



Washtenaw Community College

BULLETIN

1987-89

SEPTEMBER 1987

VOLUME 16-NUMBER 1



TELEPHONE ASSISTANCE

Main Campus: (313) 973-3300

4800 E. Huron River Drive

Mailing Address P.O. Box D-1

Ann Arbor, Michigan 48106-0978

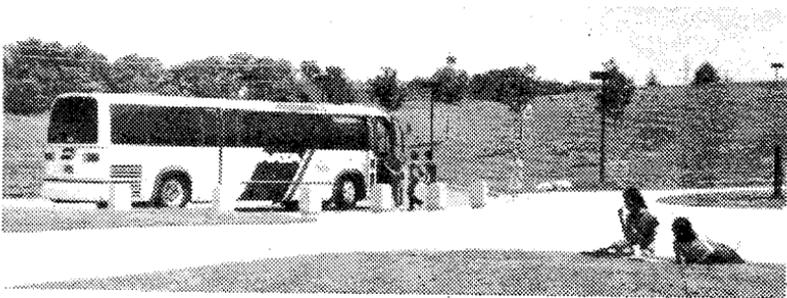
Automotive Services Building: (313) 973-3641

5115 Carpenter Road Ypsilanti, Michigan 48197

Adult Resources Center	973-3528
Apprenticeship and Trade Related Programs	973-3533
Automotive Services Center	973-3641
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
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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
Switchboard (General Information)	(313) 973-3300
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

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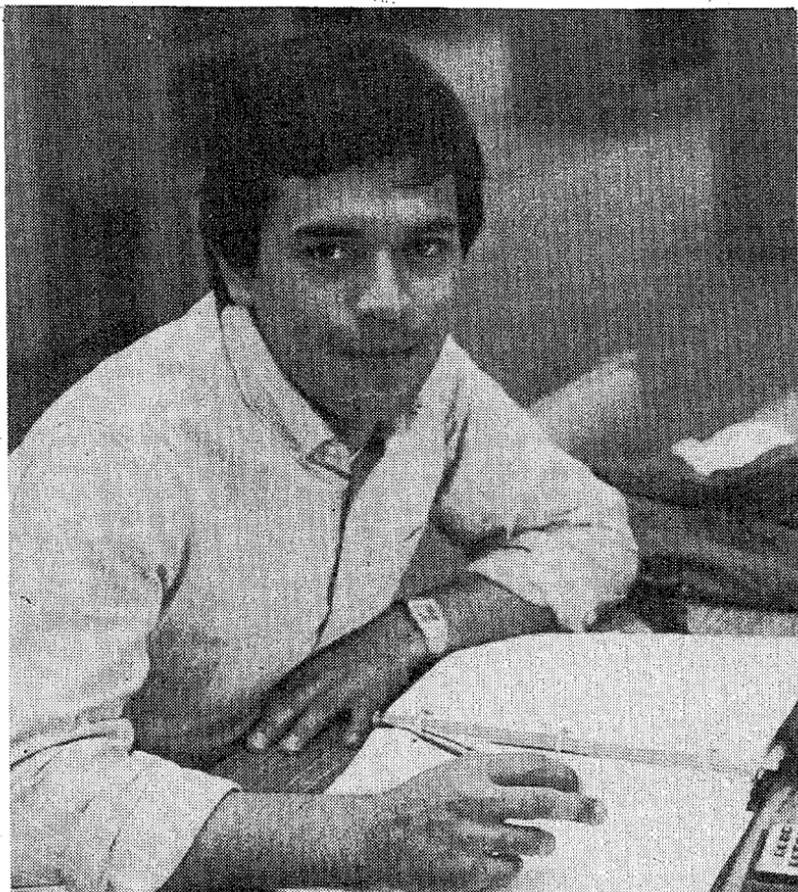


Washtenaw Community College

4800 E. Huron River Drive, P.O. Box D-1

Ann Arbor, Michigan 48106

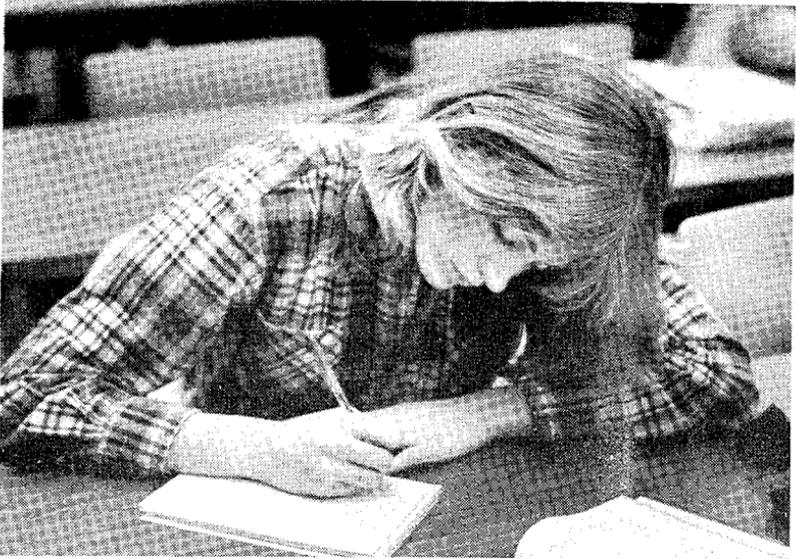
**For Tomorrow,
Start Today**



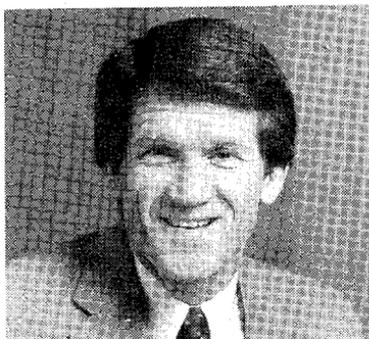
**At Washtenaw
Community
College**

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Greetings from President Gunder Myran



Dedicated to student and community and staff success — that is Washtenaw Community College's motto as we celebrate 22 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

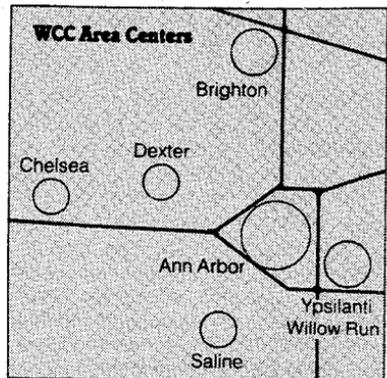
WCC offers . . .

