as a welding maintenance mechanic. Student welds metal parts together according to layouts, blueprints, or work orders using gas welding or brazing and any combination of arc-welding processes. Student performs related tasks such as frame cutting and grinding. Student may also repair broken or cracked parts, fill holes, and increase size of metal parts. *High Employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	WF 111	Basic Oxy-Acetylene	4
2	WF 112	Basic Arc	4
5	MTH	Approved Math Elective	4
6	WF 200	Layout and Theory For Welders	2
7	WF 210	Welding Metallurgy	3
			<u>17</u>
<b>Second Term</b>			
3	WF 123	Advanced Oxy-Acetylene	4
4	WF 124	Advanced Arc Welding	4
8	WF 215	Advanced TIG and MIG	4
9	WF 227	Basic Fabrication	3
10	SPH 101	Fund. of Speaking	3
			<u>18</u>

**Total Credit Hours for Program: 35**

# Visual Arts Technology Career Programs

## Graphic Design Technology

Two-Year Program: Code 882

Advisor: Dennis Guastella

A two-year program providing career training as a graphic artist. The graphic artist deals with an interesting and exciting variety of professional people such as typographers, printers, and other specialists in the reproduction graphic arts. A graphic artist is an artist for commerce — not a fine artist; however, a great number of artists and designers work in the field commonly known as "graphic arts." These creative people have one thing in common: they accept and work on projects and commissions with definite objectives for clients and employers. The objects and items of their creations are planned to entertain, inform, instruct, or sell. A few of the areas the graphic artist may work in are package design, professional publications, book illustrations, annual reports, magazines, trade publications, display design, and in-house publications. Multi-talented individuals who can write copy, who are experienced in design and reproduction of material, and who understand marketing techniques are in greatest demand. A special 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, ink, print), fundamental design, and illustration evident in a portfolio are minimum prerequisites for obtaining job experience. *Average to high employability.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
<b>First Term (Fall)</b>			
1	GDT 100	Typography I	4
2	GDT 101	Design Survey	2
2	ART 112	Basic Design	4
1	ART 111	Basic Drawing	4
2	ENG 100	Communication Skills <i>or</i>	
	ENG 111	Composition I	4
			<u>18</u>
<b>Second Term (Winter)</b>			
4	ID 105	Pictorial Drawing	2
3	GDT 112	Graphic Communication	4
3	GDT 113	Principles of Production	4
4	PHO 111	Photography	4
4	PLS 108	Government and Society	4
			<u>18</u>
<b>Third Term (Fall)</b>			
5	GDT 214	Publication Layout	4
5	GDT 215	Typography II	2
6	GDT 216	Graphic Reproduction	4
6		*Approved Elective	3-4
5	CIS 100	Intro to Computers <i>or</i>	3
	ID 216	Intro to CAD	2
			<u>15-17</u>

<b>Fourth Term (Winter)</b>			
7	GDT 227	Graphic Technology	4
7	GDT 230	Professional Practices	2
7	GDT 232	Illustration	2
8	GDT 236	Specialized Study	2-4
8		*Approved Elective	3-5
9	PSY 150	Industrial Psychology <i>or</i>	
	MGT 209	Small Business Mgt.	3
			<u>16-20</u>

**Total Credit Hours for Program: 67-73**

**\*Approved Electives:**

GDT 228	Airbrush Techniques	4
GDT 229	Screenprinting Techniques	4
PHO 112	Darkroom Techniques	5
PHO 113	Studio Techniques	3
PHO 219	Photographic Design	3
MGT 250	Principles of Marketing	3
MGT 270	Advertising Principles	3

\*Students taking the appropriate electives may pursue additional curriculum concentration in Graphic Design Technology, Photography or Business Management. See the Graphic Design advisor for further details.

**Photographic Assistant**  
**One-Year Program: Code 886**  
**Advisor: J. Raymond Steinbach**

A one-year program providing career training as a photographic assistant. The photographic assistant helps the photographer by being able to perform the following: process negative and positive prints, 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.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Full-Time Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	PHO 111	Photography	4
3	ART 112	Basic Design	4
1	MTH 090	Occupational Mathematics	3
4	ENG 100	Communication Skills	4
5	PLS 108	Government and Society	4
			<u>19</u>
<b>Second Term</b>			
2	PHO 112	Darkroom Techniques	5
4	PHO 114	Basic Color Photography	3
4	TCA 227	Graphic Reproduction	4
3	PHO 115	Photo Retouching	2
2	PHO 113	Studio Techniques	3
			<u>17</u>

**Total Credit Hours for Program: 36**



**Photographic Technology**  
**Two-Year Program: Code 885**  
**Advisor: J. Raymond Steinbach**

A two-year program with two options providing career training as a photographic technician. 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, he/she solves problems 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.*

<b>Part-Time Sequence</b>	<b>Full-Time Sequence Course</b>	<b>Description</b>	<b>Hrs.</b>
	<b>First Term</b>		
1	PHO 111	Photography	4
3	ART 112	Basic Design	4
1	MTH 090	Occupational Mathematics	3
4	ENG 100	Communication Skills	4
6	PLS 108	Government and Society	4
			19
	<b>Second Term</b>		
2	PHO 112	Darkroom Techniques	5
2	PHO 113	Studio Techniques	3
6	PHO 114	Basic Color Photography	3
4	TCA 227	Graphic Reproduction	4
2	PHO 115	Photo Retouching	2
			17
	<b>Third Term</b>		
5	PHO 220	Advanced Studio Techniques	3
5	PHO 221	Advanced Darkroom Techniques	3
7	PHO 222	Advanced Color Photography	3
7	PHO 223	Photographic Occupations	2
3	MGT 209	Small Business Management	3
			14
	<b>Fourth Term</b>		
9	PHO 229	Freelance Operations	3
8	PHO 230	Specialized Studies in Photography	2-4
9	PHO 231	Portfolio Seminar	2
7	PSY 150	Industrial Psychology	3
		1 Elective (3 credit minimum)	3
			13-15

**Total Credit Hours for Program: 63-65**

**Photographic Technology  
(Marketing Option)  
Two-Year Program: Code 887  
Advisor: J. Raymond Steinbach**

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term</b>			
1	PHO 111	Photography	4
1	MTH 090*	Occupational Mathematics	3
4	BUS 140	Introduction to Business	3
4	ENG 100	Communication Skills	4
5	PLS 108	Government and Society	4
			18
<b>Second Term</b>			
2	PHO 112	Darkroom Techniques	5
2	PHO 113	Studio Techniques	3
5	PHO 114	Basic Color Photography	3
3	MGT 209	Small Business Management	3
5	ACC 091	Fundamentals of Accounting	3
			17
<b>Third Term</b>			
3	PHO 220	Advanced Studio Techniques	3
3	PHO 221	Advanced Darkroom Techniques	3
6	PHO 222	Advanced Color Photography	4
6	PHO 223	Photographic Occupations	3
6	MGT 160	Principles of Salesmanship	3
			16
<b>Fourth Term</b>			
8	PHO 229	Freelance Operations	3
7	EC 211	Principles of Economics	3
7	BUS 111	Business Law	3
7	MGT 250	Principles of Marketing	3
8	MGT 260	Sales Management	3
			15

**Total Credit Hours for Program: 66**

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

**Technical Illustration  
Two-Year Program: Code 884  
Advisor: John Martin**

A two-year program providing career training as a technical illustrator. The technical illustrator program places emphasis on the design and execution of a portfolio of finished art of the type found in newspaper and magazine advertisements, editorials and story illustrations, posters, point-of-purchase displays, window displays, product and package displays. The ability to understand and visualize technical information, attention to detail and artistry, and a liking for precision drawing are essential skills for this occupation. Graduates may be employed in art studios which serve advertis-

ing agencies, art studios in the automotive business, display studios, the art departments of newspapers, and art studios of department stores. *Average to high employability.*

<b>Part-Time Sequence</b>	<b>Full-Time Course</b>	<b>Sequence Description</b>	<b>Hrs.</b>
<b>First Term (Fall)</b>			
2	GDT 100	Typography I	4
1	ART 111	Basic Drawing	4
2	ID 100	Technical Drawing <i>or</i>	
	ID III	Industrial Drafting	4
1	BPR 100	Blueprint Reading for Construction Trades <i>or</i>	
	BPR 101	Blueprint Reading	2-3
1	MTH 090	Occupational Mathematics <i>or</i>	
	PHY 110	Applied Physics	3-4
			17-19
<b>Second Term (Winter)</b>			
3	TCA 100	Perspective Drawing	4
4	GDT 216	Graphic Reproduction	4
4	PHO 111	Photography	4
3	ENG 100	Communication Skills <i>or</i>	
	ENG 111	Composition I	4
			16
<b>Third Term (Fall)</b>			
5	TCA 101	Technical Illustration	4
6	ID 216	Introduction to C.A.D.	2
7	ID 112	Descriptive Geometry	4
5	TCA 122	Technical Rendering	4
6	GDT 236	Specialized Study	2
			16
<b>Fourth Term (Winter)</b>			
7	PSY 150	Industrial Psychology	3
7	TCA 120	Commercial Rendering	4
8	GDT 236	Specialized Study	2
8	PLS 108	Government and Society	4
8	GDT 228	Airbrush Techniques	4
9	ID 217	Introduction to 3D C.A.D.	2
			19

**Total Credit Hours for Program: 68-69**

## **Apprentice and Employee Training; Trade-Related Instruction**

*What is 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.

Brief references to apprenticeship as a method for training skilled workers are found in histories of Greece, Rome, and China, but its golden age was the 12th cen-

tury when European Guilds developed rigid training standards and requirements. American apprenticeships existed in Colonial times although the many skilled artisans arriving from the Old World probably limited the need to develop additional craftsmen. The Fitzgerald Act, passed by Congress in 1937, signaled the development of national standards for apprenticeship training, and the endeavor became a co-operative one supported by federal and state governments, labor unions, other employee groups, and employers. Today, apprentices are trained in over 300 occupations.

Apprenticeships offer an alternative route to training and employment, and 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 journeyman'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. Fifth, because national standards have been established, geographic mobility is assured and employers throughout the United States will recognize the apprenticeship certificate.

### **Manufacturing and Construction**

The main purpose of the TRI Program is to provide manufacturing and construction firms with the opportunity to participate in training programs which will 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 Job 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 College concerning individual employees who wish to participate.

### **Pre-Apprenticeship Training**

Individuals who desire 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 Job Training. An individual pre-apprenticeship curriculum can be arranged which will help 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.**

### **Associate Degree Program for Skilled Tradesmen**

The Associate Degree can be awarded to skilled tradesmen upon earning sixty (60) hours or more of credit and complying with other College requirements. All credits earned in the Trade Related Instruction Program may be applied to the Degree. Credit earned at other institutions offering trade related subjects will be evaluated and may be applicable.

**Refrigeration and Air Conditioning Servicing  
Code 943**

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
MTH 151	Applied Algebra or Elective	4
RAC 111	Refrigeration Fund	5
RAC 122	Refrigeration Equipment	5
WF 104	Soldering and Brazing	2
RAC 123	R/AC Systems Lab	5
RAC 124	Basic Controls	5
RAC 213	Airconditioning	5
RAC 214	Control Systems	5
RAC 215	Troubleshooting Controls	5
RAC 216	Systems Lab — Advanced	5
HTG 111	Heating Fundamentals	5
HTG 122	Heating Systems	5
HTG 213	Heating Controls	5
HGT 215	Heat Pump Servicing	5
		<u>66</u>

**Additional Requirements  
for an  
ASSOCIATE DEGREE**

ENG	Elective 100 or 111	4
PLS	Elective 108, 112 or 150	3
		<u>7</u>

Minimum Required 60

**Statistical Process Control  
Technician/Supervisor  
Two-Year Program: Code 944**

**Core Courses\***

<b>Course</b>	<b>Description</b>	<b>Hrs.</b>
QC 101	Process Quality Control	3
QC 122	Sampling Quality Control	3
QC 213	Quality Control — Statistical Methods	3
QC 224	Quality Control — Problem Solving	3
QC 225	Quality Control — Management	3
QC 226	Quality Control — Dimensional Metrology and Testing	3
		<u>18</u>

\*Quality Control Core Courses are offered evenings only.

**Management Option**

QC	Core Courses	18
MTH 169		
MTH 167		
MTH 160		7-8
ENG 111	Composition I	
ENG 122	Composition II	7
EC 211		
EC 222	Principles of Economics	6
ACC 111		
ACC 122	Principles of Accounting	6
CIS 111	Comp. Concepts	

CIS 131	FORTRAN For Business and Industry	6
PLS 112	Introduction to American Government <i>or</i>	
PLS 108	Government and Society <i>or</i>	
PLS 150	State and Local Government and Politics	3
SPH 101	Fundamentals of Speaking	3
CPS 187	FORTRAN — Programming	4
	Minimum Required	<u>60</u>

### Electronics Option

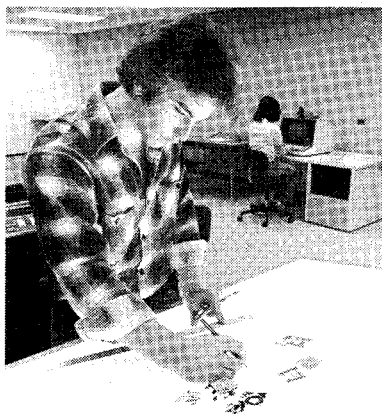
QC	Core Courses	18
MTH 169	Algebra	4
EE 110	Electrical Applications	2
EE 111	Electrical Fundamentals	4
EE 120	Electrical Applications	2
EE 122	Electrical Fundamentals	4
EE 211	Basic Electronics	4
EE	EE Electives	8
PLS 112	Introduction to American Government <i>or</i>	
PLS 108	Government and Society <i>or</i>	
PLS 150	State and Local Government and Politics	3
ENG 111	Composition I	
ENG 122	Composition II <i>or</i>	
ENG 100	Communication Skills	7-8
CIS	<i>or</i> CPS Electives	5-6
	Minimum Required	<u>60</u>

### Science and Engineering Option

QC	Core Courses	18
MTH 169		
MTH 179		
MTH 191		
MTH192		17
PHY 111		
PHY 122	Physics	8
CEM 111		
CEM 122	General Chemistry	8
ENG 111	Composition I	
ENG 122	Composition II	7
PLS 112	Introduction to American Government <i>or</i>	
PLS 108	Government and Society <i>or</i>	
PLS 150	State and Local Government and Politics	3
	Minimum Required	<u>60</u>

### Specialty Option

QC	Core Courses	18
	Electives: Purpose of the Specialty Option is to meet the needs of students working in diverse fields of Quality Control	35
PLS 112	Introduction to American Government <i>or</i>	
PLS 108	Government and Society <i>or</i>	
PLS 150	State and Local Government and Politics	3
ENG 111	Composition I <i>or</i>	
ENG 100	Communication Skills	4
	Minimum Required	<u>60</u>



# **COURSE DESCRIPTIONS**



## COURSE DESCRIPTIONS

*In this catalog descriptions of all credit courses offered at Washtenaw Community College for this program are listed. The number of hours each class meets per week is indicated if it is different from the number of credit hours for the class (i.e., 3 credit hours = 3 hours of class per week). This applies to a 15 week session. During short terms the number of class hours per week increases.*

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

### **189. STUDY PROBLEMS** . . . . . 1-8 credit hours

Prerequisite: Consent of area coordinator or instructor

Directed activities in major occupational and selected general education areas; a period of concentrated effort to an assigned problem working with faculty or a recognized specialist in the occupation; the demonstration of the individual's understanding and skill development within the selected occupation or area.

### **199. ON-THE-JOB TRAINING** . . . . . 1-6 credit hours

The College offers cooperative occupational experience programs to interested and qualified students in both the Occupational and General Education areas. These programs are designed to produce a learning situation (training station) which would not be possible to reproduce in a campus environment.

The student may be placed in a training station in business and industrial firms as well as educational, institutional and governmental establishments. Training station assignments may be arranged on (a) a half-day basis (b) daily alternating work and study (c) alternating work and study each semester (d) a summer experience program.





Students planning to enroll for credit must first review their plans with their advisors and the Instructional Coordinator or Associate Deans to obtain approval. No more than six credits may be applied to a certificate of achievement and no more than twelve credits may be applied to Associate Degree requirements.

## **ACCOUNTING (ACC 41)**

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

Prerequisite or Corequisite: MTH 090

Introduces the student to the theory and practice of modern double-entry accounting systems and procedures. Emphasis placed on journalizing and posting, adjusting and closing books and the preparation of financial statements. Designed for the non-accounting major; does not give transfer college credit.

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

Prerequisite: ACC 091

A continuation of Fundamentals of Accounting 091, which includes purchases, sales, inventories, depreciation, accruals, and the end of the year procedures with financial statements. Designed for non-accounting majors and does not give transfer college credit.

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

Prerequisite or Corequisite: MTH 163 or MTH 167

An introductory course of accounting principles and theory with emphasis on the accounting cycle, receivables and payables, depreciation, inventories, payroll, deferrals and accruals, systems and controls. Required of all Accounting majors and Business Administration transfer students.

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

Prerequisite: ACC 111

A continuation of Principles of Accounting 111 covering partnerships, corporations, and an introduction to cost accounting, budgets and analysis of financial reports. Required of all Accounting majors and Business Administration transfer students.

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

Prerequisite: AAC 092 or AAC 111

Accounting applications (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 the student to become an intelligent user of accounting software on the microcomputer.

**ACC 200. PERSONAL TAX ACCOUNTING** . . . . . 3 credit hours

Prerequisite: ACC 111 or equivalent

An introductory course in federal and state personal income taxes, federal and state payroll taxes, and other general taxes.

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

Prerequisite: ACC 122

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

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

Prerequisite: ACC 122

Principles and procedures for measuring and controlling costs. Cost-volume profit relationships, job order accounting, budgets, standard costs, relevant costs, process accounting. Required of Accounting majors. Offered Winter Semester only.

## **ANTHROPOLOGY (ANT 01)**

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

The anthropological study of the religious beliefs and practices of non-literate people as well as major religions of the world.

**ANT 160. CULTURES OF LATIN AMERICA** . . . . . 3 credit hours

Provides understanding of current events and processes in Latin America. Familiarizes students with pre-Columbian civilizations of Mexico and Peru and Spanish-Portugese civilization as a background for understanding such contemporary developments as economic underdevelopment and cultural dependence. Dilemmas of modern peasantry and destruction of Amazonian tribes receive special emphasis.

**ANT 189. STUDY PROBLEMS  
IN ANTHROPOLOGY** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Anthropology. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged.)

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

A study of the stages of man's cultural development beginning with hunting and gathering and ending with the development of the state. Change in contemporary peasant societies will also be 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

Examines the emergence of the human species using materials from primate studies, archeological findings, and early man.

**ANT 207. SOURCES OF INDIAN TRADITION** ..... 3 credit hours

An introduction to the traditions of India with emphasis on the role experiential knowledge has played in Indian culture. The art, science and philosophy of Indian classical dance, yoga and meditation will be examined.

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

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

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

**ANT 223. PSYCHO-PHYSIOLOGY OF YOGA** ..... 3 credit hours

Prerequisite: ANT 222

Research on the psychological and physiological changes brought about by the practice of yoga asanas.

## **ARCHITECTONICS (ARC 61)**

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

Prerequisite: ARC 117

An introduction to building construction specifications. The organization and preparation of specifications for construction contracts.

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

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

An introduction to light frame construction and requirements including the preparation of working drawings for the construction of structures classified as "Light Frame Structures." (12 hours per week)

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

A survey 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

The drafting of mechanical and electrical systems in buildings from prepared design data is emphasized. 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

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. (12 hours per week)

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

Comprehensive knowledge of and 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, 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 and ARC 120

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 included.

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

Prerequisite: ARC 207

Advanced course in estimating construction cost. For large scale construction projects using methods taught in Construction Estimating 207.

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

Prerequisite: MTH 151

A lecture and field course on the process of surveying and the analysis of survey data. (4 hours per week)

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

Prerequisite: PHY 111 recommended

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

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. (12 hours per week)

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

Prerequisite: ARC 213

Major problems in architectural drawing are studied through the preparation of program and drawings for a large size building project such as a shopping center or multi-story structure. (12 hours per week)

**ARC 226. REPROGRAPHICS** . . . . . 4 credit hours

Lecture and laboratory course on how to incorporate photography into architectural presentation and working drawings. (6 hours per week)

## **ART (ART 17)**

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

For students with no previous studio work who wish to experience an introductory art course and develop individual creative expression. Instruction in the fundamentals of color and composition involving basic use of art media. Not intended to take the place of Basic Drawing III or Painting 114.

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

Introduction to fundamentals of drawing. Through projects students are given experience in basic problems and issues of drawing. Emphasis on the training of the eye and the hand. Course serves as a basis for those who wish to improve their ability to think and articulate in visual terms. (6 hours per week)

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

Study 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. Emphasis on experimentation and imagination to arrive at visual ordering. (6 hours per week)

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

The necessary skills of controlling the application of colored pigments to achieve a unified two dimensional surface. Emphasis on development of sustaining attitudes toward painting regardless of subject matter or style. (6 hours per week)

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

Working from live models, students study anatomy, techniques in drawing and painting and visual expression. Multi-media. Clay modeling. Prefer some art background, although not required. (6 hours per week)

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

Prerequisite: ART 111

Complex problems of drawing are explored with greater emphasis placed on individual solutions. Several new media are introduced. (6 hours per week)

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

Prerequisite: ART 112 or consent

Three dimensional design is studied through a series of carefully conceived projects for which individual solutions are sought. Investigation of form, volume and structure with a variety of materials of different properties. (6 hours per week)

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

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.

**ART 125. PAINTING** . . . . . 4 credit hours

Prerequisite: ART 114 or consent

A continuation of Painting 114, with emphasis on individual development. (6 hours per week)

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

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. Class discussion, short papers and projects.

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

Drawing of the nude to develop visual acuity and self awareness. Emphasis on, but not limited to, gesture and contour drawing as a means towards graphic, conceptual and emotional communication through figure studies. (6 hours per week)

**ART 141. ART OF BLACK FOLKS** . . . . . 3 credit hours

Use of the visual concept of art to aid in the emergence of Black people in America. Covers the necessity to think, to develop and to manifest intelligence using art as the medium.

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

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. Anthropological approach used to recognize the importance of history in understanding the present. Multi-media methods. Skill development and aesthetic competence emphasized.

**ART 189. STUDY PROBLEMS IN ART** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Art. These activities are individualized. A special project is assigned. (Hours arranged)

## **ASTRONOMY (AST 32)**

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

The sun, moon, planets and stars observed with telescope and through films and slides. Astronomy presented as a hobby as well as a basic science. No prior knowledge of astronomy is required. (2 hours per week, 7 weeks)

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

Survey of the solar system and the universe designed for both transfer and vocational students. No previous mathematics or science 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. (4 hours per week)

## **AUTO BODY REPAIR (ABR 59)**

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

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

Repairs made on damaged body panels while studying the working properties of automobile sheet metal and basic damage conditions. Analyzing typical damage conditions and establishing accepted repair procedures are part of course. (8 hours per week)

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

Methods and procedures used with automobile refinishing materials. 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. (8 hours per week)

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

Principles of alignment and servicing of body components. Students 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. (4 hours per week, 7½ weeks)

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

Demonstration-lab course develops basic welding skills used in auto body repair. Types of welded joints used to repair or replace damaged panels with special emphasis on joint construction and heat control. (4 hours per week, 7½ weeks)

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

Prerequisite: ABR 111

Continuation of Auto Body Repair 111. Lab work includes actual repair jobs to develop all of the basic bumping skills. Emphasis placed on quality and work habits. (8 hours per week)



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

Prerequisite: ABR 112

Continuation of units in Auto Body Repair 112. Lab assignment on actual automobiles provides opportunity to improve skills, matching of high metallic colors using modern spot repair and color blending techniques, as well as overall refinishing. (8 hours per week)

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

Prerequisite: Consent

Use of flat-rate manuals to determine parts and labor prices in estimating damaged automobiles. Emphasis on procedures used to establish complete and accurate prices in preparing the estimate. (3 hours per week)

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

Prerequisite: Consent

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. (4 hours per week)

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

Prerequisite: ABR 111 and WF 101

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. (4 hours per week)

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

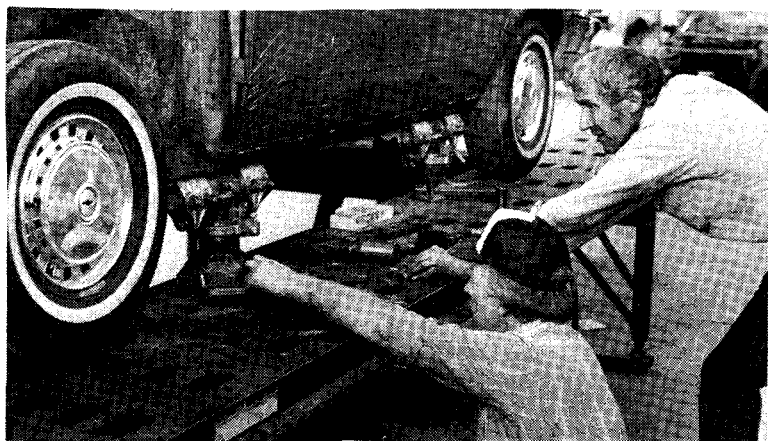
Prerequisite: ABR 112

This course will provide the student with an understanding of the art of custom painting. The learner will become familiar with the tools and techniques used in the field. It 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

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. (8 hours per week for 7½ weeks)



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

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 to provide the student diversified experience on body trim and hardware, replacement and aligning various body components. (8½ hours per week)

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

Prerequisite: ABR 124

Study of modern acrylic and polyurethane enamels which includes surface preparation, mixing and application of solid and metallic colors. Actual cars and light trucks provide the student diversified experience and skill development. (8 hours per week)

**ABR 230. SPECIALIZED STUDY** . . . . . 2-8 credit hours

Prerequisite: Consent

Students utilize periods of concentrated effort on assignments in selected areas of the auto body repair field. Students work with instructor consultation to demonstrate development within the selected area of general collision service, body shop organization and management, or estimating automobile physical damage. (8-16 hours per week)

## **AUTOMOTIVE SERVICE (AS 60)**

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

**AS 110. AUTOMOTIVE SERVICE FUNDAMENTALS . . . . . 2 credit hours**

Students will learn basic theory, diagnosis, service and repair skills needed to enter a technical automotive service curriculum. Instruction will center on safety, tools, measurement, fasteners, and specialized automotive equipment. Service basics will include cooling, lubricating and exhaust systems. Students with quality automotive experience 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. ENGINES . . . . . 2 credit hours**

Prerequisite or Corequisite: AS 110

Students will develop skills and understanding of the automobile engine and related service procedures for the most common engine service complaints. Using text, tools, manuals and automobiles in a laboratory setting, the student will 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 110, Automotive Service Fundamentals, to expect success.

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

Prerequisite or Corequisite: AS 110

Students will be guided through a fast moving curriculum of theory, diagnosis and servicing of manual transmissions, transaxles, drive lines and transfer cases. The focus of instruction will be on clutches, constant velocity joints, and common service procedures, as well as indepth study of transaxles, transfer cases and other manual gear units.

This course is the first course in a 4 course transmission sequence. It should be taken early so graduation will not be delayed because of offerings. The skills of 110 Automotive Service Fundamentals are essential to deal with the intricacies of driveline theory and repair.

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

Prerequisite or Corequisite: AS 110

Students will be introduced to basic electricity theory and practice. Using automotive components and laboratory exercises the learning will 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 116 be one of the first courses taken to build a strong foundation for advanced automotive courses.

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

Prerequisite or Corequisite: AS 110

Students will 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 will be introduced and basic service procedures will be 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

Using the skills developed in 111, the student will 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 will aid the student in complete engine disassembly, repair, reassembly and operation. Students must have the skills offered in 111 to enter this class.

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

Prerequisite: AS 110

Students will learn the basic theory of wheel alignment and develop the skills needed to diagnose and align all foreign and domestic cars. Using state-of-the-art balancers, the student will understand and perform wheel balance equal to the level accepted by the industry. This is the first course in a two (2) course suspension sequence. To repair and align vehicles, both courses must be completed.

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

Prerequisite or Corequisite: AS 110

Students will be guided through each component of the brake system. Using text, tools, manuals, and live automobiles, the theory of brakes and function of components will be stressed, preparing the student 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

Theory and application of automotive electronics systems. Includes construction and servicing of starting, charging and ignition systems.

**AS 128. FUEL SYSTEM SERVICE** . . . . . 2 credit hours

Prerequisite: AS 118

Students will build on the theory learned in 118 Fuel Systems. Instruction will center on the service and repair of fuel system components to include carburetors, fuel injection and emission system components. Test equipment will be stressed, as well as the interaction of the systems. This is the second course in the fuel sequence. Students are encouraged to enroll in this class the semester immediately following 118 so as to reinforce the concepts learned. Involvement in automatic electronics will enhance your learning in this course.

**AS 129. DIAGNOSIS AND REPAIR I** . . . . . 2 credit hours

Prerequisite: AS 110, AS 111, AS 113, AS 116, AS 118

This course is designed to provide you 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 is also included.

**AS 212. AUTOMATIC TRANSMISSIONS—  
MECHANICAL** . . . . . 2 credit hours

Prerequisite: AS 113

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

This is an advanced course involving diagnosis and service procedures of front and rear wheel drive suspension and steering systems. Emphasis on proper removal and replacement of components will be stressed. It is essential that students have all required hand tools and have successfully completed AS 124 Wheel Balance and Alignment, or have previous alignment experience.

**AS 215. BRAKE SYSTEM SERVICE** . . . . . 2 credit hours

Prerequisite: AS 125

Using live cars where possible, the student will develop skills in repairing brake systems. Concentration will be on factory technique and accepted field practice. Skills will include drum, rotor, hydraulic system and mechanical system inspection and service.

**AS 216. ELECTRICAL CIRCUITS** . . . . . 2 credit hours

Prerequisite: AS 126

Theory and application of automotive electronic circuits and accessories.

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, AS 126, AS 128

This course is designed to incorporate the basic skills learned in AS 116, 126, 111, 121, and 128, into a working diagnostic and repair sequence. Extensive use of live vehicles to enable students to learn in as close to a real situation as possible.

**AS 219. DIAGNOSIS AND REPAIR II** . . . . . 2 credit hours

Prerequisite: First year auto service courses

This course is designed to provide you 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

An application of hydraulic fundamentals to automatic transmission operation is provided. Diagnosis of transmission problems is featured, with emphasis on understanding basic transmission functions.

**AS 227. HEATING AND AIR CONDITIONING** . . . . . 2 credit hours

Prerequisite: Consent

A study of the theory, diagnosing procedures, and servicing of the automotive air conditioning and heating system. Diagnosis and services are performed on live vehicles.

**AS 228. DRIVEABILITY** . . . . . 2 credit hours

Prerequisite: AS 218

This course is designed to utilize the diagnostic and repair skills learned in AS 218 Engine Performance Diagnosis, on later model vehicles that have computerized controlled ignition, fuel and emission control systems. Additional diagnostic and repair sequences of the computerized systems will be introduced.

**AS 229. ADVANCED DIAGNOSIS AND REPAIR** . . . . . 4 credit hours

Prerequisite: All third semester automotive courses

This course covers the diagnosis and repair of engine, engine related systems, chassis units and drive trains.

**AS 230. PRACTICAL FIELD EXPERIENCE** . . . . . 2 credit hours

Prerequisite: Fourth semester student

This course is 40 hours of work experience in the field alongside an experienced licensed mechanic and work experience in auto service building. Also included is a one hour per week seminar to discuss work experiences.

**AS 232. AUTOMATIC TRANSAXLE AND AUTOMATIC OVERDRIVE TRANSMISSIONS** . . . . . 2 credit hours

Prerequisite: AS 222

To improve fuel economy, automatic transmissions have undergone major design developments in recent years. This course will include 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

The student, with the use of manuals, test equipment, special tools and the computer, will 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 will also be 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: Consent

Automobile manufacturers make extensive use of new engineering developments and include many of these on their new models. This course will include specialized instruction on the significant new care features up to and including next year's models.

## **BIOLOGY (BIO 27)**

**BIO 101. CONCEPTS OF BIOLOGY** . . . . . 4 credit hours

Basic principles and concepts of biology studied in lecture and laboratory with emphasis on their practical application and their effects on the environment. For the non-science student, but basic introduction for advanced biology courses. Lecture and laboratory. (6 hours per week)

**BIO 102. HUMAN BIOLOGY** ..... 4 credit hours

Structure, function and the place of humans in the biological world are studied in lecture and laboratory. Labs involve use of microscopes, dissection, observation and measuring techniques. Course covers basic anatomy and physiology of all body systems. (6 hours per week)

**BIO 107. FIELD ECOLOGY** ..... 3 credit hours

The activities stress the wooded areas, ponds, fields and Huron River system found on the campus, supplemented by laboratory work and investigation of off-campus environmental problems.

**BIO 108. HUMAN ECOLOGY** ..... 3 credit hours

Problems of population, pollution, energy and environmental control for the non-science student. Basic background in evolution of environmental problems, ecological concepts, current ecological problems and the outlook for the future will be investigated.

**BIO 111. ANATOMY AND PHYSIOLOGY** ..... 5 credit hours

Survey of the basic structures, functions and the dysfunctions of the human body designed for students pursuing a Health Occupations curriculum. Coverage of the systems of the body is in a logical sequence with emphasis on practical applications to various health fields. Lab experiences include relevant applications of information and principles. (7 hours per week)

**BIO 127. BOTANY** ..... 4 credit hours

Prerequisite: BIO 101 or permission

Field and laboratory investigations providing detailed study of plant structure and function. For the student with a general interest in plants and to provide a basis for further work in botany. Lecture and laboratory. (6 hours per week)

**BIO 128. ZOOLOGY** ..... 4 credit hours

Prerequisite: BIO 101 or permission

Field and laboratory investigations providing a detailed study of classification, evolutionary relationships, structure and function of the animal kingdom considered in lecture and laboratory. For the student with a general interest in animals and to provide a basis for further work in zoology. (6 hours per week)

**BIO 131-139. APPLIED PLANT SCIENCE SEQUENCE**

These courses may be taken individually or in series. The series of courses is designed to enable students to apply basic botanical information relating to indoor and outdoor gardening.



The courses study plants of economic importance to humans for food as well as pleasure in the home and outside. Practical experience in the College's greenhouse and gardens.

Designed for the non-specialist with interest in plants, their propagation, growth, maintenance, harvesting and utilization. Students are encouraged to enroll in the sequence beginning with Biology 131 and Outdoor Garden Preparation in the Winter Semester, continuing through Spring and Summer Semesters into the Fall Semester with Biology 132, Biology 133 and Biology 134. See individual courses below.

**BIO 131. OUTDOOR GARDEN PREPARATION . . . . . 2 credit hours**

The Winter Semester course deals with the propagation of plants from cuttings and seeds. The maintenance and care of indoor plants. Most class sessions will be held in the College Greenhouse. All plants used will be identified and students will be 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 discussed along with soil testing and proper use of fertilizers.

**BIO 132. GARDEN PLANTING . . . . . 1 credit hour**

The Spring Semester deals with seed bed and planting area preparation. Further opportunities for germination of seeds indoors for transplanting in prepared areas are available in the early weeks of the semester. Transplanting of seedlings and direct planting of selected varieties of seeds will highlight this semester with emphasis on proper care. Scheduling of plantings for continuous yield and plant rotation techniques will be demonstrated in each student's garden area. Control of pests will be an item of concern. (2 hours per week)

**BIO 133. GARDEN CARE . . . . . 1 credit hour**

The Summer Semester 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 discussed are utilized. Pest control practices will continue from the previous semester. Harvesting and utilization of selected plants for food and ornamental purposes highlight semester's activities. (2 hours per week)

**BIO 134. GARDEN HARVEST . . . . . 3 credit hours**

The Fall Semester will begin the week following the conclusion of the Summer Semester and end earlier than the regular Fall Semester. The harvesting of plants grown in the gardens will be the main concern during this time. This will include those grown for food and ornamental purposes. Irrigation practices will be applied along with continued control of insect pests. This semester will involve the termination of the active growth period of most plants grown. Follow-up practices in preparation for next year's garden will be of concern. There will be demonstrated

methods of preserving food by various methods such as canning, freezing, drying and maintaining certain root crops in the ground for winter harvesting.

**BIO 135. CANNING, FREEZING, DRYING GARDEN FOODS** ..... 3 credit hours

This course is designed for those who garden and would like to preserve the food they have grown for use later. Correct procedures for the canning, freezing and drying of various plant crops will be discussed and demonstrated. Techniques such as cold-packing and hot-packing in glass jars will be stressed along with the advantages of using a pressure cooker. Procedures will stress the importance of proper methods to assure that the canned or frozen food will be free from organism that may spoil the food and make it unsafe for human consumption.

**BIO 137. ORNAMENTAL INDOOR PLANTS** ..... 2 credit hours

This course is designed for the person who enjoys houseplants and wants to learn more about them. Selection and growth of ornamental indoor plants from seeds and cuttings will highlight the course. Every student should be able to increase his or her collection of houseplants by at least fifteen different varieties. Proper care of houseplants will be stressed, relating to soil, potting, transplanting, watering, fertilizers, insects, control of growth and flowering.

**BIO 138. ADVANCED INDOOR GARDENING** ..... 3 credit hours

Prerequisite: BIO 137

This course is designed primarily for those students who have taken the Ornamental Indoor Plants course. Growth of plants from seeds and cuttings will be a concern with some of the more difficult and expensive varieties being used. Specialty gardening techniques for more involved indoor plantings will be discussed and demonstrated, including terraria, hanging gardens and solarium plantings. Visits will be conducted to demonstrate what can be accomplished with plants indoors.

**BIO 147. HOSPITAL MICROBIOLOGY** ..... 1 credit hour

A survey of the morphology, physiology, and immunology for pathogenic organisms with emphasis on infection, aseptic and sterilizing procedures. (3 hours per week, five weeks)

**BIO 189. STUDY PROBLEMS IN BIOLOGY AND ECOLOGY** ..... 1 to 8 credit hours

Prerequisite: Consent of biology instructor

Directed activities in the biological sciences. These activities may be laboratory centered, field studies or small groups using seminars to investigate special problems. (Hours arranged)

**BIO 200. CURRENT TOPICS IN BIOLOGY** . . . . . 3 credit hours

An examination from a biological point of view of the state of current studies and the extent of our knowledge in such controversial fields as human genetic engineering, the biology of human behavior and human cycles, the biology of learning, the biology of sleep and the biology of cancer. Relationship of such knowledge to future technology and possible social and political implications also discussed.

**BIO 208. GENETICS I** . . . . . 4 credit hours

Basic principles of heredity and their applications to plants and animals, including classical genetic techniques as well as modern discoveries in human genetics. Laboratory studies using living and prepared materials. (6 hours per week)

**BIO 208A. GENETICS II** . . . . . 3 credit hours

Basic principles of heredity and their applications to plants and animals. No laboratory. (3 hours per week)

**BIO 237. MICROBIOLOGY** . . . . . 4 credit hours

Prerequisite: BIO 101 or permission of instructor.  
Micro-organisms and their activities studied in lecture and laboratory. (9 hours per week)

**BIO 239. APPLIED PLANT SCIENCE** . . . . . 1 credit hour

Students will carry out individually developed projects related to the subjects of Botany, Horticulture, Floriculture and/or Agriculture.

**BIO 240-289. 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 involving a three hour block of time for five weeks. See individual courses below.

**BIO 240. FIELD STUDY OF INVERTEBRATES** . . . . . 1 credit hour

Stresses field recognition of the organisms and their habits.

**BIO 247. FIELD STUDY OF INSECTS** . . . . . 1 credit hour

Recognition of insects and their habits is stressed. Primarily conducted in the field.

**BIO 248. FIELD STUDY OF REPTILES AND AMPHIBIANS** . . . . . 1 credit hour

Reptiles and amphibians studied in the field with stress on recognition and habits.

**BIO 249. FIELD STUDY OF BIRDS** . . . . . 1 credit hour  
Identification of birds and their songs and nesting habits.

**BIO 250. FIELD STUDY OF MAMMALS** . . . . . 1 credit hour  
The habits, food, behavior and life history of mammals.

**BIO 256. FIELD STUDY OF MOSSES AND FERNS** . . . . . 1 credit hour  
Stress is on the identification and habitat of mosses and ferns.

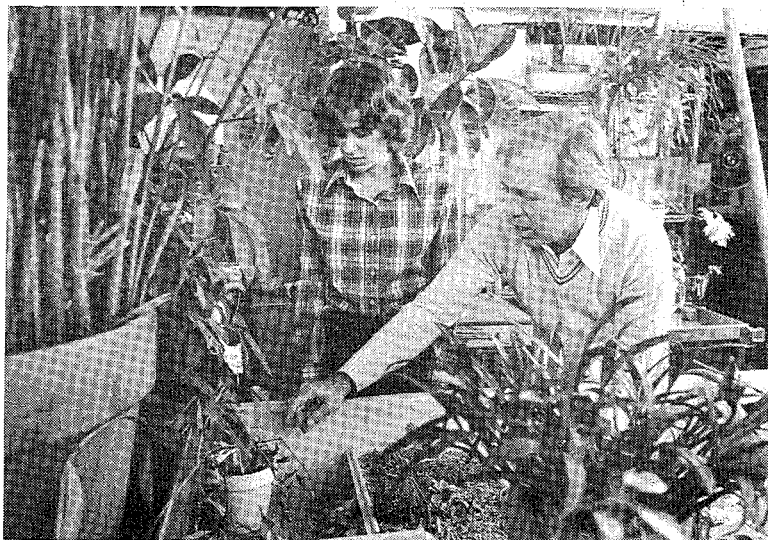
**BIO 257. FIELD STUDY OF MUSHROOMS** . . . . . 1 credit hour  
Stresses identification of flowerless plants.

**BIO 258. FIELD STUDY OF TREES AND SHRUBS** . . . . . 1 credit hour  
Identification and habitat study of woody plants.

**BIO 259. FIELD STUDY OF COMMON PLANTS** . . . . . 1 credit hour  
Non-woody higher plants are studied with emphasis on identification.

**BIO 260. SPRING WILD FLOWERS** . . . . . 1 credit hour  
The Spring flora is studied with emphasis placed on recognition.

**BIO 267. WINTER FIELD STUDY** . . . . . 1 credit hour  
Biological organisms are studied in their winter conditions.



**BIO 270. NATURE PHOTOGRAPHY** ..... 1 credit hour

A practical course in photographing nature. Several approaches are used to give the student experience with different techniques and films. Use of a camera for taking pictures and film is required.

**BIO 288. ADVANCED BEEKEEPING** ..... 2 credit hours

Deals with stocking the hive, ordering bees, handling the queen and the commercial aspects of beekeeping.

**BIO 289. FIELD BEEKEEPING** ..... 2 credit hours

Field beekeeping is a practical approach to learning about honeybees on Saturday mornings during May, June and July. The first of the eight sessions will be at the College building, but the next seven sessions will be conducted in the apiaries located in the College area. In case of inclement weather, alternate activities will be planned.

This course is primarily for those who have taken a beekeeping course or who own at least one colony of honeybees.

**BLUEPRINT READING  
(BPR 64)**

**BPR 100. BLUEPRINT READING** ..... 2 credit hours

Elementary blueprint reading for the construction trades. Emphasis is on the development of visualization skills and the study of practices and symbols for interpreting construction prints. Smaller scale construction projects studied.