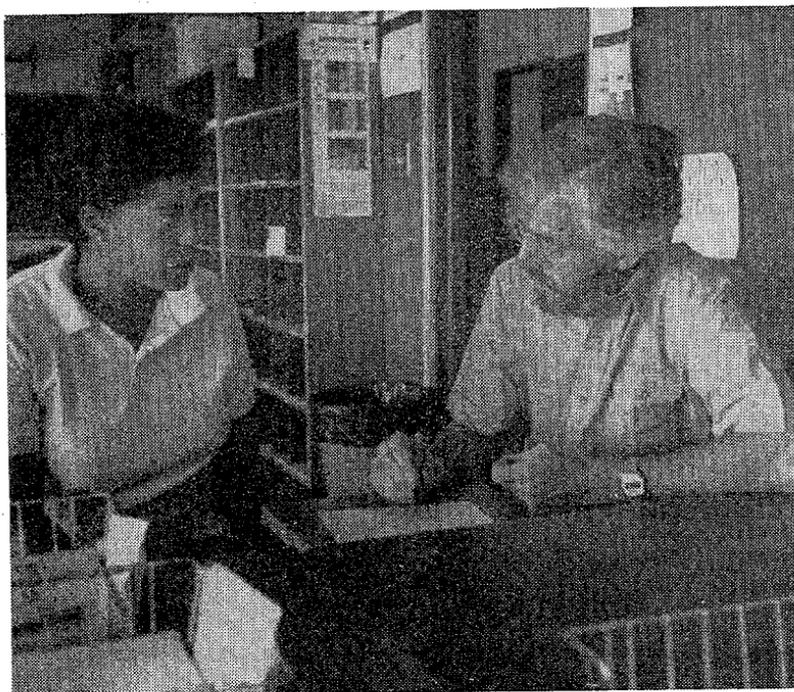
**Quality
Instruction**



**Special
Services**

**Convenient
Classes**

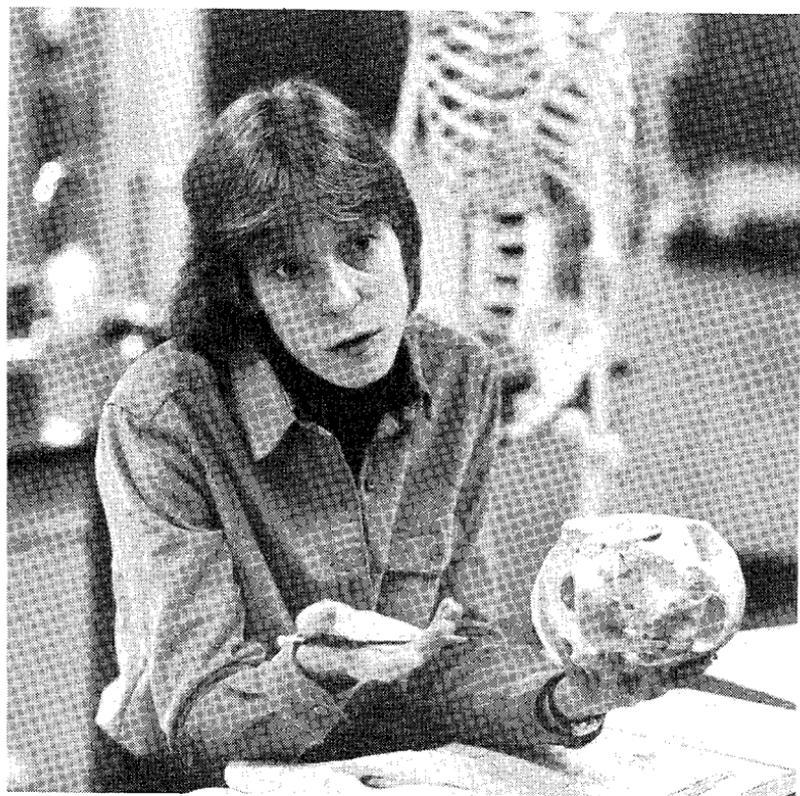
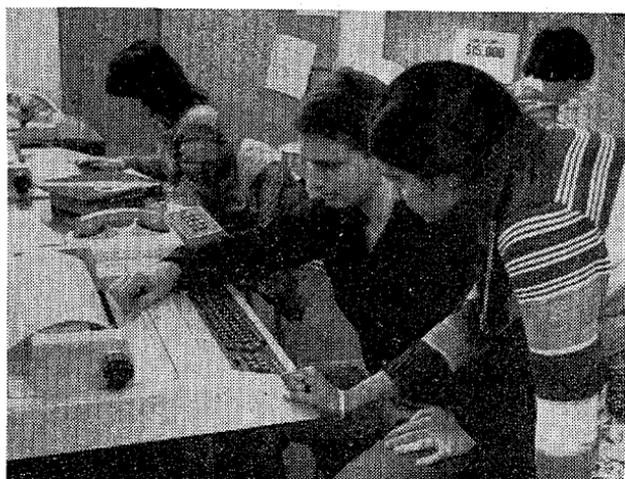




Quality Instruction

The WCC Faculty includes over 400 highly qualified full- and part-time instructors. All of these instructors have practical work experience or are currently employed in their field of instruction. A faculty/student ratio of 1:17 assures a high degree of personal attention and one-on-one teaching. Also, for those who prefer self-paced study, WCC offers several individualized-instruction courses.