**BPR 101. BLUEPRINT READING** ..... 3 credit hours

Fundamentals of blueprint reading as applied to the manufacturing industry. Basic drafting principles studied as applied to specific problems. Designed for pre-engineers, draftsmen, machine operators, machine repairmen, inspectors, welders and supervisors.

**BPR 103. SHEET METAL BLUEPRINT READING  
AND LAYOUT** ..... 3 credit hours

Elementary sheet metal layout. Emphasis is placed on developing sheet metal patterns by standard short cut methods. 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. (4 hours per week)

**BPR 105. SHEET METAL BLUEPRINT READING AND LAYOUT—ADVANCED** . . . . . 3 credit hours

Advanced sheet metal layout teaches the actual development of more difficult sheet metal fittings. Triangulation and parallel line methods of development. The development of and fabrication of the fittings most often needed in today's modern heating, ventilating and air conditioning systems emphasized. (4 hours per week)

**BPR 106. BLUEPRINT READING FOR WELDERS** . . . . . 3 credit hours

Blueprint reading for welders is designed for the welders responsible for properly locating weld on the weldment and determining weld size, contour, weld length, type of filler metal and any applicable welding procedures.

**BPR 110. BLUEPRINT READING FOR CONSTRUCTION TRADES** . . . . . 2 credit hours

Prerequisite: BPR 100

Advanced blueprint reading for persons in the construction trades. Emphasis on the application of blueprint reading, principles and fundamentals to the construction process. Large scale construction projects are the base of instruction.

## **BUSINESS (BUS 46)**

**BUS 100. INVESTMENTS** . . . . . 1 credit hour

A course designed to acquaint students with various aspects of financial investments. Topics to be covered include: corporate securities investment banking, financial statement analysis, over-the-counter market and other phases of financial investments.

**BUS 107. WOMEN IN THE WORKPLACE** . . . . . 1 credit hour

An inquiry into the economic and social factors affecting women in the workplace. An opportunity to become familiar with current literature on the working woman and to examine attitudes towards women and attitudes of working women.

**BUS 111. BUSINESS LAW I** . . . . . 3 credit hours

Text and case study of the general laws applicable to business covering the nature of law courts and court procedures, contracts, real and personal property, wills and trusts and negotiable instruments. BUS111 is offered all semesters. Will transfer to EMU as their BUS 293.



**BUS 122. BUSINESS LAW II** ..... 3 credit hours

Prerequisite: BUS 111

Text and case study of agency relationships, formation and operation of partnerships, formation and operation of corporations, security laws, sales agreements and debt relationships. BUS 122 is offered only Winter Term. Will transfer to EMU with departmental consent.

**BUS 140. INTRODUCTION TO BUSINESS** ..... 3 credit hours

Functions, objectives, problems, organization, and management of modern business. 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."

**BUS 200. INDEPENDENT DIRECTED STUDY** ..... 2-8 credit hours

Prerequisite: Consent. Credit hours determined prior to registration

A planned program of study in selected business-industrial occupational career subject matter under the guidance and direction of a regular staff member. Supplements classroom study in a way that will enhance the student's total occupational career educational experience. Includes readings, analyses, conferences and reports. (Hours to be arranged)

**BUS 207. BUSINESS COMMUNICATION** . . . . . 3 credit hours

Oral and written communication skills as they relate to business enterprise. Emphasis on social and psychological aspects and the public relations function of business communication. Importance of clarity, conciseness, accuracy and appropriateness of tone in all types of business communication. Includes business correspondence and reports and the gathering, preparation, organization and presentation of data.

## **CHEMISTRY (CEM 33)**

**CEM 057. INTRODUCTORY CHEMISTRY** . . . . . 3 credit hours

A preparatory course for the student with no background in high school science or algebra. May be taken by students wishing to improve their chemistry background before taking Chemistry 111, Chemistry 105, or by the student desiring an exposure to chemistry. Introductory Chemistry Laboratory 058 is recommended. (3 hours per week)

**CEM 058. INTRODUCTORY CHEMISTRY  
LABORATORY** . . . . . 1 credit hour

Prerequisite or Corequisite: CEM 057

A laboratory experience in basic chemical laboratory practices and procedures. Introductory Chemistry Laboratory 058 should be elected to accompany Introductory Chemistry 057. (3 hours per week)





**CEM 097. CHEMISTRY OF COMBUSTIBLES** . . . . . 3 credit hours

Designed for students in the Fire Protection Program. The course concentrates on the chemistry of flammable and explosive materials with special emphasis on hazards. (3 hours per week)

**CEM 105. FUNDAMENTALS OF CHEMISTRY** . . . . . 4 credit hours

Prerequisite: High school chemistry or CEM 057

A study of the principles of chemistry surveying the major topics in chemistry. For students with interests in nursing or other health-related areas. May also serve as a general science elective. (6 hours per week)

**CEM 111. GENERAL CHEMISTRY I** . . . . . 4 credit hours

Prerequisites: High school chemistry and one year high school algebra or CEM 057

A beginning general college chemistry course. Includes the laws of chemical combination, states of matter, atomic and molecular structure, bonding and other basic principles. Lectures and laboratory. (6 hours per week)

**CEM 122. GENERAL CHEMISTRY II** . . . . . 4 credit hours

Prerequisite: CEM 111

A continuation of General Chemistry I, including ionic equilibria, qualitative analysis and quantitative analysis. Laboratory work includes the qualitative identification of unknown substances and quantitative determinations using elementary instrumental techniques. (8 hours per week)

**CEM 140. ORGANIC BIOCHEMISTRY** . . . . . 4 credit hours

Prerequisite: CEM 105 or CEM 111

An introduction to organic and biochemistry, for those going into nursing and the health services. The study of structure and functional groups of organic compounds, structure of biological molecules, mechanism of enzyme-catalyzed reactions, equilibria involved in exchange and transport of oxygen and carbon dioxide, acid-base balance, and bioenergetics. Lectures and Laboratory. (6 hours per week)

**CEM 211. ORGANIC CHEMISTRY I** . . . . . 3 credit hours

Prerequisite: CEM 111

A lecture course dealing with nomenclature stereo-chemistry and reactions of aliphatic and aromatic compounds. Normally offered Fall Semester only.

**CEM 218. ANALYTICAL CHEMISTRY** ..... 4 credit hours

Prerequisite: CEM 122

Quantitative analysis in the modern chemistry laboratory through the use of gravimetric, volumetric, optical, electrometric, gas chromatographic and spectroscopic instrumental methods of analysis, instrument design and principles included. (8 hours per week)

**CEM 222. ORGANIC CHEMISTRY II** ..... 5 credit hours

Prerequisite: CEM 122 and CEM 211

A continuation of Organic Chemistry I involving the study of the derivatives of aliphatic and aromatic compounds. Laboratory will stress techniques used in the preparation and handling of organic compounds. Lectures and laboratory. Normally offered Winter Semester only. (9 hours per week)

## **CHILD CARE WORKER (CCW 76)**

**CCW 100. THE EXCEPTIONAL CHILD** ..... 3 credit hours

For those with no background in special education. 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. Various community, state, and national resources to assist exceptional children identified.

**CCW 101. CHILD DEVELOPMENT** ..... 3 credit hours

A general overview of the physical, social, emotional and intellectual development of the child from conception to maturity with emphasis on the preschool years. Examines the environmental, ethnic and familial factors that make for group differences and individuality of growth and current research in these areas.

**CCW 103. ALTERNATIVE PROGRAMS IN  
CHILD CARE** ..... 3 credit hours

Philosophy and theory of programs in child care. Exploration of traditional, open, Montessori, Piaget Based, Head Start, parent involvement, and kindergarten programs. Daytime observations of area child care centers will be frequently assigned.



**CCW 105. PRACTICUM I** ..... 3 credit hours

Supervised teaching at the WCC Children's Center. Students work in the classroom, supervised by a qualified teacher at the Center. One hour per week is spent attending a practicum seminar. Opportunities for observation, planning and participation dependent on the student's readiness. To be taken during first semester in Child Care Worker for program orientation.

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. (9 hours per week)

**CCW 106. PRACTICUM II** ..... 3 credit hours

Prerequisite: CCW 105 and completion of 30 credit hours of CCW Program

An advanced continuation of CCW 105. Students who completed CCW 105 on campus will be 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. (9 hours per week)

**CCW 107. EDUCATIONAL EXPERIENCES IN SCIENCE AND MATH** . . . . . 3 credit hours

Integrated curriculum workshops introduce the theory of math and science experiences for the young child. 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

Integrated curriculum workshops cover a wide range of the arts, especially music, creative movement, art and drama. Emphasis on how to facilitate creativity and self-expression. Basic materials, techniques and activities introduced and then used with young children.

**CCW 109. LANGUAGE AND COMMUNICATION** . . . . . 3 credit hours

Theories of language development. Consideration given to non-verbal communication and cultural differences. Basic methods, activities and materials in communication skills developed and experienced.



**CCW 110. SOCIAL/EMOTIONAL DEVELOPMENT . . . . . 3 credit hours**

A multi-cultural approach to the study of the personality development during the first six years of life. Exploration of the characteristics and needs that emerge with each developmental stage with emphasis on methods, suggestions and practical guides for meeting these needs. Emphasis on child management in the child care setting.

**CCW 111. DAY CARE ADMINISTRATION . . . . . 3 credit hours**

Practical aspects of starting and operating a child care center. Proposal writing, equipment selection, accounting, administrative forms, taxes, insurance, operational management, interpersonal relationships within a center and staff training.

**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)

The student will be 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 will be required.

In order to reserve available blocks of time, students are required to arrange supervised teaching hours at WCC Children's Center before registration. (12 hours per week)

**CCW 116. SEMINAR IN INFANT CARE . . . . . 3 credit hours**

The development of the infant. Theories of growth examined and related to the characteristics and needs of the infant in group or individual setting. Explores maternal care needs and facilities.

**CCW 200. STAFF/PARENT INTERPERSONAL RELATIONS . . . . . 3 credit hours**

Explores the many facets of parent and staff involvement in the child care setting. The various forms of parent participation, ways of increasing positive communication with parents, cultural differences and goals of parents, and planning parent education programs. Emphasis given to the individual parent/teacher conference, preparation, mechanics and techniques.

## **COMPUTER INFORMATION SYSTEMS (CIS 40)**

**CIS 100. INTRODUCTION TO COMPUTERS . . . . . 3 credit hours**

This course teaches computer novices how to use computers, together with the terms and concepts needed to make use of them. This course

emphasizes how to use a microcomputer, and how to use powerful software packages such as spreadsheet, word processing, and database. Structured computer programming is introduced and some practice is provided. The course teaches the basic vocabulary of computers, how computers are used in home, business, and government, the basic cycle of computer operation, input and output devices, how computers follow directions and store information. This course is also taught on television using the program series "The New Literacy."

**CIS 105. MICROCOMPUTER PROGRAMMING FOR BEGINNERS** . . . . . 2 credit hours

Student will gain insight to computer organization, how it works in layman's terms, develop (through lectures and exploring graduated exercises and assignments) skills necessary to identify problems and develop simple BASIC programs to solve them.

**CIS 111. COMPUTER CONCEPTS** . . . . . 3 credit hours

This course introduces basic terminology and concepts of computer information systems, which includes a basic discussion of hardware and software with an emphasis on business applications. Students will learn to use application software on both a large computer system in a timesharing environment and on micro-computers.

**CIS 112. COMPUTER FUNCTIONS** . . . . . 3 credit hours

Prerequisite or Corequisite: CIS 111

This course is a continuation of CIS 111. Students develop logic and code programs in a high level language such as BASIC. Other topics include introduction to database management systems, data communications and distributed processing.

**CIS 115. PROGRAMMING LOGIC** . . . . . 3 credit hours

Prerequisite: CIS 112

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** . . . . 3 credit hours

Prerequisite: CIS 112. Corequisite: CIS 115

This is a first course in Pascal covering structured algorithm development and branching and looping techniques. Strong emphasis will be placed on the use of procedures and functions and efficient passing of parameters. Data structures, including arrays and records will be covered. (3 hours per week)

**CIS 135. PL/1 PROGRAMMING . . . . . 3 credit hours**

Prerequisite: CIS 130 or consent

An introduction to the PL/1 language. Topics covered will include input/output formats, branching statements, and the use of variables. Students will write programs demonstrating the basic structures of PL/1.

**CIS 136. BASIC FOR BUSINESS AND INDUSTRY . . . . . 3 credit hours**

The principles of the BASIC language using structured techniques will be taught. Entry and retrieval of data, mathematical operations, comparison and control statements, subscripted variables and functions as well as data files and formatted output will be addressed. Students write BASIC programs, then enter and run them on microcomputers or computer terminals.

**CIS 137. RPG . . . . . 3 credit hours**

Prerequisite: CIS 112

A problem oriented approach is used to develop skills in using the Report Program Generator language. This course covers arithmetic operations, comparing, table handling and file building on auxiliary storage media.

**CIS 141. COMPUTER OPERATIONS I . . . . . 3 credit hours**

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 and using the devices about which they have studied. The interrelationships between system hardware, software and personnel are covered. Other topics include the importance of job documentation, standards manuals and error logs. Lecture and lab. (4 hours per week)

**CIS 142. COMPUTER OPERATIONS II . . . . . 3 credit hours**

Prerequisite: CIS 141

This is the study of supervisory software, utilities and other software which comprise an operating system. Topics covered include job control languages, dumps and management of systems, storage, processor and devices. Lab exercises involve cold starts, initializing disk packs and monitoring and running a computer system. Students also practice skills to become employable. Lecture and lab. (4 hours per week)

**CIS 170. COBOL I . . . . . 4 credit hours**

Prerequisite: CIS 130 or consent

This is an introductory course in the COBOL language covering basic input/output, arithmetic, and comparing operations. Structured programming is emphasized and business applications including headings, totals, and control breaks will be discussed. Several programs will be written to illustrate these topics. Lecture. (4 hours per week)

**CIS 199. ON-THE-JOB-TRAINING** . . . . . 3 credit hours

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** . . . . . 3 credit hours

Prerequisite: CIS 130

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 will be covered. Searching and sorting techniques will be studied. Students will complete an indepth programming project.

**CIS 238. ASSEMBLER** . . . . . 3 credit hours

Prerequisite: CIS 130 or consent

Principles of Assembly language. Course will emphasize use of the 8088 Assembler on the IBM PC. The 8088 microprocessor organization and machine code will be discussed as preliminary information to the use of the Assembler.





**CIS 240. CAREER PRACTICES SEMINAR. . . . . 2 credit hours**

Prerequisite: ENG 100 Communication Skills

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. Lecture. (2 hours per week)

**CIS 270. COBOL II. . . . . 4 credit hours**

Prerequisite: CIS 170

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 will be discussed. Several programs will be written to illustrate the topics covered, and at least one subprogram will be written and called from another COBOL program. Lecture. (4 hours per week)

**CIS 275. C PROGRAMMING LANGUAGE. . . . . 3 credit hours**

Prerequisite: CIS 130 or consent

An introductory course in the C programming language. The intended audience is experienced programmers. Most features of the C language will be discussed so that the student who successfully completes the course will be capable of versatility in using C. Emphasis is placed on structured programming techniques and sound documentation.

**CIS 282. SMALL SYSTEM DATA BASE. . . . . 3 credit hours**

Prerequisite: CIS 130 or consent

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 will apply the theoretical concepts to realistic case studies. Lecture. (3 hours per week)

**CIS 283. LARGE SYSTEM DATA BASE. . . . . 4 credit hours**

Prerequisite: CIS 130 or consent

This is an introductory course using a CODASYL DBTG Model Data Base. Relational, hierarchical, and network data base concepts will be 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 Burroughs 6810 computer.

**CIS 284. DATA COMMUNICATIONS** . . . . . 3 credit hours

Prerequisite: CIS 130 or consent

Introduction to design issues in a network configuration, basic terminology and methodology. Typical applications and uses of teleprocessing networks. Detailed look at typical building blocks and types of network organizations. Common carrier services, tariffs, transmission facilities and signal conversion devices will be studied.

**CIS 286. OPERATING SYSTEMS** . . . . . 3 credit hours

Prerequisite: CIS 130 or consent

Concepts and technical knowledge of operating systems, utilities and control languages are presented. The internal functions of an operating system, such as MVS or MCP are analyzed.

**CIS 288. SYSTEMS ANALYSIS AND DESIGN** . . . . . 3 credit hours

Prerequisite: CIS 130 or consent

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 31)**

**CPS 132. COMPUTER PROGRAMMING—  
CLASSROOM APPLICATIONS** . . . . . 2 credit hours

No computer experience required. Of particular help to teachers in Washtenaw County seeking to become "computer literate." Includes "canned" programs, introduction to computer languages, games, drill and practice for students, and record keeping.

**CPS 183. INTRO TO BASIC PROGRAMMING** . . . . . 4 credit hours

Prerequisite: MTH 097

This course is designed for people with or without prior computer experience. Students will 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 will 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, entertainment. This course is offered every term.

**CPS 186. INTRO TO PASCAL PROGRAMMING . . . . . 4 credit hours**

Prerequisite: MTH 169

This course has a transfer program orientation. An introduction to the principles and practices of the Pascal programming language is presented. Designed as a teaching tool for programming concepts, Pascal has become the preferred language of computer science departments. Students will learn about problem-solving strategies, top-down program development and good programming style. Students will write and execute approximately 8 programs in Pascal leading up to a significant final project. This course is offered every term.

**CPS 187. INTRO TO FORTRAN PROGRAMMING . . . . . 4 credit hours**

Prerequisite: MTH 169

An introduction to the principles and practices of the FORTRAN 77 programming language is presented. 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 will learn about problem-solving strategies, top-down program development, and good programming style. Students will write and execute approximately 8 programs in FORTRAN 77 leading up to a significant final project. This course does transfer to some four-year institutions and is offered every term.

**CPS 188. INTRO TO ALGOL PROGRAMMING . . . . . 4 credit hours**

Prerequisite: MTH 169

This course has a transfer program orientation. An introduction to the principles and practices of the ALGOL programming language is presented. Students will learn about problem-solving strategies, top-down program development, and good programming style. Students will construct and test algorithms by writing and executing selected programs in ALGOL.

**CPS 283. ADVANCED BASIC PROGRAMMING . . . . . 4 credit hours**

Prerequisite: CPS 183 or CPS 294

This course acquaints the student with the uses of microcomputers. Includes some user-defined functions, sorting procedures, data management, and use of prewritten software. Special projects may be arranged with the instructor.

**CPS 286. ADVANCED PASCAL PROGRAMMING . . . . . 4 credit hours**

Prerequisite: CPS 186 or CPS 294

This course has a transfer program orientation. The student is assumed to have a basic knowledge of Pascal. The more advanced features of Pascal and of scientific and data structure programming in general are

covered. Students will 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 will be large programs. This course is normally offered in the Winter Term.

**CPS 287. ADVANCED FORTRAN PROGRAMMING . . . . . 4 credit hours**

Prerequisite: CPS 187 or CPS 294

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 will 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 does transfer to some four-year institutions and is normally offered in the Fall term..

**CPS 288. ADVANCED ALGOL PROGRAMMING . . . . . 4 credit hours**

Prerequisite: CPS 188

This course has a transfer program orientation. The student is assumed to have a basic knowledge of ALGOL. The more advanced features of ALGOL and of scientific and data structure programming in general are covered. Students will write and execute several ALGOL programs which demonstrate advanced programming concepts and techniques.

**CPS 290. PROGRAM DESIGN METHODOLOGIES . . . . . 4 credit hours**

Prerequisite: CPS 286, CPS 287 or CPS 288

This course has a transfer program orientation. Techniques and methodologies of designing computer programs are presented. The course will illustrate 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 will design and implement one major computer system.

**CPS 291. FILE STRUCTURE . . . . . 4 credit hours**

Prerequisite: CPS 286, CPS 287 or CPS 288

This course has a transfer program orientation. This course deals with data representation and manipulation on bulk-storage devices. Both disk and tape files will be considered. The various organizational and indexing techniques available with these devices will be discussed. Students will write programs which demonstrate these concepts and techniques.

**CPS 292. ASSEMBLER LANGUAGE PROGRAMMING . . . . . 4 credit hours**

Prerequisite: CPS 186, CPS 187 or CPS 188

This course has a transfer program orientation. The basic architecture of

computers will be discussed including the physical and logical components of a computer system. Processing, control and I/O will be dealt with and programmed using most of the instruction set of a computer. Students will write programs in assembler language. The course provides a foundation in assembler general enough to be applied easily to numerous machines. This course is normally offered in the Fall term.

**CPS 294. COMPARATIVE LANGUAGES . . . . . 4 credit hours**

Prerequisite: CPS 183, CPS 186, CPS 187 or CPS 188

This course has a transfer program orientation. This course is designed to compare and contrast the characteristics of several popular programming languages. Each language will be discussed and evaluated in terms of criteria such as: general application area, efficiency, portability, ease of programming, and ease of maintenance. Students will write short programs in most of the languages discussed. Languages will probably include: BASIC, PL/I, FORTRAN, FORTRAN 77, ALGOL, and Pascal.

**CPS 299. INTERACTIVE COMPUTER GRAPHICS . . . . . 4 credit hours**

Prerequisite: CPS 187, CPS 286 or CPS 294

This course has a transfer program orientation. The principles of interactive computer programming using graphical input-output devices are presented. Topics include: graphical devices, interactive methods, dynamic array management, data structures, error recovery, file manipulation, graphical techniques, and dynamic compilation-loading-execution of program segments. The emphasis is on production programming. Students will write and execute programs which demonstrate these concepts and techniques.

## **CRIMINAL JUSTICE (CJ 78)**

**CJ 100. INTRODUCTION TO CRIMINAL JUSTICE . . . . . 3 credit hours**

An indepth look at the Criminal Justice System to include Law Enforcement, Courts and Corrections. With a study as to their individuality and purposes.

**CJ 103. POLICE RESERVE TRAINING . . . . . 3 credit hours**

This course is designed to provide the auxillary, reserve and/or part-time law enforcement officer with the skills necessary to function safely and effectively in that capacity. The course will cover topics such as legal implications, juvenile law, investigations, traffic, first aid, liability, defensive tactics, and firearms qualifications.

**CJ 111. POLICE/COMMUNITY RELATIONS . . . . . 3 credit hours**

Role of individual officer and the department in achieving and maintaining public support. Customs, culture, and problems of ethnic and minority groups. Public information services. Techniques for the alleviation of community tensions.

**CJ 122. THE CORRECTIONAL SYSTEM . . . . . 3 credit hours**

The correctional system from historical to contemporary times. Includes probation, parole and new treatments which are geared to deal with the first offender and repeater.

**CJ 205. APPLIED PSYCHOLOGY FOR POLICEMEN . . . 3 credit hours**

Principles of psychology, relevant to specific applications in law enforcement, major psychological theories viewed from perspective of their application to law enforcement practices.

**CJ 207. TRAFFIC ADMINISTRATION AND CONTROL . . . . . 3 credit hours**

The course is designed to introduce the student to the purpose and design of traffic administration. Includes coverage of the motor vehicle law, traffic engineering, control devices and accident investigation.

**CJ 208. CRIMINAL EVIDENCE AND PROCEDURE . . . . 3 credit hours**

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. Principles of constitutional, federal and state laws as applied to law enforcement.

**CJ 209. CRIMINAL LAW . . . . . 3 credit hours**

For either lawyer or layman. Designed to broaden the understanding of the student concerning the various agencies involved in the administration of criminal law. Emphasis on the more important law enforcement functions from arrest to executive pardon.

**CJ 210. INTRODUCTION TO CRIMINALISTICS . . . . . 3 credit hours**

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. (3 hours per week)

**CJ 218. CORRECTIONAL COUNSELING . . . . . 3 credit hours**

Casework method of diagnosing and treating criminal offenses. A variety

of counseling models and their application to correctional casework discussed.

**CJ 223. JUVENILE JUSTICE** . . . . . 3 credit hours

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

A basic overview of investigative techniques as they pertain to many criminal justice agencies, to include the police. Course deals with the practical applications at crime scenes.

**CJ 225. SEMINAR IN CRIMINAL JUSTICE** . . . . . 3 credit hours

A unifying experience and evaluation of criminal justice systems, policies and practices. Preparation of a concluding research paper is required in this course.

**CJ 227. SEMINAR IN CORRECTIONS** . . . . . 3 credit hours

An overall look at the system of corrections; includes discussions on alternative methods, parole, probation and community based corrections. A research effort is required in this course.

## **CULINARY ARTS (CUL 74)**

**CUL 100. INTRODUCTION TO HOSPITALITY  
INDUSTRY MANAGEMENT** . . . . . 3 credit hours

Designed to give the student the history of the hospitality industry, trends, developments and opportunities in the industry today. An introduction to the study of the organizational structure and functions of management.

**CUL 110. SANITATION AND HYGIENE** . . . . . 3 credit hours

Communicates the importance of sanitation to the hospitality worker, layman's bacteriology, communicable diseases, food poisoning, pest control, cleaning and sanitizing; personal hygiene. Students who complete this course and pass the exams receive National and State Sanitation Certification.

**CUL 111. ELEMENTARY FOOD PREPARATION** . . . . . 6 credit hours

Development of standards of food preparation, portion control, service techniques, sanitation, receiving and storage of food and materials. Students identify foods and equipment and demonstrate proper use. Laboratory and lecture. (14 hours per week)

**CUL 118. PRINCIPLES OF NUTRITION** . . . . . 3 credit hours

General principles of nutrition 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 health menu planning.

**CUL 150. DINING ROOM MANAGEMENT** . . . . . 6 credit hours

Focusing on the point of sale, the students will be provided with an opportunity to apply managerial responsibility in the "front of the house."

Special emphasis is placed on various styles of table service, sales and promotion, training, follow up and supervisory skills. Laboratory and lecture. (12 hours per week)

**CUL 199. ON-THE-JOB TRAINING** . . . . . 3 credit hours

To permit students who have accumulated at least 30 credit hours in the Foods and Hospitality Department the opportunity to earn 3 credit hours while working under supervised conditions in a commercial foods facility. A minimum of 300 hours of work on the job is required.

**CUL 210. GARDE MANGER** . . . . . 4 credit hours

Prerequisite: CUL 111

Building upon elementary cold food preparation procedures, students progress to more complex, classical preparations, techniques and presentations. Food material utilization, buffet salads, vegetable carving, food decorating techniques and garnish techniques. (6 hours per week)

**CUL 219. ELEMENTARY BAKING** . . . . . 4 credit hours

Prerequisite: CUL 111

A course in baking including yeast doughs, hot breads, muffins, puff pastry doughs, fillings, glazes, basic cake decorating and desserts. (6 hours per week)

**CUL 220. ORGANIZATION AND MANAGEMENT OF HOSPITALITY INDUSTRY** . . . . . 3 credit hours

Prerequisite: CUL 100

A study of types of organization, the process of recruitment, selection, training and evaluation, labor policies, collective bargaining and human relations techniques in personnel management.

**CUL 222. QUANTITY FOOD PRODUCTION** . . . . . 6 credit hours

Prerequisite: CUL 111

Application of techniques learned in Elementary Food Production course. Students have opportunities throughout course to learn expert preparation of soups, sauces, meats, breads, desserts, salads, appetizers and vegetables. (14 hours per week)



**CUL 224. PRINCIPLES OF COST CONTROLS . . . . . 4 credit hours**

Selection and purchasing of foods and materials used in the hospitality industry. Course will involve 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

Experience through involvement in production using advanced baking skills, cake decorating, piping gel, puff pastry, Danish and breads, including work with pastry buffet display pieces, such as pas tillage, nougat work, pulled sugar and other classical pastry items. (6 hours per week)

**CUL 227. ADVANCED CULINARY TECHNIQUES . . . . . 6 credit hours**

Prerequisite: CUL 122

A culmination of experiences for the advanced student. Hors d'oeuvres, chaud-froid, ballontine and souffle, tallow and salt carvings, aspics, ice carving, gum paste and decorating techniques become familiar to the student. (20 hours per week, 7 week semester)

**CUL 228. LAYOUT AND EQUIPMENT . . . . . 4 credit hours**

Prerequisite: CUL 111

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. (6 hours per week)

**CUL 250. ADVANCED SERVICE TECHNIQUES . . . . . 3 credit hours**

Wine and liquor identification and service, tableside preparation and flambe are covered in this advanced service techniques course. The students will learn how to satisfy the more discriminating diner.

**CUL 260. CATERING AND BANQUETS . . . . . 3 credit hours**

Prerequisite: CUL 111

The complete process of planning and serving banquets will be taught; including use of facilities, promotion, menu planning, food purchasing costs, labor costs and production. The students will practice in actual development of banquets from inception to service.

**DANCE  
(DN 16)**

**DN 101. BEGINNING MODERN DANCE I . . . . . 2 credit hours**

Warmup stretches, strengthening exercises and movement sketches introduce the student to the range of modern dance movement. Students

learn to become aware of their own bodies and the infinite range of creative movement possible to them.

**DN102. BEGINNING MODERN DANCE II** . . . . . 2 credit hours

Prerequisite: DN 101 or equivalent

The basic outline of stretches, strengthening exercises and movement work continues at a more challenging level. A complete routine is taught.

**DN 103. BEGINNING TAP DANCE I** . . . . . 1 credit hour

An opportunity to learn basic tap dance vocabulary which will be incorporated into traditional steps and dance routines. Total body awareness and rhythmical enjoyment will be emphasized.

**DN 104. BEGINNING TAP DANCE II** . . . . . 1 credit hour

Prerequisite: DN 103 or equivalent

A more advanced class designed for those who have had previous tap classes and wish to work on proficiency as well as learning more intricate steps and routines.

**DN 105. BEGINNING JAZZ DANCE I** . . . . . 2 credit hours

This course will give the student a wide range of movement to use for self expression and physical enjoyment. Jazz exercise and dances will stretch and tone the body while developing better coordination and rhythm.

**DN 106. BEGINNING JAZZ DANCE II** . . . . . 2 credit hours

Prerequisite: DN 105 or equivalent

An experience in moving intended for the student with jazz dance background who wants to work on proficiency of jazz movement and stylized dancing.

**DN 107. BEGINNING BALLET I** . . . . . 2 credit hours

An overview of ballet technique and steps intended for the student who wants to work on body awareness and alignment and skillful execution of movement while enjoying ballet's inherent beauty.

**DN 108. BEGINNING BALLET II** . . . . . 2 credit hours

Prerequisite: DN 107 or equivalent

A continuation of beginning ballet steps and movement for the student who wants to work on improving proficiency of execution.

**DN 110. AFRO-AMERICAN DANCE I** . . . . . 1 credit hour

To introduce 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

Students will learn the basics of good social dance so that they can feel comfortable in any dance situation. They will learn how to lead; follow, and dance the most popular and most useful dances: fox trot, waltz, swing, cha-cha, rhumba, 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

Designed for the student who is looking for a slower paced dance exercise program, this choreographed program of stretching, simple dance routines, and reducing, all set to various types of music, will help trim and recondition the body while providing an excellent starting or re-entry point for a fitness program. Students will be encouraged to develop a total fitness program. Discussion of nutrition and the learning of simple relaxation techniques will also be a part of this class where no prior dance or exercise experience is required.

**DN 124. CREATIVE MOVEMENT** . . . . . 2 credit hours

Prerequisite: Previous dance experience

Develop the body as an expressive tool while exploring a wide range of creative movement. Students will experiment with a variety of movement ideas, based on response to sounds, ideas, memories, feelings, and perceptions. Also covered will be some principles of choreography.

**DN 125. DANCE COMPOSITION I** . . . . . 3 credit hours

Prerequisite: Any dance activity class

This course will familiarize students with the components of dance and the process of phrase creation. An opportunity to learn manipulation of various dance forms in order to develop a performance idea will be discussed. Students will 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.

**DN 201. CLASSICAL DANCES OF INDIA** . . . . . 2 credit hours

An opportunity to 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 equivalent

To further the student's dance vocabulary using basic African/Afro-American movements employed in the "boogie," jazz, Dixieland, modern and Latin dance. Emphasis is to build confidence through the use of move-

ment combinations; traditional African/Afro-American movement; exploring solo creation, and learning at least one Afro-American dance. Performance is encouraged, but not mandatory.

**DN 221. MUSIC FOR DANCE** . . . . . 3 credit hours

This course is designed for the student who desires to use both dance and music mediums to promote and explore creative expression. Information covered will include standard music/dance forms: American-European-South American-Africas-Indias and other cultures traditional music and dance; how these different forms and styles evolved and how these forms can be used to create new works. Students will create dances to music and choose music to accompany dances.

**DN 222. BALLROOM DANCE II** . . . . . 1 credit hour

Prerequisite: DN 122 or equivalent

Students will perfect the basics of good social dance so that they can excel in any dance situation. They will learn advanced patterns in fox trot, waltz, swing, cha-cha, rumba, polka and hustle. They will be introduced to tango, mambo and samba. Designed for those who have previous ballroom dance.

**DN 223. DANCE EXERCISE II** . . . . . 1 credit hour

Prerequisite: DN 123 or equivalent

This class is designed for the student who is in reasonable physical shape. Students in this dance exercise class will learn choreographed warm-up, aerobic, strengthening, and cool down routines that will 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 will be included.

**DN 224. DANCE EXERCISE III** . . . . . 2 credit hours

Prerequisite: DN 123 and DN 223 or equivalent

A continuation of Dance Exercise I and II, this class is a fitness maintenance class for those who have already been introduced to aerobic dance exercise. Students will learn choreographed warm-up, aerobic, strengthening, and cool down routines that will help condition the heart and lungs and help keep the body flexible and strong. All routines will be set to various types of music. For the development of a total fitness program, time will be devoted to a discussion of nutrition and the learning of relaxation techniques.

# DENTAL ASSISTING (DA 51)

*(Enrollment priority for these courses is granted students admitted to this program.)*

## **DA 039. DENTAL ASSISTANT REVIEW** . . . . . 1 credit hour

Prerequisite: Graduate or OJT Dental Assistant

This course will provide a prospective candidate for a dental assistant credentialing exam an opportunity to review course materials; gain knowledge about test taking; take a simulated exam; 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 permission of instructor

A course 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 will be emphasized.

## **DA 110. INTRODUCTION TO DENTAL ASSISTING** . . . . . 3 credit hours

Prerequisite: Admission to the Dental Assisting Program

This course is an orientation to dental assisting. This is a study of the history of dentistry, professional organizations, ethics, and the role of the modern dental health team. The student will be introduced to the dental operatory, equipment, and basic procedures used in four-handed dentistry. Each student will be assigned to clinical experiences in the Washtenaw Community College Dental Clinic.

## **DA 111. DENTAL SCIENCE** . . . . . 4 credit hours

Prerequisite: Admission to the Dental Assisting Program

This is an introductory course to head and neck anatomy. This is a study of 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

This course is designed to give the dental assistant student a general knowledge of the uses and properties (chemical and physical) of the most commonly used dental materials.

**DA 114. CLINICAL DENTAL ASSISTING** . . . . . 3 credit hours

Prerequisite: Admission to the Dental Assisting Program, a 2.0 Grade Point Average in DA 110

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 operative procedures. The student will be introduced to the basic techniques used in the operative procedures. Each student will be assigned to clinical experiences in the Washtenaw Community College Dental Clinic.

**DA 120. ORAL DIAGNOSIS** . . . . . 2 credit hours

This theoretical and practical course will provide the student with the knowledge and techniques used to obtain diagnostic data and the methods of recording this data. Treatment planning and referral letter writing will also be included as well as instruction in blood pressure recording.

**DA 121. ORAL DIAGNOSIS PRACTICUM** . . . . . 1 credit hour

Prerequisite: A 2.0 Grade Point Average in DA 111, DA 114, and DA 120

A clinical course designed to actively involve the student in applying his/her knowledge of recording diagnostic data and treatment plans. Complete clinical records including referral letter will be written on actual clinical cases being treated in the College Dental Clinic. Each student will be assigned to clinical experiences in the Washtenaw Community College Dental Clinic.

**DA 122. ADVANCED DENTAL SCIENCE** . . . . . 4 credit hours

Prerequisite: A 2.0 Grade Point Average in DA 111

Continuation of Dental Science 111. 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 Grade Point Average in DA 114

A continuation of Clinical Dental Assisting 114. A study of more complex operative procedures and the instrumentation necessary to perform them. Each student will be assigned to clinical experiences in the Washtenaw Community College Dental Clinic.

**DA 125. DENTAL ROENTGENOLOGY** . . . . . 2 credit hours

Prerequisite: Admission to the Dental Assisting Program or permission of instructor

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 permission of instructor.

A demonstration and laboratory course in which the student constructs various dental devices for diagnosis and impression taking. Emphasis is placed on impression for the fabrication of diagnostic models, model trimmings and the fabrication of custom acrylic impression trays. The construction baseplates and occlusal rims, temporary crowns and bridges will be demonstrated.

**DA 200. CLINICAL PRACTICE** . . . . . 3 credit hours

Prerequisite: DA 200, a 2.0 Grade Point Average in all Dental Assisting courses

This course is an orientation to a clinical environment. The student will actively utilize all previous dental courses in a controlled clinical environment.

**DA 201. DENTAL SPECIALTIES** . . . . . 3 credit hours

Prerequisite: A 2.0 Grade Point Average in all Dental Assisting courses

This course is designed to orient the 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 Grade Point Average in all Dental Assisting courses

The student will actively participate in a variety of clinical settings. It is struc-

tured according to the students' areas of interest and geographic access in dentistry. The student becomes acquainted with a number of office routines, procedures, equipment, and patient and staff relationships.

**DA 212. OFFICE PROCEDURES . . . . . 4 credit hours**

Prerequisite: 1 year of high school or Typing 101

This course is an introduction to the dental business office. This is a study of the systems of management used in dentistry, interpersonal communications, basic concepts of third party payment, and machines utilization.

**DA 215. ADVANCED DENTAL ROENTGENOLOGY . . . . . 2 credit hours**

Prerequisite: A 2.0 Grade Point Average in DA 125

A clinical course in making x-ray exposures using the manikin and patients participating in the WCC Dental Clinic Program.

**DA 222. ADVANCED DENTAL PRACTICE MANAGEMENT . . . . . 3 credit hours**

Prerequisite: A 2.0 Grade Point Average in all DA 212 or permission of instructor

This course is designed for the student interested in advanced dental practice management. This course includes management systems, decision making, office design, equipment selection, word processing, and data processing as it is used in the modern dental office.

**DA 224. EXPANDED DUTIES . . . . . 3 credit hours**

Prerequisite: A 2.0 Grade Point Average in all Dental Assisting courses

A course 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 02)**

**EC 107. ECONOMICS OF MONEY MANAGEMENT . . . . . 2 credit hours**

Independence through budget controls, needed and unneeded insurance, consumer buying skills, no risk investments, savings on food, nutrition and health, housing dollars, self reliance income, tax savings, pensions and social security, inflation hedges, security by public policy.

**EC 111. CONSUMER ECONOMICS . . . . . 3 credit hours**

The wise use of financial resources today requires more than an income-producing job and simple subtraction skills. In today's world, an individual



must approach his or her financial needs with the savvy of an investment counselor managing the affairs of the company's most important client. In the course, the students will learn the basics of budgeting, money management, use of credit and buying, the intricacies of home ownership, income tax, and investments, and the wise use of insurance, wills, and trusts. This course is also taught as a television course using the program series "Personal Finances and Money Management."

**EC 150. LABOR RELATIONS** . . . . . 3 credit hours

Discusses our changing labor force, development, structure and philosophy of U.S. unionism; collective bargaining; bargaining power and the role of the strike; union-management issues, public labor policies. The economics of labor market; comparison with foreign labor movements; operation of labor market; productivity and wages; economic development and the role of the labor force are also discussed.

**EC 189. STUDY PROBLEMS IN ECONOMICS** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Economics. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

**EC 211. PRINCIPLES OF ECONOMICS I** . . . . . 3 credit hours

The first half of basic principles of economics. Emphasizes macronomics concepts of national income, fiscal and monetary policy and problems of unemployment, inflation and economic growth. Required of all Business Administration transfer students. This course is also taught as a television course using the program series "The Money Puzzle".

**EC 222. PRINCIPLES OF ECONOMICS II** . . . . . 3 credit hours

Prerequisite: EC 211 or permission of instructor

Second half of an introduction to basic principles of economics. Emphasizes microeconomic concepts of demand, supply and problems relating to prices and resource allocation.

## **ELECTRICAL / ELECTRONICS (EE 65)**

*The Electrical/Electronic Department is unable to offer every class every semester due to space and faculty limitations. Students should use the*

following information in planning their schedules.

The following courses are normally offered in the Fall, Winter and Spring-Summer Terms:

- EE 101. Servicing Techniques I
- EE 105. Introduction to Telecommunications
- EE 123. Fundamentals of Electricity
- EE 134. Motors and Controls
- EE 137. Switching Logic
- EE 139. Computer Systems I
- EE 211. Basic Electronics

The following courses are normally offered in the Fall Term *only*.

- EE 205. Basic Telephony
- EE 215. Digital Communications I
- EE 221. Computer Peripherals
- EE 222. Digital Electronics I
- EE 224. Programmable Controllers
- EE 230. Computer Systems II
- EE 240. Career Practices Seminar
- EE 241. Digital Electronics II
- EE 244. Electronics Controls Systems

The following courses are normally offered in the Winter Term *only*.

- EE 225. Digital Communications II
- EE 235. Computer Systems III
- EE 238. Electronic Analog Circuits
- EE 245. Transmission Systems
- EE 250. Microprocessors

**EE 040. KNOW YOUR HOME'S ELECTRICAL SYSTEM** ..... 2 credit hours

This course has been designed to help the consumer better understand his or her home's electrical system. During the class sessions, the student will evaluate his or her home's existing electrical system in an effort to understand the capabilities and limitations of the system. A great deal of "hands on" time will be offered and will be devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that will be discussed and wired by the students are: duplex outlet circuits, dimmer circuits, three and four way switch circuits, lawn and garden lighting circuits, electric dryer and electric stove circuits. (3 hours per week, 10 weeks)

**EE 101. SERVICING TECHNIQUES I** ..... 4 credit hours

Development of techniques for service and maintenance of electrical/electronic systems. Use and care of tools and measuring instruments. Splicing, soldering, simple printed circuit layout and fabrication. The study of and working with materials and circuits found in residential wir-

ing systems and common electronic equipment. Lecture and Lab. (6 hours per week)

**EE 105. INTRODUCTION TO TELECOMMUNICATIONS** . . . . . 3 credit hours

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. Lecture. (3 hours per week)

**EE 123 FUNDAMENTALS OF ELECTRICITY** . . . . . 8 credit hours

An introductory course in electricity. Topics include D.C. and A.C. circuits, Ohm's law, Kirchhoff's laws, superposition and Thevenin's theorems, and j-operator. Lab topics include wiring circuits and measuring voltage, current, resistance, and waveforms. Lecture and open labs. (9 hours per week plus open lab time)

**EE 123A. FUNDAMENTALS OF ELECTRICITY, (PART A)** . . . . . 5 credit hours

The first half of Fundamentals of Electricity 123. Topics include D.C. circuits, Thevenin's and Norton's theorems, Kirchhoff's laws. Laboratory topics include wiring circuits and making circuit measurements with laboratory test equipment. (5 hours per week plus open lab time)

**EE 123B. FUNDAMENTALS OF ELECTRICITY** . . . . . 4 credit hours

The second half of Introductory Electricity EE 123. Topics include: A.C. circuits, Ohm's Law, Kirchoff's Law and the j-operator. Lab topics include wiring and drawing A.C. circuits and circuit measurement. Proficiency will be gained using signal generators and the oscilloscope. Lecture and open Lab. (5 hours per week plus open lab time)

**EE 134. MOTORS AND CONTROLS** . . . . . 4 credit hours

Prerequisite: EE 123

D.C. motors and generators, A.C. motors and generators; measurements of torque, speed, power; speed control, starting, stopping, reversing; SCR speed control; three phase circuit analysis; transformers; stepper motors; brushless D.C. motors; JIC symbols and ladder diagrams. Lecture and Lab. (6 hours per week)

**EE 137. SWITCHING LOGIC** . . . . . 3 credit hours

Fundamentals of digital logic: number systems, digital codes, Boolean algebra, and gate minimization techniques. The functional and logical operations of basic logic gates, combinational logic, flip-flops, sequential logic, memories and arithmetic logic are studied. Lecture and Lab. (4 hours per week)

**EE 139. COMPUTER SYSTEMS I** . . . . . 4 credit hours

Prerequisite: Preceded or accompanied by EE 137 and/or EE 140.

Corequisite: EE 140

This course is an introduction to the physical and logical makeup of a computer system. The major functional units of a computer system and their relationship with each other are examined. Topics include coding systems, data storage, data representation, central processor architecture, input/output devices, input/output techniques, bus structures, programming concepts, flow-charting, machine language programming and software components. The laboratory provides hands-on experience with computer equipment. Lecture and Lab. (6 hours per week)

**EE 140. SOFTWARE CONCEPTS I** . . . . . 3 credit hours

Prerequisite: EE 123. Corequisite: EE 139

Student will 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, executing programs on a computer system, development of consistent test cases and preparation of understandable documentation. Fundamental operating system concepts will be covered. Lecture and Lab. (4 hours per week)



**EE 204. NATIONAL ELECTRICAL CODE** . . . . . 2 credit hours

Prerequisite: EE 123

Electrical safety, CPR, NEC, wiring practices, sizing wire, lighting circuits, service entrances, grounding, ground fault interrupters, commercial, residential, and industrial applications; symbols, schematics, and wiring diagrams. Lecture. (3 hours per week)

**EE 205. BASIC TELEPHONY** . . . . . 4 credit hours

Prerequisite: EE 105

The theory, maintenance, and installation of telephone systems including basic electromechanical and electronic key systems with an emphasis on voice systems. Measurements, troubleshooting, transmission lines and switching concepts are emphasized. The latest telephone system technology will be studied. Lecture and Lab. (6 hours per week)

**EE 211. BASIC ELECTRONICS** . . . . . 4 credit hours

Prerequisite: EE 123

Semiconductor devices and circuits. Semiconductor materials, the PN junction diode, power supplies, bipolar junction transistor, characteristic curves, operating regions, common-emitter circuit, common-base, common-collector circuits, transistor switch, small signal amplifiers, load lines, biasing techniques, temperature characteristics and trouble shooting procedures. Lecture and Lab. (6 hours per week)

**EE 215. DIGITAL COMMUNICATIONS I** . . . . . 3 credit hours

Corequisite: EE 105

An introductory course in data communication principles and techniques. Topics include communication media, circuit types, data codes, interfaces, protocols, data transmission integrity, modems and modulation, digital transmission, multiplexers, distributed data processing networks, and network types and services. Lecture. (3 hours per week)

**EE 221. COMPUTER PERIPHERALS** . . . . . 3 credit hours

Prerequisite: EE 139

Input/output devices of a typical computer system including printers, tape and disc drives. The lecture includes the theory of operation of the devices, their control units and their interaction with the central processor. The laboratory activities are presented with the object of stressing the mechanical, electronic and logical principles of operation. Fall offering. (4 hours per week)

**EE 222. DIGITAL ELECTRONICS I** . . . . . 4 credit hours

Prerequisite: EE 211

Theory, analysis and application of pulse and digital circuits. Includes

pulse parameters, waveform analysis, RC integrators, RC differentiators, clippers, clampers, the bipolar junction transistor inverter, the CMOS inverter, flip-flops, the Schmitt trigger, sweep and sampling circuits. Lecture and Lab. (6 hours per week)

**EE 224. PROGRAMMABLE CONTROLLERS** . . . . . 4 credit hours

Prerequisite: EE 123

Review of digital logic principles needed to understand programmable controllers. Topics include ladder diagrams, relays; programming and interfacing the Modicon Micro-84; programming and interfacing the Allen Bradley PLC-4; selected I/O devices. Lecture and Lab. (6 hours per week)

**EE 224A. PROGRAMMABLE CONTROLLERS A** . . . . . 3 credit hours

Prerequisite: EE 123

The first half of EE 224; a review of digital logic; programming and interfacing the Modicon Micro-84. Lecture and Lab. (4 hours per week)

**EE 224B. PROGRAMMABLE CONTROLLERS B** . . . . . 3 credit hours

Prerequisite: EE 123

The second half of EE 224; review of digital logic; programming and interfacing the Allen Bradley PLC-4. Lecture and Lab. (4 hours per week)

**EE 225. DIGITAL COMMUNICATIONS II** . . . . . 4 credit hours

Prerequisite: EE 215, EE 205

Theoretical and practical aspects of digital communication systems. Major topics include telephone system performance requirements, transmission of data, digital modulation, modems, data terminals, operation of data communication links, data communication software, network protocols, pulse transmissions and the effects of noise and other distortions. Lecture and Lab. (6 hours per week)

**EE 230. COMPUTER SYSTEMS II** . . . . . 4 credit hours

Prerequisite: EE 139 and EE 211

The operation, servicing and troubleshooting of a digital computer system based on the PDP-11 minicomputer. This course emphasizes the operation of the CPU, and the topics include addressing modes, instruction sets, assemble language programming, business operation, CPU organization, main memory, I/O techniques and PDP-11 families. The architecture, implementation and operation of the KD-11A CPU is studied. Lecture and Lab. (6 hours per week).

**EE 234. OPERATING SYSTEMS FOR HARDWARE TECHNICIANS** . . . . . 3 credit hours

Prerequisite: EE 140 Software Concepts for Hardware Technician, EE 230 Computer Systems II. Corequisite: EE 235 Computer Systems III

This course deals with the practical skills needed to perform hardware maintenance on operating systems. Topics include maintenance of the current diagnostic files, management of account privileges, installation of current version of VMS on a VAX, running the User Environment Test Program as a system verification tool and the collection of relevant data on system problems. Lecture and Lab. (4 hours per week)

**EE 235. COMPUTER SYSTEMS III** . . . . . 4 credit hours

Prerequisite: EE 230 and EE 221

A more detailed study of digital computer system operation and servicing based on the PDP-11/40 and an introduction to VAX systems. Topics include mainframe maintenance, peripheral devices and interfacing, disk operation, troubleshooting techniques and use of diagnostic programs. Lecture and Lab. (6 hours per week)

**EE 236. COMPUTER VIDEO-DISPLAY TERMINALS** . . . . . 4 credit hours

Prerequisite: EE 230, EE 238, EE 241. Corequisite: EE 235

A detailed study of Video-Display Terminals and their operation in a computer system. The systems studied are based on the components and principles covered in the prerequisite courses: Computer Systems II, Electronic Analog Circuits and Digital Electronics II. The course emphasizes operation and maintenance of hardware. Topics include display technologies, Video Terminal types, UARTS, Modems, Computer interface and analog-to-digital conversion. A graphic terminal (using a direct-view storage-tube display) and a personal computer (with a color display) will be described at a detailed functional-block level. Labs will be based on a VT52/PDP-11 minicomputer configuration.

**EE 238. ELECTRONIC ANALOG CIRCUITS** . . . . . 4 credit hours

Prerequisite: EE 211

The theory of operation and characteristics of JFET's and MOSFET's, biasing techniques for FET's and FET amplifier characteristics. The principles of negative feedback and closed-loop gain. The operation and characteristics of IC operational amplifiers when used as inverting amps, non-inverting amps and differential amps. The application of IC op amps for signal processing, comparators and oscillators are also studied. Lecture and Lab. (6 hours per week)

**EE 240. CAREER PRACTICES SEMINAR** . . . . . 2 credit hours

Prerequisite: English 100 Communication Skills

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. Lecture. (2 hours per week)

**EE 241. DIGITAL ELECTRONICS II** . . . . . 4 credit hours

Prerequisite: preceded or accompanied by EE 222

Digital electronic circuits. The characteristics of modern integrated circuits and applications in digital systems. The operation, electrical parameters, and application of basic logic gates with emphasis on the TTL and CMOS logic families. Extensive use made of manufacturer's specification sheets. Digital adders, subtractors, shift registers, counters, timing circuits, decoders, encoders, memories and control waveform generation. Experience in the use, operation, testing and troubleshooting of integrated logic circuits. Lecture and Lab. (6 hours per week)

**EE242. HIGH FREQUENCY TRANSMISSION** . . . . . 4 credit hours

Prerequisite: EE 211

High frequency transmission line and antenna techniques. Students introduced to transmission line analytical concepts; measurement techniques; the use of the Smith Chart; and high frequency generating sources. Study of antennas includes basic antenna measurement and analytical techniques to determine such antenna properties as gain radiation patterns and impedance; various antenna types and typical applications. Lecture and Lab. (6 hours per week)

**EE 244. ELECTRONIC CONTROL SYSTEMS** . . . . . 4 credit hours

Prerequisite: EE 134, EE 211 and PHY 110

The theory and practical aspects of troubleshooting and maintaining an automatic control system; open and closed loop control of linear and rotational actuators; constant speed control systems; position control; sensors and transducers; proportional, integral, and differential control. Lecture and Lab. (6 hours per week)

**EE 245. TRANSMISSION SYSTEMS** . . . . . 4 credit hours

Prerequisite: EE 205, EE 215. Corequisite: EE 225

Principles of digital and analog transmission systems. Topics include transmission codes, conventions, and hierarchy. The T-1 system, Time Division Multiplexing, Frequency Division Multiplexing, signaling, multiplexer interfacing and system maintenance are included. Lecture and Lab. (6 hours per week)

**EE 250. MICROPROCESSORS** . . . . . 4 credit hours

Prerequisite: EE 139 or permission of instructor

An introductory technician level course on the theory, hardware, software and applications of microprocessors. Includes microprocessor architecture, programming, input/output interfacing and peripherals. Laboratory and Lab. (6 hours per week)



**EE 254. PROGRAMMABLE CONTROLLER SYSTEMS** ..... 4 credit hours

Prerequisite: EE 224, EE 139, EE 244

Intercommunication systems between networks of programmable controllers (PLC-4's or Micro-84's), master computers (PDP 11), master programmable controllers (Modicon 484 and Allen Bradley PLC-2), and machines and/or processes. Data Highway and Modbus communications. Lecture and Lab. (6 hours per week)

**EE 264. MICROPROCESSOR SYSTEMS** ..... 4 credit hours

Prerequisite: EE 250, EE 134, EE 244

Automatic control of open and closed loop systems which utilize digital methods, via microprocessors; interfacing; sensors, transducers; counting, sorting; temperature control, position control and speed control. Lecture and Lab. (6 hours per week)

**EE 274. MEASUREMENTS AND INSTRUMENTATION** ..... 4 credit hours

Prerequisite: EE 244

Theoretical and practical characteristics of a measurement, sources of errors, electrical standards; advanced procedures for measuring position, displacement, velocity, acceleration, force, temperature, flow, rate pressure, humidity and level; instruments include oscilloscopes, meters, tachometers, strip chart recorders, potentiometers, strain gages, load cells, photo-voltaic cells, linear-differential transformers, sensors, transducers; shielding and grounding. Lecture and Lab. (6 hours per week)

**EE 275. SWITCHING SYSTEMS** ..... 4 credit hours

The theory, operation and maintenance of analog and digital switches. Topics include; switch programming, diagnostic procedures, system trouble shooting. Customer owned switching systems will be emphasized. Lecture and Lab. (6 hours per week)

## **EMERGENCY MEDICAL TECHNOLOGY (EMT 55)**

**EMT 037. EMERGENCY FIRST AID** ..... 1 credit hour

Designed to train first responders in basic first aid procedures to be used before an ambulance or doctor arrives. Skills taught include artificial respiration, bleeding control and splinting; treating poisoning, burns and fainting.

**EMT 097. EMERGENCY MEDICAL REVIEW . . . . . 3 credit hours**

Designed to update and refresh the skills and techniques of practicing EMTs. Meets requirements of the Michigan Department of Public Health for continuing education to maintain state licensure.

**EMT 101. EMERGENCY MEDICAL TREATMENT PRINCIPLES I . . . . . 3 credit hours**

Corequisite: EMT 102, 105

Theoretical aspects of Basic Life Support including C.P.R., cardiac care and adjuncture devices used in field EMT practice. Diagnostic skills, medical emergencies and environmental emergencies discussed by experts in the field. Concepts on water safety, practical aspects of auto extrication among other basic principles are included in lecture sessions.

**EMT 102. EMERGENCY MEDICAL TREATMENT TECHNIQUES I . . . . . 3 credit hours**

Corequisite: EMT 101, 105

Correct procedures of emergency intervention learned through laboratory and field exercises. Emphasis placed on techniques such as cardio-pulmonary resuscitation, treatment of soft tissue injuries, burns, spinal and head injuries, shock, fractures, emergency childbirth, automobile extrication, backboarding and water safety.

**EMT 103. EMERGENCY MEDICAL TREATMENT PRINCIPLES II . . . . . 3 credit hours**

Corequisite: EMT 104, 106

A continuation of EMT Principles I. Lectures by medical experts on other concepts of medical emergencies.

**EMT 104. EMERGENCY MEDICAL TREATMENT TECHNIQUES II . . . . . 3 credit hours**

Corequisite: EMT 103, 106

A continuation of EMT Techniques I. New techniques and further skills acquired in the first semester.

**EMT 105. PATIENT CARE PROCEDURES . . . . . 3 credit hours**

Corequisite: EMT 101, 102

Course includes patient assessment and diagnostic techniques, patient handling skills and some lab practice in basic techniques such as taking vital signs, airway management, special interview skills, etc. Also included are several hours of observation time in a hospital emergency room. (3 hours per week)

**EMT 106. EMERGENCY MEDICAL TREATMENT  
CLINICAL PRACTICUM** . . . . . 3 credit hours

Corequisite: EMT 103, 104

The clinical and field experience will expose students to real life emergencies in hospital emergency rooms and the ambulance field. (2 hours per week)

**EMT 111. PSYCHOLOGICAL ASSESSMENT—  
EMERGENCY MEDICAL TREATMENT** . . . . . 3 credit hours

Presents principles of the treatment and evaluation of psychological needs of the patient and the EMT. The student is taught basic concepts of evaluation, strategies, and treatment of individuals exhibiting various emotional and mental disturbances and disorders.

**EMT 112. EMERGENCY MEDICAL SERVICE  
ISSUES** . . . . . 2 credit hours

This class identifies some of the problems and issues involved with Emergency Medical Service, and explores possible solutions and alternatives to meet the needs of practicing EMTs.

**EMT 114. BEGINNING EKG TECHNIQUE** . . . . . 3 credit hours

This course is designed to teach the principles of the electrocardiogram, the conduction system and the techniques of taking the EKG.

**EMT 115. EMERGENCY MEDICAL TECHNICIAN  
SPECIALIST** . . . . . 5 credit hours

This course is designed to provide currently licensed Emergency Medical Technicians with the additional skill and knowledge necessary for them to fulfill the role of Emergency Medical Technician Specialists within a limited advanced life support system.

**EMT 120. AMERICAN RED CROSS FIRST AID** . . . . . 3 credit hours

Prerequisite: None

Consists of lectures, textbooks and practice work in first aid outlined by the American Red Cross. A certificate awarded to each student completing the course successfully.

**EMT 130. EMERGENCY MEDICAL SERVICES  
DEVELOPMENT AND OPERATIONS** . . . . . 2 credit hours

The course consists of an overview of the development of the Medical Emergency Services on the national, regional and local levels. Emphasis is placed on the dynamics of EMS operation and impact at the local and national levels, international EMS and career development.

**EMT 131. CARDIOPULMONARY RESUSCITATION . . . . . 1 credit hour**

The student is taught the skills necessary to aid or maintain vital body functions in those persons suffering from heart attack or cardiopulmonary arrest. Certification is offered via the Michigan Heart Association and the American Red Cross. (2 hours per week)

**EMT 132. CARDIOPULMONARY RESUSCITATION INSTRUCTOR TRAINING . . . . . 1 credit hour**

Students who have completed Health Sciences 131 learn how to be effective instructors of cardiopulmonary resuscitation. Participants will be certified by the Michigan Heart Association as CPR instructors. The course is offered only when there is sufficient demand. (2 hours per week)

**EMT 133. CARDIOPULMONARY RESUSCITATION INSTRUCTIONAL TRAINER . . . . . 1 credit hour**

A course preparing people to train resuscitation instructors. Includes updating of information and skills as well as teaching techniques. Meets Michigan Heart Association standards.

**EMT 134. ADVANCED FIRST AID . . . . . 3 credit hours**

The course provides the student with information necessary to improve and develop first aid knowledge, skill ability and personal judgment. Upon successful completion the student will be awarded certification by the American Red Cross. Classroom is devoted to didactic and practical objectives.

**EMT 148. ELEMENTARY PHARMACOLOGY . . . . . 2 credit hours**

A survey of basic pharmacology. General aspects of drug administration, metabolism, excretion are discussed. Mechanisms of action, indication and contraindications and side effects of broad list of drugs are presented.

**EMT 149. ELEMENTARY PATHOLOGY . . . . . 1 credit hour**

An introduction to the study of pathology; correlations with clinical medicine are emphasized. Topics include infectious diseases, tumors, chemical injuries, respiratory and cardiovascular diseases.

**EMT 161. FIRST RESPONDER . . . . . 3 credit hours**

Provides training for the functioning law enforcement officer in all aspects of emergency medical care required at the scene of a traffic accident. Upon successful completion of the course the officer will be awarded certification by the U.S. Department of Transportation.

**EMT 201. ADVANCED EMERGENCY MEDICAL TECHNOLOGY** . . . . . 6 credit hours

Consists of didactic and practical training as well as observation time spent on an Advanced Life Support Unit. The class meets biweekly for three hours per session. The first half semester involves didactic and laboratory experiences including training in specialized skill areas such as I.V. administration, pharmacology, intubation and administration of medication.

**EMT 202. ADVANCED LIFE SUPPORT PROCEDURES** . . . . . 8 credit hours

Corequisite: EMT 202 and 206

Consists of lecture, practical application, recitation and review of case studies. The first half of the semester is dedicated to an in-depth study of cardiology. The second half is devoted to the practical application of information gathered in EMT 201 and the first half of EMT 202. This is achieved through recitation, use of Advanced Cardiac Life Support slide set, mannequins and cardiac arrhythmia simulators.

**EMT 206. ADVANCED CLINICAL EXPERIENCE** . . . . . 4 credit hours

Corequisite: EMT 202

Consists of the clinical application and practice of skills gained in EMT 201. The student will participate in 16 hours of clinical practice weekly for the semester. He/she will be directly responsible to the clinical instructor. Grades will be awarded on a PASS/FAIL basis. At the discretion of the clinical instructor, and based on the student's ability to perform the skills listed in the Michigan Department of Public Health Clinical Performance Objectives. Observation time will consist of two (eight hour) shifts on an Advanced Life Support Unit. The observation schedule is flexible and every effort will be made to arrange a mutually agreeable time for the student and the Advanced Life Support provider.

## **ENGLISH (ENG 24)**

### **WRITING LAB**

*The Writing Lab provides three 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 varies from course to course. Second, students can receive help on any writing projects from the lab staff. Third, students may enroll in a self-paced course offered exclusively in the lab. Two such courses are offered,*

each for one credit hour: *Writing Practicum (ENG 010)* and *Text Editing (ENG 015)*. Please see course descriptions below.

**ENG 010. WRITING PRACTICUM** . . . . . 1 credit hour

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 course to improve writing or receive help in completing writing assignments.

**ENG 015. TEXT EDITING** . . . . . 1 credit hour

Provides individualized self-paced instruction in using the computer to edit papers, letters, memos and other written communication. Students begin by learning basic editing functions on the Apple IIe computer and practicing with assigned texts. Students finish the course by editing their own writing. Instruction is based on student's interest and may include use of graphics software, speller and text editor. Students do all of their work in the Writing Lab at their own pace in consultation with a Writing Lab instructor.

**ENG 030. ENGLISH FOR THE FOREIGN BORN I** . . . . . 2 credit hours

Individualized instruction for foreign-born residents who wish to feel more comfortable and confident in their English skills, with special application to personal, social, and business situations. Offers extensive practice in understanding, speaking, pronouncing, and writing basic American English. Special attention to spelling and daily usages.

**ENG 031. ENGLISH FOR THE FOREIGN BORN II** . . . . . 2 credit hours

A continuation of all the areas covered in English 030.

**ENG 040. BASIC WRITING — ESL** . . . . . 4 credit hours

Prerequisite: Score of 75 on English Placement Test or approval of instructor.  
Corequisite: ENG 000

Developing skills in formal written English for non-native speakers of English. Emphasizes rhetorical structures, vocabulary, and a review of individual problem areas in grammar.

**ENG 050. BASIC WRITING I** . . . . . 4 credit hours

Corequisite: ENG 000

For students not prepared for the regular English college parallel composition class. Students work at their own speed with materials appropriate to their capabilities. Emphasis on sentences and paragraphs.

**ENG 051. BASIC WRITING II** . . . . . 4 credit hours

Corequisite: ENG 000

A continuation of English 050 with an individualized program of studies in basic writing skills.

**ENG 085. REVIEW OF ENGLISH GRAMMAR** . . . . . 3 credit hours

Reviews the basics of our grammatical system and looks at some complex language problems often experienced by native speakers. Helps students to write more precisely and effectively. May be taken in conjunction with ENG 091, 100, 107, 111, and 122.

**ENG 091. WRITING FUNDAMENTALS** . . . . . 4 credit hours

Corequisite: ENG 000

A course for writers who have mastered most of the grammar and mechanical skills (spelling and punctuation) necessary for successful college writing. Course focuses on longer paragraph and short narrative essays. Individualized instruction provided to prepare student for 100-level writing courses. Student must select a writing lab section with this course.

**ENG 100. COMMUNICATION SKILLS** . . . . . 4 credit hours

Corequisite: ENG 000

Students receive practice in a variety of writing assignments relevant to their program area. Assignments include letter writing for a variety of situations (eg. 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. Primarily for native speakers of English. Students must select a writing lab section with this course.

**ENG 102. TERM PAPER** . . . . . 1 credit hour

Provides individual instruction for students engaged in preparing a research paper. Step by step help provided in topic selection, information gathering, note taking, organization, writing, documenting, and revising. Students who enroll in this course must use a text processor (computer) to complete their work. Students accessible computers are available at several locations on campus, including the Writing Lab.

**ENG 107. TECHNICAL COMMUNICATIONS** . . . . . 3 credit hours

Prerequisite: ENG 100

A continuation of writing skills and situations presented in ENG 100, Communication Skills. Emphasis on writing longer and more sophisticated occupational communication and oral presentations.

**ENG 111. COMPOSITION I** . . . . . 4 credit hours

Corequisite: ENG 000

Developing skills in written composition (from paragraphs to expository essays and documented papers), logical thinking and reasoning, and critical reading. Methods of organization and development. Students write

both in-class and outside themes frequently. Reading materials serve as basis for papers and for classroom discussions. During the first week of class, students must demonstrate a writing proficiency at the ENG 091 level. Students must select a writing lab with this course.

**ENG 122. COMPOSITION II** ..... 3 credit hours

Prerequisite: ENG 111

A continuation of English 111 with emphasis on research and critical literary papers along with narrative and persuasive writing.

**ENG 140. SCIENCE FICTION** ..... 3 credit hours

Relevancy of science fiction as prophecy and as a guide to shaping future societies. Course centers around a series of 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 of dialogue among members.

**ENG 145. WOMEN WRITERS** ..... 3 credit hours

A survey of poetry, fiction, drama and essays by women, with an emphasis on 20th Century writers. 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

Study of poetic and dramatic literature designed to give an understanding of literature through close reading and discussion of selected works of poetry and drama. In both English 160 and 170 students are encouraged to evolve criteria for assessing the value of literary works. Specially designated sections of English 160 emphasize poetry or drama.

**ENG 170. INTRODUCTION TO LITERATURE:  
SHORT STORY AND NOVEL** ..... 3 credit hours

Students explore short stories and the novel as they provide blueprints for living, self-discovery and recreation. Each student helped in strengthening reading and writing skills. Specially designated sections of English 170 emphasize popular literature, science fiction, biography, mystery, westerns or images of women in literature. Readings and discussion consider the cultural relevance of writings and the structural design and the effects upon the reader.

**ENG 175. LITERATURE OF  
WILDERNESS EXPERIENCE** ..... 3 credit hours

A literature class focusing on wilderness experiences and the various things nature has to teach and to offer. Historical survey of changing views of nature.



**ENG 181. BLACK LITERATURE** . . . . . 3 credit hours

A critical analysis of Black emotions in the world of literature with the goal of raising the level of Black consciousness. Introduction to contemporary Black literature, letters and thought.

**ENG 189. STUDY PROBLEMS IN ENGLISH** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in English. These activities are individualized. A special project is assigned. (Hours arranged)

**ENG 200. SHAKESPEARE** . . . . . 3 credit hours

Introductory reading and discussion of the varieties of Shakespeare's plays: comedy, history, tragedy and dramatic romance. All periods of Shakespeare's work represented. Wherever possible, the opportunity to witness performances, either live or on film, is made available.

**ENG 207. LITERATURE OF THE BIBLE** . . . . . 3 credit hours

Content and literary forms of the Old and New Testaments, their influence on the literatures of the world to the present day.

**ENG 210. CHILDREN'S LITERATURE** . . . . . 3 credit hours

Survey of prose, poetry and illustrated books suitable for the preschool, elementary, and early adolescent child. Required of students entering elementary education. Also for library studies or work, teacher aide program, nursery and day care work and as general education for parents.

**ENG 211. AMERICAN LITERATURE I** . . . . . 3 credit hours

Our nation's literature from the beginnings to the Civil War, stressing the major authors of the period. Relates trends of the period to contemporary problems and readings.

**ENG 212. ENGLISH LITERATURE I** . . . . . 3 credit hours

English literature from the Anglo-Saxon period through the Eighteenth Century. Readings stress the major authors from Chaucer to Johnson.

**ENG 213. WORLD LITERATURE I** . . . . . 3 credit hours

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

A continuation of American Literature 211, covering the period from the Civil War to the present. Relates trends of the period to problems and writings occurring before the Civil War.

**ENG 223. ENGLISH LITERATURE II** . . . . . 3 credit hours

English Literature 212 continued. A study of representative writers of the Romantic, Victorian and Modern periods.

**ENG 224. WORLD LITERATURE II** . . . . . 3 credit hours

A continuation of World Literature 213. Explores some of the great literary experiences since the Renaissance with attempts to show how they have contributed to our present cultural heritage.

**ENG 225. INTERMEDIATE EXPOSITION** . . . . . 3 credit hours

Prerequisite: ENG 100 or 111

Students review writing fundamentals and practice writing using materials drawn from students' special interest fields.

**ENG 230. NATURE OF ENGLISH LANGUAGE** . . . . . 3 credit hours

The nature and development of the English language. Consideration of English from its beginning to the present. Language examined in its social context and also in terms of dialects, speech and formal structure.

**ENG 260. JOURNAL WORKSHOP I** . . . . . 3 credit hours

Workshop 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. Student composes own biography against background of universal problems and solutions. Choice of many ways to use writing: biography, mind exploration, growth work, creative expansion, problem solving, renewing faith, celebrating life, affirming commitments. Chance to start writing project you've been putting off. Journals remain confidential. Transferable to four year colleges.

**ENG 261. JOURNAL WORKSHOP II** . . . . . 3 credit hours

Prerequisites: ENG 260

A continuation of English 260 Journal Workshop, for students who have already completed 260, and who wish to continue to develop their skills and produce additional written work.

**ENG 270. CREATIVE WRITING I** . . . . . 3 credit hours

A course in the fundamentals of creative writing through the analysis of various forms of writing and frequent written exercises in poetry, fiction, basic playwriting and non-fiction. Students encouraged to develop writing skills according to personal interests and abilities. A course assumption is that understanding of the skills involved in creative writing promotes better reading of literature. Also designated for persons seeking an avocation in creative writing with interest in learning the fundamentals of the craft.

**ENG 271. CREATIVE WRITING II** . . . . . 3 credit hours

Prerequisite: ENG 270

A continuation of English 270, Creative Writing, for those students who have already completed 270 and who wish to continue to develop their skills and produce additional written work.

## **FINANCE (FIN 43)**

**FIN 100. PERSONAL AND CONSUMER FINANCE** . . . . . 3 credit hours

Role of the individual as consumer: cost of establishing and maintaining a household; problems of personal consumer credit, installment buying; taxes; basic finance concepts; insurance; investments; health services; governmental influence and protection; personal-consumer savings; banking.

**FIN 220. PRINCIPLES OF FINANCE** . . . . . 3 credit hours

Prerequisite: ACC 122

A survey of the whole field of finance, both private and public. Emphasis on 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 and money markets and financing state and federal governments.

## **FIRE PROTECTION (FP 79)**

**FP 097. CHEMISTRY OF COMBUSTIBLES** . . . . . 3 credit hours

(See CEM 097)

Designed for students in the Fire Protection Program. The course concentrates on the chemistry of flammable and explosive materials with special emphasis on hazards. (3 hours per week)

**FP 099. LABOR RELATIONS  
IN THE PUBLIC SECTOR** . . . . . 3 credit hours

Labor relations as it applies to the public sector. Simulated collective bargaining procedures and case studies discussed. A field study report required.

**FP 100. INTRODUCTION TO FIRE PROTECTION** . . . . . 3 credit hours

Prerequisite: Consent of department

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 101. HYDRAULICS** . . . . . 3 credit hours

Prerequisite: Consent of department

Basic skills relevant to fire service hydraulics operation. Emphasis on types and styles of pumps, construction, testing and maintenance procedures.

**FP 103. FLAMMABLE MATERIALS** . . . . . 3 credit hours

For students in the Fire Protection Program. The chemistry of flammable and explosive materials with special emphasis on hazards.

**FP 111. HYDRAULICS I** . . . . . 3 credit hours

Prerequisites: Math 097 & Consent of department

Basic skills relevant to fire service hydraulics operation. Emphasis on types and styles of pumps, construction, testing, and maintenance procedures.

**FP 112. FIRE COMPANY SUPERVISION** . . . . . 3 credit hours

Prerequisite: Consent of department

The theory and practice of supervision. 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 of department

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. A study of the fundamental concepts of building design and construction; site selection, code compliance, architectural plans; terminology; explorations of design with emphasis focused on fire protection concerns.

**FP 122. FIRE PREVENTION THEORY AND APPLICATIONS** . . . . . 3 credit hours

Prerequisite: FP 100 or consent of department

The development of fire prevention laws and ordinances for elimination of fire hazards; inspection organization, practices and procedures; theory and application of laws and ordinances in modern concepts of fire prevention.

**FP 124. FIRE PROTECTION SYSTEMS I** . . . . . 3 credit hours

An introduction to the concepts of fire protection systems and their relationship to the control and extinguishment of fires. A review of extinguishing agents and their application. Study of sprinkler systems, automatic fire detection systems, and municipal fire alarm systems.

**FP 209. ADVANCED STRATEGY** . . . . . 3 credit hours

Prerequisite: Consent of department

Covers fireground operations, strategy and judgments involving questions, such as when to call for additional equipment, why buildings collapse, when to retreat, when or when not to ventilate, how to best augment systems which are installed in the building and factors or conditions which affect and determine a department's operations.

**FP 210. INTRODUCTION TO FIRE ADMINISTRATION** . . . . . 3 credit hours

Prerequisite: Consent of department

A study of the practical application of records, reports, and training; 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. Also, the budget and purchasing practices; a study of rating and systems and their application to the fire service; and ways to handle personnel problems and employee suggestions.

**FP 211. HYDRAULICS II** . . . . . 3 credit hours

Prerequisite: Hydraulics I

A presentation of the hydraulic principles covering complex pumping operations, master streams, water distribution systems, and the support of automatic extinguishing systems. This course provides partial coverage of the objectives of NFPA Standard 1002.

**FP 213. FIRE INVESTIGATION AND ARSON** . . . . . 3 credit hours

Prerequisite: Consent of department

The fire fighter's role in arson investigations. 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. 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

A study of legislative and court decisions which will effect the fire service. There will be a review of criminal and administrative law, and tort actions

against municipalities. There will also be a study of legal implications of hiring, discipline, and promotions.

**FP 224. PROTECTION SYSTEMS** . . . . . 3 credit hours

Attitudes prevalent in industry toward fire protection; development of fire and safety organizations in industry; relationships between private and public fire protection organizations. Also includes industrial obligations to communities in regard to fire and safety; current trends, deficiencies, and possible solutions for fire protection problems facing industry today.

## **FLUID POWER (FLP 67)**

**FLP 111. FLUID POWER FUNDAMENTALS** . . . . . 4 credit hours

Basic components of hydraulic and pneumatic systems as well as a general understanding of the basic laws and formulas. Pumps, control valves, actuators, ANSI symbols are used for circuit construction and print reading. Laboratory experiences include assembly and disassembly of components and construction of hydraulic circuits. (5 hours per week)

**FLP 122. HYDRAULIC PUMPS** . . . . . 4 credit hours

Prerequisite: FLP 111 or consent

Experience with a variety of different types and styles of pumps including piston, vane, gear and combination pumps. Construction, testing and maintenance procedures, laboratory experiences. (5 hours per week)

**FLP 201. PLUMBING AND PIPEFITTING I** . . . . . 3 credit hours

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 included.

**FLP 202. PLUMBING AND PIPEFITTING II** . . . . . 4 credit hours

A continuation of Plumbing and Pipefitting 201 involving the study of water supply, waste disposal, drainage, venting, unit sanitation equipment and plumbing codes.

**FLP 213. HYDRAULIC CONTROLS** . . . . . 3 credit hours

Prerequisite: FLP 111 or consent

Components used in the control of hydraulic fluids studied with emphasis placed on pressure, direction and volume control assemblies. Manual, electrical, pneumatic, mechanical and hydraulically operated valves studied and demonstrated in typical circuits. (4 hours per week)

**FLP 214. BASIC HYDRAULIC CIRCUITS** . . . . . 3 credit hours

Prerequisite: FLP 111 or consent

The fundamentals, review of components and necessary computations for basic hydraulic circuits. Trouble-shooting techniques in the hydraulic circuit, including line component malfunctions stressed. (4 hours per week)

**FLP 225. ADVANCED HYDRAULIC CIRCUITS** . . . . . 3 credit hours

Prerequisite: FLP 214 or consent

The operations, applications and maintenance of hydraulic circuits to typical machines such as lathe, broach, mill and die-cast machines. Circuit design and trouble-shooting stressed. (4 hours per week)

**FLP 226. PNEUMATICS** . . . . . 3 credit hours

Basic air systems as a control medium in industrial applications such as presses, clamps, transfer devices, etc. Valves, cylinders, motors, compressors, regulators, filters and other power components included. (4 hours per week)

**FRENCH  
(FRN 18)**

**FRN 111. FIRST YEAR FRENCH I** . . . . . 4 credit hours

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. No prerequisite is necessary.

**FRN 120. CONVERSATIONAL FRENCH I** . . . . . 2 credit hours

Basic French course, mainly conversational in approach, assumes no previous knowledge of the language, is chiefly for persons interested in foreign travel through a basic knowledge of spoken and written French. French 120 may also be taken as a preview for students entering the First Year College French studies.

**FRN 121. CONVERSATIONAL FRENCH II** . . . . . 2 credit hours

Prerequisite: FRN 120

Continuation of French 120. Provides vocabulary expansion and cultural insights through student involvement in the conversation practice sessions.

**FRN 122. FIRST YEAR FRENCH II** . . . . . 4 credit hours

Prerequisite: FRN 111 or consent

This is a continuation of French 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** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in French. These activities are individualized, and special aspects of the French language or culture are studied. (Hours arranged)

**FRN 213. SECOND YEAR FRENCH I** . . . . . 3 credit hours

Prerequisite: FRN 122 or consent

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 French 111 and 122.

**FRN 224. SECOND YEAR FRENCH II** . . . . . 3 credit hours

Prerequisite: FRN 213 or consent

A continuation of French 213. Short-wave broadcasts and language laboratory practice augment the oral-aural method. Covers aspects of Canadian as well as French cultural life.

## **GENERAL STUDIES (GS 15)**

**GS 111. FIRST YEAR RUSSIAN I** . . . . . 4 credit hours

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. No prerequisite is necessary.

**GS 120. CONVERSATIONAL RUSSIAN** . . . . . 2 credit hours

Designed to be a short term, seven week, non-sequential conversational course. It 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. No prerequisite is necessary.

**GS 122. FIRST YEAR RUSSIAN II** . . . . . 4 credit hours

Prerequisite: Russian I (GS 111) or consent

This is a continuation of Russian 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** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Russian. These activities are individualized, and special aspects of the Russian language or culture are studied. (Hours arranged)

## **GEOGRAPHY (GEO 03)**

**GEO 100. GEOGRAPHY AND ENVIRONMENT** . . . . . 3 credit hours

Survey of contemporary global society emphasizing the interrelationships between developed and developing nations. 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

Survey of the various types of natural resources and regions within the state and of the cultural adjustment man has made to natural conditions. Emphasis 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.

## **GEOLOGY (GLG 34)**

**GLG 100. INTRODUCTION TO EARTH SCIENCES** . . . . . 4 credit hours

For students who desire to obtain a broad perspective of the science. Practical training in earth science, including work with soils, minerals, glaciers, volcanism, maps, meteorology, astronomy, and oceanography and a field trip to points of interest is included in the three hour weekly laboratory. (5 hours per week.)

**GLG 103. FIELD GEOLOGY** . . . . . 3 credit hours

Geology taught in the field. Study processes and land forms that have formed or are forming the landscape in the Ann Arbor area carried out on weekly afternoon field trips.

**GLG 104. WEATHER** . . . . . 3 credit hours

Atmospheric processes and phenomena that produce the day-to-day weather changes experienced throughout the world. Emphasis on empirical observation of cloud type, development and movement as well as weather map interpretation and analysis to learn elementary weather forecasting techniques will be combined with field trips.

**GLG 109. COMMON ROCKS AND MINERALS** . . . . . 3 credit hours

Involved is the identification of rocks and minerals and study of local exposures revealing rocks and minerals. Useful for prospective elementary school teachers.

**GLG 114. PHYSICAL GEOLOGY** . . . . . 4 credit hours

Prerequisite: GLG 100 or permission

Physical features and processes of the earth with special reference to their origin through plate tectonics along with the interpretation of topographic maps and the study of common rocks and minerals. A three day weekend field trip is required with food and housing expenses the responsibility of the student. (5 hours each week)

**GLG 125. HISTORICAL GEOLOGY** . . . . . 4 credit hours

Prerequisite: GLG 114

Development of North America as a typical continent, covering the formation of mountains, plains, and evolution of life on land and water, and the identification of fossils and interpretation of geologic maps. A three day weekend field trip is required with food and housing expenses the responsibility of the student. (5 hours per week)

## **GRAPHIC DESIGN TECHNOLOGY (GDT 77)**

**GDT 100. TYPOGRAPHY I** . . . . . 4 credit hours

Prerequisite: MTH 151 or equivalent proficiency

Introduction to principles/evolution of typography with concentration on typeface identification, copyfitting, and layout formulation. Assignments investigate typography use in graphic design and advertising. (6 hours per week)

**GDT 101. DESIGN SURVEY** . . . . . 2 credit hours

Survey of historical and contemporary styles and influences in advertising, graphic design, and typography. Visiting lecturers and field trips are periodically scheduled. (2 hours per week)

**GDT 112. GRAPHIC COMMUNICATION** . . . . . 4 credit hours

Prerequisite: GDT 100, ART 112

Coverage of methods in visual communication, ideation, visual perception and problem solving techniques make up coursework. Exercises explore word-picture-abstract design, visual thinking and communication theories. (6 hours per week)

**GDT 113. PRINCIPLES OF PRODUCTION** . . . . . 4 credit hours

Prerequisite: GDT 100

Art production mechanics and techniques including keylining, page formatting, camera ready art preparation focuses on industry related assignments. (6 hours per week)

**GDT 214. PUBLICATION LAYOUT** . . . . . 4 credit hours

Prerequisite: GDT 112, GDT 113

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. (6 hours per week)

**GDT 215. TYPOGRAPHY II** . . . . . 2 credit hours

Prerequisite: GDT 112, GDT 113

Continuation of principles of Typography with greater concentration on typographic layout, implementation and expressive/explorative design solutions. (4 hours per week)

**GDT 216. GRAPHIC REPRODUCTION** . . . . . 4 credit hours

Prerequisite: ART 112

Basic printing processes and terminology covers the various stages required for producing printed graphics. Students concentrate on hands-on execution and take projects through printing preparation to the final printed piece. (6 hours per week)

**GDT 227. GRAPHIC TECHNOLOGY** . . . . . 4 credit hours

Prerequisite: GDT 216. Corequisite: GDT 230

Further investigation into offset printing preparation, paper characteristics, inks, darkroom procedures and bindery. Greater emphasis is placed on hands-on experience with graphic arts equipment including the operation of small format offset printing presses. (6 hours per week)

**GDT 228. AIRBRUSH TECHNIQUES** . . . . . 4 credit hours

Prerequisite: ART 111 or consent of department

Introduction to various rendering techniques using an airbrush and various associated materials. Assignments deal with illustrative and graphic design solutions to industry related projects. (6 hours per week)

**GDT 229. SCREENPRINTING TECHNIQUES** . . . . . 4 credit hours

Prerequisite: GDT 216 or consent of department

An introductory course in screen process printing (known as silkscreen printing). Through projects, students will 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 will be given hands-on experience in hand-screen and machine printing. (6 hours per week)

**GDT 230. PROFESSIONAL PRACTICES** . . . . . 2 credit hours

Prerequisite: GDT 101. Corequisite: GDT 227

An overview of various professional design operations, career options, media services, freelancing; resume and portfolio preparation/presentation procedures are emphasized. Lectures also touch on the fundamentals for operating a small design office. (4 hours per week)

**GDT 232. ILLUSTRATION** . . . . . 2 credit hours

Prerequisite: ART 111, GDT 214

Exercises explore varied media and creative problem-solution techniques used by illustrators. (4 hours per week)

**GDT 236. SPECIALIZED STUDY** . . . . . 2-4 credit hours

Prerequisite: GDT 113, GDT 214

An opportunity for students to work independently with faculty on projects related to industry. Students are recommended to concentrate on study in areas of interest and subjects not fully covered in the curriculum such as computer typesetting. (Hours TBA)

## **HEALTH SCIENCE (HS 56)**

**HS 039. ANATOMY AND PHYSIOLOGY REVIEW FOR PATHOPHYSIOLOGY** . . . . . 1 credit hour

Prerequisite: BIO 111 or equivalent. Corequisite: HS 220

Overview of anatomy and physiology principles for students in HS 220. This 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 SCIENCES** . . . . . 2 credit hours

This course provides an overview of the health professions, how and why diseases occur, vital signs, death and dying. The course content may vary according to student interest.