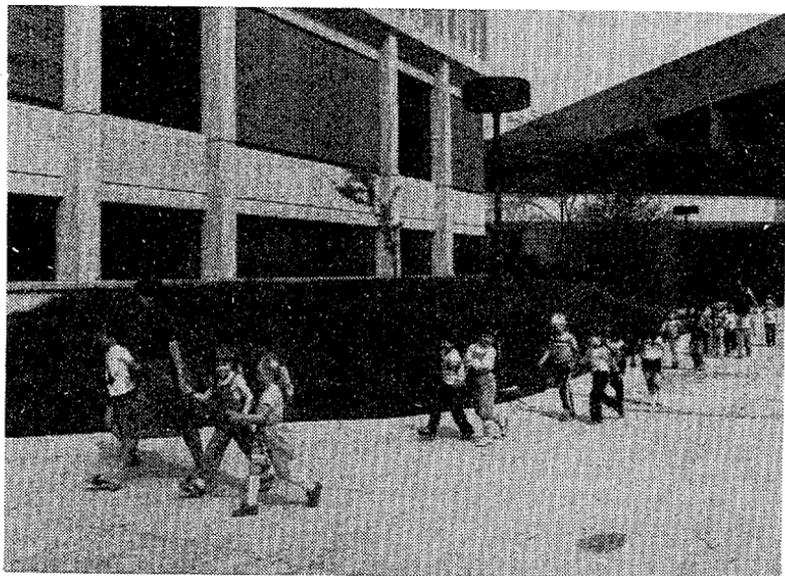
Special Services

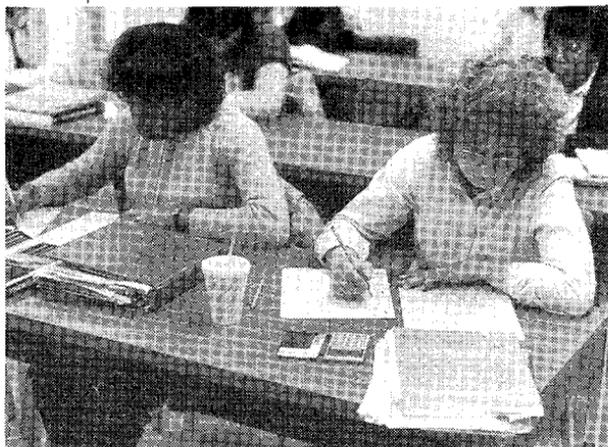


Special Services are those extras that make attending and succeeding in college possible. Counselors are available to help with academic needs, personal needs and setting up class schedules.

More specific individual needs are addressed by other offices and centers within the College. The Adult Resource Center is especially sensitive to women and minorities and offers support to students who choose a career program considered non-traditional for their gender. The Special Needs Office offers its services to men and women who are physically or mentally handicapped, economically disadvantaged, or those with limited English proficiency.

Other offices and centers include the Child Care Center, Financial Aid Office and Veteran Services. All Services are free of charge to Washtenaw Community College students with the exception of the Child Care Center, which provides certified care at per-semester rates.

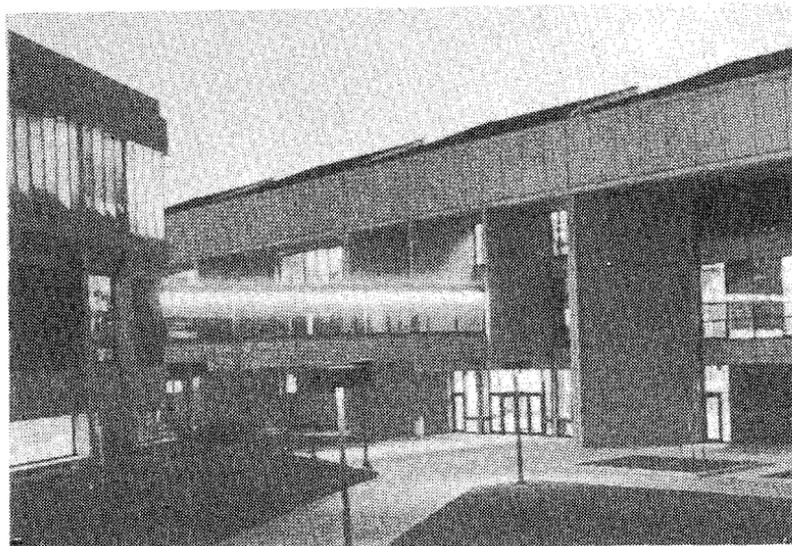




Convenient Classes

At Washtenaw Community College we make coming to class convenient. A wide variety of classes are offered during the day and evening. On-campus parking is free.

Another convenience is accessibility. We bring class to you by offering credit and non-credit courses at extension centers located in Ann Arbor, Brighton, Chelsea, Dexter, Pinckney, Saline, Willow Run and Ypsilanti.