**HS 115. MEDICAL OFFICE AND LABORATORY PROCEDURES** . . . . . 3 credit hours

Prerequisite: HS 113 or equivalent

Course consists of lecture on office examining room procedures, sterile technique, medical emergencies, specimen collection and minor surgery. Laboratory experience course material from the lectures.

**HS 117. NUTRITION** ..... 2 credit hours

Presents normal nutrition and its relation to health. Includes nutritional needs for various age groups and introduces therapeutic nutrition. Emphasis on the importance of nutrition in the growth and functioning of the human body.

**HS 121. INTERPERSONAL DYNAMICS OF PATIENT CARE** ..... 2 credit hours

Studies in interpersonal dynamics in patient care, concepts of dyadic relationships and team relationships, responsibilities of the health worker as a helping person and as a member of the helping team; developing understanding of self and human behavior in general.

**HS 147. GROWTH AND DEVELOPMENT** ..... 3 credit hours

Corequisite: NUR 135 or consent of faculty

Study of the physical, psychological and social growth of the individual from birth to death. Includes the study of the family in society.

**HS 220. PATHOPHYSIOLOGY** ..... 4 credit hours

Prerequisite: Nursing students or consent of faculty

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

Exploration of various philosophies of ethics (Kantian, utilitarian, natural law). Models for decision making using a multifaceted approach and incorporating philosophy, values clarification, and legal aspects, will be used to examine current ethical issues. Among topics to be discussed are: patient rights, confidentiality, informed consent, abortion, genetic manipulation, experimental procedures, treatment of defective newborns and euthanasia.

## **HEATING (HTG 81)**

*The following list of heating courses are offered primarily as trade-related instruction to train and up-grade individuals currently employed in licensed occupations; i.e., heating/air conditioning or as boiler operators in power plants. Courses are theory presentations with little or no laboratory. Students who desire to enter these occupations are welcome providing they understand the nature of the courses. Consult the program advisor as to licensing requirements and qualifications.*

**HTG 100. BOILER OPERATIONS** ..... 3 credit hours

Prerequisite: Employment working with boilers or consent

First in a series of courses to aid the student 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. Safety is included, along with basic codes governing the operation of boilers.

**HTG 101. BOILER ACCESSORIES** ..... 3 credit hours

Prerequisite: HTG 100 or consent

Devoted to boiler settings, combustion equipment, fuels, heating surfaces, stokers, pumps, safety valves, steam traps, separators, and other accessories. Keeping of records, logs and inspection preparation.

**HTG 102. BOILER AUXILIARIES** ..... 3 credit hours

Prerequisite: HTG 101 or consent

Continuing the study of accessories and auxiliaries covering injectors, feedwater heaters, deaerators and evaporators, economizers, air preheaters, cooling towers, etc.

**HTG 103. POWER PLANT ENGINES AND TURBINES** ..... 3 credit hours

Prerequisite: HTG 102 or consent

Principles of operation and maintenance practices of steam engines and turbines are presented. Studying construction, mechanisms, engine indicators, governors, engine rating and efficiency.

**HTG 104. POWER PLANT REFRIGERATION** ..... 3 credit hours

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 thermodynamics, refrigerators and lubricating oils.

**HTG 105. POWER PLANT AIR CONDITIONING SYSTEMS** ..... 3 credit hours

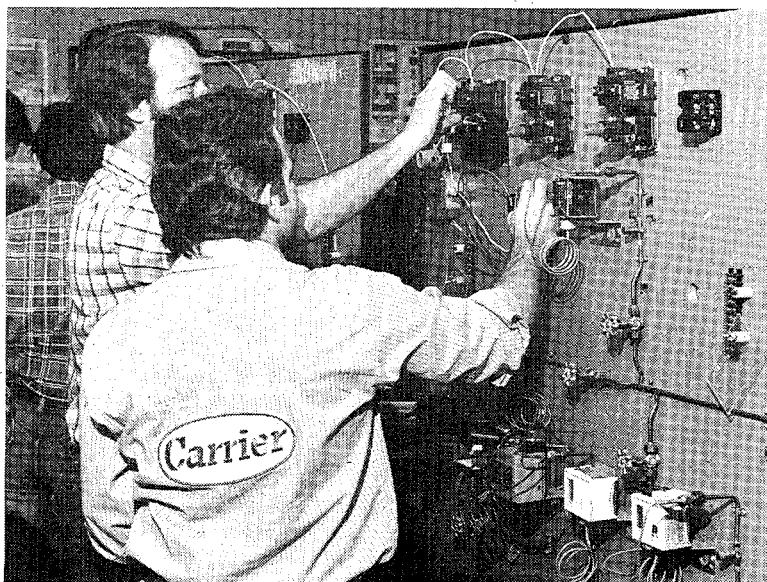
Prerequisite: HTG 104

The 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

Introduces operator to basic electricity and the basic application of elec-



trical measuring instruments including: basic terms, volts, ohms, amps, power factors, AC and DC principles, single and 3 phase circuits, motor protectors (fuses, heaters, breakers, etc.) sub-stations, transformers, etc.

**HTG 107. POWER PLANT ELECTRICITY II** . . . . . 3 credit hours

Prerequisite: HTG 106 or consent

A continuation of Heating 106. Types of motors and generators employed in Power Plants to generate electricity. 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 discussed.

**HTG 109. REVIEW FOR BOILER EXAMINATIONS** . . . . . 3 credit hours

Prerequisite: Employed operating boilers or consent

Reviewing 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.

*Note: 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. Membership in the Educational Society of the Refrigeration Service Engineers (RSES) is required. Initiation fee and dues are approximately \$45. Consent of advisor is required for registration.*

**HTG 111. HEATING FUNDAMENTALS** ..... 5 credit hours

Prerequisite: Refrigeration Service Engineers Society membership required

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

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

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

National and local codes, covering materials, installation and operation of heating equipment and systems, discussed and interpreted.

**HTG 215. HEAT PUMP SERVICING** ..... 5 credit hours

Prerequisite: Refrigeration Service Engineers Society membership and demonstrated knowledge of basic refrigeration, air conditioning and electricity through a prerequisite test

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 the individual will be awarded a certificate of completion, with the stipulation that he or she will be required to reappear for the examination every three years.

**HTG 228. PNEUMATIC TEMPERATURE CONTROLS** ..... 2 credit hours

Develops understanding of the installation, maintenance and function of pneumatic temperature control systems. 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.



# HISTORY (HST 04)

**HST 101. WESTERN CIVILIZATION TO 1600** . . . . . 3 credit hours

Development of the cultures and institutions of the ancient Near East and Classical, Medieval and Renaissance civilizations.

**HST 102. WESTERN CIVILIZATION FROM 1600 TO THE PRESENT** . . . . . 3 credit hours

Cultural developments and the growth of institutions from the Renaissance to the present. Emphasis on the expansion of European civilizations.

**HST 150. AFRO-AMERICAN HISTORY** . . . . . 3 credit hours

Survey and analysis of 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

(See HUM 160)

Development of American cinema from its beginnings in 1896 to the present. The films, viewed in class, are discussed in terms of film techniques as well as in terms of content. Relates cinema to themes in American culture.

**HST 189. STUDY PROBLEMS IN HISTORY** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in History. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

**HST 200. MICHIGAN HISTORY** . . . . . 3 credit hours

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 events and personalities in the 20th century.

**HST 201. UNITED STATES HISTORY, 1500-1865** . . . . . 3 credit hours

The American peoples and their growth from early colonization to the close of the Civil War. Re-examining both the dominant themes in American life as well as the conflicts oppressed minorities faced in seeking their needs and ambitions in America.

**HST 202. UNITED STATES HISTORY, 1865—PRESENT** . . . . . 3 credit hours

American society and politics since the Civil War. Examination of social and cultural unrest of growing America to better understand and to deal with stresses of the present. A continuation of U.S. 1500-1865.

**HST 204. ORAL HISTORY** . . . . . 3 credit hours

Tape recording the memoirs of people around us. Oral history project initiation and management via lectures, guest speakers. Special emphasis on class participation and practical field work. Guidance given to persons developing individual projects for themselves or their sponsoring institutions.

## **HOTEL / MOTEL MANAGEMENT (HMT 75)**

**HMT 100. HOSPITALITY INDUSTRY ACCOUNTING** . . . . . 3 credit hours

Provides basic knowledge of bookkeeping and accounting skills and orientation to office procedures as related to hospitality industry.

**HMT 104. FRONT OFFICE PROCEDURE** . . . . . 3 credit hours

An introduction to a systematic approach to front office operations as well as an overview of the flow of business through the hotel organization.



**HMT 222. LODGING MANAGEMENT AND PROMOTION** . . . . . 3 credit hours

Prerequisite: HMT 100

This course is designed to zero in on both "front office" and "back of the house" management. A special emphasis will be placed on sales and promotion of the Hotel/Motel Operation dealing with related activities as banquet sales, convention planning and holiday packages. Official Certificate of Completion from Institute of Hotel/Motel Management.

**HMT 223. PRACTICUM IN LODGING MANAGEMENT** . . . . . 3 credit hours

To permit students who have accumulated at least 30 hours in the Foods and Hospitality Department 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.

**HMT 230. HOSPITALITY LAW** . . . . . 4 credit hours

Contract Law as a foundation for anticipating legal difficulties and making the best use of legal advice. Functional hotel problems, policy problems, and the legal resolution of a controversy. The origin and development of common statutory and constitutional law and of the functioning of the judicial system.

## **HUMANITIES (HUM 22)**

**HUM 101. INTRODUCTION TO HUMANITIES** . . . . . 3 credit hours

Exploration of the humanities considering the creative nature of man with its focus on art, literature, music, philosophy, human thought and man's relationship to his culture.

**HUM 150. INTERNATIONAL CINEMA** . . . . . 3 credit hours

A survey of important foreign films and film makers. Emphazizes development of the art of seeing, the heightening of the student's appreciation of the nature of the film medium.

**HUM 160. AMERICAN FILM** . . . . . 3 credit hours

(See HST 160)

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. Relates American cinema to themes in American culture.

**HUM 189. STUDY PROBLEMS IN HUMANITIES** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in the Humanities. These activities are individualized. A

specific problem/issue is studied, or a special project is assigned. (Hours arranged)

## **INDUSTRIAL DRAFTING (ID 63)**

### **ID 100. TECHNICAL DRAWING . . . . . 4 credit hours**

An introduction to the graphic language, use of drafting materials and instruments. Drawings will include geometry of technical drawing, orthographic views, auxiliary views, section views, pictorial drawings and developments, electrical block diagrams, logic diagrams and schematics. (6 hours per week)

### **ID 105. PICTORIAL DRAWING . . . . . 2 credit hours**

Prerequisite: ID 100 Technical Drawing or equivalent

Development of perspective and isometric drawings suitable for engineering studies, parts catalogs, and assembly and service manuals. Emphasis is placed on rapid methods of drawing development using typical manufactured parts as subjects. (3 hours per week)

### **ID 107. MECHANISMS . . . . . 4 credit hours**

Prerequisite: MTH 152 Applied Geometry and Trigonometry or equivalent

Principles of gears, cams, pulley's and other mechanical means to transmit motion and energy. Included are graphic and mathematical techniques to solve force, displacement and motion application problems. (4 hours per week)

### **ID 111. INDUSTRIAL DRAFTING . . . . . 4 credit hours**

Prerequisite: ID 100 Technical Drawing or 2 years of high school drafting

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 included. (6 hours per week)

### **ID 112. DESCRIPTIVE GEOMETRY . . . . . 4 credit hours**

Prerequisite: ID 100 Technical Drawing or consent

Points, lines and planes and their relationships in space. Emphasis on practical application of principles to actual problems in industry. (6 hours per week)

**ID 114. INDUSTRIAL DRAFTING** . . . . . 4 credit hours

Prerequisite: ID 111 Industrial Drafting or equivalent

Practices and procedures for preparing assembly drawings from given details. An introduction to types of dies and their representation. Emphasis on use of standard part catalogs. (6 hours per week)

**ID 121. THEORY OF JIGS AND FIXTURES** . . . . . 2 credit hours

Prerequisite: ID 100 Technical Drawing, MT 111 Machine Shop Theory and Practice

The various types of jigs and fixtures and their combined use. Development of skills in the proper location and clamping of a part. Emphasis on the application principles and presentation of a practical design. The use of standard parts catalog.

**ID 123. TOLERANCING: CONVENTIONAL AND GEOMETRICAL** . . . . . 2-credit hours

Prerequisite: ID 111 Industrial Drafting or equivalent

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. (3 hours per week)

**ID 212. THEORY OF DIES** . . . . . 2 credit hours

Prerequisite: Apprentice in Tool and Die Making or ID 111 Industrial Drafting

The nomenclature and the basic types, principles and standards used in the design of dies is studied. Special attention is given to the use of standard parts catalogs and the standard die detailing and assembly drawing practices. (3 hours per week)

**ID 216. INTRODUCTION TO COMPUTER AIDED DESIGN** . . . . . 2 credit hours

Prerequisites: ID 100 Industrial Drafting

The principles and applications of computer-aided drafting systems, familiarity with the hardware components of the CAD system. Use of the interactive graphic software, development of input and output skills, and familiarity with software, languages and systems hierarchy. (3 hours per week)

**ID 217 INTRODUCTION TO 3-D CAD** . . . . . 2 credit hours

Prerequisites: ID 112 Descriptive Geometry and ID 216 Intro to Computer Aided Drafting

A continuation of ID 216 which introduces the use of three axes to create drawings. Included also are the drafting of auxiliary views, schematics, and PC layouts. (4 hours per week)

**ID 218. INTERACTIVE COMPUTER AIDED DRAFTING** . . . . . 2 credit hours

Prerequisite: ID 217 Intro to 3-D CAD or consent

A self-paced introduction to interactive systems that require operator initiated commands with minimum system prompts. Use of two screen, color, and programmable menus are included. (2 hours per week)

**ID 219. 2-D CAD PLANNING AND DRAWING** . . . . . 3 credit hours

Prerequisite: ID 217 Introduction to 3-D CAD or equivalent

An introduction to the operation of a large CAD/D system. Emphasis is on the start up, input, and output skills as applied to typical 2-D drawings. Planning and flow processes are stressed. (6 hours per week)

**ID 220. CAD APPLICATION — ELECTRONIC** . . . . . 4 credit hours

Prerequisite: ID 219 2-D CAD Planning and Drawing and ID 251 Fundamentals of Electronic Drafting

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. (6 hours per week)

**ID 221. CAD APPLICATION — MECHANICAL** . . . . . 4 credit hours

Prerequisite: ID 219 2-D CAD Planning and Drawing

Mechanical detailing and preparation of elementary assemblies of machine tools and parts as created on a CAD station using 3-D database capability. (6 hours per week)

**ID 222. INTRODUCTION TO ELECTRONIC DESIGN** . . . . . 4 credit hours

Prerequisite: ID 220 CAD Application — Electronic

Design principles or laying out single and double sided printed circuit assemblies, wireless, and harness drawings for electronic unit interfacing. (6 hours per week)

**ID 223. INTRODUCTION TO MECHANICAL DESIGN** . . . 4 credit hours

Prerequisite: ID 221 2-D CAD Application-Mechanical

Design principles of developing machine components, assemblies, and specifications of typical products requiring large volume production processing. Emphasis given to tolerancing, production method and product maintenance.

**ID 230. ADVANCED PRODUCT DRAFTING** . . . . . 4 credit hours

Prerequisite: ID 107 Mechanisms and ID 111 Industrial Drafting or consent  
Development of a machine from conception through design and layout stages to the preparation of working drawings. Emphasis on preparation of a layout drawing incorporating maximum of commercially available components, fastening techniques, use of standard and special methods, keeping maintenance of the machine as a design criteria. (6 hours per week)

**ID 250. STATICS AND STRENGTH OF MATERIALS** . . . . . 3 credit hours

Prerequisite: MTH 177 Triangle Trigonometry and ID 219 2-D CAD Planning and Drawing or consent

The identification and definition of internal stresses and deformation of elastic bodies as a result of internal and external forces. Principles of strength of materials in the design of structures, machines, products. Students will identify and define the properties of materials and related material elasticity, tensile and compression stresses, torsion stresses, joints and connections. Work will be completed on a CAD machine. (4 hours per week)

**ID 251. FUNDAMENTALS OF ELECTRONIC DRAFTING** . . . . . 2 credit hours

Prerequisite: ID 100 Technical Drawing or consent

Principles and practices of electronic drafting encompass the layout of block diagrams, identification and layout of logic diagrams, identification of electronic components and associated symbols, and layout of electrical schematic drawings. (3 hours per week)

**ID 252. FUNDAMENTALS OF ELECTRONIC DRAFTING** . . . . . 4 credit hours

Prerequisite: ID 251 Fundamentals of Electronic Drafting or consent

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. (6 hours per week)

**ID 260. INTRODUCTION TO CIM** . . . . . 2-5 credit hours

Prerequisite: Major advisor approval only

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. (4-10 hours per week)

## **INTEGRATED MANUFACTURING (IM 36)**

**IM 121. ROBOTICS I** ..... 3 credit hours

An introductory exposure to robotic components, capability and application. The sociological impact of robots in the work place and economy will be reviewed.

**IM 212. ROBOTICS II** ..... 4 credit hours

Prerequisite: Robotics I

This class will be primarily a hands-on experience. Work on hydraulics, pneumatic, and electronic devices will be performed by the student. Basic design in pneumatic and electronic circuitry will be stressed.

**IM 223. ROBOTICS III** ..... 4 credit hours

Prerequisite: Robotics I and II

The method of diagnosing problems relating to robotic functions and manipulators will be presented. Emphasis will be placed on servo-systems related to hydraulics. Air logic circuits will be designed and assembled. Special emphasis will be placed on programmable controllers and numerical control.

**IM 224. ROBOTICS IV** ..... 4 credit hours

Prerequisite: Robotics I, II and III

This course will offer a hands-on experience in programming, maintenance, troubleshooting and service. Many types of robots, their characteristics, and applications will be explored.

## **INTERNSHIP-EXTERNSHIP (IE 44)**

**IE 200. INTERNSHIP-EXTERNSHIP** ..... 2-6 credit hours

To be assigned prior to registration

Prerequisites: Consent of I-E Coordinator

Internships are for the purpose of acquiring work experience in the student's 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.

## **MANAGEMENT AND MARKETING (MGT 47)**

### **MGT 150. LABOR-MANAGEMENT RELATIONS . . . . . 3 credit hours**

Fundamental forces affecting the labor-management relationship. Development of insights into the growth, objectives and methods of organized labor and the significant managerial problems involved in dealing with labor. Analysis of the legal and institutional framework for collective bargaining; the nature, content, and problem areas of the collective bargaining process.

### **MGT 160. PRINCIPLES OF SALES . . . . . 3 credit hours**

Prerequisite: BUS 140

Principles and concepts of the sales function in modern business-industrial enterprise in the marketing of goods and services. Analysis of sales techniques, the sales "cycle," sales demonstrations, as well as personal career salesmanship. Emphasis on creativity in selling, and the impact of socio-economic and psychological factors related to consumer needs, motivations and product performance as they affect the sale of consumer and/or industrial goods and services.

### **MGT 200. HUMAN RELATIONS IN BUSINESS AND INDUSTRY . . . . . 3 credit hours**

Prerequisite: BUS 140

Modern concepts of administrative principles and practices with emphasis on the human relations aspect of management responsibility as it affects employee attitudes, morale and productivity. Major emphasis 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.

### **MGT 208. PRINCIPLES OF MANAGEMENT . . . . . 3 credit hours**

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."

**MGT 209. SMALL BUSINESS MANAGEMENT . . . . . 3 credit hours**

For persons interested in starting a small business. This course will enable a student to learn to translate a business ownership dream into reality. Students will prepare a business plan for their chosen, future business. Required for the Photographic Technician program and a recommended elective for the Auto Body Specialist, Electronics Service, and Food Service programs.

**MGT 211. SMALL BUSINESS MANAGEMENT FOR WOMEN . . . . . 4 credit hours**

A combination of MGT 209 Small Business Management and WS 102, Growth Experiences for Women. Developed in conjunction with AAWCJC specifically for women considering entrepreneurship.

**MGT 215. SMALL BUSINESS MANAGEMENT . . . . . 3 credit hours**

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. Recommended for students in programs such as Numerical Control, Computer Information Systems, Robotics, Telecommunications, and Computer Aided Drafting.

**MGT 220. WOMEN IN MANAGEMENT . . . . . 3 credit hours**

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.

**MGT 230. SUPERVISORY MANAGEMENT . . . . . 3 credit hours**

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. 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.

**MGT 240. PERSONNEL MANAGEMENT . . . . . 3 credit hours**

Prerequisite: BUS 140 and MGT 208

An exposition of the fields of activity covered in modern personnel work. Covers employment techniques, wages and hours, job evaluation, training, employer ratings, collective bargaining, employment counseling, and collateral benefits such as pensions and fringe benefits.

**MGT 250. PRINCIPLES OF MARKETING** ..... 3 credit hours

The institutions and functions developed for carrying on commercial trade operations, retail and wholesale agencies, elements of marketing efficiency, the cost of marketing, price maintenance, unfair competition and the relationship of government to marketing.

**MGT 260. SALES MANAGEMENT** ..... 3 credit hours

Prerequisite: BUS 140 and MGT 160

Managerial functions of planning, organization, and direction of sales effort; the management of sales and services. Personnel and control of sales operations emphasized.

**MGT 270. ADVERTISING PRINCIPLES** ..... 3 credit hours

Prerequisite or Corequisite: MGT 250

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. 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.

## **MATHEMATICS (MTH 30)**

**MTH 036. MATH ANXIETY** ..... 1 credit hour

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 problem-solving skills. The origin of "math anxiety" is explored and help given to reduce such anxiety and change attitudes toward mathematics. Grading uses the satisfactory/unsatisfactory system.

**MTH 037. INDEPENDENT STUDY** ..... 1-3 credit hours

Prerequisite: Permission of instructor

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 location to meet, 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** . . . . . 2 credit hours

This course is designed to increase confidence levels in math-anxious people by providing instruction in problem solving techniques. Topics covered include: "What is anxiety and how do you deal with it?", logic, calculations, problem solving, spatial relations, and graphing. Grading uses the satisfactory/unsatisfactory system.

**MTH 039. BASIC MATHEMATICS** . . . . . 3 credit hours

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 only in the self-paced format. Grading uses the satisfactory/unsatisfactory system.

**MTH 090. OCCUPATIONAL MATHEMATICS** . . . . . 3 credit hours

Prerequisite: MTH 039 or placement test equivalent

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, practical algebra, geometry, measurement, the metric system, ratio and proportion problems, graphs, and statistics. This course currently offered only in the self-paced format.

**MTH 097. INTRODUCTORY ALGEBRA** . . . . . 4 credit hours

Prerequisite: MTH 039 or placement test equivalent

This course is first-year high school algebra. Topics include: the real number system, algebraic operations, solving equations, practical applications, inequalities, graphing, systems of equations, polynomials, rational expressions, roots and radicals, and quadratic equations. This course is offered in standard lecture format. 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

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.

**MTH 097B. INTRODUCTORY ALGEBRA (second half)** . . . . . 3 credit hours

Prerequisite: MTH 097A or placement test equivalent

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

This course teaches the metric system. (Offered irregularly.)

**MTH 110. HANDHELD CALCULATOR** . . . . . 2 credit hours

Prerequisite: MTH 097 or permission of instructor

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  $y^x$  function.

**MTH 114. COMPUTER ASSISTANCE FOR STUDENTS WITH SPECIAL NEEDS** . . . . . 1-6 credit hours

Prerequisite: Permission of instructor

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.

**MTH 118. MATHEMATICS AND THE ENVIRONMENT** . . . . . 3 credit hours

This course enables adults to use basic mathematics to interpret the facts related to current global issues. Topics, emphasizing applications to environmental concerns, include: calculations, ratios, percents, graphs, bar and circle charts, sequences, and elementary statistics.

**MTH 150. PRECISION MEASUREMENT** . . . . . 4 credit hours

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.

**MTH 151. APPLIED ALGEBRA** . . . . . 4 credit hours

Prerequisite: MTH 039 or placement test equivalent

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.

**MTH 152. APPLIED GEOMETRY AND TRIGONOMETRY** ..... 4 credit hours

Prerequisite: MTH 097 or MTH 151

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

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

This course provides instruction in plane Euclidean geometry. (Offered irregularly.)

**MTH 158. MATHEMATICS FOR ELEMENTARY TEACHERS** ..... 4 credit hours

Prerequisite: MTH 039

This course emphasizes teaching aids and methods of teaching mathematics for education students. (Offered irregularly.)

**MTH 160. BASIC STATISTICS** ..... 4 credit hours

Prerequisite: MTH 097

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 161. CHESS PRACTICE AND THEORY** ..... 1 credit hour

This course provides students with the rules of chess, the principles of play, and popular strategies. (Offered irregularly.)

**MTH 162. ADVANCED CHESS** . . . . . 1 credit hour

Prerequisite: MTH 161 or permission of instructor

This course intensively studies the theory of chess. (Offered irregularly.)

**MTH 163. BUSINESS MATHEMATICS** . . . . . 3 credit hours

Prerequisite: MTH 039 or placement test equivalent

This course provides the mathematical skills needed to solve business applications problems, and satisfies the requirements of several one- and two-year business programs. The topics, which emphasize business applications, include: operations with whole numbers, fractions, decimals, and percents; measurement; the metric system; signed numbers; solving equations; ratio and proportion; 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

This course provides the necessary mathematical skills needed to solve problems encountered in health-related fields, and satisfies the requirements of several one- and two-year occupational programs. The topics, which emphasize health science applications, include: basic mathematics; operations with percents; 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

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, and linear and non-linear systems of equations and inequalities. 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

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

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, and systems of inequalities. 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.

**MTH 177. TRIANGLE TRIGONOMETRY** ..... 3 credit hours

Prerequisite: MTH 097 or placement test equivalent

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. This course transfers to some four-year institutions.

**MTH 178. GENERAL TRIGONOMETRY** ..... 4 credit hours

Prerequisite: MTH 169 or placement test equivalent (MTH 179 and MTH 180 may be taken concurrently. It is recommended that MTH 179 be taken first if the two are not taken concurrently.)

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 179. PRECALCULUS** ..... 4 credit hours

Prerequisite: MTH 169 or placement test equivalent

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. This course is currently offered only in the standard lecture format. The content of this course is occasionally offered in the self-paced format as MTH 179A and MTH 179B. Precalculus transfers to most four-year institutions.

**MTH 179A. PRECALCULUS (first half)** ..... 3 credit hours

Prerequisite: MTH 169 or placement test equivalent

This course is the first half of MTH 179, and is currently offered only in the self-paced format.



**MTH 179B. PRECALCULUS (second half)** ..... 3 credit hours

Prerequisite: MTH 179A

This course is the second half of MTH 179, and is currently offered only in the self-paced format.

**MTH 181. MATHEMATICAL ANALYSIS I** ..... 4 credit hours

Prerequisite: MTH 169 or placement test equivalent

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 181

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. This course transfers to many four-year institutions.

**MTH 189. STUDY PROBLEMS** ..... 1-8 credit hours

Prerequisite: Consent of area coordinator

Directed activities in mathematics; a period of concentrated effort to an assigned problem working with a chosen member of the math faculty. The content, time and location to meet, and the number of credit hours must be approved by the chosen instructor.

**MTH 191. CALCULUS I** ..... 5 credit hours

Prerequisite: MTH 178 and MTH 179

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

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

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** . . . . . 4 credit hours

Prerequisite: MTH 192 and knowledge of FORTRAN

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 MTH 197

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 MTH 293

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, and solving linear systems of equations using eigenvalues. This course transfers to four-year institutions.

## **MECHANICAL TECHNOLOGY (MT 68)**

**MT 100. MACHINE SHOP THEORY** . . . . . 3 credit hours

A class 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 will be covered. Film supplement classroom instruction.

**MT 101. MILLWRIGHT THEORY** . . . . . 2 credit hours

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

Introduction to the basic terms, processes and structures of materials. Hardness testing, classification systems and demonstrations of testing equipment. Principles of heat treatments are studied and demonstrated. (3 contacts per week)

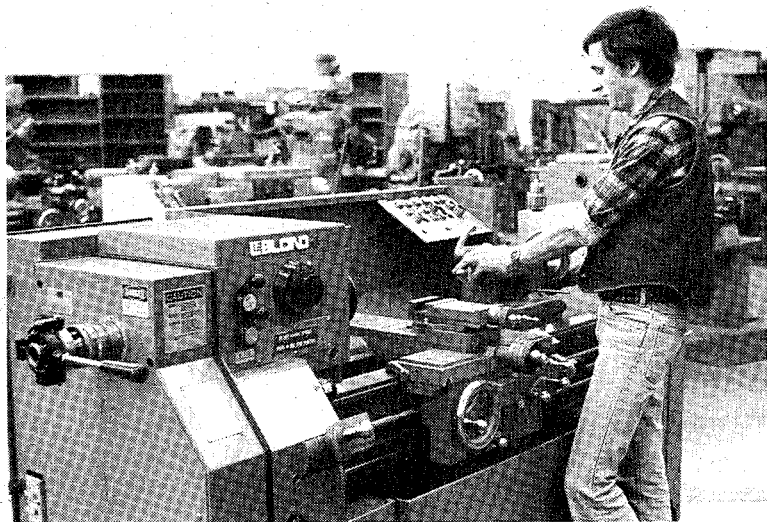
**MT 111. MACHINE SHOP THEORY AND PRACTICES** . . . . . 4 credit hours

A beginning machine shop class for those with little or no past 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 other areas that will be covered. Lab time will be 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 of the instructor

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 will be studied in depth; drill press, saws, engine lathes, milling machines, and grinders. 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

A continuation of MT 122. A class designed for mechanical technology students or for those who simply want to gain more machining experiences. The students will experience new advanced operations on familiar machines along with new operations on entirely new machine tools, the new operations will include spiral milling, taper grinding, and tracing techniques. The new machine tools will include the electrical discharge machine, the optical comparater, the turret lathe, and the cutter grinder. Projects will be 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

The last and most advanced machine shop class. Emphasis is placed on the student's individual goals and proficiencies of specific machining operations. The student will choose a challenging product to manufacture using several advanced machining techniques to meet goals set by student. (6 hours per week)

**MT 205. DIE CAST, DIE AND MOLD DESIGN FUNDAMENTALS** . . . . . 3 credit hours

Basic fundamentals of mold construction and the fundamental processes and basic construction of plastic molds (compression, transfer, and injection), molds for die castings (pressure moldings of non-ferrous alloys), and rubber molds.

**MT 240. PLANT LAYOUT AND MATERIAL HANDLING SYSTEMS** . . . . . 4 credit hours

Prerequisite: ID 100

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.

**MUSIC  
(MUS 20)**

**MUS 100. CONCERT BAND** . . . . . 1 credit hour

A course in performance open to all students and the public upon registration for the class. May be repeated for credit up to a maximum of four times. (2 hours per week)

**MUS 102. STRING ENSEMBLE** . . . . . 2 credit hours

A course in performance open to all students and public upon registration for class. May be repeated for credit up to a maximum of four times. (2 hours per week)

**MUS 103. WCC JAZZ ORCHESTRA** ..... 1 credit hour  
A course in performance open to those who desire to read, improvise and perform. Audition necessary for registration. May be repeated for credit up to a maximum of four times. (2 hours per week)

**MUS 106. JAZZ COMBO** ..... 1 credit hour  
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. The group is a performing one and offers concerts in the community.

**MUS 109. BRASS ENSEMBLE** ..... 2 credit hours  
An ensemble course designed for brass quartets, quintets, depending on class instrumentation. This class is also a performing group.

**MUS 135. CHORUS** ..... 1 credit hour  
A course in performance covering traditional choral music. This course is open to all students. May be repeated for credit up to a maximum of three times.

**MUS 136. GOSPEL CHORUS** ..... 1 credit hour  
A course in gospel choral performance open to all students. This course can be repeated up to a maximum of six times.

**MUS 140. BASIC MUSICIANSHIP** ..... 3 credit hours  
Designed to give students, prospective teachers and others a foundation in music theory and reading, concepts of rhythm, tonality, music composition, and other techniques, with aim of developing musical skills and understanding. No musical experience necessary.

**MUS 143. COMPOSITION: THEORY AND ARRANGEMENT** ..... 2 credit hours  
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  
For the prospective song writer, 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, and the music industry and its procedures concerning how to get a song published and recorded. Other areas of study include recording, the recording-studio, record pressing and copyright procedures.

**MUS 147. ENTERTAINMENT LAW** . . . . . 2 credit hours

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

An approach to listening to and reading music designed to develop composing and listening skills. An introduction in training the ear to identify intervals, chords, scales and chord progressions.

**MUS 152. MUSIC THEORY I** . . . . . 3 credit hours

An in-depth study of melodic, harmonic and rhythmic aspects of tonal music related to various styles: European, rock, jazz, ballads and the Blues. Aimed to equip the student 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

A course in jazz theory that provides the student with techniques of melody, harmony and rhythm that would excite spontaneous creativity in the jazz style.

**MUS 158. BLACK MUSIC, CREATIVE IMPROVISATION** . . . . . 3 credit hours

Students create music through improvisation which is an integral part of Black music. Skills in basic musicianship used depending on the student's musical proficiency. Focuses on the development of Black music from Africa to the Americas.

**MUS 159. SOUTH INDIAN MUSIC** . . . . . 3 credit hours

Theory and practice of South Indian music. Sacred and secular roles of music in the Indian culture. The 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, tamboora and table. A brief history of Indian music, short biographies of noted Indian musicians such as Purandara Dasa and Sayma Sastri and their contributions to South Indian Music.

**MUS 161. CONDUCTING** . . . . . 3 credit hours

Deals with various styles and techniques of conducting ensembles. Covers styles of all music periods. Hand position, metric conducting, dynamics and such other techniques as score reading and musical phrasing techniques discussed.

**MUS 170. AUDIO RECORDING TECHNOLOGY** . . . . . 3 credit hours

Designed to provide the student with the fundamentals necessary for a career-oriented study in creative audio recording. Audio-visual presenta-

tions of professional studio recordings and lectures on automated recording.

**MUS 180. MUSIC APPRECIATION . . . . . 3 credit hours**

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 styles of music covered. Presentations deal with the growth and development of musical forms and different styles through recordings and demonstrations.

**MUS 183. MUSIC OF THE AFRICAN-AMERICAN CULTURE (AFROMUSICOLOGY). . . . . 3 credit hours**

An ethnomusicology approach to African-American music aimed to combine the resources of history, anthropology, psychology and musicology to examine the music and its meaning within Black cultures. Deals with the socio-cultural aspects of the Black man's life style, traditions and mores as the motivation for Black expression in the arts.

**MUS184. MUSIC THERAPY . . . . . 2 credit hours**

The medical use of music, treating mental and physical complaints, occupational therapy where the affliction is of the body, bringing rhythm to the patient, encouragement of instrument playing to restore movements of the hand and arms. Based on restoring the patient to normalcy.

**MUS 186. PIANO LITERATURE . . . . . 3 credit hours**

A lecture-demonstration course which surveys piano literature from the 18th to the 20th Century. Teaching skills will be emphasized to help the piano teacher.

**MUS 187. HISTORY OF OPERA . . . . . 3 credit hours**

The aim of this course is to acquaint the student with the development of opera in European history. Presentations will include operas of Monteverdi, Mozart, Wagner, Verdi, Puccini, Strauss, Britten and many others. Assignments will include listening during class and attending professional performance of opera.

**MUS 189. STUDY PROBLEMS . . . . . 2-8 credit hours**

Prerequisite: Consent of area coordinator

Directed activities in major occupational and selected general education areas; a period of concentrated effort to an assigned problem working with faculty or a recognized specialist in the occupation; the demonstration of the individual's understanding and skill development within the selected occupation or area.



**MUS 203. INTRODUCTION TO VOICE** . . . . . 2 credit hours  
 Learn techniques in performing songs. Opportunities to work with musicians and sound equipment.

**MUS 204. VOICE** . . . . . 2 credit hours  
 Vocal techniques in depth. An extension of Introduction to Voice.

**MUS 206. VOCAL PERFORMANCE** . . . . . 1 credit hour  
 Learn techniques in performing songs. Opportunities to work with musicians, sound equipment and with groups.

**MUS 210. FUNCTIONAL PIANO** . . . . . 2 credit hours  
 A piano class 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 fundamentals of piano technique, 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  
 A continuation of Music 210, this course provides piano studies beyond the elementary or beginning stage. For those with some experience in piano playing.



**MUS 216. PIANO: JAZZ AND BLUES** . . . . . 2 credit hours

A piano course designed to cover such styles as Blues and elementary jazz improvisation techniques. Music theory in terms of chord progression and improvisational techniques will be part of the course of study.

**MUS 220. APPLIED MUSIC: BRASS** . . . . . 2 credit hours

Introductory group instruction in brass instruments. Instruction geared to student's level.

**MUS 225. BEGINNING JAZZ DRUM** . . . . . 2 credit hours

Rudimentary skills in jazz drumming. Includes study of historical styles such as Swing, Be-Bop, and South American and African rhythms. For the experienced drummer.

**MUS 226. STEEL DRUM MUSIC** . . . . . 3 credit hours

An applied laboratory demonstration in the making and performance of the steel drum.

**MUS 230. FOLK GUITAR** . . . . . 2 credit hours

Learning of techniques necessary to play folk music and folk songs. For those with some experience in guitar playing, keyed to interests and needs of students.

**MUS 233. BEGINNING GUITAR** . . . . . 2 credit hours

Designed for those with limited or no experience playing the guitar. Basic chords and techniques as well as folk and Blues songs. Class keyed to interests and needs of students.

**MUS 236. INTERMEDIATE GUITAR** . . . . . 2 credit hours

For the student with a basic knowledge of guitar playing. There will be opportunity to learn more difficult techniques as well as learning about song arrangements and some theory. Class will be keyed to interests and needs of students.

**MUS 239. JAZZ GUITAR** . . . . . 2 credit hours

Designed to enable students to develop skills necessary to play the guitar in different jazz styles. Includes improvisation work and chording. Requires basic guitar playing experience.

**MUS 242. BASS GUITAR** . . . . . 2 credit hours

A course in applied music (bass) designed specifically for jazz enthusiasts who want to learn techniques of jazz bass performance. Melodic, harmonic and rhythmic theory will be used to develop styles of jazz bass performance. You must have your own instrument.

**MUS 243. INTRODUCTION TO JAZZ BASS** . . . . . 2 credit hours

An introductory course to jazz bass whereby the student learns technically how to create good bass lines, good bass ostinatos, interpretation of chords, good solo techniques and concepts of big band and small ensemble playings.

**MUS 246. BEGINNING BANJO** . . . . . 2 credit hours

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

An introductory course in jazz flute for students of varying ability.

**MUS 250. BEGINNING FLUTE/SAX** . . . . . 2 credit hours

A beginning flute class to familiarize students with primary musical jargon and the basics of flute and sax playing. Basic flute playing will include sound production, reading musical notation, knowing flute and saxophone fingering, performance of basic major scales and a combination of reading and performance of simple tunes involving both classical and jazz music.

**MUS 266. SAXOPHONE (CLASSICAL)** . . . . . 2 credit hours

An 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

Introductory group instruction in jazz saxophone techniques and various styles. Requires basic saxophone playing experience.

**MUS 270. APPLIED VIOLIN** . . . . . 2 credit hours

A group instruction designed for community people who like to further their talents on the violin, learning more technical and musical skills to develop their abilities.

## **NUMERICAL CONTROL (NC 66)**

**NC 100. INTRODUCTION TO  
NUMERICAL CONTROL** . . . . . 3 credit hours

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. (3 hours per week)

**NC 111. MANUFACTURING PROCESSES FOR NUMERICAL CONTROL** . . . . . 4 credit hours

Prerequisite: NC 121

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. (4 hours per week)

**NC 121. MANUAL PROGRAMMING AND NC TOOL OPERATION** . . . . . 3 credit hours

Prerequisite: NC 100, MTH 111, MT 151

The first in a two-course study of manual programming of CNC milling and turning machines. Student 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** . . . . . 3 credit hours

Prerequisite: NC 121, MTH 152

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 213. COMPACT II COMPUTER PROGRAMMING** . . . . . 4 credit hours

Prerequisite: NC 121, NC 122, not concurrent with NC 224 or 225

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. (4 hours per week)

**NC 224. APT III COMPUTER PROGRAMMING** . . . . . 4 credit hours

Prerequisite: NC 121, NC 122, not concurrent with NC 213

The APT III computer assist language is studied on an "in house" system. Geometry, cutter path, post processor statements are studied and prac-

ticed. Program verification is completed by the use of plotters, and NC tool operation. (4 hours per week)

**NC 225. NUMERICAL CONTROL GRAPHICS** . . . . . 4 credit hours

Prerequisite: NC 213, NC 224

Students will 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 227. NUMERICAL CONTROL COORDINATE MEASUREMENT** . . . . . 3 credit hours

A study in the programming and operation of numerically controlled Coordinate measuring equipment through hands on experience. The course is taught on sight at DEA Corporation, a large manufacturer of coordinate measuring machines in Livonia. A knowledge of blueprint interpretation, and NC computer assist programming or FORTRAN is desirable prior to enrolling. Geometric tolerancing is also presented.

**NC 229. TOOLING FOR NUMERICAL CONTROL** . . . . . 3 credit hours

Prerequisite: NC 121

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.

**NC 230. GRAPHIC PROGRAMMING** . . . . . 4 credit hours

Prerequisite: NC 213

Numerical control graphic solutions to part programming including part geometry and tool path. Graphic methods will be demonstrated. Students will be given terminal time to improve their understanding of the concepts.

## **NURSING (NUR 57)**

*Enrollment 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 nursing division after review of previous transcripts.*

**NUR 029. PHARMACOLOGY REVIEW** . . . . . 1 credit hour

Prerequisite: NAPNES approved pharmacology course, consent of faculty  
Designed for persons who successfully completed a NAPNES pharmacology course but have not passed the NAPNES challenge exam. Includes a review of safe drug administration, drug actions, uses, and effects, as well as drug abuses. The NAPNES challenge exam is taken at the end of the course.

**NUR 039. STATE BOARD PREPARATION** . . . . . 1 credit hour

Prerequisite: Consent of faculty  
Assists graduates of the Nursing Program to prepare for the State Board of Nursing Examination. Emphasis placed on reviewing learned materials and on taking national competitive examinations.

**NUR 050. PHARMACOLOGY PREPARATION** . . . . . 2 credit hours

Intended to prepare Licensed Practical Nurses for taking their first courses in pharmacology and drug administration. Includes a review of mathematics and an introduction to drug therapy.

**NUR 100. NURSING FUNDAMENTALS WITH LABORATORY** . . . . . 5 credit hours

Presents principles of nursing with emphasis on social, psychological, and physical needs of the patient. Includes units on first aid, geriatric nursing, nursing history and organizations.

**NUR 110. NURSING CLINICAL EXPERIENCE** . . . . . 1 credit hour

Supervised clinical experience in a long term health care facility applying basic nursing skills in simple nursing situations.

**NUR 111. PHARMACOLOGY I** . . . . . 1 credit hour

Study of metric and apothecary systems, drug classification and legislation. Provides for practice in solving drug dosage problems. Introduces principles of safe drug administration.

**NUR 118. PERSONAL AND COMMUNITY HEALTH** . . . . . 1 credit hour

Presents concepts of personal health. Survey of resources available in the community for the promotion of health. Includes survey of current public health problems.