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

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

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

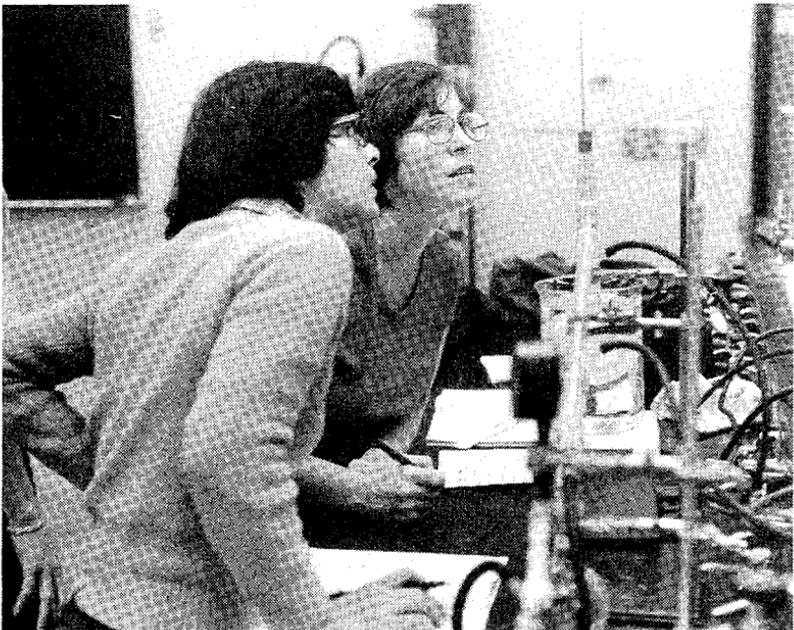
A Member of
NATIONAL COUNCIL FOR
COMMUNITY SERVICES/CONTINUING EDUCATION

A Member of
MICHIGAN COMMUNITY COLLEGE COMMUNITY
SERVICES ASSOCIATION

A Member of
NATIONAL REGISTRY FOR CONTINUING EDUCATION

An Affirmative Action/Equal Opportunity Institution

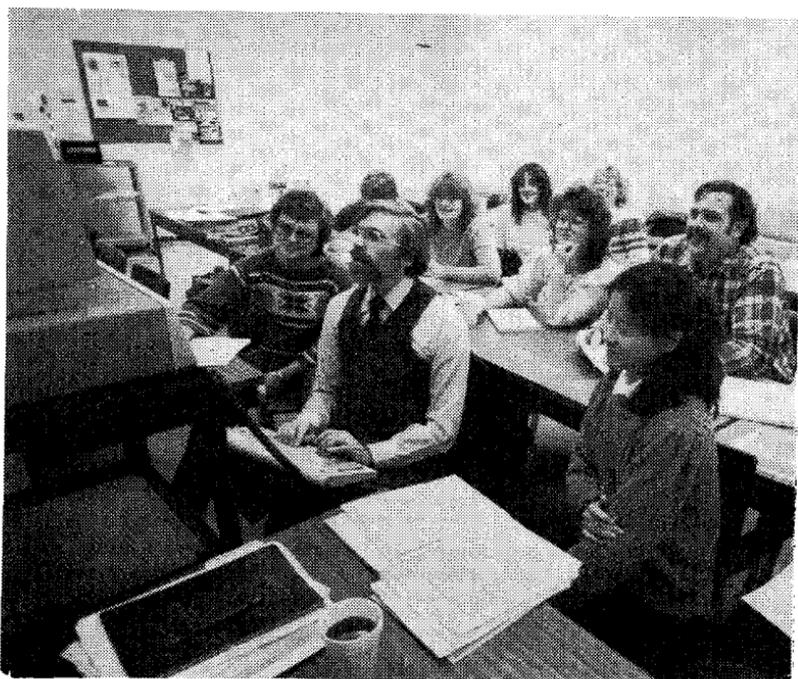
*In full compliance with Title IX (Equal Opportunity)
and Title VI (access to handicapped and disadvantaged)*







INSTRUCTION



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 computer 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 25, 282

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, Criminal Justice, Correctional Science, Child Care, Secretarial and



Office, Digital Equipment Technology, Telecommunications Technology, 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 271.

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 em dash 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.

The 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.

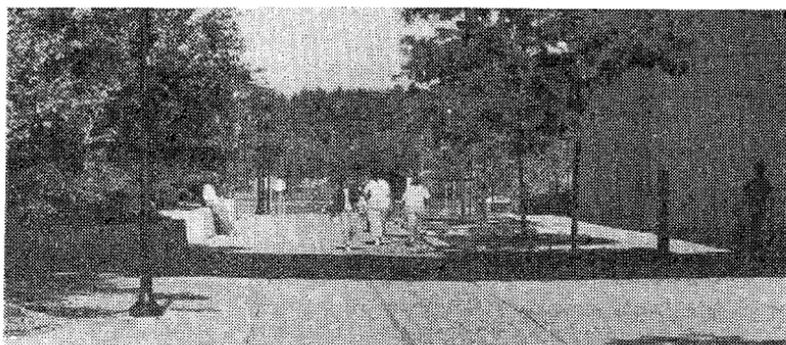
General and Transfer Education: The College offers courses in various academic disciplines which are transferable to four-year colleges and universities, general education courses which complement occupational education programs, and courses which enhance the personal growth of the student.

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.

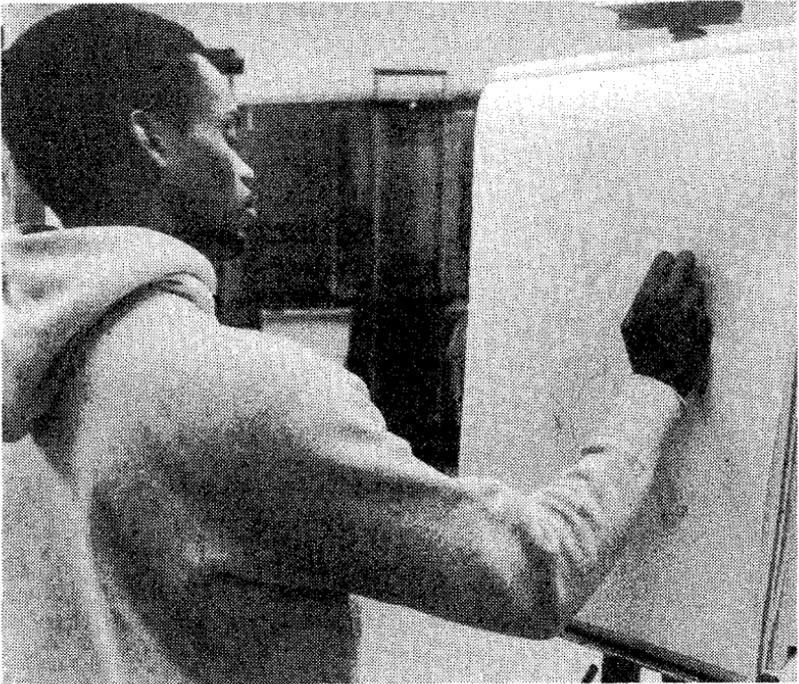
Student Services: The College offers such services as admission counseling, orientation, assistance in selecting College programs and courses, personal counseling, financial aid planning, career counseling, and job placement.

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.





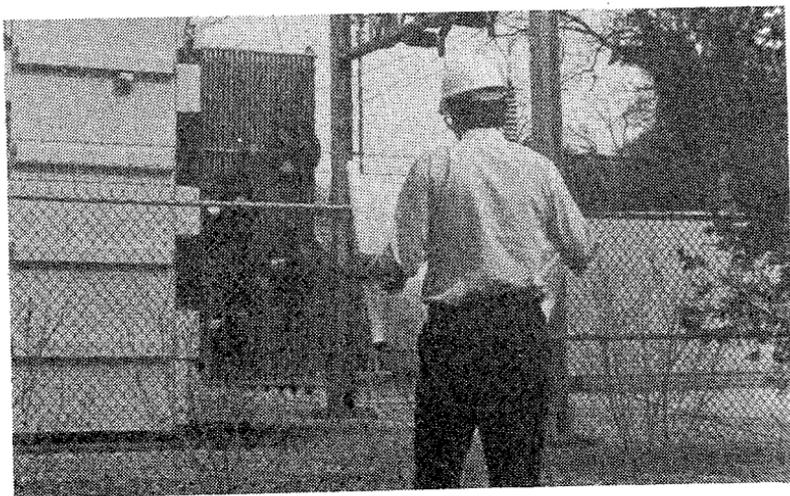
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GENERAL AND CAREER EDUCATION



Engineering Career Program

**Pre-Engineering
Two-Year Transfer Program
Advisors: George Kapp**

This is 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 (see page X) depending on the field in which they are interested. Further, it is important that students meet with a program advisor and clarify the options available.

Curriculum I

All fields except Chemical Engineering and Materials Engineering

Description	Course	Hrs.
First Term (Fall)		
Calculus I	MTH 191	5
FORTRAN Programming	CPS 187	4
English Composition I	ENG 111	4
General Chemistry I	CEM 111	4

First Semester Total: 17

Second Term (Winter)

Calculus II	MTH 192	4									
Linear Algebra	MTH 197	4									
General Chemistry II	CEM 122	4									
Government	<table 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 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 ¹	<table style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">{</td> <td>Technical Drawing</td> <td>ID 100</td> </tr> <tr> <td></td> <td>Technical Communications*</td> <td>ENG 107</td> </tr> <tr> <td></td> <td>English Composition II</td> <td>ENG 122</td> </tr> </table>	{	Technical Drawing	ID 100		Technical Communications*	ENG 107		English Composition II	ENG 122	3 or 4
{	Technical Drawing	ID 100									
	Technical Communications*	ENG 107									
	English Composition II	ENG 122									
Semester Total:		18 or 19									

Third Term (Fall)

Calculus III ²	MTH 293	4									
Analytical Physics I	PHY 211	5									
Elective	<table style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">{</td> <td>Introductory Psychology</td> <td>PSY 100</td> </tr> <tr> <td></td> <td>Principles of Economics I</td> <td>EC 211</td> </tr> <tr> <td></td> <td>Western Civilization to 1600</td> <td>HST 101</td> </tr> </table>	{	Introductory Psychology	PSY 100		Principles of Economics I	EC 211		Western Civilization to 1600	HST 101	3
{	Introductory Psychology	PSY 100									
	Principles of Economics I	EC 211									
	Western Civilization to 1600	HST 101									
Elective	<table 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									

Fourth Term (Winter)

Differential Equations ³	MTH 295	4									
Analytical Physics II	PHY 222	5									
Elective	<table style="display: inline-table; vertical-align: middle;"> <tr> <td style="font-size: 3em; vertical-align: middle;">{</td> <td>Principles of Sociology</td> <td>SOC 100</td> </tr> <tr> <td></td> <td>Principles of Economics II*</td> <td>EC 222</td> </tr> <tr> <td></td> <td>Western Civilization from 1600</td> <td>HST 102</td> </tr> </table>	{	Principles of Sociology	SOC 100		Principles of Economics II*	EC 222		Western Civilization from 1600	HST 102	3
{	Principles of Sociology	SOC 100									
	Principles of Economics II*	EC 222									
	Western Civilization from 1600	HST 102									
Elective	<table 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:		15									

Total Credit Hours for Program: 65 or 66

*Indicates the recommended elective.