**NUR 120. BASIC MEDICAL SURGICAL NURSING PRACTICE** . . . . . 3 credit hours

Prerequisite: First semester courses. Corequisite: NUR 125  
Clinical experience in caring for adult patients with medical-surgical problems. Includes experience in the operating room, recovery room,

emergency room and outpatient department. (23 hours per week, 7½ weeks)

**NUR 121. INTERMEDIATE MEDICAL-SURGICAL NURSING PRACTICE** ..... 3 credit hours

Prerequisite: NUR 120 and 125. Corequisite: NUR 126

Clinical experience in caring for adult patients with medical-surgical problems. Includes experience in the operating room, recovery room, emergency room and the outpatient department. Also includes clinical experience in the administration of medications. (23 hours per week, 7½ weeks)

**NUR 122. PHARMACOLOGY II** ..... 2 credit hours

Prerequisite: NUR 111

Study of drug action, uses and effects in the administration of drug therapy. Includes a unit on drug abuse.

**NUR 125. BASIC MEDICAL-SURGICAL NURSING THEORY** ..... 3 credit hours

Prerequisite: First semester courses. Corequisite: NUR 120

Study of the adult patient with common medical-surgical problems. Includes principles and skills that assist the student in meeting the needs of the patient in the clinical situation. Pharmacology and diet therapy inter-related with the study of disease conditions. (7½ weeks)

**NUR 126. INTERMEDIATE MEDICAL-SURGICAL NURSING THEORY** ..... 3 credit hours

Prerequisite: NUR 120 and 125. Corequisite: NUR 121

Continued study of the adult patient with common medical-surgical problems. Includes principles and skills that assist the student in meeting the needs of the patient in the clinical situation. Pharmacology and diet therapy inter-related with the study of disease conditions. (7½ weeks)

**NUR 130. PARENT-CHILD NURSING PRACTICE** ..... 3 credit hours

Prerequisite: NUR 120 and 125. Corequisite: NUR 135

Clinical experience in obstetric and pediatric units of the hospital to develop skills in caring for parents and children. (18 hours per week, 8 weeks)

**NUR 133. PHARMACOLOGY III** ..... 2 credit hours

Prerequisite: NUR 111 and 122

Continued study of drug action, uses and effects, with emphasis on body systems.

**NUR 135. PARENT-CHILD NURSING THEORY** . . . . . 3 credit hours

Prerequisite: NUR 120 and 125. Corequisite: NUR 130

Study of the nursing care of mothers during the reproductive cycle, the care of the newborn and the care of ill children. (8 weeks)

**NUR 140. ADVANCED MEDICAL-SURGICAL NURSING PRACTICE** . . . . . 3 credit hours

Prerequisite: NUR 121 and 126. Corequisite: NUR 145

Provides for the practice of nursing skills including the administration of medications and assisting in the teaching of patients preparing for discharge from the health care agency. (23 hours per week, 6 weeks)

**NUR 144. PHARMACOLOGY FOR NURSES** . . . . . 5 credit hours

Prerequisite: LPN, RN, GPN, GN, or consent of faculty

Designed for currently practicing nurses. Includes 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 challenge exam at end of course.

**NUR 145. ADVANCED MEDICAL-SURGICAL NURSING THEORY** . . . . . 2 credit hours

Prerequisite: NUR 121 and 126. Corequisite: NUR 140

Study of medical-surgical problems in the specialty areas. Prepares the student for the role of the practical nurse, including legal and ethical implications. (6 weeks)

**NUR 150. EXTENDED CARE NURSING** . . . . . 3 credit hours

Includes essentials of the nursing process related to geriatrics and care of the long-term chronically ill patient. Patient's psychological needs, nutrition problem solving, rehabilitation and maintenance regimes examined through case studies and special student projects. Designed for the advanced student nurse or for the graduate nurse working in or intending to work in private duty, nursing home or extended care setting.

**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

Study of nursing history and development of associate degree nursing programs, nursing roles, change theory and individual reactions to change. Also included will be an introduction to general systems theory and advanced study of the nursing process. The laboratory components will include nursing skills review/update, CPR update and nursing assessment practice.

**NUR 230. ADVANCED PARENT-CHILD NURSING PRACTICE** . . . . . 2 credit hours

Prerequisite: Successful completion of all Nursing 100 level courses or LPN accepted into Level II of the program, NUR 200. Corequisite: NUR 235

Application of parent-child nursing concepts developed in NUR 235 in hospital situations. Students will have experience with high and low-risk families across the childbearing cycle, including antepartum, intrapartum, and postpartum periods. Experience with the childrearing family will include opportunities for health teaching.

**NUR 235. ADVANCED PARENT-CHILD NURSING** . . . . . 3 credit hours

Prerequisite: Successful completion of all Nursing 100 courses or LPN accepted into Level II of the program, all first semester Level II courses. Corequisite: NUR 230

Further study of the family with parent-child health related needs. Focus will be 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, will be discussed.

**NUR 240. COMPLEX MEDICAL-SURGICAL NURSING PRACTICE** . . . . . 3 credit hours

Corequisite: NUR 245

This course emphasizes the application of the nursing process in 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.

**NUR 245. COMPLEX MEDICAL-SURGICAL NURSING THEORY** . . . . . 3 credit hours

Prerequisite: Successful completion of all first semester Level II courses and Mental Health Nursing.

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.

**NUR 250. MENTAL HEALTH NURSING CLINICAL PRACTICE** . . . . . 2 credit hours

Corequisite: NUR 255

Application of mental health nursing concepts developed in NUR 255. Includes hospital and community situations. The student will have experience with current methods of prevention, maintenance and treatment.



**NUR 255. MENTAL HEALTH NURSING** . . . . . 3 credit hours

Prerequisite: Successful completion of all Nursing Level I courses and first semester Level II courses. Corequisite: NUR 250

Development of knowledge and skills necessary to provide basic mental health nursing care to selected clients in hospital or community settings who demonstrate common mental health problems. The central focus will be 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 will be discussed.

**NUR 260. NURSING MANAGEMENT AND TRENDS** . . . . . 2 credit hours

Prerequisite: Successful completion of all first and second semester Level II courses. Corequisite: NUR 240

This course includes leadership and management concepts in relation to organizing care of groups of patients. Emphasis will be placed on communication, decision making and motivation as it relates to entry level nursing responsibilities. Legal aspects of supervision will be studied, as well as trends and current problems in the nursing profession. Clinical practice of management skills will be integrated into the Complex-Medical-Surgical Nursing Practice.



# PHARMACY TECHNOLOGY (PHT 58)

## **PHT 100. INTRODUCTION TO HOSPITAL AND COMMUNITY PHARMACY** . . . . . 3 credit hours

Prerequisite: Admission to Pharmacy Technician Program

The student will become familiar with the functions and services provided by both hospital and community pharmacies. Hospital organization will be presented. The role of the pharmacist and technician will be studied. Discussion will include legal and ethical responsibilities.

## **PHT 101. DRUG PRODUCTS AND NOMENCLATURE** . . . . . 3 credit hours

Prerequisite: PHT 100 or permission

Drugs are studied by therapeutic classification with special attention on dosage forms, commonly used names, and manufacturers. Study will be 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** . . . . . 4 credit hours

Prerequisite: PHT 100 or permission

Methods of drug preparation, packaging and distribution in the hospital and community pharmacy setting will be presented. The specific duties and responsibilities of the technician will be emphasized. The course will consist of two lecture hours and four laboratory hours each week.

## **PHT 105. PREPARATION OF MEDICATIONS** . . . . . 2 credit hours

Dosage forms and routes of drug administration will be 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 198. PHARMACY FIELD EXPERIENCE** . . . . . 8 credit hours

Prerequisite: All first and second semester courses

Skills and knowledge acquired in the first two semesters of the program will be put into practice in both hospital and community settings. Students will spend 16 hours a week in a practice setting. All experience will be under the supervision of a registered pharmacist.

## **PHILOSOPHY (PHL 14)**

### **PHL 101. INTRODUCTION TO PHILOSOPHY . . . . . 3 credit hours**

The general nature of philosophical thought, its basic methods, problems, goals. 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. Uses philosophical concepts to help understand oneself, other people and the world around us. Focuses on formulating and defending individual viewpoints and developing personal skills in abstract thinking.

### **PHL 189. STUDY PROBLEMS IN PHILOSOPHY . . . . . 1-8 credit hours**

Prerequisite: Consent of instructor

Directed activities in Philosophy. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

### **PHL 200. EXISTENTIALISM . . . . . 3 credit hours**

A general introduction to the existentialist tradition of philosophy as it is presented in the works of such representative thinkers as Nietzsche, Kierkegaard, Heidegger, Sartre and Camus. Special attention 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**

An introduction to the analysis of valuing behaviors. Deals with social values and aesthetic values. Some writing will be required in which the student will give evidence of his increased capacity to make distinctions in these areas.

### **PHL 265. PHILOSOPHY OF LIFE . . . . . 3 credit hours**

Learning to look at your fundamental beliefs and assumptions (about life, the world, yourself, other people) from a philosophical point of view. Emphasizes expressing and developing the philosophy you live by. Includes a discussion of various approaches that may be helpful in the process of personal growth and development.

## **PHOTOGRAPHY (PHO 72)**

### **PHO 090. GENERAL PHOTOGRAPHY . . . . . 2 credit hours**

A course for individuals who have an interest in photography. Primary emphasis is on picture taking, composition, lighting, films, etc. No

darkroom work is included in the course. Students should own or have the use of some type of camera.

**PHO 100. PORTRAIT PHOTOGRAPHY** . . . . . 2 credit hours

Prerequisite: PHO 220 and PHO 221

An indepth study and appreciation of the art of portrait photography through lecture, demonstration and field trips to commercial portrait studios.

**PHO 101. PHOTOGRAPHY AND ENVIRONMENT** . . . . . 3 credit hours

A study of the methods of documenting various types of environments with the camera. This will include 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

Designed to introduce students to the history of photography, with the development of the important processes for making photographs and with the philosophy of the most significant photographers of the 19th and 20th centuries.

**PHO 111. PHOTOGRAPHY** . . . . . 4 credit hours

Principles, practices, basic application and limitations of photography as a communication form used in business and industry. Assigned field practices in the use of the small format camera, composing, lighting, exposure and photo darkroom processing. (6 hours per week)

**PHO 112. DARKROOM TECHNIQUES** . . . . . 5 credit hours

Prerequisite: PHO 111; Corequisite: PHO 113

Development of skills needed by technicians in commercial and other types of darkrooms used in business and industry. All major phases of darkroom work including film processing, print making, photographic supplies, handling and equipment maintenance practiced. (7 hours per week)

**PHO 113. STUDIO TECHNIQUES** . . . . . 3 credit hours

Corequisite: PHO 112

Specialized instruction in large format photography under controlled lighting situations. Use of various types of lights emphasized along with lighting for various situations. (4 hours per week)

**PHO 114. BASIC COLOR PHOTOGRAPHY** . . . . . 3 credit hours

Prerequisite: PHO 111

An introduction to the various color photography processes in common

use today. Emphasis placed on the production of color transparencies, color negatives and color prints and off-easel color print correction techniques. (4 hours per week)

**PHO 115. PHOTO RETOUCHING** . . . . . 2 credit hours

Prerequisite: PHO 111

Manual spotting techniques and associated materials as applied to the retouching and processing of photographic prints and negatives. (3 hours per week)

**PHO 201. INTRODUCTION TO FASHION PHOTOGRAPHY** . . . . . 2 credit hours

Prerequisite: PHO 112

The student will learn through lecture, shooting sessions, critique and lab practice, the basic techniques of black and white fashion photography. Lighting, posing, model selection, printing fashion, and basic business practices will be studied. (3 hours per week)

**PHO 213. ADVANCED PHOTO RETOUCHING** . . . . . 2 credit hours

Prerequisite: PHO 115

This class will prepare students to solve most problems which occur to prints which he or she cannot rephotograph. (3 hours per week)

**PHO 219. PHOTOGRAPHIC DESIGN** . . . . . 3 credit hours

Prerequisite: PHO 111

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. (4 hours per week)

**PHO 220. ADVANCED STUDIO TECHNIQUES** . . . . . 3 credit hours

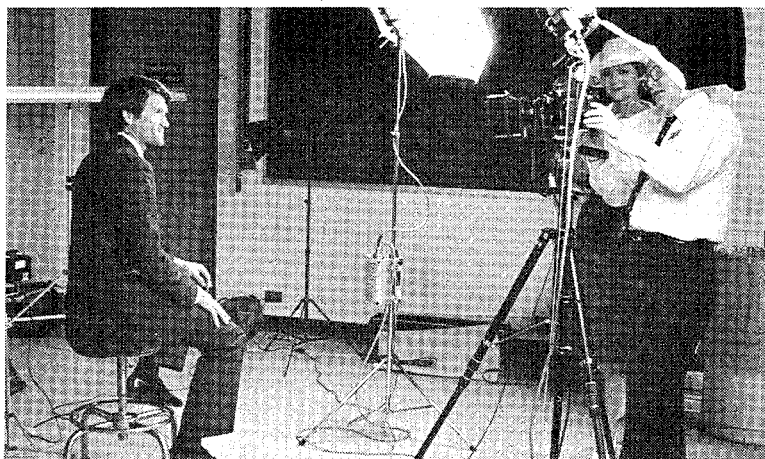
Prerequisite: PHO 112

A detailed study of the various types of cameras and their uses. Roll and sheet film cameras emphasized as well as the more unusual applications of the medium format camera. (4 hours per week)

**PHO 221. ADVANCED DARKROOM TECHNIQUES** . . . . . 3 credit hours

Prerequisite: PHO 113

Specialized instruction in the problems faced by the darkroom technician. How to produce acceptable results under difficult situations the major emphasis. (6 hours per week)



**PHO 222. ADVANCED COLOR PHOTOGRAPHY** . . . . . 3 credit hours

Prerequisite: PHO 114

A continuation of the studies begun in Basic Color Photography 114. Emphasis placed on color correction from unusual situations and color distortion to achieve special effects and experience in automated color production techniques and equipment. (6 hours per week)

**PHO 223. PHOTOGRAPHIC OCCUPATIONS** . . . . . 2 credit hours

Prerequisite: PHO 113

A survey of photographic occupations with guest lecturers, field trips and discussion. (3 hours per week)

**PHO 224. PHOTOGRAPHY QUALITY CONTROL TECHNOLOGY** . . . . . 2 credit hours

Prerequisite: PHO 112, 113, 114

The student will, 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 226. COLOR LABORATORY OPERATIONS AND TECHNIQUES** . . . . . 2 credit hours

Prerequisite: PHO 222

The student will, through lecture, demonstration, and lab practice, utilize automated color and printing and processing equipment both with color

positive, negative, and reversal materials. Color lab production techniques, demands, and operations will be studied and a portion of the class meetings will be held within an operating professional color laboratory environment.

**PHO 229. FREELANCE OPERATIONS** ..... 3 credit hours

Prerequisite: PHO 220

A survey of the types of photographic assignments and environments in which the freelance photographer is involved as a one-person/site proprietor operation. Outside speakers and visits to various types of freelance studios included as well as an in-depth study of the problems involved in operating a free lance photographic business. (4 hours per week)

## **PHYSICAL EDUCATION ACTIVITIES (PEA 29)**

**PEA 105. INDEPENDENT SPORTS** ..... 2 credit hours

Provides opportunities for the student to acquire skills which will be a source of healthful and recreational exercise. (2 hours per week)

## **PHYSICS (PHY 35)**

### **OPEN PHYSICS LABORATORY**

*Physics courses numbered 105, 111, 122, 131, 141, and 142 operate under an open laboratory format. This means that the laboratory is open about twenty or more hours per week for students to use at their convenience. Laboratory equipment is set out at specified stations ready for use, and instructors are available. Computer software is used for simulation and data analysis.*

**PHY 105. INTRODUCTORY PHYSICS** ..... 4 credit hours

Prerequisite: MTH 090

Designed for both transfer and vocational students who have had no previous physics. Course surveys the major topics of physics: motion, heat, waves, electricity, magnetism, light, atomic energy. A conceptual approach with a minimum of mathematics is used to obtain a working knowledge of the principles of physics. This course will transfer as a general science or vocational credit. (3 hours lecture and 3 hours open laboratory per week)

**PHY 110. APPLIED PHYSICS** . . . . . 4 credit hours

Prerequisite: MTH 090

An introductory course for technical-vocational students with no previous physics course. Course surveys the major topics in physics: matter and measurements; mechanics; electricity and magnetism; heat and light. Important ideas of physics presented through laboratory experiments, supplemented by lectures and films. Technical vocabulary translated to understandable English with everyday work applications of the basic ideas of physics and how they affect our life and work. (6 hours per week)

**PHY 111. GENERAL PHYSICS I** . . . . . 4 credit hours

Prerequisite: MTH 169

Corequisite: MTH 177

For both pre-professional transfer students and liberal arts students. No previous physics necessary. Course surveys the topics of mechanics, heat and wave motion. Three hours of open laboratory each week enable students to learn the use of basic scientific instruments and the techniques used in the science laboratory. (3 hours lecture and 3 hours open laboratory per week)

**PHY 122. GENERAL PHYSICS II** . . . . . 4 credit hours

Prerequisite: PHY 111

A continuation of Physics I with topics including magnetism, electricity, light and atomic energy. (3 hours lecture and 3 hours open laboratory per week)

**PHY 131. PHYSICS FOR RESPIRATORY THERAPY** . . . . . 3 credit hours

Prerequisite: MTH 165

A one-semester course in basic physics, designed primarily for students in the respiratory therapy program. No previous knowledge of physics is assumed. Topics discussed are the use of energy in body processes, mechanics of fluids, electrical devices used in the hospital and the effects of radiation on living matter. (2 hours discussion and 2 hours open laboratory per week)

**PHY 141. RADIOLOGIC PHYSICS I** . . . . . 3 credit hours

Prerequisite: MTH 165

Physical principles underlying the operation of an X-ray machine discussed in lecture and illustrated in laboratory exercises. Basic concepts of mechanics, energy and electrical circuitry covered the first semester, to be followed by Physics 142. (2 hours discussion and 2 hours open laboratory per week)



**PHY 142. RADIOLOGIC PHYSICS II** ..... 3 credit hours

Prerequisite: PHY 141

Continuation of Physics 141 with topics including the production of X-rays and their effects on tissue, the X-ray tube, the X-ray circuit, and the nature and use of radioactivity. (2 hours discussion and 2 hours open laboratory per week)

**PHY 211. ANALYTICAL PHYSICS I** ..... 5 credit hours

Prerequisite: MTH 191, H.S. Physics or PHY 105 or PHY 111

For students intending to major in science or engineering, and for those liberal arts students with calculus background. Uses calculus to develop concepts in mechanics, heat and wave motion. (4 hours lecture and 3 hours laboratory per week)

**PHY 222. ANALYTICAL PHYSICS II** ..... 5 credit hours

Prerequisite: PHY 211

Continues to develop mathematical methods for understanding physical phenomena in the areas of electromagnetism, light and modern physics. (4 hours of lecture and 3 hours laboratory per week)

## **POLITICAL SCIENCE (PLS 05)**

*Political Science 108, 112, and 150 all meet the minimum requirements for the Associate Degree.*

**PLS 108. GOVERNMENT AND SOCIETY** ..... 3 credit hours

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). Designed to help the student to more clearly define and express his or her own political ideas.

**PLS 112. INTRODUCTION TO AMERICAN GOVERNMENT** ..... 3 credit hours

The forms and functions of American government with emphasis on national government. Decision-making process in the Congress, the Presidency and the federal court system studied. Relationship of political parties and public opinion to the electoral process.

**PLS 150. STATE AND LOCAL GOVERNMENT AND POLITICS** . . . . . 3 credit hours

Forms and functions of state and local governments in the United States. Relationships of development of the urban community to the politics of metropolitan areas analyzed. Theories of studying community decision-making evaluated.

**PLS 189. STUDY PROBLEMS IN POLITICAL SCIENCE** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Political Science. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

**PLS 200. INTRODUCTION TO INTERNATIONAL POLITICS** . . . . . 3 credit hours

The instruments of world politics 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

A survey of the political systems of Great Britain, France, Italy, Germany, the Soviet Union, and China. The importance of ideologies to the development of political systems will be emphasized.

**PLS 230. POLITICAL PARTIES AND PRESSURE GROUPS** . . . . . 3 credit hours

An analysis of American political parties and pressure groups; emphasizes their origins, functions, organizations, methods and the relationship between party politics, public opinion, campaigns, voting and elections.

## **PSYCHOLOGY (PSY 08)**

**PSY 100. INTRODUCTORY PSYCHOLOGY** . . . . . 3 credit hours

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

An overview of the psychology of aging; 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

Psychological dynamics of the Black experience. An assessment of sociocultural factors that determine the Black psyche.

**PSY 109. PSYCHOLOGY OF MID-LIFE CAREERS** . . . . . 2 credit hours

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

An exploration into the problems of the adult child and his/her relationship with aging parents. Emphasis will be placed on intergenerational living, role reversals and problem solving.

**PSY 114. LEARNING TO LEARN** . . . . . 3 credit hours

A course in applied psychology. Emphasis will be placed on learning styles and learning strategies. Students will be provided with a variety of techniques for analyzing their learning style. Next, they will be given information on learning strategies and practice in developing and using various strategies.

**PSY 130. ALCOHOLISM: ITS EFFECTS, IMPACT AND TREATMENT** . . . . . 3 credit hours

The 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.

**PSY 150. INDUSTRIAL PSYCHOLOGY** . . . . . 3 credit hours

Human relations in business and industry. Special attention given to occupational information, personnel selection, training and development and employee appraisal. A practical introduction to the psychological dimensions and implications of the modern working world.

**PSY 160. COPING WITH STRESS** . . . . . 3 credit hours

Recent developments in stress reduction and personal growth using materials from humanistic psychology, psychiatry, nutrition, and exercise.

**PSY 170. HIGH TECHNOLOGY:  
IMPACT ON PERSONALITY** . . . . . 3 credit hours

This course will focus 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 technology will be isolated to evaluate the demand they have made on human adjustment. This course will make 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** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Psychology. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

**PSY 200. CHILD PSYCHOLOGY** . . . . . 3 credit hours

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 207. SOCIAL PSYCHOLOGY** . . . . . 3 credit hours

Designed to give students an understanding of the influence of social interaction upon the development of personality. Interaction between the individual and society stressed. Includes emphasis on group dynamics and sensitivity training.

**PSY 209. PSYCHOLOGY OF ADJUSTMENT** . . . . . 3 credit hours

A study of the processes involved in the adjustment of the individual to the problems of everyday living. Emphasis given to the study of the development of techniques or adjustment to meet conflict situations in the social environment. Includes consideration of adjustment mechanisms of major societal institutions.

**PSY 222. LOSSES AND GRIEVING** . . . . . 3 credit hours

"Losses and the therapeutic process of grieving" will examine people's reactions to unexpected losses. Losses due to death are treated as well as those perennial losses naturally accompanying everyday life and the growth process. Also examined are those kinds of grieving resulting from such common experiences as disillusionment, divorce, unemployment, role change, the empty nest, and the loss of material possessions. The class will focus on the way persons 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 will be considered in depth. The class blends theory with practice.

**PSY 257. ABNORMAL PSYCHOLOGY** . . . . . 3 credit hours

A course dealing with the abnormalities of certain types of personalities, their origin, symptoms, developments and treatment, short of psychiatric competence. Main topics—simple maladjustment; disturbances of emotional nature, of perception, memory, judgment, thought, disorders of mobility, speech, etc.; early symptoms of schizophrenia.

## **QUALITY CONTROL (QC 70)**

**QC 097. QUALITY: AN OVERVIEW** . . . . . 2 credit hours

Goals are to provide the student with a total concept of quality and its relationship to the work environment. Topics include: who determines quality; what is quality requirement; when is quality economical; where are quality requirements determined; why quality requirements; and how quality requirements are implemented.

**QC 101. PROCESS QUALITY CONTROL** . . . . . 3 credit hours

The concepts of variation and methods of measuring, evaluating and interpreting industrial data. An in-depth working knowledge of process control imparted through the use of capability analysis and statistical control charts. Industrial applications are presented and class participation is used extensively in workshops.

**QC 107. APPLIED STATISTICS: PROCESS MEASUREMENT AND CONTROL** . . . . . 3 credit hours

Prerequisite: Basic Algebra preferred

A basic course designed to acquaint participants with statistical control programs. Students develop a working knowledge of elementary statistical concepts such as normal distribution and standard deviation, of the common/special causes of variability. Students work in groups to construct, maintain and interpret X and R charts using data from in-plant operations.

**QC 122. SAMPLING QUALITY CONTROL** . . . . . 3 credit hours

Prerequisite: MTH 169

The theory of probability and basic concepts of statistical sampling. The development of sampling plans, effect of sample size and acceptance number on the probability of acceptance, and the use of interpretation of sampling acceptance plans discussed. Military 105D, sequential, and variable sampling are introduced and their effectiveness and industrial applications are analyzed.

**QC 213. QUALITY CONTROL BY STATISTICAL METHODS** . . . . . 3 credit hours

Prerequisite: QC 101 and QC 122

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 solved in the classroom to illustrate the techniques presented.

**QC 224. QUALITY CONTROL PROBLEM SOLVING** . . . . . 3 credit hours

Prerequisite: QC 213 and knowledge of basic algebra

Provide the student with a synopsis of the material presented in the previous three (3) courses (Process, Acceptance 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, provides a simplified procedure for applying the statistical tools which are most often used by the Q.C. practitioner.

**QC 225. QUALITY CONTROL MANAGEMENT** . . . . . 3 credit hours

The total quality control concept in planning, organizing and implementing an effective system. Details of how to plan a quality system, set up the organizational structure, integrate the support activities, install controls, and measure the 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.

**QC 226. DIMENSIONAL METROLOGY AND TESTING** . . . . . 3 credit hours

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 in determining dimensional measurement as practiced by skilled tradesmen, inspectors and quality control technicians.

## **RADIOGRAPHY (RAD 53)**

*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

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

The history of radiography, medical specialties, health care delivery, organizational structure of a radiology department, professional development and ethics will be covered. Introductory course for the beginning radiographer with emphasis on acquainting the student with the goals, philosophies and organizations of the radiography program and radiology department. (4.2 hours per week, 7 weeks)

**RAD 101. METHODS OF PATIENT CARE** . . . . . 2 credit hours

Prerequisite: Admission to the Radiography Program

Designed to teach the radiographer how to interact with the patient, to provide for his or her physical and emotional needs, how to assist in moving patients by using various transfer methods. Some lab practice in basic techniques such as taking vital signs, blood pressure and airway management. (4.2 hours per week, 7 weeks)

**RAD 110. CLINICAL EDUCATION** . . . . . 1 credit hour

Corequisite: RAD 112

Structured clinical experience, application of knowledge and skill in positioning the upper extremity, chest and abdomen; demonstrate knowledge concerning professional ethics, courtesy and empathy in handling patients, film processing and darkroom procedures. (16 hours per week, 7½ weeks)

**RAD 111. FUNDAMENTALS OF RADIOGRAPHY** . . . . . 2 credit hours

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 will be understood. (4 hours per week, 7½ weeks)

**RAD 112. RADIOGRAPHIC POSITIONING I** . . . . . 2 credit hours

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. (3 hours per week)

**RAD 113. RADIOGRAPHIC PROCESSING** . . . . . 2 credit hours

Covers the principles of processing to include 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. (4 hours per week, 7½ weeks)

**RAD 120. CLINICAL EDUCATION** ..... 2 credit hours

Corequisite: RAD 123

Structured clinical experience, application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine, and selected contrast studies, demonstrate knowledge on the design and operational characteristics of equipment and accessories in a general radiographic room. (16 hours per week)

**RAD 123. RADIOGRAPHIC POSITIONING II** ..... 2 credit hours

Prerequisite: RAD 112

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. (3 hours per week)

**RAD 124. PRINCIPLES OF RADIOGRAPHIC EXPOSURE** ..... 3 credit hours

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

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

Structured laboratory experience conducted to illustrate film response to various exposure techniques. Emphasis on evaluation of exposure techniques used in obtaining diagnostic information on x-ray film. (2 hours per week)

**RAD 130. CLINICAL EDUCATION I** ..... 2 credit hours

Structured clinical experience 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 demonstrate knowledge of the components and operational characteristics of the fluoroscopic unit. (32 hours per week, 7 weeks)



**RAD 135. PATHOLOGY FOR RADIOGRAPHERS . . . . . 2 credit hours**

A survey of basic pathology. A study of the disease process and how various diseases alter the appearance and function of human organisms; includes infectious diseases, tumors, chemical injuries and the conditions of illness involving the systems of the body. (4.2 hours per week)

**RAD 140. CLINICAL EDUCATION . . . . . 2 credit hours**

Continuation of Clinical Education 130; demonstrate knowledge of orthopedic radiography. (32 hours per week, 7 weeks)

**RAD 215. RADIOGRAPHY OF THE SKULL . . . . . 2 credit hours**

A study of the anatomy and radiography of the skull designed so that the student can correlate the relationship of external landmarks and positioning lines to specific internal structures. Includes laboratory experience in skull positioning. (3 hours per week)

**RAD 217. CLINICAL EDUCATION . . . . . 3 credit hours**

Corequisite: RAD 215

Structured clinical experience application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine, procedures requiring the use of a contrast medium, skull and demonstrate knowledge of the components and operational characteristics of the radiographic equipment used in skull radiography. (24 hours per week)

**RAD 218. RADIATION BIOLOGY . . . . . 2 credit hours**

To acquaint the student with the effects of ionizing radiation on the cells which form human tissue. (4 hours per week, 7½ weeks)

**RAD 219. RADIATION PROTECTION . . . . . 2 credit hours**

Covers 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. (4 hours per week, 7½ weeks)

**RAD 220. MANAGEMENT OF RADIOLOGICAL ENVIRONMENT . . . . . 2 credit hours**

A course designed to acquaint students with various aspects of managing the modern radiology department. Topics to be covered include: department organization and operations, equipment specifications, quality assurance guidelines, patient education, planning and design.

**RAD 225. CLINICAL EDUCATION . . . . . 3 credit hours**

Structured clinical experience in all areas of radiography. Electives in specialized areas i.e., ultrasound, C.T. Scanner, demonstrate knowledge of mobile and surgery radiography. (24 hours per week)

**RAD 240. CLINICAL EDUCATION** . . . . . 2 credit hours

Internship in Clinical Education. (32 hours per week, 7 weeks)

**RAD 255. QUALITY ASSURANCE IN RADIOGRAPHY** . . . . . 3 credit hours

A course designed to update the practicing radiographer on current techniques in quality assurance testing and procedures. The participant will learn to use quality assurance tools, processor monitoring techniques, sensitometry/densitometry and planning retake analysis that are applicable to the learner's department. Practical experience in using quality assurance instruments will be provided through laboratory experience. Lectures and discussions on special imaging areas—computed tomography, angiography, NMR and future state-of-the-art radiological procedures are included in the course.

## **READING (RDG 25)**

### **READING CENTER**

*The Reading Center (SC 301) is available to improve the student's 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** . . . . . 3 credit hours

To provide the remedial reader with basic reading skills. A program of instruction individually designed for each student based on his or her diagnostic reading test and a personal interview. Students enrolled in this course must satisfactorily complete the work before enrolling in a higher level reading course.

**RDG 090. PARENTS: CHILDREN'S READING** . . . . . 2 credit hours

Designed for parents who are concerned about their children's reading. Special attention given to methods for preparing preschoolers for reading using the home as a learning environment. Also focuses on reading-related home and school problems. (3 hours per week)

**RDG 100. VOCABULARY AND SPELLING POWER** . . . . . 2 credit hours

Designed for the student interested in strengthening spelling skills and expanding vocabulary. Emphasis placed on meeting the individual student's needs. Not a remedial course; students in need of basic spelling and/or vocabulary skills should elect Reading 040. Class meets for half a regular semester. (3 hours per week)

**RDG 103. STUDY SKILLS** ..... 3 credit hours

Prerequisite: high school reading ability

Designed for the student interested in improving study and note taking skills. Reading and note taking techniques appropriate to specific course materials stressed. Essential for a student electing this course to be enrolled also in English, Humanities, Social or Exact Science course to which the student shall apply his or her newly learned study skills.

**RDG 104. STUDY SKILLS** ..... 2 credit hours

Prerequisite: High school reading ability

Designed for the student interested in improving study and note taking skills. Reading and note taking techniques appropriate to academic materials stressed. Class meets for half a regular semester. Essential for a student electing this course to be enrolled also in a English, Humanities, Social or Exact Science course to which the student shall apply his or her newly learned study skills. (3 hours per week)

**RDG 105. VOCABULARY AND SPELLING POWER** . . . . 3 credit hours

Designed for the student interested in strengthening skills and expanding vocabulary. Emphasis placed on meeting the individual student's needs. 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

Designed for the student interested in becoming a more flexible reader. The student will learn techniques to vary reading speeds and techniques appropriate to material and purposes. Class meets for half a regular semester.

**RDG 107. SPEED READING** ..... 3 credit hours

Prerequisite: high school reading ability

Designed for the competent student interested in becoming a faster and more flexible reader. The student will learn techniques to vary reading speeds appropriate to material and purposes. Class meets for a full semester, allowing time for the student to master each successive reading technique before learning a new one.

**RDG 115. MEDICAL TERMINOLOGY** ..... 2 credit hours

Acquaints students with the origin and structure of medical terms. Helps 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** . . . . . 1-8 credit hours

Prerequisite: Consent of instructor

Directed activities in Reading. These activities are individualized. (Hours arranged)

## **REAL ESTATE (RE 48)**

**RE 100. REAL ESTATE PRINCIPLES** . . . . . 3 credit hours

An introductory course in real estate principles, practices and concepts. The student will be 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, the Board of Realtors, ethics. An opportunity for the student to participate in an essential learning process leading to valuable real estate career. (3 hours per week)

## **REFRIGERATION / AIR CONDITIONING (RAC 82)**

*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. 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 \$45. Consent of advisor is required for registration.*

**RAC 111. REFRIGERATION I** . . . . . 5 credit hours

Prerequisite or corequisite: consent; RSES membership required

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. (5 hours per week)

**RAC 122. REFRIGERATION II** . . . . . 5 credit hours

Prerequisite: RAC 111 and consent; RSES membership required

Emphasis 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. (5 hours per week)

**RAC 123. REFRIGERATION AND AIR CONDITIONING SYSTEMS** . . . . . 5 credit hours

Prerequisite: RAC 111, 124 and consent; RSES membership required

Sketching and constructing refrigeration systems. Calibration and efficiency balance of these units stressed. Troubleshooting electrical controls and additional study in thermodynamics included. (6 hours per week)

**RAC 124. BASIC CONTROLS** . . . . . 5 credit hours

Prerequisite: RAC 111 and consent; RSES membership required

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 included and emphasized. (5 hours per week)

**RAC 213. AIR CONDITIONING** . . . . . 5 credit hours

Prerequisite: RAC 122 or consent; RSES membership required

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. (5 hours per week)

**RAC 214. CONTROL SYSTEMS** . . . . . 5 credit hours

Prerequisite: RAC 124 and consent; RSES membership required

Presenting 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. (5 hours per week)

**RAC 215. TROUBLESHOOTING CONTROLS** . . . . . 5 credit hours

Prerequisite: RAC 214 and consent; RSES membership required

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. (5 hours per week)

**RAC 216. SYSTEMS LABORATORY** . . . . . 5 credit hours

Prerequisite: RAC 123

Advanced troubleshooting experiences in refrigeration/air conditioning remote control systems. Calibrating and efficiency-balancing of commercial systems continues as the major thrust. (6 hours per week)

**RAC 240. REFRIGERATION CODES** . . . . . 2 credit hours

Prerequisite: Consent of Advisor

Michigan Mechanical Refrigeration Code. (2 hours per week)

## **RESPIRATORY THERAPY (RTH 54)**

**RTH 097. RESPIRATORY THERAPY REVIEW** . . . . . 1 credit hour

Designed to assist graduates of Respiratory Therapy Programs studying for their certification or registry exams. Offered the five Saturday mornings preceding the exam. Emphasis placed on sample examinations. (5 three-hour sessions)

**RTH 106. CHEMISTRY FOR RESPIRATORY THERAPISTS** . . . . . 3 credit hours

Prerequisite: CEM 057 and CEM 058

Intended primarily for students in Respiratory Therapy Program. A study of the chemical and physiochemical behavior of gases, solutions, acids, bases, pH and electrolytes. Encompasses topics in organic chemistry and biochemistry related to metabolism and respiration.

**RTH 121. BASIC EQUIPMENT AND PROCEDURES** . . . . . 4 credit hours

Prerequisite: Admission to the Respiratory Therapy Program

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. (2 hours laboratory, 2 hours lecture)

**RTH 122. RESPIRATORY PHYSIOLOGY** . . . . . 2 credit hours

Prerequisite: BIO 111 and RTH 106

For respiratory therapy students only: an in-depth study of the anatomy and physiology of the respiratory system and the diseases that affect it.

**RTH 123. RESPIRATORY PATHOPHYSIOLOGY** . . . . . 3 credit hours

Prerequisite: BIO 111, RTH 122

To be taken concurrently with Respiratory Physiology 122: intended for respiratory therapy students only. 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

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

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

Bedside practice of general respiratory therapy techniques such as intermittent positive pressure breathing, oxygen therapy, humidity therapy, cardiopulmonary resuscitation, sputum induction and equipment rounds. Meets in a cooperating hospital. Experience will be coordinated with topics covered in RTH 121. (16 hours per week)

**RTH 199. GENERAL CLINICAL PRACTICE II** . . . . . 3 credit hours

Prerequisite: RTH 198

Continued bedside practice of general respiratory therapy techniques developed in RTH 198. (16 hours per week).

**RTH 200. ADVANCED CLINICAL PRACTICE** . . . . . 4 credit hours

Prerequisite or Corequisite: RTH 121, RTH 122, RTH 123, RTH 198, RTH 199, RTH 212, RTH 213 and successful completion of Qualification exam

Structured, at-the-bedside, practice of respiratory therapy techniques involved with the care of acutely ill patients and patients with chronic obstructive pulmonary disease. Students assigned to intensive care units of cooperative hospitals. Involved are two eight-hour sessions per week. (16 hours per week)

**RTH 201. SPECIALTY CLINICAL PRACTICE** . . . . . 2 credit hours

Prerequisite: Completion of third semester of Respiratory Therapy Program  
Experience in one of the following specialty areas; mangement, teaching, cardiognostics, burn medicine, home care, research, pulmonary function testing. (16 hours per week for 7.5 weeks)

**RTH 202. PEDIATRIC CLINICAL PRACTICE** . . . . . 2 credit hours

Prerequisite: RTH 200, 212, 213, 219, successful completion of Pediatric Qualification Exam

Structured, at the bedside, practice of respiratory therapy in the neonatal intensive care unit and pediatric units.

**RTH 212. VENTILATORS AND DIAGNOSTIC TESTS** . . . 3 credit hours

Prerequisite: RTH 121

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 AND REHABILITATIVE RESPIRATORY CARE** . . . . . 4 credit hours

Prerequisite: RTH 106, 212

A detailed study of 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 emphasized. Medical specialists will discuss the respiratory care of their patients.

**RTH 214. CARDIODIAGNOSTICS** . . . . . 3 credit hours

Prerequisite: BIO 111 or equivalent (Open to students other than Respiratory Therapy)

A survey of invasive and noninvasive methods of studying the heart and cardiovascular system. Swan Gantz catheterization, echocardiography, stress tests, EKG interpretation, etc.

**RTH 217. SEMINAR—RESPIRATORY THERAPY** . . . . . 2 credit hours

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

A study of the physiology of children; modes of therapy used to treat cardiopulmonary diseases of children, infants and neo-nates explained.



**RTH 220. EXERCISE TECHNOLOGY** . . . . . 4 credit hours

Prerequisite: CPR provider card, successful completion of e.c.g. test

Study of equipment, techniques and medications employed in graded exercise testing of patients with suspected heart disease. Includes units on physiology, anatomy, emergency procedures and psychology.

**RUSSIAN**

(See General Studies, page 158)

**ROBOTICS**

(See Integrated Manufacturing, page 174)

**SECRETARIAL AND OFFICE  
(SO 49)**

**SO 090. FUNDAMENTALS OF TYPEWRITING** . . . . . 1 credit hour

A basic keyboarding course designed to meet the needs of the non-secretarial student in developing basic keyboarding. (This is a 1 credit/2 contact hour course, plus 4-6 practice hours.)

**SO 101. BEGINNING TYPEWRITING** . . . . . 3 credit hours

The beginning typewriting course has been designed to develop initial keystroking skill, using the operating parts of the typewriter efficiently, placing materials attractively on a page by centering the copy horizontally and vertically. The student will then complete tabulation problems; set up and type business letters, personal letters, and memoranda, simple tables, outlines and manuscripts; and use the typewriter as an aid in composing. Proofreading skill is developed by comparing and verifying. (This is a 3 credit/4 contact hour course)

**SO 102. INTERMEDIATE TYPEWRITING** . . . . . 3 credit hours

Prerequisite: SO 101 or equivalent (minimum of 35 wpm with 5 errors or less for 5 minutes)

A course designed to develop student 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. (This is a 3 credit/4 contact hour course.)

**SO 107. CLERICAL METHODS AND PROCEDURES** . . . . . 4 credit hours

Prerequisite: Typewriting proficiency of 45 wpm or concurrent enrollment in SO 102 Typewriting

The student will prepare for employment, improve typewriting skills, per-

form general office duties, including extensive filing and payroll procedures. The student will prepare for advancement opportunities in the clerical field by studying human relations and personality development, and by improving work habits and procedures.

**SO 130. BUSINESS MACHINES** . . . . . 3 credit hours

Prerequisite: MTH 163 or equivalent

The emphasis throughout this course is using electronic business calculators in problem-solving activities. This requires the college student to 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. (Three hours per week plus a minimum of six practice hours)

**SO 131. BEGINNING SHORTHAND** . . . . . 4 credit hours

This is a course in Gregg theory principles designed for the student to develop shorthand skills in reading, writing, and transcription. In addition there will be emphasis on vocabulary building, spelling, punctuation, and the application of the rules of grammar. (This is a 4 credit/5 contact hour course.)

**SO 132. INTERMEDIATE SHORTHAND** . . . . . 3 credit hours

Prerequisite: SO 101 Typewriting and SO 131 Shorthand or equivalent

The intermediate shorthand course is designed to review Gregg theory and strengthen the student's grasp of major shorthand principles in order to develop dictation and transcription skills. (This is a 3 credit/4 contact hour course.)

**SO 151. INFORMATION PROCESSING PRINCIPLES** . . . . . 3 credit hours

A study of the basic principles and concepts of the information processing function in modern business-industrial enterprises. Development of basic insights into the growth, objectives and methods of information processing. Included are basic terminology and concepts of information processing applications, systems design, basic memory, and storage types.

**SO 152. INFORMATION PROCESSING TRANSCRIPTION SKILLS** . . . . . 3 credit hours

Prerequisite: High school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent.

An integrative approach to the study and application of current dictation/transcription practices found in the modern business office. The course will emphasize mastery of the equipment as well as mastery of transcription skills essential to quality correspondence. These skills will be stressed in the attainment of acceptable productivity standards. (This is a 3 credit/4 contact hour course.)