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

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

³It 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

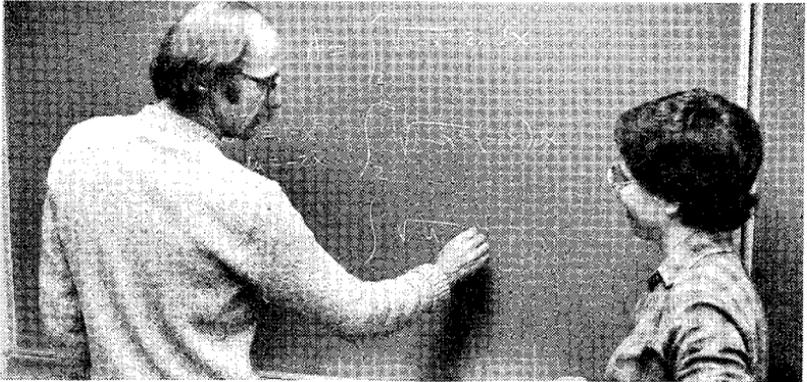
Chemical Engineering and Materials Engineering

Description	Course	Hrs.	
First Term (Fall)			
Calculus I	MTH 191	5	
FORTRAN Programming	CPS 187	4	
English Composition I	ENG 111	4	
General Chemistry I	CEM 111	4	
First Semester Total:		17	
Second Term (Winter)			
Calculus II	MTH 192	4	
Linear Algebra	MTH 197	4	
General Chemistry II	CEM 122	4	
Principles of Economics I ⁴	EC 211	3	
Government	Government and Society	PLS 108	3
	Intro. to American Government ...	PLS 112	
	State and Local Government	PLS 150	
Second Semester Total:		18	
Third Term (Fall)			
Calculus III ⁵	MTH 293	4	
Analytical Physics I	PHY 211	5	
Organic Chemistry I	CEM 211	3	
Elective	Introduction to Philosophy	PHL 101	3
	World Literature I*	ENG 213	
	Art Appreciation	ART 130	
Third Semester Total:		15	
Fourth Term (Winter)			
Differential Equations ⁵	MTH 295	4	
Analytical Physics II	PHY 222	5	
Organic Chemistry II	CEM 222	5	
Elective	Shakespeare	ENG 200	3
	World Literature II*	ENG 224	
	Introduction to Humanities	HUM 101	
Fourth Semester Total:		17	
Total Credit Hours for Program:		67	

*Indicates the recommended elective.

⁴Some 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.

⁵It 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.



Liberal Arts Transfer Program

**Two-Year Program: Code 100
(Liberal Arts)**

This Liberal Arts program of study is designed to provide a broad base of skills and methods with which to acquire knowledge. The program is intended for students planning to transfer to a baccalaureate degree-granting institution. The program also provides for the intellectual, cultural, and personal development of individuals.

Graduation Requirements:

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

1. Complete a minimum of 60 college credit hours (the last 15 must be earned at Washtenaw Community College) covering the course and distribution requirements as detailed below.
2. Complete seven credit hours of English Composition (English 111 and 122).
3. Complete three credit hours of Political Science (Political Science 108, 112, or 150).
4. Complete four credit hours of Mathematics (Mathematics 169 or above).
5. Complete the following distribution options:

Complete at least three courses in each of three areas, for a total of at least nine credits in each area, or 27 credit hours.

- a) Natural Science (9 credit hours):
(Astronomy, Biology, Chemistry, Geology, Mathematics, or Physics)
 - b) Social Science (9 credit hours):
(Anthropology, Economics, Geography, History, Political Science, Psychology, or Sociology)
 - c) Humanities (9 credit hours):
(Art, Communication & Theatre, English/Literature, French, German, Humanities, Music, Philosophy, Russian, or Spanish)
6. Complete the remaining 19 credit hours by enrolling in any of the recommended transfer courses from the Natural Science, Social Science, or Humanities areas.

OCCUPATIONAL EDUCATION

Business and Management Career Programs

Accounting

Two-Year Program: Code 521

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

This is 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 Sequence	Title	Hrs.
First Term			
1	BMG 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	<u>4</u>
			16
Second Term			
2	ACC 122	Principles of Accounting	3
3	ACC 131	Computerized Accounting	3
2	ENG 111	Composition I	4
4	CHT 101	Fundamentals of Speaking	3
6	PLS 150	State and Local Government and Politics	<u>3</u>
			16
Third Term			
3	ACC 213	Intermediate Accounting	3
5	BMG 111	Business Law	3
4	EC 211	Principles of Economics	3
3	ENG 122	Composition II	3
7	BMG 230	Supervisory Management	<u>3</u>
			15

Fourth Term			
4	ACC 225	Managerial Cost Accounting	3
6	BMG 200	Human Relations in Business and Industry	3
5	BMG 207	Business Communications	3
5	EC 222	Principles of Economics	3
7	BMG 220	Principles of Finance	3
7	BMG 200	Internship-Externship or Business Elective ²	3
			<u>3</u>
Total Credit Hours for Program: 62			15

*Meets 6 hours per week for 7½ weeks.

²BMG 122 Business Law

²ACC 200 Tax Accounting

²Other Electives with Program Advisor Consultation

Management

Two-Year Program: Code 541

**Advisors: Gwen Arnold, Robert C. McNally, Frank Ross, Rosemary Wilson,
Ronald Zeeb**

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

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
1	BMG 140	Introduction to Business	3
4	ACC 091	Fundamentals of Accounting or ACC 111	3
2	BMG 160	Principles of Salesmanship	3
1	ENG 111	Composition I	4
1	MTH 163	Business Mathematics or Mathematics Elective	3
			<u>3</u>
			16
			27

Second Term			
2	BMG 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	BMG 111	Business Law	3
8	CMT 101	Fundamentals of Speaking	3
			<hr/> 18
Third Term			
3	BMG 150	Labor Management Relations	3
7	BMG 207	Business Communication	3
2	EC 211	Principles of Economics	3
8	PLS	Political Science 108, 115 or 150	3
		Business Elective**	3
			<hr/> 15
Fourth Term			
6	BMG 200	Human Relations in Business and Industry	3
6	BMG 240	Personnel Management	3
3	EC 222	Principles of Economics	3
2	BMG 250	Principles of Marketing	3
	BMG 220	Principles of Finance	3
			<hr/> 15

Total Credit Hours for Program: 64

*Meets 6 hours per week for 7½ weeks.