**SO 153. INFORMATION PROCESSING APPLICATIONS/BASIC PRACTICE** . . . . . 2 credit hours

Prerequisite: High school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent. (Minimum 35 wpm with 5 errors or fewer.)

An integrative, applied approach to the study of modern word processing designed to acquaint the student with the use of automated word processing equipment as it relates to business, industry, and other specialized fields. Skill development and speed building in creating, editing and printing documents are emphasized. (This is a 2 credit hour/7½ week course.)

**SO 200. INDEPENDENT DIRECTED STUDY** . . . . . 1-3 credit hours

**SO 203. ADVANCED TYPEWRITING** . . . . . 3 credit hours

Prerequisite: SO 101 and 102 Typewriting or equivalent. (Minimum of 45 wpm with 5 errors or fewer for 5 minutes.)

Advanced typewriting is designed to build on the foundations of earlier training in correspondence, reports, and tables. Increasing with difficulty of material, the student will have a variety of specialized office-typing tasks and business forms to complete. Students make decisions that govern attractive placement or layout of materials. The student does independent work, matching employment conditions. Significant amounts of edited and longhand materials are included. (This is a 3 credit/4 contact hour course.)



**SO 210. MEDICAL TRANSCRIPTION** ..... 3 credit hours

Prerequisite: SO 102 or equivalent

An introductory course in medical terminology and medical transcription for students who are proficient in typewriting. Emphasis is placed on basic transcription techniques in order for the student to acquire a thorough knowledge of dictation/transcription equipment. The course familiarizes the student with a broad base of medical terms and the basic types of medical reports. (This is a 3 credit/4 contact hour course, plus a minimum of 4 weekly machine hours)

**SO 214. INFORMATION PROCESSING APPLICATIONS/ADVANCED PRACTICE** ..... 3 credit hours

Prerequisite: SO 153 and high school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent

An advanced practice in information processing applications as they relate to business and industry and other specialized fields such as law. Skill development and speed building in transcribing, revising, and printing finished information processing assignments are emphasized. (This is a 3 credit/4 contact hour course.)

**SO 223. MEDICAL OFFICE PROCEDURES** ..... 3 credit hours

Prerequisite: SO 102 or equivalent

This course covers secretarial responsibilities in a medical office or hospital. Included are appointments, patient records, pegboard book-keeping, telephone procedures, credit and collection procedures, and medicolegal considerations. Medical insurance will be studied, and the student will complete forms for Blue Cross/Blue Shield, Medicare, Medicaid, Workers' Compensation, CHAMPUS and private insurances using the proper coding system. (This is a 3 credit/4 contact hour course, plus a minimum of 4 practice hours.)

**SO 224. INFORMATION PROCESSING FOR MEDICAL SPECIALIST** ..... 2 credit hours

Prerequisite: SO 152 or 210, SO 153 and high school typewriting or concurrent enrollment in SO 102 or equivalent

Advanced practice in information processing applications as it relates to medical offices, hospitals, and other medical related fields. Skill development in document formatting, revising, printing, and list processing is emphasized.

**SO 225. INFORMATION PROCESSING SYSTEMS AND PROCEDURES** ..... 3 credit hours

Prerequisite: SO 151, SO 152, SO 153, SO 214 and high school typewriting

proficiency or concurrent enrollment in advanced typewriting or equivalent.

Practical study of the fundamental systems and procedures comprising the information processing center. Emphasis 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 the other business systems. Includes information processing alternatives, equipment and needs surveys, organizing and implementing information processing, and management and control of the information processing function. (This is a 3 credit/4 contact hour course.)

**SO 231. ADVANCED SHORTHAND (DICTATION/TRANSCRIPTION) . . . . . 3 credit hours**

Prerequisite: SO102 Typewriting and SO 131 and SO 132 Shorthand or equivalent

The third course in Gregg Shorthand dictation and transcription emphasizes the improvement of shorthand speed and developing mastery of techniques directly related to transcription. (This is a 3 credit/4 contact hour course.)

**SO 250. OFFICE SYSTEMS AND PROCEDURES . . . . . 4 credit hours**

Prerequisite: Two-year high school typewriting proficiency or concurrent enrollment in SO 203 or equivalent. SO 107 Clerical Methods and Procedures is recommended.

A practical study of the fundamental systems and procedures comprising the modern business office. This is the capstone of the secretarial program. As such, it covers most of the operational functions of the secretary that have been changed by technology. This course emphasizes the development of decision-making ability, time management, the setting of priorities, and good human relations. Included also are those tasks expected of the executive secretary or administrative assistant: making travel arrangements, preparing conferences and meetings, handling financial and investment reports, and presenting statistical information. Because competent secretaries today must become "word specialists," continuing importance is given to the area of effective communications.

## **SOCIOLOGY (SOC 09)**

**SOC 100. PRINCIPLES OF SOCIOLOGY . . . . . 3 credit hours**

Introduces students to unique ways of understanding and explaining the connection between self and society, the patterns of human relationships,

social organization, and institutions: how they began, how they are maintained and transmitted, and how they are changed. Sociological study begins with the notion that we think, feel, and act as we do because of what we learn and observe and because of invisible social forces that pressure us to make choices to conform or to deviate. Scientific methods are then used to uncover the normative principles and relativistic complexity of human behavior and social arrangements, events and processes, as well as socio-cultural changes. This course is also taught as a television course using the series "Focus on Society."

**SOC 102. BLACK WOMAN . . . . . 3 credit hours**

Inner and outer mechanisms of Black women throughout our history. Role of the Black woman examined in areas of society; the family, the church, politics, community, education, etc. All these factors considered in determining how Black women's roles differ from those of other women.

**SOC 150. MARRIAGE AND THE FAMILY . . . . . 3 credit hours**

This course examines the principles, practices, and problems of mate selection, marriage and family and singleness. Main themes will focus on how socio-cultural, technological and economic changes are reshaping marriage and family relationships, sexuality, and single lifestyles; how social and personal factors influence choices in interpersonal relationships, childbearing, communication and conflict. Some issues to be discussed are family planning, single-parenting, cohabitation, divorces, childcare, sex education, abortion, and spouse abuse.

**SOC 154. THE BLACK FAMILY . . . . . 3 credit hours**

Structure and functions of the Black family as a dynamic social organization. An analysis 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 . . . . . 1-8 credit hours**

Prerequisite: Consent of instructor

Directed activities in Sociology. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

**SOC 201. MEDICAL SOCIOLOGY . . . . . 3 credit hours**

This course uses sociological and social-psychological concepts to account for the differences in getting sick, getting care, getting well, and staying well. The role of patients, providers and policies are examined through a combination of theory, research and practical applications.

Specific topics to be covered include: socio-cultural definitions and distributions of illness and health; taking the sick role and seeking and using health service; lifestyle, stress and illness; patient-practitioner relationships; socialization and training of health workers; health care services, hospitals, agencies and insurance. Issues include: escalating costs versus benefits, consumerism, self-help movements and prevention, death and dying, medicalization of deviance, care of needy groups, professionalization, drug industry, and bio-medical technology.

**SOC 202. CRIMINOLOGY** . . . . . 3 credit hours

An examination of the theories which attempt to explain criminal behavior. Punishment versus rehabilitation schools of thought 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

This course examines the social and social-psychological aspects of the aging process and responses to it. Topics center on the policies, practices and principles of aging and include: socio-cultural attitudes towards aging, the social demography of aging, retirement, role changes and adult socialization, adaptive challenges; social responses: living environment, economic and political participation, sexuality, family life and social support, health experiences, government and community services, victimization, elderly minorities. Various issues are addressed: intergenerational conflicts, drug abuse, institutional care, prolonging life, elderly rights, ageism, gerontocracy and political activism, medicare and social security.

**SOC 205. RACIAL AND ETHNIC RELATIONS** . . . . . 3 credit hours

Examination of the basic concepts of racial and ethnic relations and the concept of race. 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

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 their 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**

The social forces that played a role in developing the urban setting, with particular emphasis on the role of the Afro-American. Focus on the migration movement as the first stage in the development of urban and racial crises as factors in the urbanization of Blacks. Detroit will be examined as a case study with references to Chicago, Washington, St. Louis and others. The course will treat and analyze social, political and economic forces that created the urban ghettos. The organizing conceptual framework is Black urban history as a protracted struggle. Emphasis on Black ideological and institutional development.

**SOC 211. DEATH AND DYING . . . . . 3 credit hours**

This course is a study of social and social-psychological aspects of death and dying. Topics center on policies, practices and principles related to the socio-cultural attitudes and meanings of death and dying, personal responses: dying experience and coping, survivor's grieving process, death denial and preparation. The societal responses are also studied: institutional practices, caring for the dying, burial practices and the funeral industry, psychosocial functions of the funeral, economic aspects of dying, professional care-givers role.

**SOC 250. JUVENILE DELINQUENCY . . . . . 3 credit hours**

The growing-up process of late childhood and adolescence from a sociological and cultural viewpoint. 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.

**SOC 260. WOMEN IN TODAY'S WORLD . . . . . 3 credit hours**

This course is designed to help students develop an awareness of woman's position in today's world and to identify the economic consequences of that position. Among topics included in discussion are: identity, marriage as a contract, legalities and economics of divorce, women in the work force, benefit programs, political action and women's legal status and rights.

**SOC 263. HEALTH CARE ISSUES . . . . . 3 credit hours**

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.

**SOC 266. MARRIAGE-DIVORCE . . . . . 3 credit hours**

Structural-functional analysis of family institutions and relationships



between social structure of society and family system; change and comparative analysis are emphasized.

## **SPANISH (SPN 21)**

### **SPN 111. FIRST YEAR SPANISH I . . . . . 4 credit hours**

A beginning course in Spanish using the conversational approach. Spoken language mastered through classroom and laboratory practice. Cultural aspects of Spain and Latin America highlighted.

### **SPN 112. SPANISH LAB I . . . . . 1 credit hour**

Prerequisite: Current enrollment in SPN 111

This course is intended to augment Spanish 111. Students will work in a supervised language lab with taped materials which correlate to the lessons in their texts and workbooks. Students intending to transfer will be offered accelerated materials as well as supplemental listening aids that include both music and literature.

### **SPN 115. SPANISH FOR NURSES . . . . . 2 credit hours**

A practical course designed to help students gain proficiency in the pronunciation and basic structure of the language while making use of vocabulary that is unique to nurse-patient situations.

### **SPN 118. FOCUS-LATIN AMERICA/SPAIN . . . . . 1 credit hour**

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. Course will involve students' individual experiences, expertise and research. A bilingual approach.

### **SPN 119. SPANISH LANGUAGE ADVENTURES . . . . . 1 credit hour**

A course of independent study to be undertaken during any of the College field trip "Adventures" to Spanish speaking countries and their centers of culture. Students will live in the individual 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**

Conversational in approach and assumes no previous knowledge of the language. 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. 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 111, its equivalent or consent

Continuation of Spanish 120. Provides vocabulary expansion and cultural insights through total student involvement in the conversation practice sessions in this flexibly structured course.

**SPN 122. FIRST YEAR SPANISH II** ..... 4 credit hours

Prerequisite: SPN 111 or SPN 120 or equivalent

Continuation of Spanish 111. Emphasis on the spoken form and on the cultures of Latin American countries and Spain

**SPN 123. SPANISH LAB II** ..... 1 credit hour

Prerequisite: Current enrollment in SPN 122

This course is intended to augment Spanish 122. Students will work in a supervised language lab with taped materials which correlate to the lessons in their texts and workbooks. Students intending to transfer will be offered accelerated materials as well as supplemental listening aids that include both music and literature.

**SPN 213. SECOND YEAR SPANISH I** ..... 3 credit hours

Prerequisite: SPN 122, its equivalent or consent

An intermediate course in Spanish using the conversational approach. First year emphasis on spoken form and culture reviewed. Attention given to the written form.

**SPN 224. SECOND YEAR SPANISH II** ..... 3 credit hours

Prerequisite: SPN 213, its equivalent or consent

Continuation of Spanish 213 with special attention to Latin American and Spanish literature.

## **SPEECH (SPH 23)**

**SPH 101. FUNDAMENTALS OF SPEAKING** ..... 3 credit hours

Instruction in essential speech processes and skills. Organization of speeches and effective delivery 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 larger group or to an unfamiliar audience.

**SPH 131. RADIO-TELEVISION SPEECH . . . . . 3 credit hours**

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 broadcast forms, views, interviews, features, commercials and music continuity. Basic oral reading techniques and a brief introduction to the International Phonetic Alphabet.

**SPH 140. VOICE IMPROVEMENT FOR BUSINESS AND PROFESSION . . . . . 1 credit hour**

An introduction to contemporary scientific and linguistic theory of the human speaking voice. 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 as it must be controlled for effective use on the microphone and telephone.

**SPH 152. ACTING FOR THE THEATRE . . . . . 3 credit hours**

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.

**SPH 189. STUDY PROBLEMS IN SPEECH . . . . . 1-8 credit hours**

Prerequisite: Consent of instructor

Directed activities in Speech. These activities are individualized. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

## **STUDENT PERSONNEL SERVICES (SPS 07)**

**SPS 100. CAREER PLANNING SEMINAR . . . . . 3 credit hours**

Designed for persons undecided in their career and life goals and interested in exploring alternatives to current careers or who are interested in clarifying tentative decisions. This course provides opportunity for participants to become more aware of themselves and others and to become knowledgeable of careers, career alternatives, employment trends and issues and projections. Also provides opportunity for participants to develop and/or refine job hunting skills. Participants gather, evaluate and utilize appropriate career information to assist in planning, narrowing and implementing realistic career and life goals.

**SPS 102. INDEPENDENT STUDY—  
CAREER PLANNING . . . . . 1 credit hour**

Independent Study course is designed for persons undecided about their career and life goals and unable to come to campus regularly for a group course (see SPS 100). At their own pace, participants complete a series of

exercises and activities to learn about their goals, interest, skills, abilities, and values, to explore occupations and to learn decision-making techniques. Participants write a summary career plan upon completion and meet for consultation with instructor three times during the period of independent study. (Hours arranged on an individual basis.)

**SPS 189. STUDY PROBLEMS** ..... 2-8 credit hours

Prerequisite: Consent of area coordinator

Directed activities in major occupational and selected general education areas; a period of concentrated effort to an assigned problem working with faculty or a recognized specialist in the occupation; the demonstration of the individual's understanding and skill development within the selected occupation or area.

## **TECHNICAL AND COMMERCIAL ART (TCA 73)**

**TCA 100. PERSPECTIVE AND PARALLEL  
PROJECTION** ..... 4 credit hours

Development of ideas by three dimensional drawing techniques. Emphasis on the fundamentals of oblique, one point, isometric, two points and three point perspective projection. Projects utilizing parallel and perspective projected shadow construction emphasized. (6 hours per week)



**TCA 101. TECHNICAL ILLUSTRATION** ..... 4 credit hours

Prerequisite: TCA 100 or consent

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, section and phantom drawings used by automotive, aircraft and electronics industries. (6 hours per week)

**TCA 103. FASHION ILLUSTRATION** ..... 2 credit hours

More than just a fashion review, the course will cover: figures and fashion, fashion research, constructing an art portfolio, fabric rendering, color rendering, and fashion newspaper advertising. (4 hours per week)

**TCA 120. COMMERCIAL RENDERING** ..... 4 credit hours

Prerequisite: TCA 100 or consent

An introduction to the various materials and rendering techniques used by the commercial artist. Rendering of commercial illustrations with water colors, acrylics, pastels, colored pencils, pen and ink. (6 hours per week)

**TCA 122. TECHNICAL RENDERING** ..... 4 credit hours

Prerequisite: TCA 100 or consent

Fundamentals of rendering techniques and the various compatible materials used in industry by the technical illustrator. Directed projects in parallel and perspective shadow construction. Stipple, smudge and French rendering of geometrics. (6 hours per week)

**TCA 231. INTRODUCTION TO SCIENTIFIC ILLUSTRATION** ..... 2 credit hours

An introduction to scientific illustration: includes a technique for accurate drawing (vs. freehand sketch) as well as overview of different rendering styles. (3 hours per week)

## **TRADE RELATED INSTRUCTION (TRI 80)**

**TRI 092. REVIEW FOR APPRENTICE TEST** ..... 4 credit hours

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.

# WELDING AND FABRICATION (WF 71)

## **WF 100. FUNDAMENTALS OF WELDING** . . . . . 2 credit hours

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 made in a laboratory setting. (4 hours per week)

## **WF 101. ACETYLENE WELDING** . . . . . 2 credit hours

Designed for students who need a knowledge of oxy-acetylene welding and a degree of skill required by industry. Primarily for students whose occupations are associated with welding. (4 hours per week)

## **WF 102. ARC-WELDING** . . . . . 2 credit hours

An introductory course in arc welding covering theory and practice: proper procedures for various welding positions; both A.C. and D.C. welding is covered; electrode identification, classification and proper applications to typical operations. (4 hours per week)

## **WF 103. HELI-ARC WELDING** . . . . . 2 credit hours

Instruction given in tungsten, inert gas, shielded arc-welding, with manually operated torch on such metals as aluminum, stainless and mild steels; includes theory directly related to the composition and properties of these metals. (4 hours per week)

## **WF 104. SOLDERING AND BRAZING** . . . . . 2 credit hours

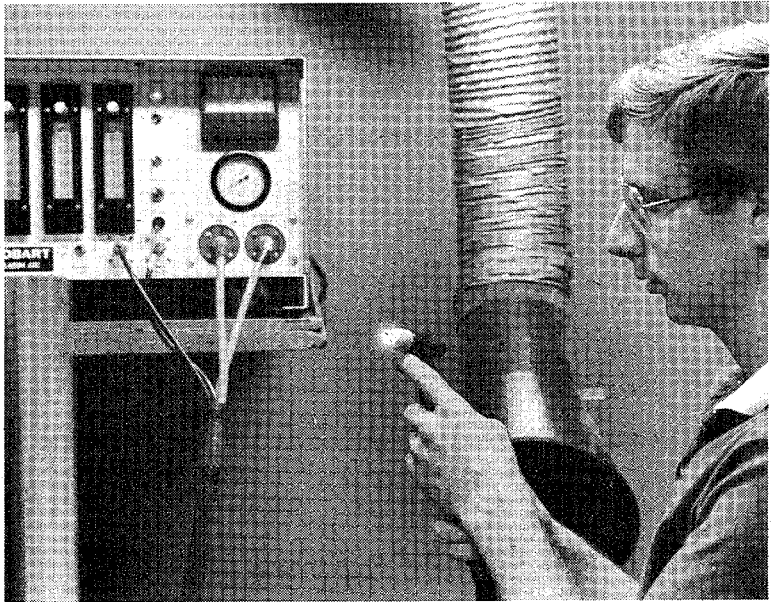
Course designed for basic knowledge of soft soldering, brazing, silver soldering, copper tubing and fittings, brazing of steel, silver soldering of copper and stainless. Practical application included.

## **WF 111. WELDING (BASIC OXY-ACETYLENE)** . . . . . 4 credit hours

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 emphasized. (8 hours per week)

## **WF 112. WELDING (BASIC ARC)** . . . . . 4 credit hours

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 included. Safety procedures stressed. (8 hours per week)



**WF 123. WELDING (ADVANCED OXY-ACETYLENE)** . . . 4 credit hours

Prerequisite: WF 111

Advanced instruction in oxy-acetylene welding with emphasis on "out of position" welded joints. Procedures covered and put in practice for fabricative welded joints on steel plate and pipe. Related theory included. (8 hours per week)

**WF 124. ADVANCED ARC WELDING** . . . . . 4 credit hours

Prerequisite: WF 112

Advanced instruction in arc welding using both A.C. and D.C. arc welding equipment. Emphasis 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 included. (8 hours per week)

**WF 200. LAYOUT FOR WELDERS** . . . . . 2 credit hours

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 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 included. (3 hours per week)

**WF 210. WELDING METALLURGY . . . . . 3 credit hours**

Metal properties and identification properties through testing, effects of alloying element, specification use and application of mild steel, low steel alloys, stainless steel principles of electricity as they apply to different welding applications and heat treatment of metals. (3 hours per week)

**WF 215. ADVANCED T.I.G. AND M.I.G. WELDING . . . . . 4 credit hours**

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. (8 hours per week)

**WF 221. APPLIED AUTOMOTIVE WELDING . . . . . 1 credit hour**

Practice in the application of welding fundamentals with emphasis on cutting and brazing. (2 hours per week, 7½ weeks)

**WF 226. WELDING (SPECIALIZED) . . . . . 4 credit hours**

Prerequisite: Consent

Specialized oxy-acetylene welding, inert gas-shield arc and consumable carbon dioxide welding. Emphasis given aluminum, stainless steel, high alloy steels and cast iron. Procedures for welding of the exotic metals such as titanium, columbium, zirconium, and molybdenum included. (8 hours per week)

**WF 227. BASIC FABRICATION . . . . . 3 credit hours**

Prerequisite: Consent

For advanced welders planning to use their welding skills in manufacturing. 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. Includes estimation of material and labor costs.

**WF 229. SHAPE CUTTING OPERATIONS . . . . . 3 credit hours**

Prerequisite: Consent

The students will 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, the student will learn how to cut mild steel, aluminum, and stainless steel parts.



# WOMEN'S STUDIES (WS 06)

## **WS 102. GROWTH EXPERIENCES FOR WOMEN** . . . . . 1 credit hour

Growth Experiences for Women is a consciousness-raising, support therapy group in which emphasis is on the personal "ego" growth of women rather than on 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 each individual in the group.

## **WS 103. PSYCHOLOGY/BIOLOGY OF WOMEN** . . . . . 3 credit hours

An examination of the current experiences of women in our society through the exploration of history and theory and their cultural interpretation. Focus will be 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. HISTORY AND LITERATURE OF WOMEN** . . . . . 3 credit hours

A look at the role of women throughout the ages. An opportunity to explore the richness and variety of women's lives in history and literature.

## **WS 105. WOMEN AND THE LAW I** . . . . . 1 credit hour

A look at the topics of credit, discrimination, employment, insurance, ERA. Emphasis will be on individual cases and the process involved in making laws.

## **WS 109. WOMEN'S HEALTH CARE** . . . . . 3 credit hours

Patient's rights, malpractice, natural childbirth, menopause, birth control research, medical experimentation, prescription drugs, doctor/patient relationship, breast self-exam, unnecessary surgery, 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

A more in-depth look at the topics covered in "Women and the Law." Discussions of credit, discrimination, employment, insurance, ERA. Emphasis on individual cases and the process involved in making laws.

**WS 115. ASSERTIVENESS TRAINING FOR WOMEN** ..... 3 credit hours

Teaches non-aggressive means of reducing fears, resolving conflicts, expressing likes and dislikes more fully, experiencing personal rights, increasing self-respect.

**WS 121. WOMEN AND RELIGION** ..... 1 credit hour

A study 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 will be looked at.

**WS 122. IMAGES OF WOMEN IN MYTHOLOGY** ..... 2 credit hours

Participants will have an opportunity to investigate how women are presented in classical myths and to better understand how current attitudes about women have been influenced by these myths. Emphasis on ancient times.

**WS 123. ADVANCED ASSERTIVENESS TRAINING** ..... 1 credit hour

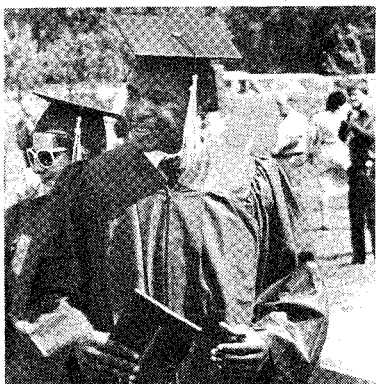
Opportunity to take an advanced look at particular areas of desired assertiveness than that provided in SS 115. Behavior rehearsed, discussion and films will be used. Previous experience with assertion training necessary.

**WS 203. ADVANCED WOMEN'S STUDIES SEMINAR** ..... 2 credit hours

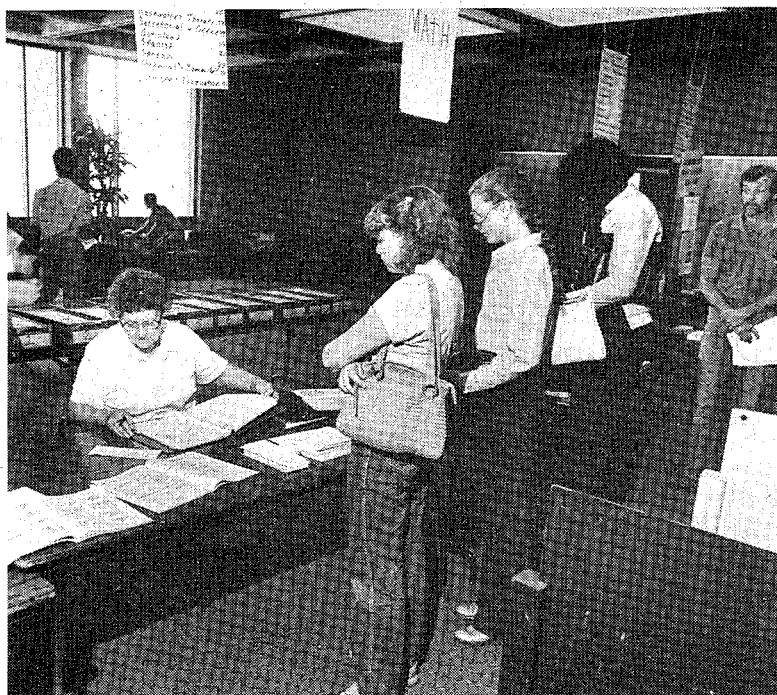
Prerequisite: WS 103 or equivalent

A more in depth examination of specific experiences of women in our society through the continued exploration of history, theory and their cultural interpretation. Course includes readings, discussions and lectures.





# GENERAL INFORMATION



## **ENROLLMENT INFORMATION**

### **Admissions and Registration (973-3543 and 973-3548):**

Any person who has graduated from high school or is 18 years of age may be admitted to Washtenaw Community College.

Washtenaw Community College is open to all individuals who can benefit from the College's instructional and service programs. The focus is on the individual's career and life goals rather than on his or her previous educational background. The College seeks to create an admissions assistance process where those interested in attending the College can learn about College programs and assess their own academic, career and life goals. This service is available without charge, and the individual is then free to decide whether College programs are available which match these goals.

### **Admissions Criteria:**

Any person who has graduated from high school or passed the GED examination may be admitted. Persons 18 or older who are not high school graduates may be admitted to specific classes, but are encouraged to visit with a counselor before enrolling. Persons under 18 years of age who have passed the GED examination may be admitted with the recommendation of their high school principal. Any person, regardless of experience or educational background, is encouraged to visit with a counselor to learn about services the College can provide.

Applications for admissions can be made any time during the year and throughout the registration period. However, students are encouraged to apply by July 15 for Fall, November 15 for Winter, and March 15 for Spring/Summer semesters in order to register at an earlier date.

The application is considered complete when the application form is received by the College and the \$10.00 application fee has been paid. This fee is non-refundable and paid only once, no matter how many times one enrolls in classes at the College in the future. This enables a student to take any course or program at the College with the exception of some programs in the Allied Health Occupations which have special admissions requirements. Information on these requirements is available by calling the College Admissions Office (313)973-3596.

The procedure for applying for admission is simply to contact the Admissions Office by telephone (313)973-3543 for an application blank or to come in person to the Office on the second floor of the Student Center Building. Fill out the application and pay the \$10.00 fee. If formal registration has begun, the fee can be paid at the same time tuition is paid.

### **Books and Supplies:**

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.

**Fees:**

Tuition is \$29.00 per credit hour for in-district residents; \$46.00 per credit hour for out-of-district but in-state residents; \$60.00 per credit hour for out-of-state residents. Tuition is subject to change.

Throughout the year many non-credit workshops and programs which run from several hours to a semester in length are offered. Tuition for these courses is determined by the subject content and the length of the course.

The only other fees are the \$10.00 application fee for new students only and, for those who register after the regular registration period, a \$5.00 late registration fee. Both are non-refundable. A processing fee is charged to students who have registered but who withdraw completely from the College prior to the first day of class.

The College provides scholarships for all types of students including those just out of high school and those who are reentering school. The College has monies available through Federal Financial Aid Programs. Students interested in applying for any type of scholarship or financial aid can apply at the Financial Aid Office, Room 221, Student Center Building or by calling (313)973-3523 for further information.

In addition the College provides an Emeritus Scholarship Program for retired persons living in Washtenaw County. These scholarships make it possible for adults, 60 or over, to participate in College courses without cost, other than books. Applications and information can be obtained from the Admissions Office, Room 221, Student Center Building or by telephone at (313)973-3543.

The College reserves the right to change tuition and fees without advanced notice.

**General Requests:**

1. Please register for yourself.
2. Please be prepared to pay tuition in full at the time of registration. MasterCard and Visa (BankAmericard) are accepted. Problems regarding tuition payment should be directed to the Financial Aid Office.
3. Please have schedule approved by a counselor or advisor before going to registration area.

**High School Students:**

High school juniors and seniors may take daytime, evening, weekend, or spring-summer classes for college credit or for units to be counted toward the high school diploma.

High school students enrolled under this program must be assigned to and work consistently with a WCC counselor. Students will be allowed to enroll for a maximum of six (6) credit hours. Application for admission must be initiated through the high school, signed by the high school principal, and forwarded to the WCC Admissions Office. (See discussion of advanced placement for further information.)

**High School Contractual Arrangements:**

It is the intent of Washtenaw Community College to permit College district high school seniors and juniors to take courses at the College as an enrichment to their high school program through the financial sponsorship of the school district. Such arrangements shall be initiated by the individual school district.

**Late Registration:**

Late registration will be held beginning the first day of classes and continue for five days during the Fall and Winter semesters; it continues for three days for the Spring/Summer sessions. A special late registration period is scheduled on several evenings for those students who cannot register during the day.

A \$5.00 fee is charged those who register late.

Students who feel they can only register late should report to their advisors or to the Counseling Office for approval of their programs. An Add Card must be completed for each late course request. This should be filled out before registering and should include the instructor's signature.

Late student registration is not considered complete until the late fee and the tuition are paid. Valid copies of Add Cards (stamped with the Registrar's name) need to be presented to the instructor by those who register late for a class.

**New Student Orientation:**

A registration orientation session is set up prior to each semester for all new students to attend. During this required session, counselors will assist students in selecting and scheduling courses. These registration sessions are scheduled at a variety of times to accommodate the busy schedules of prospective students.

**Readmission:**

Former students who have not registered for classes at Washtenaw Community College for one (1) full semester (Spring and Summer Session excluded) must complete an Application for Readmission to reactivate and update their files.

**Returning Students:**

All returning full-time students must have a registration form signed by an advisor or a counselor before registering.

**Registration Changes**

Students are expected to complete the courses in which they register. If a change is necessary, it should be done as follows:

### **Refunds:**

All refunds **must be initiated by the student**, including refunds of cancelled classes and all residency changes. In the case of an official drop prior to the end of the drop/add period, the student may claim a 100% refund. The student may claim 75% refund of tuition paid if the drop or withdrawal is made during the next five days of the semester. A 50% refund may be claimed for drops or withdrawals after the tenth day and before the twentieth day of the semester. In the case of complete withdrawal prior to the beginning of the semester the student may claim 100% refund less a processing fee of \$10.00. A check for your refund will be sent to you within 4 to 6 weeks. NOTE: Students dropping and adding after the official drop/add period (100% refund) must pay the difference if they wish to drop and add classes.

Example:	4 credit drop 75%	=	\$ 87.00
	4 credit add	=	116.00
	Student pays		<u>\$ 29.00</u>

Exceptions to this are cancelled classes, or instructors shifting student to higher or lower levels of classes (i.e. Mathematics, English, Reading).

### **Drops and Adds:**

During the official drop and add 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. Students should retain copies of any transaction until final grades or refunds are received.

Generally, the following rules apply:

**To Add a Course:** Students should have their added courses approved by their advisors or counselors. An Add Card must be completed for each course request, prior to reporting to the Late Registration Area. An added course will be accepted on a space available basis during the official drop and add period. Afterwards, the signature of the appropriate instructor and dean is also required.

A student is not registered in a class until the Add Card has been accepted in the Registrar's 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.

**To Drop a Course:** A student is not officially dropped from the class until the Drop card is accepted in the Registrar's Office.

**Changing Sections:** Students changing from one section to another of the same course, may complete the process within the Late Registration Area.

Students will be added on a space available basis and instructor approval is required after the Drop/Add period.

**Adjustment of Tuition:** If the adding or dropping of courses changes the total number of credits in which the student is enrolled, an adjustment of tuition is made according to the policies for assessment of tuition and refunds as shown under Tuition, Fees, Refunds, and Residence Policy section of this catalog.

### **Registration Withholds:**

Students will be withheld from registering if they have failed to meet their financial responsibilities to the College or have been disciplined. Any withhold must be cleared with the office issuing it before registration may be completed.

### **Residency Policy:**

Students enrolling at Washtenaw Community College shall be classified in-district, out-district, or out-of-state for purposes of administering tuition charges.

### **Classification of Residency:**

The following regulations are set forth as the major points which govern the determining of residency status:

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

- Independent applicants who have resided in
  - Applicants who live *with* and whose spouse has resided in
  - 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 as a non-student immediately prior to enrollment if previous residency was within Michigan
  - 6 months as a non-student 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 are legal residents of the State of Michigan for at least six months.

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

### **Aspects of Residency:**

A student's legal residency is the basis for the determination of the appropriate tuition rate. Tuition rates are not determined on the basis of the location of owned property which is not the student's legal residence.

Students whose families move out of the college district or out of Michigan during the time he or she is a student may retain their current residency status as long as they are continuously enrolled in successive fall and winter semesters.

An in-district student will not lose residency by marrying an out-district or out-of-state student during the time he or she is continuously enrolled at Washtenaw Community College for successive fall and winter semesters.



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.

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.

Students cannot gain residency for the purpose of attending Washtenaw Community College while enrolled as students at another college or university. If a person has come to the college district primarily for the purpose of becoming a student and not as a permanent resident, in-district status will not be granted.

Anyone who moves into the district and works full-time for thirty (30) days immediately prior to enrollment qualifies for in-district rates for that semester/session. Appropriate documentation of employment has to be supplied at the beginning of each semester. Such documentation should substantiate legal residence and that the person worked full-time thirty (30) or more days prior to enrollment. Spouse and dependents will also qualify for in-district rates. After working full-time for sixty days for out-district students (or six months for out-state students), the residency status can be changed officially by supplying proof of full-time employment and legal residence.

Students who are employed full time by an in-district company may pay in-district tuition rates at the time of registration providing they have 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 30 or more days prior to enrollment. If such students attend Washtenaw Community College without documentation from their company/industry, tuition rates will be determined by their legal residency.

#### **Change in Out-District or Out-of-State Classification:**

Students who feel they are entitled to in-district or out-district residency classifications may petition the Admissions Officer, stating their reasons, with supporting documents, why their residency classifications should be changed. Any residency change after the eighth day of classes becomes effective the following semester.

#### **Billing:**

Students employed at in-district companies which pay tuition charges will be billed at the in-district rate. This does not affect the residency of the student, and when the student discontinues employment at an in-district company, tuition charges will be based on legal residence.

#### **Admission for International Students:\***

Proof of visa status is required upon applying.

**Student Visa:** A person on a student visa cannot be admitted.

F-1—An International student supported by private funds cannot be admitted.

A-1, A-2 (Diplomatic Visa)—can attend full-time.

B-1 (Business Visa)—can attend part-time. Immigrant Visa—can attend full-time.

B-2 (Visitor Visa)—can attend full-time.

F-2—The spouse of the F-1 student can be admitted on a part-time basis.

G-4 (Work Visa)—can attend part-time.

H-3 (Trainee Visa)—can attend part-time.

I-94 (Refugee)—can attend full-time.

J-1 (Exchange Visitor)—can attend full-time.

J-2 (Spouse Visa)—can be admitted on a part-time basis.

**International Students on "Guest" Status:** Washtenaw Community College may accept International Students (F-1) as "Guest" students for the Spring/ Summer Sessions subject to the following provisions:

a) Accepted on "Guest" status only.

b) All counseling, advising or financial assistance must be done by the "home" institution.

c) Student must demonstrate ability to communicate in the English language. A personal interview may be requested by the Admissions Officer prior to acceptance.

d) Student must be assessed the out-state tuition.

e) No certification of attendance will be made other than transcript of record.

The Admission policy for International Students is currently under review by the Washtenaw Community College Board of Trustees. Contact the Office of Enrollment Services for revised policy and procedures regarding International Student Admission.

### **Student Classifications:**

A **Full-time Student** is one who enrolls in twelve or more credit hours (six or more for Spring or Summer sessions).

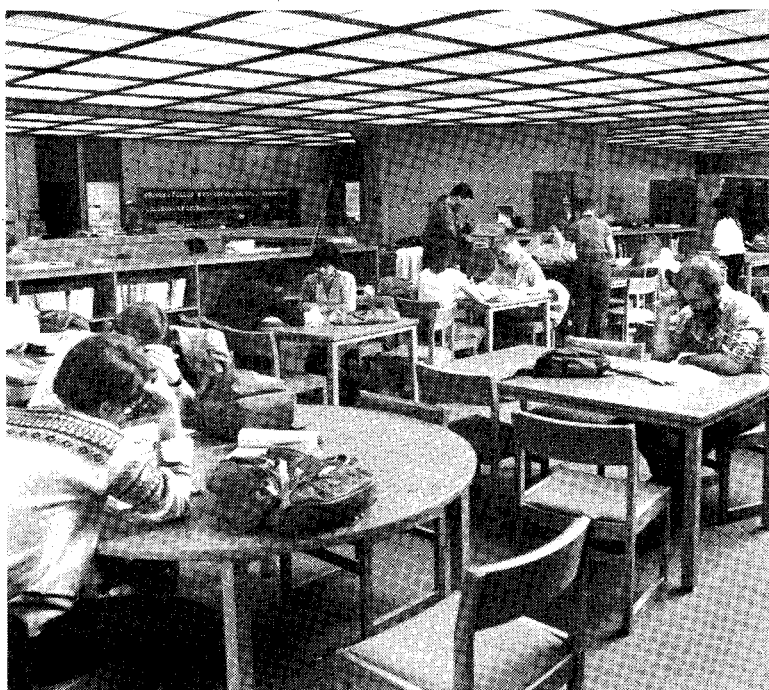
A **Part-time Student** is one who enrolls in less than twelve credit hours (six or more for Spring or Summer sessions).

A **Freshman** or **First Year Student** is one who has completed fewer than 28 credit hours.

A **Sophomore** or **Second Year Student** is 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.

A **Special Student** is one who is enrolled in classes but is not pursuing a degree or certification of achievement.

A **Transfer Student** is one admitted from an institution whose entrance requirements, programs, and grading systems are equivalent to those at WCC. Students transferring to WCC from other colleges and universities should submit their applications for admission and official transcripts in advance of the term they plan to enroll at WCC. That way an evaluation of credits can be completed before seeing a counselor for scheduling. These students may receive full credit for their past work in



which they earned a grade of "C" or better. Courses in the program not covered by equivalent work at the first college attended must be taken at WCC. An evaluation of transfer of credit will not be made until a student has been admitted to WCC. Acceptable course credits earned at another institution are recorded on the student's permanent academic record, but the grades and grade points earned are not transferred to this record. Only grades and grade points earned at WCC appear on the Washtenaw Community College academic record. Thus, only work completed at WCC is included in the WCC grade-point average.

***Guest Student at Another Institution*** is a WCC student who attends another institution as a guest student for short periods, either during the regular academic year or in the summer for the purpose of earning credit for transfer to WCC. Students planning to attend Michigan public institutions should use the Michigan Uniform Undergraduate Guest Application available from the host institution or from the Admissions Office at WCC. Applications must be completed and turned in to the Registrar's Office where the seal of the college will be imprinted. It is the responsibility of the prospective guest student to determine in advance the appropriateness of courses at the school to be visited in which he or she proposes to enroll. Assistance with this is available from Admissions Office personnel.

# CREDITS, GRADES AND POLICIES

## Credit:

All credit courses offered by the College are taught on a semester basis. Each course carries a designated number of credits. This number is based upon how many hours are required each week for the student to be in class or in laboratory. In most cases, one credit hour is earned by attending an on-laboratory class for fifty-five minutes, once a week for fifteen weeks. In a laboratory courses, one credit is granted for from two to four (fifty-five) periods per week in the laboratory.

## Credit Load:

The minimum full-time credit load is 12 credit hours. However, to complete a program in two years, most students need to take fifteen credits per term.

## Grades:

Washtenaw Community College uses a letter grade system for showing the degree of progress or the postponement of assigning a grade for a student.

Grades	Grade Points Per Credit Hour
A — Superior	4
B — Excellent	3
C — Average	2
D — Inferior	1
F — Failure	0
S* — Satisfactory	
U* — Unsatisfactory	051 numbered classes and below
I** — Incomplete; Credit Withheld	
W — Withdrawal	
DF*** — Deferred	
N — Non-Attendance	
V**** — Visitor or auditor	

\***Satisfactory 'S' or Unsatisfactory 'U'**: In courses numbered 051 and below or certain short courses the evaluation of a student's performance will be by the grade of 'S' (satisfactory) or 'U' (unsatisfactory). Honor points will not be given for these grades.

\*\***Incomplete Grade 'I'—Credit Withheld**: If for some reason a student has missed a final examination or has not otherwise completed all requirements for the courses as determined by the instructor, the instructor may issue an incomplete grade 'I'. The 'I' grade will remain on the student's permanent Academic Record until the requirements for the course are met. The 'I' grade will not be considered as a deficiency and is not figured into credits attempted or honor points.

\*\*\***Deferred Grade 'DF'—Credit Withheld**: In certain designated courses a student may be unable to complete the required work until the following semester. If in the opinion of the instructor the student is making normal progress, the 'DF' may be assigned. The student 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**: A student 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 Visitor except by re-enrollment for credit and completion of the course with a satisfactory grade.

### **Grade-point Average:**

Honor points or grade points measure the achievement of the student for the number of credit hours he or she has attempted.

Grade points are determined by multiplying the grade points per credit hour by the credit hour value of the course attempted. The following example will enable students to compute their grade-point average.

Divide the total grade points by the total credit hours attempted—34 divided by 17 = 2.00 grade-point average.

The cumulative grade-point average is the total number of grade points earned divided by the number of credit hours attempted. It includes the number of credit hours of 'F,' even though no grade points are allowed for this grade.

<b>Courses</b>	<b>Credit Hours Attempted</b>	<b>Final Grade</b>	<b>Grade Points</b>
English	3	B	3 grade points (3x3) = 9
History	3	F	0 grade points (0x3) = 0
Mathematics	3	C	2 grade points (2x3) = 6
Electronics	2	A	4 grade points (4x2) = 8
Physics	5	C	2 grade points (2x5) = 10
Speech	1	D	1 grade point (1x1) = 1
<b>TOTAL</b>	<b>17</b>		<b>34</b>

### **Policy for Release of Private Records:**

Effective November 19, 1974, pursuant to the Family Educational Rights and Privacy Act of 1974, as amended, any person who is or has been in attendance at Washtenaw Community College, shall have the right to inspect and review any and all education records directly related to that person after a request for access to such records has been made on the approved form and in accordance with the approved College procedure for such access. If any material or document in the educational record of a person includes information on more than one person, an individual shall have the right to inspect and review only such part of such material or document as relates to the individual or to be informed of such specific information contained in such part of such material. Access will be granted within a reasonable time but in no case more than forty-five days after the request has been made.

Release of educational records (or personally identifiable information contained therein) without the written consent of the student will not be made, except to the following:

1. Other school officials, including faculty within Washtenaw Community College, who have a legitimate educational interest;
2. Authorized representatives of government agencies in connection with the audit and evaluation of federally-supported education programs, provided that the collection of any personally identifiable data shall not include information which would permit the personal identification of such students after the data has been collected;
3. Organizations conducting studies for, or on behalf of, educational agencies or institutions for the purpose of developing, validating, or administering predictive tests, administering student aid programs, and improved instructions, if such studies are conducted in such a manner as will not permit the personal identification of students by persons other than representatives of such organizations and such information will be destroyed when no longer needed for the purpose for which it was conducted;
4. Accrediting organizations in order to carry out their accrediting functions;
5. Subject to regulations of the Secretary of Health, Education and Welfare in connection with an emergency, appropriate persons if the knowledge of such information is necessary to protect the health or safety of the student or other persons;
6. In compliance with judicial order or lawfully issued subpoena with notice to the student of such orders or subpoenas prior to compliance therewith; and
7. In connection with the student's appliance for or receipt of financial aid.

An appropriate hearing procedure will be established, in accordance with the regulations of the Secretary of Health, Education and Welfare to provide students with an opportunity to challenge the content of the student's educational records, in order to insure that the records are not inaccurate, misleading, or otherwise in violation of the student's privacy or other rights, and to provide an opportunity for the correction or deletion of any such inaccurate, misleading or otherwise inappropriate data contained therein and to insert into such records a written explanation of the student respecting the content of such records.

**Repeating a Course:**

A student who receives a grade of "D" or below may repeat the 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 student's permanent academic record.

Grades are issued at the end of each semester session. Final grades are mailed to the home address of the student.

**Request for Transcript:**

A student requesting that a transcript of his or her grades be sent to an educational institution or to a prospective employer must complete the

appropriate form in the Registrar's Office. There is a service charge of \$1.00 for each copy. Transcripts will be withheld from students if they have failed to meet their financial responsibilities to the College or for disciplinary reasons. Any withhold must be cleared with the appropriate office before transcripts are released. PLEASE NOTE: Please allow 4-5 days to process transcript requests.

A hold will be applied to the release of a transcript for any student who has any overdue indebtedness or other obligation to the College.

### **Scholastic Honors:**

Recognition is given to all students obtaining high scholastic achievement while attending the College.

*Dean's Honor Roll:* The Dean's Honor Roll honors all students in the College completing 12 hours or more during the Fall and Winter semesters. "S" and "U" grades are not included in the computation.

*Graduation Honors:* High scholastic achievement is recognized at graduation for students earning a 3.50 or better average for all work completed prior to the semester of graduation. Graduation with honors is indicated on the student's permanent record, the commencement program, and lists released to the press.

Students earning a 3.80 or better are designated as "High Honors."

## **ATTENDANCE AND EXAMINATIONS**

### **Student Evaluation (Examinations):**

Scheduled evaluations are an important part of the instructional program at WCC. Students should be prepared not only for final examinations, but for periodic tests covering various phases of instruction. The instructor will inform the student as to the time, place and other examination requirements.

### **Attendance:**

1. It is consistent with the College philosophy that regular class attendance is necessary if students are to receive maximum benefits from their work. Students are expected to attend all sessions of the classes for which they registered. The individual instructor may determine that the quality of the student's work has been adversely affected by absence or tardiness.

2. Students should explain the reason for the absence to their instructors.

3. It is the responsibility of the student to make up work missed because of any absence.

4. Students are required to be present at examinations in order to receive credit in a course.

***No person is allowed to attend a class unless officially enrolled on a credit or non-credit basis with the appropriate fees paid.***

**Withdrawal from the College:**

A student finding it necessary to withdraw from the College during the semester must initiate the withdrawal procedure in the Counseling Office.

Upon official voluntary withdrawal from the College, grades are assigned according to the Change of Enrollment section of this catalog.

In case of official voluntary withdrawal from the College, semester tuition and fees are subject to the refund policy shown under the Tuition, Fees, and Residency Policy section of this catalog.

A student who leaves the College during a semester without obtaining an official withdrawal may be reported as having failed all courses. The withdrawal procedure will not take place automatically for the student who leaves the campus because of illness, of either one's self or family member, but must be initiated by writing the Registrar's Office.

A student who leaves the College without withdrawing properly forfeits any tuition or deposits paid to the College.

**Dismissal:**

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

## **GRADUATION RECORD AND REQUIREMENTS**

**Graduation Requirements:**

To be eligible for the ASSOCIATE DEGREE a student must:

1. Complete a minimum of sixty credit hours (the last fifteen must be earned at Washtenaw Community College), including the specific subject or course requirements in the selected program. Certain programs may require more than the minimum of sixty credit hours—these must also be completed. Physical Education activity hours and credits in courses numbered 051 and below do not count toward graduation.





2. Complete three credit hours of English. (091 or 100 or 107 or 111 or 122)
3. Complete three credit hours of political science.
4. Earn a minimum cumulative grade-point average at Washtenaw Community College of 2.0.
5. File the Application for Graduation form at the time of registering for the final semester. This form is available from the Registrar's Office.
6. A second associate degree in an additional program area may be earned by re-enrollment and the completion of a minimum of fifteen credit hours, including all specific subject or course requirements in the selected program.

To be eligible for the CERTIFICATE OF ACHIEVEMENT a student must:

1. Complete a minimum of thirty credit hours (the last fifteen must be earned at Washtenaw Community College), including the specific subject matter or course requirements of the selected program. Certain programs may require more than the minimum of thirty credit hours—these must also be completed. Physical Education activity hours and credits in courses numbered 051 or below do not count toward graduation.

2. Complete three credit hours in speech or three credit hours in English.

3. Earn a minimum cumulative grade-point average at Washtenaw Community College of 2.0.

4. File the Application for Graduation form at the time of registering for the final semester. This form is available from the Registrar's Office. Certificates are available only in certain study areas.

Commencement ceremonies for all Washtenaw Community College graduates are held in the month of June. The conferring of Associate Degrees, the granting of Certificates of Achievement, and the giving of honors highlight the graduation exercises. Students receiving the Associate Degree or the Certificate of Achievement are requested to participate in the commencement.

A hold may be applied to the graduation for a student who has an overdue indebtedness or other obligation to the College.

Requirements for graduation may be completed during any semester or session.

### **Academic Record (Transcript):**

A report of the student's grades in each course is sent to the student at the end of each semester.

A permanent record of all student's courses, credits and grades earned is kept in the Registrar's Office. Students should maintain a record of courses, credits and grades each semester and check from time to time to see that their records agree with those of the College. The record may also help students determine their eligibility for any activity which requires them to meet specific scholastic standards. Copies of the permanent record are available to the student upon request and payment of a small service charge. Completion of graduation requirements will be indicated on a student's transcript.

## **FINANCIAL AID INFORMATION**

The Financial Aids Office at Washtenaw Community College exists to help students with financial difficulties they may encounter while attending Washtenaw Community College. The main function of the Financial Aids Office is to provide financial assistance to students who are in need of additional funds to attend college. Washtenaw Community College administers the major federal financial aid programs and provides support of the many state, institutional and private sources of financial assistance.

In addition to determining students' needs for monetary assistance and administering financial aid to students, the office also provides many other resources to students to help them exist on limited budgets while attending college, such as referrals to community agencies.

Students are invited to stop in to see the staff on the second level of the Student Center Building or to call (313) 973-3525, whenever they have any questions concerning financial assistance.

### **How to Apply for Aid:**

The bulk of financial aid awards are made to students in July and August, prior to the beginning of the Fall Semester. Students who wish maximum consideration for financial aid should have applications in the Financial Aids Office by the following dates, in order of priority: Fall Semester: June 1; Winter Semester: November 1; Spring-Summer Semester: March 1. Applications received after these dates will be processed only as staff time and funding allows.

Most programs of financial assistance at Washtenaw Community College are jointly sponsored with the federal government and are based on a student's financial "need." Need is determined by calculating a student's expected family contribution and subtracting this from the appropriate standard expense budgets, which include adequate minimum amounts for costs of tuition, books and supplies, transportation, room and board, and personal expenses.

### **Financial Aid Programs:**

A student must meet the following eligibility requirements to receive financial aid at Washtenaw Community College:

1. Must carry at least six (6) credit hours per semester.
2. Must be U.S. citizen or permanent resident.
3. Can receive aid for no more than six semesters at Washtenaw Community College.
4. Must be of undergraduate status.
5. Must show need.

In addition, different aid programs have specific requirements. In packaging aid for a student, the student is generally expected to accept some type of self-help—either a loan or a job—before grant aid is awarded.

**Pell Grant:**

This program provides direct student grants of up to \$2,000 minus expected family contribution. The maximum dollar value of these awards is also limited to 50% of the established school budget, or amount of demonstrated need, whichever is least. Priority is given to students who apply early.

**Supplemental Educational Opportunity Grant Program:**

The Supplemental Educational Opportunity Grant provides funds to supplement self-help resources such as loans and work for those who have greatest financial need. Students are eligible to receive SEOG funds only after all other sources of aid have been exhausted for that individual and if the student would be unable to attend the institution without the grant aid. The grant can meet up to one-half the student's financial need (up to \$1500) and must be matched by funds from another aid program controlled by the school. Students who complete the applications for financial assistance will be considered for the SEOG if they are eligible.

**Trustee Awards:**

Trustee Awards are scholarships made available by the Board of Trustees of Washtenaw Community College to assist students with financial need who may not be eligible for other types of financial assistance or who do not receive enough assistance from other sources to meet their entire financial need.

**Scholarships:**

Most academically-based scholarships at Washtenaw Community College come in the form of donations from groups outside the College who wish to help meet one or more students' educational costs. Only a few scholarships are available each year which are awarded through the college. Students are chosen for these scholarships on the basis of academic achievement and financial need as well as particular requests made by the donating group.

**National Direct Student Loan Program:**

The NDSL program provides loan funds of up to \$1500 per academic year and up to \$5000 for four years of study.

Repayment at 5% interest normally begins six months after a student ceases to be at least a half-time student in College, and may be extended over a ten-year period. Repayment deferment options are available if the student enrolls in another college or university or enters the Peace Corps, VISTA, or Military Service. In certain situations, a portion of the loan may be cancelled for full-time teaching in a formally defined "disadvantaged" school setting, full-time teaching of the handicapped, full-time educational position in an approved pre-school program, and full-time military service in an active combat zone.

Students must complete the application for financial aid and must demonstrate need to be eligible for the NDSL program.

### **College Work-Study Program (CWS):**

The College Work-Study Program provides jobs for students with financial need for up to twenty hours a week on the Washtenaw Community College campus or in nonprofit community agencies. This earn-while-you-learn program helps to provide many students with the financial resources to pay for the direct and indirect expenses necessary for attending college.

Students must complete the application for financial aid and must demonstrate need to be eligible for the College Work-Study Program.

### **Community Scholarships:**

**High School Honor Scholarships:** High School Honor Scholarships will be offered by Washtenaw Community College to each of the county high schools based upon student's academic performance and the type of activities in which they participated during their high school years. Each county high school will be granted one High School Honor Scholarship which will be for the cost of tuition for a Fall and Winter Semester, plus \$100.00 per semester for books and supplies.

Applications for the High School Honor Scholarship Program will be accepted from high school seniors during the Winter Semester. Selections will be made by May 15.

**Community Honor Scholarships:** Community Honor Scholarships will be offered by Washtenaw Community College to students selected from various communities. These Honor Scholarships will be for a period of one academic year (Fall and Winter Semesters). They will include the cost of tuition for the selected students as well as \$100.00 per semester for books and supplies.

Applications for the Community Honor Scholarship will be accepted during the Winter Semester or Spring Term and final selection will be made by June 15. Applicants will be asked to submit an application and a copy of their high school and college transcripts before May 15. Criteria for selection will consist of the following: (1) Significant contribution to community, (2) Previous grades (3) Vocational goals (4) Recommendation from community organizations or groups.

**Start-Up Scholarships:** A major goal of Washtenaw Community College is to provide educational opportunity for adults who are entering college several years after completing high school or other schooling. Some of these individuals need financial assistance in order to return to the mainstream of the educational system. In order to accomplish this, the college will provide "Start-Up" tuition scholarships to part-time students. Students may receive aid for a maximum of five credit hours. Each recipient will receive a tuition scholarship for the first semester of attendance only.

Selection of persons will be on the basis of financial need, demonstrated occupational objectives, and potential to succeed in a chosen career.

**Emeritus Scholarships:** This scholarship program is designed for persons over age 60 and retired. These scholarships would make it possible for retired persons to participate in college courses without cost.

#### **Student Expenses:**

Students are expected to live at a modest standard while attending college. Student budgets are determined yearly in an attempt to define realistic figures relating to student expenses in the Washtenaw County area.

Tuition is \$29.00 per credit hour for Washtenaw County residents, \$46.00 per credit hour for out-of-county residents, and \$60.00 per credit hour for out-of-state students. Books and supplies are estimated at \$200 for two semesters.

#### **Additional Programs:**

**Guaranteed Student Loan Program:** Provides loans to half and full-time students through lending institutions such as banks, which are guaranteed by the Michigan Department of Education against the borrower's death, permanent disability, or default. Application forms are obtained directly from a lender who participates in the program and is willing to make a loan to the particular student. The student completes the application and submits it to Washtenaw Community College which verifies enrollment, academic standing, etc. The Student Financial Services Office returns the forms to the lender which sends them to the Michigan Department of Education for guarantee approval. After approval, the student lender and Washtenaw Community College are notified if the loan is approved. Undergraduates may borrow a maximum of \$2,500 if full-time and \$1,250 if part-time. The maximum interest rate charged to the student is 8% simple interest which begins the day the loan proceeds are disbursed.

**Scholarships:** The State Scholarship Program currently measures academic potential on the basis of performance on the ACT Exam. Applicants with qualifying academic credentials are screened on the basis of financial need and other program requirements. Those found eligible may receive up to the amount of demonstrated need, the amount of tuition or \$1,200 per academic year, whichever is least.

**Washtenaw Community College Deferred Tuition Loan:** Deferred tuition loans are available to spread out tuition for students over the first four weeks of the semester. A down payment is required and the balance of the loan is to be paid within four weeks. Students must be able to demonstrate the ability to pay the tuition. Applications are available during the registration period in the Financial Aids Office.

#### **Housing:**

The College is primarily an institution for commuting students; therefore, no dormitory facilities are provided. A list of apartment locations available within a short distance from the College is available from the Information Center in the Student Center Building.

# TRANSFER AGREEMENTS AND ARRANGEMENTS

## State Articulation Agreement (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 requirements.

## 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 100  
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 course 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

#### **IV. Humanities**

##### **(3 courses in more than one discipline)**

Art .....	ART 101, 111, 112, 122, 130
Foreign Language .....	FRN/SPN 111, 122, 213, 224
Foreign Language (cont.) .....	FRN/SPN 120
Humanities .....	HUM 101, 150, 160
Literature .....	ENG 160, 170, 200, 211, 212
Literature (cont.) .....	ENG 213, 222, 223, 224
English .....	ENG 225, 230, 270
Music .....	MUS 140, 146, 152, 158, 180
Music (cont.) .....	MUS 183
Philosophy .....	PHL 101, 250
Religion .....	ANT 150
Speech .....	SPH 101, 131, 152

#### **Cleary College Agreement**

Cleary College and Washtenaw Community College have an agreement which provides junior level status to Washtenaw Community College graduates who transfer to Cleary College.

The articulation agreement provides that all of the courses an individual successfully completes at Washtenaw Community College will apply toward a Bachelor of Business Administration degree at Cleary. The student can then pursue a degree in Accounting, Secretarial Science or Management.

An associate degree represents the successful completion of 60 semester credit hours of college courses. At Cleary the student will take an additional 90 quarter term credits to complete the bachelor's degree. The total program can be completed in four years.

#### **Eastern Michigan University Agreements**

Eastern Michigan University and Washtenaw Community College have specific agreements which allow students who have earned Associate Degrees in various Occupational Education programs to transfer all credits toward a Bachelor of Science Degree at Eastern Michigan University. At the present time detailed agreements exist for 24 Occupational Education Programs.

#### **University of Michigan School of Natural Resources Arrangement**

The University of Michigan School of Natural Resources and Washtenaw Community College have an arrangement which allows students to take a course of study at the freshman and sophomore levels which can lead to a Bachelor of Science in Natural Resources degree. Students can enroll for their first 60 hours of foundation courses at Washtenaw and transfer into the School of Natural Resources at the junior level in one of two concentration areas, **Resources Science/Bio-**

physical or Resources Science/Socio-behavioral. The foundation courses include:

**Humanities & Social Sciences**

English Composition  
Communication (writing or speech)  
Psychology or Sociology  
Economics  
Electives

**Biophysical Science**

Biology  
Ecology  
Chemistry or Physics

**Analysis**

Computer Science  
Calculus

## **COLLEGE SERVICES**

**Adult Resources Center (973-3528):**

This is a special drop-in center offering help for adults entering or re-entering school; making course, program and career decisions, or desiring personal counseling. The Center staff is especially sensitive to the concerns and needs of female and minority students.

Drop-in center hours for each semester will be posted on the ARC news board in the cafeteria area. The Center is located on the first floor of the Student Center Building, 4800 East Huron River Drive, Ann Arbor.

*Financial Aid Information on Special Programs:*

The State of Michigan Department of Education, Voc-Tech Department, 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. For further information, contact the Center at 973-3528.

Some WCC scholarships for a limited number of credit hours on a first-time at WCC basis are also available. Call 973-3528.

*Emeritus Program—Mature Adult Development (973-3528):*

Older adult county residents, aged 60 or older, and retired, have special opportunities at Washtenaw Community College as members of the Emeritus Program. Citizens may participate in any credit course or credit-free offering with tuition waived.

Emeritus participants may enroll for a credit class by following regular Registration procedures. If a credit-free offering is desired, contact the above number.



**Alumni Association (973-3492):**

The College needs the support of its former students now living in our community and other areas. An alumni association is being formed. For information, call the Office of College Advancement at 973-3492.

**Artists' Gallery Dining Room (973-3584):**

The Artists' Gallery Dining Room is located on the first level of the Student Center Building next to the Cafeteria. Students staff the kitchen and dining room earning credit in the Hospitality courses. The dining room is open for service to students and the general public Monday through Thursday during the lunch hour. Parties of 9 or more make reservations by calling 973-3488.

**Bookstore (973-3593):**

The College serves the student body and enhances the instructional program through the bookstore. 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. Located on the lower level of the Student Center Building, the bookstore is open daily. Please note that the Bookstore is unable to accept personal checks.

**Business and Industry Services (973-3533):**

Coordinators are available to assist in the development of apprenticeship and other employee training programs. Special training programs may be developed and tailored to meet specific needs for groups or individual employees. Related instruction can be provided for most apprenticeable trades with the College coordinator 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 Bureau of Apprenticeship and Training, Department of Labor. The Related Instruction program is approved by both the Bureau of Apprenticeship and Training and the Michigan State Department of Education.

**Career Development Center (973-3558):**

The Career Development Center (Room 141, Student Center Building, next to the Bookstore) helps persons make a career change or career decision. Individual career counseling and vocational testing are available. The Center has a Career Library that contains books, magazines, newspapers and other materials on careers, colleges, employers and job hunting. A microcomputer is located in the Center Library for persons who want to use a computer program to assess career interests, college majors, occupational values and skills. The computer can also be used to write a sample resume.

The Center maintains a list of job openings and offers information on job-hunting techniques. Job openings are posted on Bulletin Boards in four campus locations (1st floor of LA Building, Student Center Building,

T & I Building and O.E. Building).

Besides testing and counseling, classes and a special workbook are available to help individuals with their career plans. *Moving On* is a self-help guide to career planning available in the Bookstore for \$5.00. This workbook contains self-assessment exercises and information on goals, interests, values, skills, abilities, occupational exploration and decision-making. Individuals can do the workbook on their own or complete it as an Independent Study and get one college credit. Interested persons should enroll in SPS 102 and see the instructor.

In addition, a three-credit career planning seminar (SPS 100) is taught each fall and winter semester. All credit classes in career planning are found in the catalog and time schedule under the heading, "Student Personnel Services." Other short-term workshops are frequently sponsored by the Adult Resource Center or Continuing Education Services.

Individual counseling and interest inventories are also available through the Counseling Center (2nd Floor, Student Center Building).

Those who want to know more about these services or want help in making a career plan or change, should contact the Career Development Center (973-3558).

### **Children's Center (973-3538):**

The Student Services Division provides a licensed "special place" for children in the spacious Family Education Building. This special place promotes each child's exploration of their exciting new world. The Center is proud of its comprehensive child development program which emphasizes the emotional, social, intellectual and physical development of the young child.

**Staff:** Our teaching staff are fully trained in early childhood education and development. They are professionals. Beyond training and experience, every one of our staff brings two very special qualities to their job; 1. Enthusiasm and 2. a great capacity for caring about each child entrusted to them. Special love and care are offered by four foster grandparents. Practicum students in the Child Care Worker program provide additional new experiences for our children.

**Meals:** The center serves a nutritious breakfast, milk with a lunch brought from home, and an afternoon snack.

**Hours:** 7:30 a.m. to 5:30 p.m., Monday through Friday. If you need care prior to 7:30 a.m. stop by the Children's Center office. We will help you find someone who will provide care for your child and then drop them off at the Center.

**Ages:** 1½-9 years (Children need *NOT* be toilet trained.)

**Attendance:** The Center's first purpose is to care for children of WCC students, staff and former WCC students while parents are attending class, studying on campus or employed on campus. Children can also be cared for during appointments and off-campus employment. A higher fee is charged for this time.

**Enrollment:** Children must be enrolled *EACH* semester. Children's Center enrollment follows the same daytime schedule as WCC registra-

tion. Enrollment papers can be picked up at the Children's Center office. Specific rooms will be closed to enrollment when hourly maximums are reached. We encourage you and your child to visit the Center before attending.

**Fees:** A non-refundable enrollment fee is charged at the time of enrollment each semester. Hourly fees are charged based on the age of the child and the family income. Copies of the fee schedule can be obtained at the Children's Center office in the Family Educational Building or at the College Information Desk, 2nd floor, Student Center Building.

### **College in the Mall (973-3408):**

Washtenaw Community College, in cooperation with Briarwood Mall, offers credit courses as a part of its extension program. Classes will be held in the mall's Community Room. Students may register on campus during normal registration times, or on special registration days set up at the mall.

### **College Information Center (973-3622):**

The College Information Center, located on the 2nd floor of the Student Center Building, is available to assist individuals who have questions or concerns. The Center is open Monday through Thursday from 7:30 a.m. to 10:30 p.m.; on Friday from 7:30 a.m. to 8:00 p.m.; and on Saturday from 8:00 a.m. to 3:00 p.m.\* Many printed materials about the College are available at the Center, and persons are encouraged to come to the Center or call for general College information, for directions or referrals to specific areas/individuals, for A.A.T.A. bus information, for information about "Lost and Found," or for assistance of any kind.

\*During periods between semesters/sessions, the Information Center has reduced office hours, being open only those evenings when registration is scheduled. Saturday office hours may also vary.

### **College Newspaper (973-3376):**

*Focus* is the Washtenaw Community College newspaper for students. Students with talent in writing, graphics and photography are welcome to contribute and should contact the editor. The *Focus* office is at 235 Student Center Building.

### **Continuing Education Services (973-3493):**

The Office of Continuing Education Services is the link through which the College extends its resources and facilities to business, industry, labor and the community. The special activities offered through this office provide continuing education and training for industry, government, and professional groups.

Continuing Education Services responds to requests from business, industry and labor. Courses/workshops are designed on a contractual basis for specific firms, agencies or organizations and are scheduled before, during, or after the workday, or on weekends at local firms, unions or community locations.

Continuing Education Services also offers opportunities for the general public to partake in life centered, lifelong learning. Individuals may explore new career options, increase their professional proficiency, and/or develop new skills and potential.

With its objective of continuing life education, Continuing Education Services provides real opportunities to meet the desire for an education focusing on life experiences in a way that recognizes the rapid changes and complexities of today's world. Continuing Education Units (CEUs) are offered for most programs as a measurement of the completion of an educational offering. One CEU is equal to ten hours of classroom participation.

### **Counseling Center (973-3464):**

Counselors are available at the Counseling Center Monday through Friday, 8:00 a.m.–12:00 noon, 1:00 p.m.–5:00 p.m. During the fall and winter terms the Counseling Center is also open from 6:30–8:30 p.m. Monday through Thursday evenings. The schedule of evening hours during the spring and summer terms as well as during semester breaks and holiday periods will vary. Contact the Counseling Center for specific scheduling during these times. Each student is assigned to a counselor who will discuss career goals and plan a program of classes at the College.

Counselors aid students in clarifying their vocational objectives. Interest inventories can be administered and reference made to sources of occupational information which is available to students.

The professionally trained counseling staff will work with students experiencing personal or emotional problems or may refer them to the appropriate agency or service in the community for specialized assistance.

Counseling services include providing G.E.D. testing, transfer information, and tutorial assistance.

All students are encouraged to utilize the services provided by their counselors. Counselors are available for all part-time, full-time, day, and extended-day students at the College.

The entire faculty of Washtenaw Community College has a major commitment to help each individual student pursue a course of study planned to fulfill his or her goals. In order to accomplish this, instructors are committed to assisting students on an individual basis. Students are encouraged to confer with their instructors when problems or questions arise.

### **Dental Clinic (973-3337):**

The College has a complete, modern dental clinic which is open to students, faculty and staff during the Winter and Spring-Summer terms on Tuesdays and Thursdays from 8:00 a.m. until 12:00 noon and from 1:00 to 4:00 in the afternoon. A non-profit nominal fee schedule ranging from \$3–5 has been set to cover basic costs of materials. Treatment is given by University of Michigan dental students under the supervision of

a licensed dentist. The dental students are assisted by College dental assistant enrollees. Primary types of treatment include x-rays, oral prophylaxis (cleaning) and minor operative treatment (fillings). To make all appointments, stop by the clinic in LA325 or call staff at 973-3337.

**Drama Group, The College Players (973-3625):** The College Players is a drama group at the College, open to all students regardless of major area of study. The group is a touring one which presents plays each year to between 6,000 and 7,000 people. Presentations have expanded to include two major three-act productions as well as children's theatre. Other performances are given for area hospitals and schools. Community groups requesting performances should contact Dr. William Devereaux at the College. Interested students are invited to sign up at the beginning of each semester, stop by the theater in the Liberal Arts and Sciences Building or call drama staff at the above number.

**Extension Center (973-3408):**

In an effort to better serve its students, Washtenaw Community College offers many of its credit courses throughout the college district in cooperation with local high schools and other institutions. A minimum enrollment of 12 students is required for each class. Students may register on campus during normal registration times or on special registration days set up at the sites. These sites include various locations in Ann Arbor, the high school in Brighton, Chelsea, Dexter, Saline, and the Ypsilanti Community Center Building.

**Immigrant and Refugee Education Program (973-3315):**

The Refugee Education Program offers English as a Second Language classes for all refugees living in Washtenaw County. The Program also assists refugees in adjusting to the American culture. Class emphasis is placed on topics which increase employability and ease assimilation.

If you are in need of any of these services or would like to contribute your talents or ideas, please come by our office in Room 200 of the Liberal Arts and Sciences Building or call 973-3315.

**Institute for Economic Development and Job Training (973-3352):**

The College's Institute has been established for the purpose of creating job training programs requested by area businesses, industries and other employers. The College is supporting the economic development activities of the Washtenaw County area by providing job training programs and other educational services:

- Providing short-term training programs in specific job categories when requested by existing or new firms and organizations.
- Supporting the College's associate degree and certificate programs in a wide range of occupational areas.
- Providing continuing education programs for employers who wish to upgrade or improve the job skills of specific employee groups.

Working with other community groups to attract new firms to the area and to support the expansion efforts of existing firms.

A wide range of possibilities exist. The College can assist employers by drawing upon the resources of its established occupational programs in Business and Management careers, Human Service Careers, Health Careers, Technical and Industrial Careers.

### **Learning Resource Center (973-3429):**

The Learning Resource Center is an integral part of the total WCC learning environment. As the materials center of the College, the Learning Resource Center offers students and faculty the opportunity to use a collection of over 58,000 books, nearly 10,000 pamphlets and clippings, over 500 magazines, 20 newspapers, 500 college catalogs, and a growing collection of such audio-visual items as cassette tapes, video-tapes, 16mm films, records, slides, and filmstrips.

Faculty and librarians select the best of current and retrospective materials to respond to students' curriculum needs and extracurricular interests to keep information up to date, and to present varying viewpoints on subjects and issues. To help students use the Learning Resource Center, the librarians provide group instruction and assist in independent study activities.

The Instructional Media Area of the Learning Resource Center offers equipment distribution, film rental, and production services to College staff.

Learning Resource Center facilities include small seminar rooms, traditional study tables, informal lounge seating, and carrels specially equipped for the use of tapes, slides and similar audio-visual materials. A microcomputer lab housing 36 microcomputers is also available for student and staff use.

If needed materials are not available in the Learning Resource Center, the staff can usually arrange, on request, to borrow the materials from another library.

### **Math Center (973-3392):**

The Mathematics Center (LA 320) provides many services — all designed to improve the students' mathematical skills in a non-threatening environment. Placement tests designed to counsel students into the proper level course for their needs and abilities are administered and evaluated. Information regarding courses, procedures, policies, schedules, degree program requirements, and tutoring is readily available. Individualized tutoring by student aids, for help with specific problems from mathematics courses, is provided free of charge. Several micro-computers are available for student use, providing drill and practice of mathematical concepts. Many of the self-paced mathematics classes meet in this area. (See the listings for courses numbered MTH: 039, 090, 097A, 097B, 163, 165, 169A, 196B, and 177 in the curriculum section of this catalog for details.)

**Public Service Training Program (973-3323):**

The College's 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 a one-day seminar to a full semester program. Approval by the appropriate professional certification group is sought for all courses offered.

**Reading Center (973-3301):**

The Reading Center laboratory is available to improve the student's 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. The Reading Center is located in SC301.

**Special Needs Program (973-3342):**

The Special Needs Office, located in SC2271, provides services to handicapped, 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.

The program is coordinated through the Counseling Office and is a part of the Student Services Division. For additional information and eligibility for services, contact the Counseling Office.

**Student Center:**

Food services, a spacious lounge and meeting rooms are located on the first level of the Student Center Building. A casual lounging area provides a full-service cafeteria as well as vending machines for snacks, light lunches and beverages for students.

**Student Insurance:**

Washtenaw Community College does not sponsor health, life, and/or accident insurance coverage by any particular agency or company. However, a comprehensive sickness and accident insurance plan is available from a private carrier for students who are interested in this coverage. Full-time students will receive information about the plan at the beginning of the Fall Semester. Additional information concerning the insurance program may be obtained by calling the Security Office at 973-3502.

**Student Publications (See College Newspaper)****Television Courses (973-3671):**

Washtenaw Community College offers courses on television to be viewed at home which may be taken for college credit. Registration for telecourses is completed in the same manner as all other academic

credit classes.

Telecourses are aired over public television stations and area cable network stations. Actual airing times are available by calling the TELECOURSE HOTLINE (973-3671) and leaving your name, address, and short message on the recorder.

All students enrolled in a telecourse are required to attend an on-campus orientation session/first class meeting. There are also periodic on-campus meetings arranged with the instructors. The orientation session will cover information on how to contact instructors, assignments, testing requirements, textbook and study guide information.

### **Tutoring (973-3464):**

Washtenaw Community College offers a program in Peer Tutoring. The tutors are chosen from the current student body. Students who wish to help other students, to reinforce one's own knowledge and to get paid for doing it should contact the Counseling Office for further information. The Counseling Office is located in Room 227, Student Center Building.

### **Veteran Services (973-3481):**

The Veteran's Affairs Office, second level, Student Center Building, is qualified to handle all veteran matters. Specialized veteran counseling offers academic, personal and career advisement, interpretation of military records, and discharge up-grade counseling. Appropriate agency referral service is available when necessary.

It is the Veterans' Affairs Office major responsibility to assure the veteran has someone whose only concern and responsibility is the veteran's welfare during his time at Washtenaw Community College.

All veterans receiving benefits must see a veteran's counselor 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 32, 34 and 35, 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 Office of the Registrar after registering for classes. Please bring with you certified copies of your DD-214, marriage license and birth certificates of dependent children, if applicable.

### ***Previously Enrolled Veterans:***

Veterans who have not attended classes during the previous semester should bring a copy of their registration receipt to the Office of the Registrar.

### ***Transfer Students:***

Those 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 Office of the Registrar. DD-214 and transcripts from colleges or universities where the student has completed previous training must accompany the application.

***Credit for Formal Service School Experience:***

Credit will be 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 Veterans Affairs, SC 231.

***Continuing Veterans:***

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

***Standards for Receiving Educational Benefits:***

In compliance with the Department of Veteran Benefits, Circular 22-80-38, the College has developed the following standards of progress. Each Veteran student must conform to these standards to be eligible for Veterans Administration Educational Benefit Certification.

Each Veteran student must read, sign, and return the original copy of these standards to the Registrar's Veterans Certification Office at each enrollment.

1. It is the responsibility of the Veteran student to report to the Registrar's Certification Office immediately upon withdrawal or dropping of courses, indicating the last date of attendance in class. This information will be reported to the Veterans Administration.

A Veteran student, receiving an "N" (nonattendance) on the final grade reports, will be reported to the Veterans Administration as having registered for the class but did not attend. "DF" grades are also reported to the Veterans Administration.

2. Veteran students having attended another institution of higher education, must submit a transcript of the previous training to the Registrar's Certification Office for evaluation, prior to enrollment. The Veterans Administration and the student will be notified, indicating the appropriate credit given by the College for this training and the student's training period will be shortened proportionately.
3. Veteran students are required to make satisfactory progress toward their approved programs of study. As of June 21, 1982, Veteran students who have a cumulative grade point average of less than 2.0 (C) or receive "N" grades in any of their classes during a semester will be placed on academic probation. Veteran students will be certified for benefits while on probation for no more than two (2) consecutive semesters.

Veteran students will not be certified after attempting 60 hours with a cumulative grade point average below 2.0 without prior approval of

the Veterans Administration nor will they be certified for benefits if they received "N" grades during their next semester of attendance without prior approval of the Veterans Administration.

Veteran students will be removed from academic probation when they have attained a cumulative grade point average of 2.0 and/or they do not receive any "N" grades in the subsequent semesters.

Courses not included in an approved program of study will be certified, subject to approval of the Veterans Administration.

For the General Studies Program, a maximum of 60 credit hours is allowed, 3 must be in English and 3 in Political Science.

A 2.00 grade point average is required for graduation.

4. When a Veteran student has accumulated credits which would result in granting of a degree to the Veteran, and for which the degree has been certified to the Veterans Administration during the period of attendance in the institution, the Veteran will be considered as having met the degree requirements and further financial benefits will be terminated unless the Veteran has not otherwise fulfilled graduation requirements. An additional 12 credit hours may be allowed to meet these requirements. The General Studies Program does not qualify for this extension without Veterans Administration approval.
5. A Veteran student, with an Associate Degree or 72 semester hours, will be certified subject to approval of the Veterans Administration.

#### **Washtenaw County Vocational Articulation (973-3629):**

Articulation is the process which allows high school graduates to receive WCC credit for high school vocational training.

Graduates from Washtenaw County high school vocational programs may apply for advanced placement credit at WCC in these programs: Automotive Service, Electrical-Electronics, Culinary Arts, Secretarial, Child Care Worker, Mechanical Technology and Welding and Fabrication.

The Articulation Agreement provides that students may receive up to nine (9) credits towards a certificate program at WCC and up to eighteen (18) credits towards an Associate Degree program. The number of WCC credits granted for high school vocational training is dependent upon each student's high school performance record in a particular vocational program.

Students interested in applying for articulated credit should speak to their high school vocational instructor and/or a counselor. The tuition for articulated credit(s) is waived.

#### **Women's Studies and Resources (973-3493):**

In order to meet the diverse educational and occupational needs of the increasing numbers of adult women students, several areas of Washtenaw Community College have cooperated with Continuing Education/Community Services to present a variety of courses, workshops, seminars and special events. These offerings are planned to assist women to set goals, make career decisions, learn their rights, be more aware of their world, effect change and take action. Students may

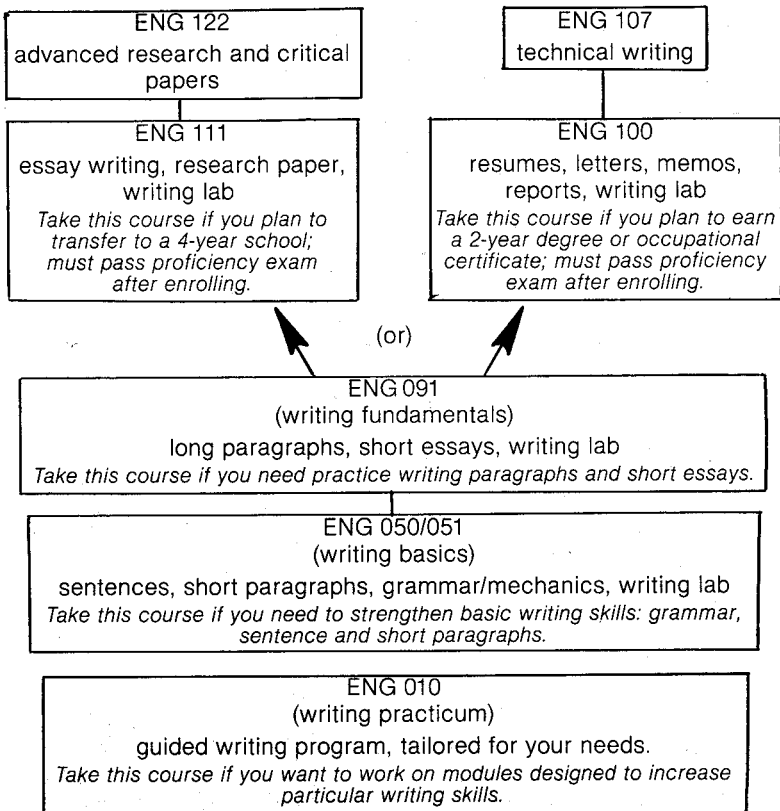
register for credit course offerings by following the Registration procedures. Credit-free offerings are handled by the Office of Continuing Education Services at 973-3493.

**Writing Center (973-3647):**

Two services are offered at the Writing Center. First the Center provides you with a lab service when you are enrolled in English 050, 091, 100, and 111. Second, the Center assists you in completing writing assignments for any course at the College. You can work with Center staff on any aspect of a writing project, from deciding on a topic, writing a thesis, organizing your ideas, to reviewing a rough draft or proofreading a final copy. Check a copy of "Writing Lab News," available in the lab, SC315, for hours of operation during any particular term.

Below is an outline of our writing courses and a "decision table" to help you select the course best suited to your needs.

**Writing Course Offerings**



## **DISCLAIMERS**

a. This document is for informational purposes only and is not to be construed as a binding offer or contract between the College and the student.

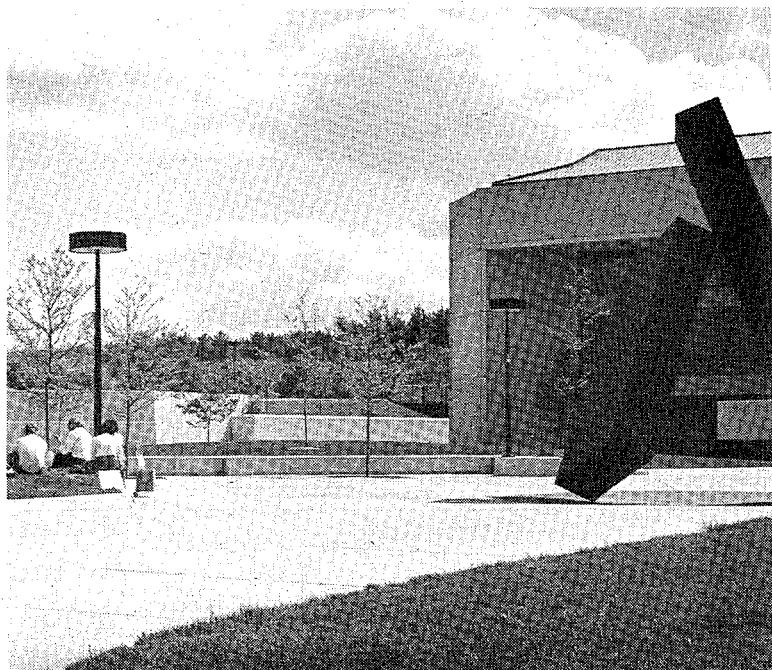
b. This document was prepared on July 15, 1985 and is subject to change without prior notice.

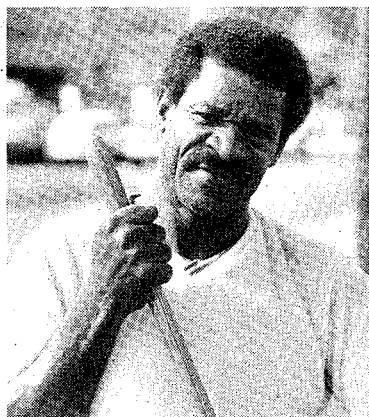
c. This Catalog is intended to be used with the Time Schedule, published each term, which provides more recent information on courses as well as College regulations and more details on the academic calendar and procedures.

Details concerning new developments and changes in occupational programs are available through the College Counseling Center.

## **AFFIRMATIVE ACTION / NON-DISCRIMINATION**

It is the policy of Washtenaw Community College not to discriminate on the basis of sex or race in admissions or in the operation of any educational program or activity. Any inquiries should be directed to Title IX Coordinator.