****RECOMMENDED ELECTIVES:**

BMG 122	Business Law	3
BMG 299	Internship/Externship	3
BMG 230	Supervisory Management	3
BMG 235	Women in Management	3
BMG 225	Public Relations	3

Marketing

Two-Year Program: Code 542

Advisors: Gwen Arnold, Frank Ross, Rosemary Wilson, Ronald Zeeb

Marketing, a two-year program, prepares students for career opportunities in the field of marketing. These positions may be in any one of the marketing activities that involves the moving of products and services from producer to consumer, including the concepts and methods marketers use to identify and solve marketing problems and identify business opportunities through market target, product, price, distribu-

tion and promotion strategies. The program emphasizes such skills as sales technique, advertising concepts, sales management, human relations, market research, customer contact, product placement, administrative and record management. Business communications, computer familiarization, management and accounting are also stressed in this program.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
1	BMG 140	Introduction to Business	3
1	MTH 163	Business Mathematics or Mathematics Elective	3
2	ENG 111	Composition I	4
7	BMG 160	Principles of Sales	3
3	CMT 101	Fundamentals of Speaking	3
2	CIS 100	Introduction to Computers	3
			<u>3</u>
			16
Second Term			
	CIS 111	Computer Concepts*	3
2	CIS 112	Computer Functions*	3
1	BMG 150	Labor Management Relations	3
	ENG 122	Composition II	3
6	BMG 111	Business Law	3
	PLS	Political Science 108, 112 or 150	3
			<u>3</u>
			18
Third Term			
5	BMG 200	Human Relations in Business and Industry	3
3	BMG 207	Business Communications	3
5	EC 211	Principles of Economics	3
3	BMG 250	Principles of Marketing	3
4	BMG 208	Principles of Management	3
5	ACC 091	Fundamentals of Accounting or	
	ACC 111	Principles of Accounting	3
			<u>3</u>
			18
Fourth Term			
7	BMG 260	Sales Management	3
8	BMG 270	Advertising Principles	3
6	EC 222	Principles of Economics	3
8	BMG 299	Internship-Externship or Business Elective**	3
5	ACC 092	Fundamentals of Accounting or	
	ACC 122	Principles of Accounting	3
			<u>3</u>
			15

Total Credit Hours for Program: 67

*Meets 6 hours per week for 7½ weeks.

**RECOMMENDED ELECTIVES:

BMG 122	Business Law
BMG 225	Public Relations
BMG 230	Supervisory Management
BMG 235	Women in Management

Sales

One-Year Program: Code 543

Advisors: Gwen Arnold, Frank Ross, Rosemary Wilson, Ronald Zeeb

This is 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 include display preparation, inventory analysis and basic market research.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
1	BMG 140	Introduction to Business	3
1	MTH 163	Business Mathematics or Mathematics Elective	3
2	ENG 100	Communication Skills or	4
	ENG 111	Composition I	3
3	CMT 101	Fundamentals of Speaking	3
4	PSY 100	Introductory Psychology	3
			<u>16</u>
		Second Term	
4	BMG 250	Principles of Marketing	3
3	BMG 160	Principles of Sales	3
5	BMG 200	Human Relations in Business and Industry	3
5	BMG 111	Business Law	3
2	ACC 091	Fundamentals of Accounting or	3
	ACC 111	Principles of Accounting	3
6	BMG 299	Internship-Externship or Business Elective	3
			<u>18</u>

Total Credit Hours for Program: 34

Computer and Electronic Career Programs

Computer Information Systems

Business Computer Programming

Two-Year Program: Code 533

Advisors: Charles Finkbeiner, Usha Jindal, Lawrence Krieg
Arlene Paup, John Rinn, J. Robert Wotring

This is 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 in-

dustry, 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.

Full-Time Sequence	Title	Hrs.
First Term (Fall)		
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>
Second Term (Winter)		
CIS 115	Programming Logic	3
CIS 130	Pascal for Business and Industry	4
ACC 122	Principles of Accounting	3
MTH 160	Basic Statistics	4
ENG 107	Technical Communications	3
		<u>17</u>
Spring Half-Term		
CMT 101	Fundamentals of Speech	3
BMG 200	Human Relations in Business and Industry	3
		<u>6</u>
Third Term (Fall)		
CIS 170	COBOL I	4
CIS 286	Operating Systems	4
CIS 288	Systems Analysis and Design	3
CIS	Approved CIS Elective	3
		<u>14-15</u>
Fourth Term (Winter)		
PLS 108	Government and Society	3
BMG 215	Small Business Management	3
CIS 270	COBOL II	4
CIS 283	Large System Data Base	4
CIS 240	Career Practices	2
		<u>16</u>
Approved CIS Electives		
CIS 135	PL/1	4
CIS 136	BASIC for Business and Industry	3
CIS 137	RPG	3
CIS 199	On-the-Job Training	3
CIS 284	Data Communications	3