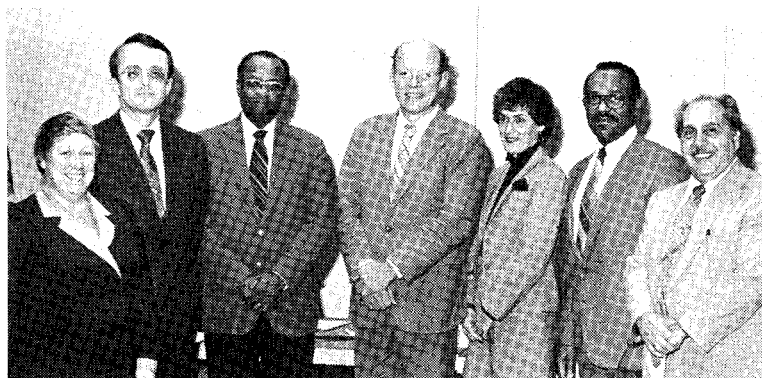


## **PERSONNEL**



## BOARD OF TRUSTEES

Member	Term Expires
<b>Richard W. Bailey</b> , <i>Chairperson</i> . . . . . Ann Arbor	December 31, 1990
<b>Vanzetti M. Hamilton</b> , <i>Vice Chairperson</i> . . . . . Ypsilanti	December 31, 1986
<b>James W. Anderson, Jr.</b> , <i>Secretary</i> . . . . . Ann Arbor	December 31, 1990
<b>John W. Corey</b> , <i>Treasurer</i> . . . . . Ann Arbor	December 31, 1990
<b>Marcia D. Harrison</b> , <i>Trustee</i> . . . . . Ypsilanti	December 31, 1988
<b>Susan M. Madley</b> , <i>Trustee</i> . . . . . Saline	December 31, 1988
<b>Anthony J. Procassini</b> , <i>Trustee</i> . . . . . Ann Arbor	December 31, 1986



*WCC Board of Trustees: (left to right) Susan M. Madley, John W. Corey, Vanzetti M. Hamilton, Richard W. Bailey, Marcia D. Harrison, James W. Anderson, Jr., Anthony J. Procassini.*

*Date following each name indicates individual's first full-time employment association with the college.*

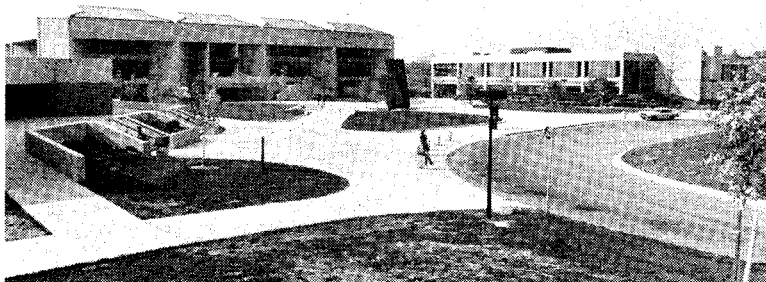
## EXECUTIVE OFFICERS

<b>Myran, Gunder A.</b> . . . . .	<b>1975</b>
<i>President</i>	
B.S.—Mankato State University	
M.A.—University of Iowa	
Ed.D.—Michigan State University	

- Konschuh, Harry J.** ..... 1972  
*Vice President*  
 B.Ed.—University of Alberta  
 M.A.—Michigan State University
- Hurd, John D.** ..... 1977  
*Vice President for Instruction and Student Services*  
 B.B.A.—The University of Michigan  
 M.B.A.—The University of Michigan

### ADMINISTRATIVE/PROFESSIONAL STAFF

- Albert, Rudolph A.** ..... 1968  
*Coordinator, Instructional Media*  
 B.S.—Bradley University  
 M.A.—The University of Michigan
- Arcure, Catherine** ..... 1979  
*Director, College Advancement and Executive Director  
 Washtenaw Community College Foundation*  
 B.A.—The University of Michigan
- Bertoia, Roger R.** ..... 1966  
*Dean of Occupational Education*  
 B.S.—The University of Michigan  
 M.S.—The University of Michigan
- Bosch, Barbara J.** ..... 1966  
*Supervisor, Technical Processing, LRC*  
 Henry Ford Community College  
 Washtenaw Community College  
 Friden Educational Center
- Bostwick, Phyllis M.** ..... 1966  
*Director, HRD and Support Services*  
 A.A.—Flint Junior College  
 B.G.S.—Wayne State University
- Dodge, Gary** ..... 1980  
*Supervisor, Weekend, Evening, and Extension Programs*  
 B.A.—Eastern Michigan University  
 M.A.—The University of Michigan

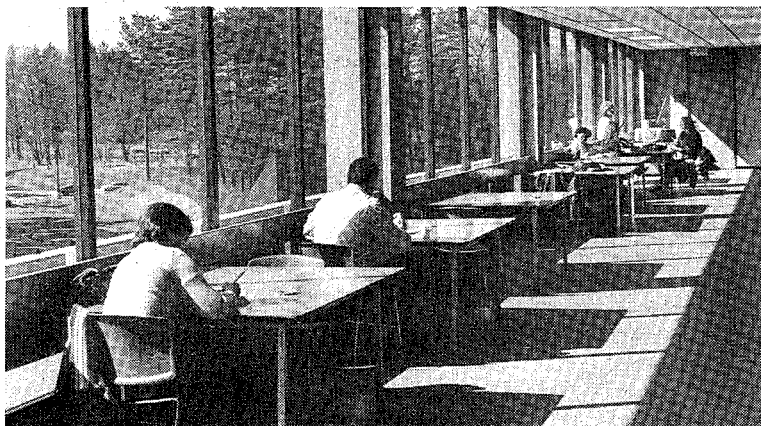


<b>Featheringham, Lee R.</b> .....	1981
<i>Director, Computer Services Center</i>	
B.S.—Kent State University	
B.S.E.E.—The University of Michigan	
<b>Galant, Richard L.</b> .....	1978
<i>Dean of General Education</i>	
A.B.—The University of Michigan	
A.M.—The University of Michigan	
Ph.D.—The University of Michigan	
<b>Galvin, Ralph H.</b> .....	1984
<i>Coordinator, Public Service Training Programs</i>	
B.S.—Nazareth College	
<b>Gottlieb, Naomi W.</b> .....	1984
<i>Accountant</i>	
B.S.—The University of Michigan	
<b>Grzegorzczuk, Phyllis</b> .....	1978
<i>Dean, Health and Public Service</i>	
Diploma—Mercy School of Nursing	
B.S.N.—The University of Michigan	
M.S.—The University of Michigan	
Specialist in Aging, The University of Michigan	
<b>Gustin, Evonne C.</b> .....	1977
<i>Analyst, Personnel Services</i>	
Washtenaw Community College	
<b>Hackney, Larry H.</b> .....	1973
<i>Dean, Student Services</i>	
B.A.—Tennessee State University	
M.A.—The University of Michigan	
Ph.D.—The University of Michigan	
<b>Jacques, Edith N.</b> .....	1976
<i>Dean, Continuing Education and Community Services</i>	
B.A.—D'Youville College	
M.A.—The University of Michigan	
Ph.D.—The University of Michigan	
<b>Jordan, Cole L.</b> .....	1978
<i>Supervisor, Plant Services</i>	
A.D.—Washtenaw Community College	
<b>Kooi, Lucy A.</b> .....	1977
<i>Programmer Analyst II</i>	
A.B.—The University of Michigan	
Washtenaw Community College	
<b>Levy, Mary L.</b> .....	1981
<i>Programmer Analyst I</i>	
B.A.—College of Wooster	
M.A.—The University of Michigan	



<b>Mandel, Carla</b> .....	<b>1979</b>
<i>Director, Continuing Education Services</i>	
B.A.—The University of Michigan	
M.A.—The University of Michigan	
<b>Medeiros, Neil O.</b> .....	<b>1980</b>
<i>Supervisor, Maintenance Department</i>	
R.E.T.S. Electronics Engineering School	
Washtenaw Community College	
<b>Nair, Damodaran (“Dom”)</b> .....	<b>1980</b>
<i>Administrator, Title III and College Planning</i>	
B.A.—Gandhigram University	
M.A.—Gandhigram University	
M.S.—Michigan State University	
Ph.D.—Michigan State University	
<b>Peoples, Gregory A.</b> .....	<b>1985</b>
<i>Director, Enrollment Management</i>	
B.A.—Allegheny College	
M.Ed.—Kent State University	
<b>Phibbs, John</b> .....	<b>1969</b>
<i>Supervisor, Reprographic Services</i>	
A.D.—Washtenaw Community College	
B.B.A.—Eastern Michigan University	
<b>Pierce, Leslie (Les) E.</b> .....	<b>1984</b>
<i>Director, Technical Job Training Programs</i>	
B.A.—University of Florida — Gainesville	
M.A.—University of Florida — Gainesville	
<b>Pulter, Kim M.</b> .....	<b>1984</b>
<i>Systems Analyst</i>	
A.D.—Henry Ford Community College	
B.B.A.—Eastern Michigan University	
M.S.—Eastern Michigan University	
<b>Reeves, Cornelius</b> .....	<b>1966</b>
<i>Supervisor, Power House</i>	
A.D.—Washtenaw Community College	
<b>Reeves, Robert A.</b> .....	<b>1968</b>
<i>Assistant Vice President for Employee Relations</i>	
B.A.—Eastern Michigan University	
M.A.—Eastern Michigan University	
<b>Reid, Juanita H.</b> .....	<b>1984</b>
<i>Assistant to the President</i>	
B.S.—West Virginia State College	
M.A.—Eastern Michigan University	
<b>Robinson, Albert</b> .....	<b>1974</b>
<i>Dean, Computer and Electronic Education</i>	
B.A.—Indiana University	
M.S.—Eastern Michigan University	

<b>Sabada, Mary L.</b> .....	1966
<i>Director, Personnel Services</i>	
Ohio University	
Washtenaw Community College	
<b>Scheuher, Judith A.</b> .....	1984
<i>Programmer Analyst I</i>	
B.A.—Oakland University	
<b>Scott, Adella</b> .....	1975
<i>Director, Learning Resource Center</i>	
A.B.—The University of Michigan	
M.A.L.S.—The University of Michigan	
<b>Sigworth, Denise J.</b> .....	1983
<i>Coordinator, Occupational Education</i>	
Curriculum Development, Title III	
B.S.—Eastern Michigan University	
M.A.—The University of Michigan	
<b>Sims, Donald L.</b> .....	1968
<i>Director, Admissions, Registration and Student Programs</i>	
B.S.—Wayne State University	
M.A.—The University of Michigan	
<b>Spickard, James F.</b> .....	1977
<i>Director, Plant Operations and Security</i>	
B.S.—Eastern Michigan University	
<b>Stallworth, Clarence A.</b> .....	1974
<i>Director, Management and Auxiliary Services</i>	
B.S.E.—The University of Michigan	
M.S.E.—The University of Michigan	
<b>Travis, Patricia A.</b> .....	1974
<i>Coordinator, Children's Center</i>	
B.A.—The University of Michigan	
M.A.—Eastern Michigan University	



<b>Walker, Audrey H.</b> .....	1985
<i>Coordinator, Accounting Services</i>	
A.D.—Jackson Community College	
B.A.—Cleary College	
<b>Wilkins, Barry L.</b> .....	1982
<i>Supervisor, Custodial Services</i>	
A.D.—Washtenaw Community College	
<b>Wojnowski, Judith L.</b> .....	1978
<i>Controller</i>	
B.S.—Canisius College	
C.P.A.	

## FACULTY

### ADULT RESOURCES CENTER

<b>Roberts, Shirley</b> .....	1968
<i>Clinical Psychologist</i>	
B.A.—The University of Michigan	
M.A.—The University of Michigan	
<b>Allen, Jacqueline</b> .....	1978
<i>Technician</i>	
B.A.—Case Western Reserve University	
M.A.—The University of Michigan	

### AUTOMOTIVE SERVICE

<b>Barron, Kenneth E.</b> .....	1966
<i>Automotive Service</i>	
B.S.—Central Michigan University	
A.S.E.—Certified Master Automotive Technician	
State of Michigan—Licensed Master Mechanic	
<b>Bogue, Robert A.</b> .....	1984
<i>Technician, Automotive Service</i>	
A.D.—Washtenaw Community College	
B.S.Ed.—The University of Michigan	
<b>Brown, Eugene</b> .....	1977
<i>Automotive Service</i>	
A.D.—Washtenaw Community College	
B.S.—The University of Michigan	
<b>Cammet, Edward</b> .....	1975
<i>Automotive Body Repair</i>	
Army Mechanic School	
Ford Motor Institute	
Bear Frame School	
Ditzler Paint Instructors School	
Martin Senour Refinishing School	

<b>Fisher, Scott</b> .....	1982
<i>Automotive Service</i>	
B.S.—Eastern Michigan University	
N.I.A.S.E.—Certified General Mechanic	
State of Michigan—Certified Master Mechanic	
F.A.A.—Certified Airframe and Power Plant Mechanic	
<b>Jordan, Lester</b> .....	1979
<i>Automotive Body Repair</i>	
B.A.—Eastern Michigan University	
M.Ed.—Wayne State University	
<b>Mann, John B.</b> .....	1971
<i>Automotive Service</i>	
Washtenaw Community College	
B.S.—Eastern Michigan University	
M.A.—The University of Michigan	
A.S.E. and State of Michigan—Certified Mechanic	
<b>Weid, Richard</b> .....	1979
<i>Automotive Service</i>	
B.S.—Eastern Michigan University	
M.A.—Eastern Michigan University	
M.S.—Eastern Michigan University	

## BEHAVIORAL SCIENCES

<b>Bylsma, Donald Jr.</b> .....	1966
<i>Sociology</i>	
B.S.—Wayne State University	
M.S.—Wayne State University	
Ph.D.—The University of Michigan	
<b>Campbell, Benjamin I.</b> .....	1968
<i>Psychology</i>	
B.M.—Peabody Institute	
M.A.—The University of Michigan	
<b>Kollen, Michael</b> .....	1969
<i>Psychology</i>	
B.A.—Knox College	
M.S.—New Mexico Highlands University	
M.A.—The University of Michigan	
<b>Martin, Herbert L.</b> .....	1967
<i>Psychology</i>	
B.A.—Eastern Michigan University	
M.A.—Eastern Michigan University	
M.S.W.—The University of Michigan	
<b>Moy, William</b> .....	1968
<i>Psychology</i>	
A.B.—Valparaiso University	

- Roberts, Alvin** ..... 1968  
*Psychology*  
 B.S.—Prairie View A & M College  
 M.S.W.—Wayne State University
- Thompson, Doreen** ..... 1975  
*Sociology*  
 A.B.—Atlantic Union College  
 Licence es Lettres—University of Paris  
 M.P.H.—The University of Michigan
- Zaremba, Ernest** ..... 1969  
*Psychology*  
 A.B.—The University of Michigan  
 A.M.—The University of Michigan

## BUSINESS AND ACCOUNTING

- Arnold, Gwen** ..... 1966  
*Management, Intern-Extern*  
 A.D.—Washtenaw Community College  
 B.B.A.—Cleary College  
 M.A.—The University of Michigan
- Bellers, Clifford** ..... 1969  
*Business, Accounting*  
 B.B.A.—Eastern Michigan University  
 M.A.—Eastern Michigan University
- Kokkales, Paul C.** ..... 1966  
*Accounting*  
 B.S.—Eastern Michigan University  
 M.A.—The University of Michigan
- McCoy, Robert I.** ..... 1974  
*Business Law/General Business*  
 B.S.—Western Michigan University  
 M.A.—Western Michigan University  
 M.A.—The University of Michigan  
 J.D.—Detroit College of Law
- McNally, Robert C.** ..... 1966  
*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
- Meyers, Norma** ..... 1980  
*Accounting*  
 B.B.A.—The University of Michigan  
 M.B.A.—Eastern Michigan University

- Ross, Frank J.**.....1981  
*Finance, Marketing, Management*  
 B.S.—Wayne State University  
 M.A.—Central Michigan University
- Zeeb, Ronald E.**.....1968  
*Marketing, General Business*  
 B.S.—Eastern Michigan University  
 M.A.—Eastern Michigan University

### CAREER DEVELOPMENT CENTER

- Greiner, Margaret E.**.....1981  
*Career and Life Planning Counselor*  
 B.A.—The University of Michigan  
 M.A.—The University of Michigan
- Wood, John D.**.....1984  
*Technician*  
 B.S.—Michigan State University

### CHILDREN'S CENTER

- Fauri, Greta**.....1977  
*Technician*  
 B.A.—Adrian College

### COMPUTER INFORMATION SYSTEMS

- Finkbeiner, Charles A.**.....1975  
*Computer Information Systems*  
 A.D.—Washtenaw Community College  
 B.S.—The University of Michigan  
 M.S.—The University of Michigan
- Jindal, Usha R.**.....1982  
*Computer Information Systems*  
 B.S.—Delhi University  
 B.S.—Pennsylvania State University  
 M.S.—Pennsylvania State University
- Krieg, Laurence J.**.....1983  
*Computer Information Systems*  
 B.A.—College of Wooster  
 M.A.—The University of Michigan  
 Ph.D.—The University of Michigan

- Paup, Arlene M.** ..... 1982  
*Computer Information Systems, Electricity/Electronics*  
 B.A.—Temple University  
 M.S.—Drexel University
- Rinn, John,** ..... 1980  
*Computer Information Systems*  
 A.A.—Port Huron Junior College  
 A.B.—The University of Michigan  
 M.S.—The University of Michigan
- Wotring, John R.** ..... 1969  
*Computer Information Systems*  
 B.A.—University of Philippines

### COMPUTER SERVICES CENTER

- Campbell, Debra** ..... 1984  
*Technician*  
 Washtenaw Community College
- Palay, Roger M.** ..... 1976  
*Professional Service*  
 B.S.—University of Chicago  
 M.S.—University of Wisconsin

### CONTINUING EDUCATION SERVICES

- Horowitz, Marian S. H.** ..... 1985  
*Technician*  
 B.A.—The University of Michigan — Dearborn  
 M.A.—The University of Michigan

### COUNSELING CENTER

- Clark, William G.** ..... 1968  
*Counselor*  
 B.R.E.—Grand Rapids Baptist College  
 M.A.—Western Michigan University
- Eaglin, Marguerite** ..... 1967  
*Counselor*  
 B.S.—Eastern Michigan University  
 M.A.—Eastern Michigan University  
 Ed.S.—Eastern Michigan University  
 The University of Michigan

- Meeks, Sandra S.** ..... 1969  
*Orientation Advisor*  
 B.S.N.—The University of Michigan  
 Registered Nurse  
 M.S.—The University of Michigan
- Williams, Calvin E.** ..... 1969  
*Counselor*  
 B.A.—Western Michigan University  
 M.A.—The University of Michigan  
 Ph.D.—The University of Michigan  
 N.C.C.—National Board for Certified Counselors, Inc.
- Wirbel, Johanna V.** ..... 1968  
*Counselor*  
 B.A.—Kent State University  
 M.A.—The University of Michigan
- Young, Mary E.** ..... 1975  
*Counselor*  
 B.R.E.—Detroit Bible College  
 B.A.—Eastern Kentucky University  
 M.A.—Eastern Kentucky University  
 The University of Michigan

### DENTAL AUXILIARY

- Finkbeiner, Betty Ladley** ..... 1969  
*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
- Johnson, Claudia Sullens** ..... 1984  
*Clinical Technician*  
 A.D.—Washtenaw Community College  
 C.D.A.—American Dental Assisting Association  
 R.D.A.—Michigan State Board of Dentistry  
 B.S.—Madonna College
- Nevers, William B.** ..... 1975  
*Dental Assisting*  
 B.S.—Wayne State University  
 D.D.S.—The University of Michigan School of Dentistry



## DRAFTING

- Byrd, David R.**..... 1966  
*Architectonics*  
Hampton Institute College and Trade School  
N.C.A.R.B. Certified  
Registered Architect—D.C., Maryland, West Virginia,  
and Michigan  
M.A.—The University of Michigan
- Ford, Andrew F.**..... 1966  
*Industrial Drafting, Psychology*  
B.S.—Wayne State University  
M.Ed.—Wayne State University  
D.Ed.—Wayne State University
- Hentz, Gary R.**..... 1967  
*Industrial Drafting*  
B.S.—Eastern Michigan University  
M.A.—Eastern Michigan University
- Packard, R. James**..... 1969  
*Industrial Drafting*  
A.D.—Washtenaw Community College  
B.S.M.E.—University of Wisconsin  
M.A.Ed.—Wayne State University
- Pogliano, Michael F.**..... 1969  
*Architectonics*  
B.Arch.—The University of Michigan  
Registered Architect, Michigan  
N.C.A.R.B. Certified
- Stager, Augustus P. III**..... 1977  
*Industrial Drafting, Mechanical Technology*  
B.S.M.E.—The University of Michigan

## ELECTRICITY/ELECTRONICS

- Bellers, Robert**..... 1968  
*Technician*  
A.D.—Washtenaw Community College  
Electronics Engineering Technician Trade School  
Grantham Electronics School  
F.C.C. License  
Journeyman Electrician
- Cleary, William T., Jr.**..... 1983  
*Electricity/Electronics*  
A.S.E.E.T.—University of Maine at Orono  
B.E.E.T.—University of Maine at Orono  
M.B.A.—University of Maine at Orono  
F.C.C.—License, Radar Endorsement  
E.I.T.—Professional Licensing Board, Maine

- Downen, Gary W.**..... 1983  
*Electricity/Electronics*  
 B.G.S.—The University of Michigan  
 M.A.—Eastern Michigan University
- Kramer, Lawrence**..... 1977  
*Electricity/Electronics*  
 B.S.—The University of Michigan
- Mullins, Philip G.**..... 1982  
*Electricity/Electronics*  
 Air Force Community College  
 Ventura Junior College  
 University of Maryland, European Division  
 Eastern New Mexico University
- Russell, Dean A.**..... 1966  
*Electricity/Electronics*  
 B.S.—Eastern Michigan University  
 M.A.—Eastern Michigan University
- Weyant, David E.**..... 1983  
*Electricity/Electronics*  
 B.S.E. (EE)—The University of Michigan  
 M.S.E. (EE)—The University of Michigan
- Wheeler, Kenneth**..... 1966  
*Electricity/Electronics*  
 B.S.E.E.—Detroit Institute of Technology  
 Member Institute of Electrical and Electronic Engineers

## EMERGENCY MEDICAL TECHNOLOGY

- Dunham, Craig**..... 1978  
*Emergency Medical Technology*  
 A.S.—Washtenaw Community College  
 B.S.—Eastern Michigan University  
 M.S.—The University of Michigan  
 Licensed Paramedic—Michigan Department of Public Health  
 (MDPH)

## ENGLISH AND WRITING

- Croake, Edith M.**..... 1966  
*English*  
 B.A.—The University of Michigan  
 M.A.T.—Northwestern University  
 M.A.—Northwestern University  
 D.A.—The University of Michigan

- Erickson, Lorene F.**.....1981  
*English*  
 B.A.—Wayne State University  
 M.Ed.—Wayne State University
- Fritts, Ruth**.....1968  
*English*  
 B.A.—The University of Michigan
- Gaughan, John T.**.....1968  
*English*  
 B.A.—St. Mary's College  
 B.S.—St. Mary's College  
 M.A.—Eastern Michigan University
- Hatcher, Ruth**.....1981  
*English*  
 B.A.—Earlham College  
 M.A.—The University of Michigan
- Hunt, Barbara**.....1968  
*English*  
 B.A.—University of Toledo  
 M.A.—The University of Michigan  
 D.A.—The University of Michigan
- Minock, Daniel W.**.....1983  
*English*  
 Ph.D.—Ohio State University
- Mitchell, W. Bede**.....1967  
*English*  
 A.B.—Wayne State University  
 M.A.—Wayne State University
- Salerno, Douglas**.....1969  
*English, Speech*  
 B.A.—Western Michigan University  
 M.A.—Western Michigan University  
 M.A.—The University of Michigan  
 Ph.D.—The University of Michigan
- Weidner, Hal R.**.....1969  
*English*  
 A.B.—Columbia College  
 M.A.—The University of Michigan  
 Ph.D.—The University of Michigan
- Williams, Thomas G.**.....1971  
*English*  
 B.S.—Eastern Michigan University

## ENROLLMENT SERVICES

- Frye, Iota H.** ..... 1975  
*Financial Aids Officer*  
B.S.—Eastern Michigan University  
M.A.—Eastern Michigan University  
Graduate—Rhema Bible Training Center
- Grotrian, Paulette** ..... 1980  
*Admissions Officer*  
B.A.—Valparaiso University  
M.A.—Valparaiso University
- Hower, Guy W.** ..... 1966  
*Financial Aids Officer*  
B.B.A.—The University of Michigan  
M.A.—The University of Michigan
- Jordan, Diane** ..... 1978  
*Technician, Financial Aids*  
Washtenaw Community College

## FOODS AND HOSPITALITY

- Beaton, James** ..... 1976  
*Culinary Arts*  
Wayne County Community College  
Eastern Michigan University  
Wayne State University
- Beauchamp, Jillaine** ..... 1977  
*Culinary Arts*  
Culinary Institute of America  
B.S.—Eastern Michigan University  
M.S.—The University of Michigan
- Garrett, Don L.** ..... 1975  
*Culinary Arts*  
A.D.—Washtenaw Community College  
B.S.—Mercy College of Detroit
- Harris, Ricardo O.** ..... 1984  
*Technician, Culinary Arts*  
Michigan State University

## HUMANITIES

- Biederman, Rosalyn L.** ..... 1967  
*Spanish, E.S.L.*  
B.A.—Ohio State University  
M.A.—Ohio State University

<b>Devereaux, William</b> .....	<b>1976</b>
<i>Speech</i>	
B.A.—Michigan State University	
M.A.—Michigan State University	
Ed.D.—Laurence Universtiy	
<b>Hanson, Charlotte</b> .....	<b>1966</b>
<i>Speech</i>	
A.B.—The University of Michigan	
M.A.—The University of Michigan	
<b>Horowitz, Frederick A.</b> .....	<b>1968</b>
<i>Art</i>	
B.A.—Yale University	
B.F.A.—Yale University	
M.F.A.—The University of Michigan	
<b>Kibens, Maija</b> .....	<b>1976</b>
<i>Philosophy</i>	
B.A.—Mount Holyoke College	
M.A.—The University of Michigan	
Ph.D.—The University of Michigan	
<b>Lockard, Jon M.</b> .....	<b>1970</b>
<i>Art</i>	
Certificate—Meinzinger Art School	
Certificate—Obleton Advertising Company	
Wayne State University	
<b>Radick, Lawrence J.</b> .....	<b>1966</b>
<i>French, Russian</i>	
B.A.—Michigan State University	
M.A.—Michigan State University	
Certified Flight Instructor. ASELS	
<b>Zenian, Paul</b> .....	<b>1968</b>
<i>Art</i>	
B.S.—The University of Michigan	
M.F.A.—The University of Michigan	

## INDUSTRIAL TECHNOLOGY

<b>Agin, George C.</b> .....	<b>1968</b>
<i>Mechanical Technology, Fluid Power, Robotics</i>	
B.S.—Wayne State University	
M.A.—Eastern Michigan University	
<b>Avery, Dean</b> .....	<b>1981</b>
<i>Mechanical Technology</i>	
B.S.—Ferris State College	
M.S.—Wayne State University	

- Diçk, Roger**..... 1979  
*Mechanical Technology, Numerical Control*  
 B.S.—Western Michigan University  
 M.A.—Eastern Michigan University  
 Ferris State College—Machine Tool  
 Washtenaw Community College
- Donahey, Jeffrey**..... 1984  
*Numerical Control*  
 B.S.M.E.—The University of Michigan
- Hoag, Todd H.**..... 1983  
*Technician*  
 Washtenaw Community College
- Lowe, Burton, C.**..... 1968  
*Mechanical Technology, Blueprint Reading*  
 Journeyman Industrial Machinist, Machine Repairman  
 Ford Motor Company Apprenticeship School  
 Wayne State University
- Schultz, Gary L.**..... 1984  
*Fluid Power, Robotics*  
 Eastern Michigan University

## LEARNING RESOURCE CENTER

- Ho, Leo C.**..... 1975  
*Media Librarian*  
 B.A.—National Cheng Chi University  
 M.L.S.—Atlanta University  
 Ph.D.—Wayne State University
- Scott, Kathleen**..... 1971  
*Librarian*  
 B.A.—University of Iowa  
 M.A.—University of Iowa

## LIFE SCIENCES

- Davenport, James M., Instructional Coordinator**..... 1966  
*Biology*  
 B.A.—Ohio Northern University  
 M.A.—Syracuse University
- Grossman, Esta**..... 1975  
*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

- Niehaus, Paul J.**..... 1966  
*Biology*  
 B.A.—Eastern Michigan University  
 M.S.—The University of Michigan
- Strayer, James L.**..... 1969  
*Biology*  
 B.S.—Eastern Michigan University  
 A.M.—The University of Michigan

## MATHEMATICS

- Batell, Mark F.**..... 1984  
*Mathematics*  
 B.A.—Knox College  
 M.A. (Math)—The University of Michigan  
 M.A. (Psych)—The University of Michigan
- Bila, Dennis W.**..... 1969  
*Mathematics*  
 B.S.—Central Michigan University  
 M.A.—Wayne State University
- Bottorff, Ralph S.**..... 1966  
*Mathematics*  
 B.A.—University of Northern Iowa  
 M.A.—University of Illinois  
 Ph.D.—The University of Michigan
- Goldberg, David**..... 1977  
*Mathematics, Computer Science*  
 B.S.—The University of Michigan
- Hastings, Janet G.**..... 1967  
*Mathematics, Computer Science*  
 B.A.—The University of Michigan  
 M.A.—Cornell University
- Lee, Arthur A.**..... 1984  
*Mathematics*  
 B.A.—Aquinas College  
 M.A.—The University of Michigan
- Lewis, William A.**..... 1969  
*Mathematics*  
 B.S.—North Carolina Central University  
 M.A.—The University of Michigan
- McGill, John B.**..... 1966  
*Mathematics, Computer Science*  
 B.S.—Eastern Michigan University
- Mealing, Percy**..... 1966  
*Mathematics*  
 B.A.—Talladega College  
 M.A.—The University of Michigan

<b>Mealing, Robert C.</b> .....	1966
<i>Mathematics</i>	
Ford Motor Company Apprenticeship School	
B.S.—Wayne State University	
<b>Prichard, Lawrence</b> .....	1968
<i>Mathematics</i>	
B.S.—Eastern Michigan University	
M.A.—Eastern Michigan University	
<b>Remen, Janet M.</b> .....	1982
<i>Mathematics, Computer Science</i>	
B.Sc.—University of Durham	
M.S.—The University of Michigan	
<b>Showalter, Martha</b> .....	1980
<i>Mathematics, Computer Science</i>	
B.S.—Ohio State University	
B.A.—Ohio State University	
M.S.—University of Houston	

### MUSIC

<b>Lawrence, Morris J., Instructional Coordinator</b> .....	1969
<i>Music</i>	
Certificate—Straight Business College	
B.S.M.E.—Xavier University	
M.M.—The University of Michigan	
Ph.D.—Bernadean University	

### NURSING

<b>Goodkin, Barbara, H.</b> .....	1975
<i>Nursing</i>	
B.S.N.—The University of Michigan	
M.S.—The University of Michigan	
<b>Knoll, Gladys</b> .....	1981
<i>Nursing</i>	
Diploma—Henry Ford Hospital School of Nursing	
B.S.N.—The University of Michigan	
M.S.—The University of Michigan	
<b>Miller, Glenn</b> .....	1982
<i>Clinical Technician</i>	
B.S.N.—Eastern Michigan University	
<b>Regensburg, Janice</b> .....	1981
<i>Clinical Technician</i>	
B.S.N.—Eastern Michigan University	
<b>Salois, Claire M.</b> .....	1982
<i>Clinical Technician</i>	
B.S.N.—Salve Regina College	
R.N.C.—Certified Medical-Surgical Nurse	



- VanderVeen, Judith, Sister** ..... 1976  
*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  
 Wayne State University

### OCCUPATIONAL EDUCATION CO-OP

- Vrabel, George** ..... 1969  
*Professional Service*  
 B.S.—Western Michigan University  
 M.A.—Wayne State University

### PHYSICAL SCIENCES

- Amundsen, Jack** ..... 1975  
*Physics*  
 B.A.—The University of Michigan  
 M.A.—The University of Michigan
- French, Gargi** ..... 1974  
*Chemistry*  
 B.Sc.—University of Bombay  
 Ph.D.—Radcliffe College  
 Harvard University
- Griswold, George H.** ..... 1966  
*Chemistry*  
 B.A.—College of Wooster  
 M.S.—Eastern Michigan University
- Hinds, Dwight D.** ..... 1968  
*Physics*  
 B.S.—Eastern Michigan University  
 M.S.—Michigan State University
- Kapp, George** ..... 1970  
*Physics*  
 A.D.—Washtenaw Community College  
 B.S.E.—The University of Michigan
- Pool, Milton** ..... 1969  
*Chemistry*  
 B.S.—Eastern Michigan University
- Thomas, David** ..... 1980  
*Geology*  
 A.S.—Macomb Community College  
 B.S.—Eastern Michigan University  
 M.S.—Eastern Michigan University

- VanGenderen, Gary L.** ..... 1982  
*Chemistry*  
 B.S.—The University of Michigan  
 M.S.—Eastern Michigan University

### PUBLIC SERVICE

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## GLOSSARY

**Accreditation:** An award for meeting high standards set by official groups for colleges and for programs. Accreditation means WCC teaches college-level classes which transfer to other schools and has programs which get students ready for beginning-level jobs.

**Admission:** The part of WCC which takes care of beginning paperwork the first time a student takes classes here.

**Application:** Form a person has to fill out before he or she can be a student at WCC.

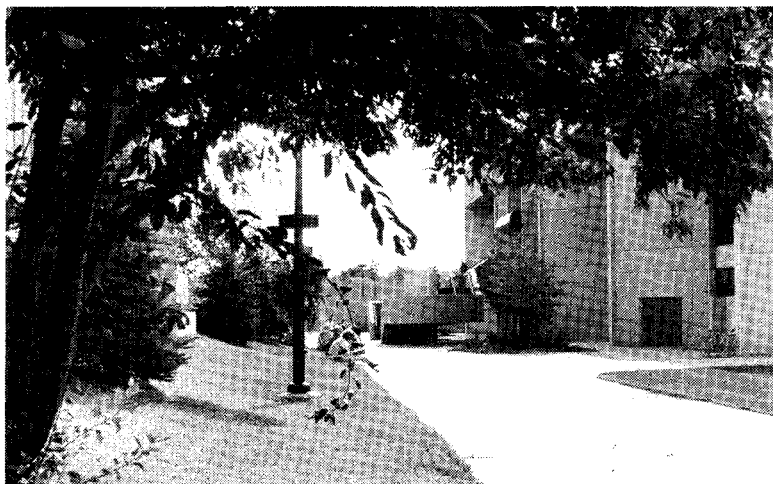
**Articulation:** How well work from one school transfers to another, such as high school work transferring to WCC or WCC work transferring to another college.

**Assessment:** Finding out, often by testing, what a person is good at doing or would like doing.

**Associate Degree:** College award given to students who complete at least 60 credits at WCC, including all the classes in a program, three credits of English, and three credits of political science, with an average mark of C or better.

**Certification:** Paperwork which shows that a person meets certain standards. For example, construction specialist certification proves that a person completed all the classes in the construction specialist program.

**Corequisite:** Something a student has to have at the same time he or she takes a particular course. For instance, students must be signed up for the Writing Lab if they are taking English Composition III.





**Credits:** Way of measuring the grades classes a student completes at WCC. Students must complete a certain number of credits to graduate from different programs. Generally, the more credits a class is worth, the more time a student should expect to spend working on that class. Credit-free classes are not graded and do not count towards the credits a student needs to graduate.

**Cumulative Grade-Point Average:** The average of the final marks a student gets in all the classes he or she takes during the time he or she is a student at WCC.

**Curriculum:** All the courses taught in one subject area (like History) or, broadly, all the courses taught at WCC.

**Documentation:** Paperwork a person needs to show that something is true. Students who want financial aid, for instance, must turn in documentation of their need for the money.

**Eligibility:** Whether or not a person meets the standard for something. Eligibility for an associate degree depends on the classes a student has taken and how well he or she did in those classes.

**Emeritus Program:** Any citizen of Washtenaw County who is 60 years old or over and retired may take any course at WCC for free.

**Extended-Day Students:** People who take classes at WCC in the evening or on weekends.

**GED Examination:** General Education Development Examination. This is a test for people who did not go to high school or did not finish high school. A high enough score on this test shows that a person has learned as much as people need to learn to graduate from high school.

**Grade-Point Average:** The average of the final marks a student gets in the classes he or she takes during a term at WCC. Each mark is worth points: the higher the mark, the higher the points; and the more credits for the class, the more points its mark is worth. A perfect grade-point average would be a 4.0, for all A's. A B-level grade-point average would be a 3.0, C-level a 2.0, a D-level 1.0. An F grade is not worth any points.

**Occupational Areas:** Subject areas which have programs to get students ready for beginning-level jobs.

**Orientation:** Time WCC spends with new students to help them get used to WCC and get signed up for classes for the first time.

**Paraprofessional:** A trained person who helps a professional do his or her work.

**Placement:** Where someone starts. A French placement is the right French course for a particular student to start with. A job placement is a beginning job.

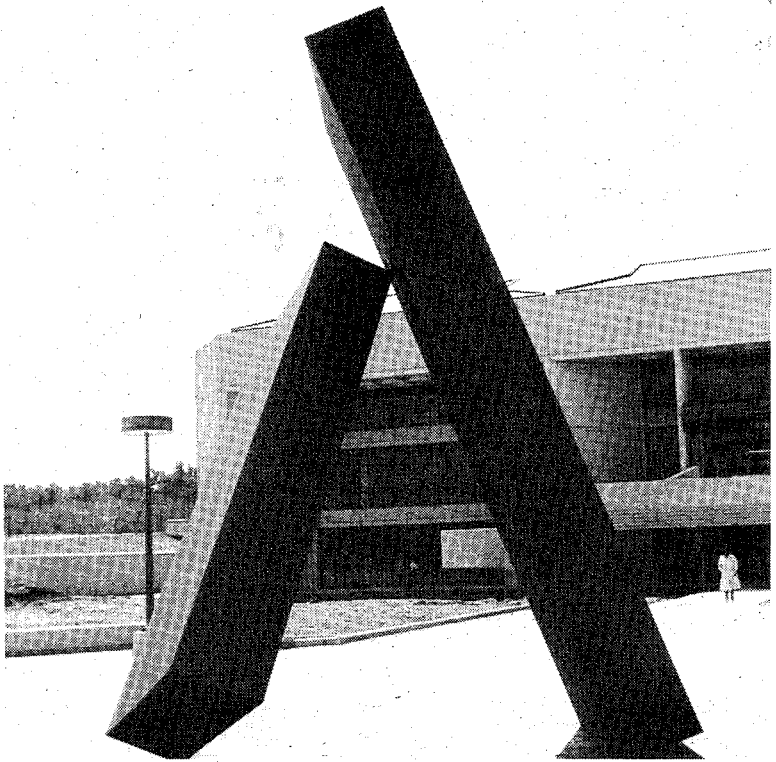
**Postsecondary:** College-level; education after high school.

**Prerequisite:** Something a student has to have before taking a particular course. For instance, a student must complete Numerical Control 100 before taking Numerical Control 111, or students must be licensed practical nurses to take Nursing 144.

**Program:** The series of classes a student must take to end up with a certificate or associate degree. Different subject areas have different programs.







**Programmed Instruction:** A way of teaching that lets the student work on his or her own, learning one step at a time with a teacher nearby to help.

**Registration:** Paperwork that the student and WCC have to do to get the student into classes at the beginning of each term.

**Self-Paced:** A type of teaching in which the student controls how fast he or she goes through what there is to learn. Programmed instruction (see definition) is usually self-paced.

**Scholarship:** Amounts of money which may be available to help students pay the costs of going to school. This money is usually given to students whose marks are quite good.

**Transcript:** Paper record of the classes a student takes and the marks the student gets in those classes during the time he or she is at WCC.

**Tuition:** The money a student pays for taking classes at WCC.

**Undergraduate:** College student who does not yet have a bachelor's degree.

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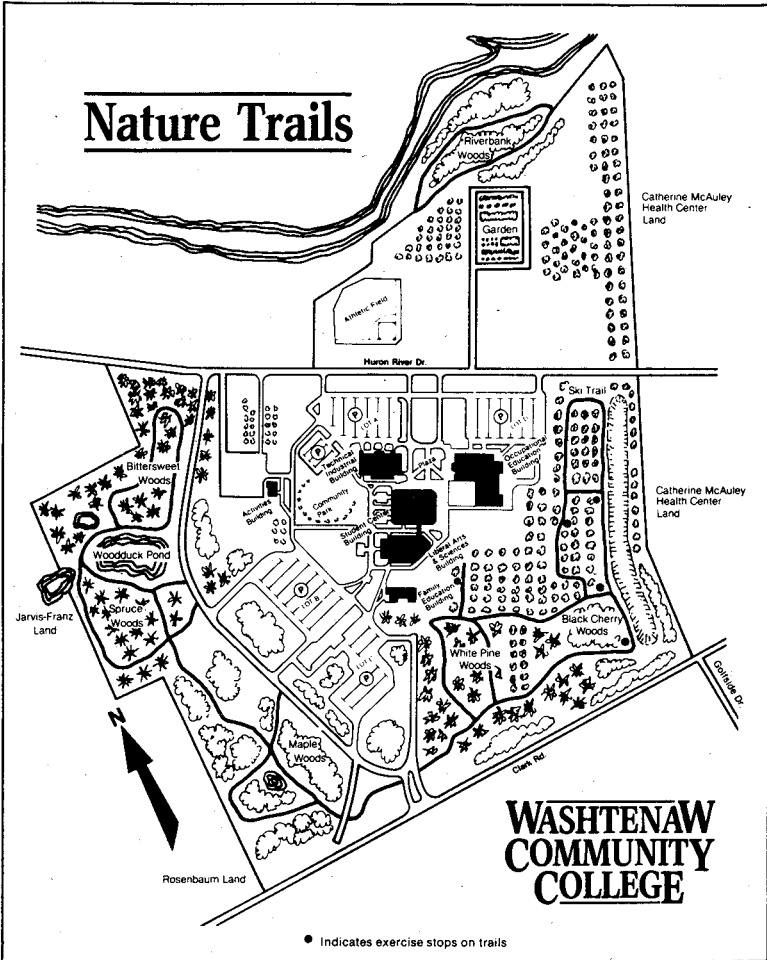
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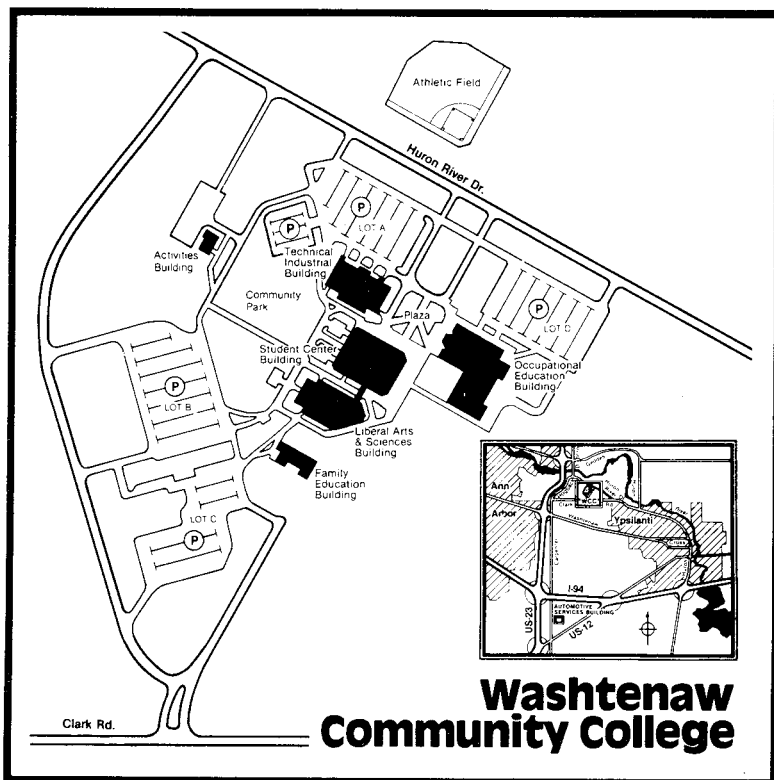
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# Start your Tomorrow Today!

## Building Abbreviations

- AC—Activities Building
- ASB—Automotive Services Building
- FE—Family Education Building
- LA—Liberal Arts & Science Building
- LRC—Learning Resource Center
- OE—Occupational Education Building
- SC—Student Center Building
- TI—Technical and Industrial Building



**Bulletin 1985-87**

**Washtenaw Community College**

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