Total Credit Hours for Program: 70-71

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

Computer Science
Two-Year Transfer Program
Advisors: 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.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
	CPS 186	Introduction to Pascal Programming	4
2	MTH 191	Calculus I	5
1	MTH 184	Discrete Mathematics I	4
4	ENG 111	English Composition I	4
			17
Second Term (Winter)			
	CPS 286	Advanced Pascal Programming	4
2	MTH 192	Calculus II	4
3	PHY 211	Analytical Physics I	5
5	PSY 100	Introduction to Psychology	3
3			3
			16
Third Term (Fall)			
	CPS 294	Comparative Languages	4
6	PLS 108	Government and Society or	
5	PLS 112	Introduction to American Government or	
	PLS 150	State and Local Government	3
4	MTH 293	Calculus III	4
6	PHY 222	Analytical Physics II	5
			16
Fourth Term (Winter)			
	CPS 290	Program Design Methodologies	4
7	CPS 291	File Structures or	
8	CPS 292	Assembler Language Programming	4
		6 credits of approved electives in Humanities;	
7		it is recommended that ENG 122 English Composition	
8		be included.	6
			14

Total Credit Hours for Program: 63

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 Operating
One-Year Program: Code 531
Advisors: Charles Finkbeiner, Usha Jindal, Laurence Krieg,
Arlene Paup, John Rinn, J. Robert Wotring

This is 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.

Part-Time Sequence**	Full-Time Sequence	Title	Hrs.
	First Term (Fall)		
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
			<hr/> 16
	Second Term (Winter)		
4	CIS 286	Operating Systems	4
3	BMG 200	Human Relations in Business and Industry	3
4	PLS 108	Government and Society	3
3	CIS	*Choose two approved Electives	6
			<hr/> 16

Total Credit Hours for Program: 32

***Approved Electives**

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

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

**Small Business Computer Systems
Programming Curriculum**

Two-Year Program: Code 534

**Advisors: Charles Finkbeiner, Usha Jindal, Laurence Krieg,
Arlene Paup, John Rinn, J. Robert Wotring**

This is 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	Title	Hrs.
First Term (Fall)		
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
		<hr/> 17

Second Term (Winter)

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

Spring Half-Term

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

Third Term (Fall)

CIS 230	Advanced Pascal for Business and Industry	4
CIS 240	Career Practices	2
CIS 275	C Language	4
CIS 288	Systems Analysis and Design	3
CIS	Approved CIS Elective*	<u>3</u>
		16

Fourth Term (Winter)

PLS 108	Government and Society	3
BMG 215	Small Business Management	3
CIS 238	Assembler	3
CIS 282	Small System Data Base	3
CIS	Approved CIS Elective*	<u>3</u>
		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: 71

Digital and Electronics Career Programs

Digital Equipment Technology

Two-Year Program: Code 835

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

The Digital Equipment Technology Program trains technicians to install, service and maintain a wide range of equipment such as digital computer systems, word processing systems, numerical control systems, security systems and instrumenta-

tion systems. Students in this program gain the basic electronic skills needed to install and service this wide range of electronic systems. A typical graduate will be employed as a field service representative for a company dealing in computer and digital electronic equipment. Beside being technically competent, he/she must possess verbal, written communication and interpersonal skills to interface with customers, managers and fellow representatives.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
1	EE 101	Servicing Techniques	4
1	EE 123A***	Fundamentals of Electricity (A)	5
2	EE 137	Switching Logic	3
4	EE 140	Software Concepts	4
			<u>16</u>
Second Term (Winter)			
2	EE 123B***	Fundamentals of Electricity (B)	5
4	EE 139	Computer Systems I	4
5	EE 211	Basic Electronics	4
3	ENG 100	Communication Skills	4
			<u>17</u>
Spring/Summer Term			
5	EE 221	Computer Peripherals	3
9	EE 299	Customer Relations	1
6	ENG 107	Technical Communications	3
			<u>7</u>
Third Term (Fall)			
3	EE 215	Data Communications I	3
7	EE 230	Computer Systems II	4
7	EE 238	Electronic Analog Circuits	4
9	EE 240	Career Practices Seminar	2
6	EE 241	Digital Electronics	4
			<u>17</u>
Fourth Term (Winter)			
8	EE 234	VAX/VMS for Hardware Technicians	3
8	EE 235	Computer Systems III	4
9	EE 250	Microprocessors	4
10	PLS 108	Government and Society	3
10		Approved Non-Technical Elective	3
			<u>17</u>

***STUDENTS WHO PLACE HIGH ON THE MATH PLACEMENT AND ASSETT TESTS SHOULD CONSIDER ENROLLING IN EE 123.

Total Credit Hours for Program: 74

Electronic Control Systems Technology

Two-Year Program: Code 837

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

This is a two-year program designed to provide career training as an industrial electronics and automation technologist. The technologist will do much more of the traditional work of an industrial electrician — installing equipment, wiring the factory, maintaining motors, transformers, and switchgear, choosing wire sizes, locating equipment and ensuring that electrical codes and specifications are met. But today's technologist will also do much more. He or she will be part of a team consisting of engineers, managers and skilled trades workers, which will automate the factory. The technologist 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 or 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.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
1	EE 123A***	Electrical Fundamentals (A)	5
2	EE 137	Switching Logic	3
4	EE 140	Software Concepts	4
3	PHY 110	Applied Physics	4
			<hr/> 16
Second Term (Winter)			
2	EE 123B***	Fundamentals of Electricity (B)	5
5	EE 134	Motors and Controls	4
4	EE 139	Computer Systems I	4
6	EE 211	Basic Electronics	4
			<hr/> 17
Spring/Summer Term			
1	EE 101	Servicing Techniques	4
3	ENG 100	Communication Skills	4
			<hr/> 8
Third Term (Fall)			
7	EE 224	Programmable Controllers	4
10	EE 238	Electronic Analog Circuits	4
9	EE 240	Career Practices Seminar	2
7	EE 241	Digital Electronics	4
10	PLS 108	Government and Society	3
			<hr/> 17

Fourth Term (Winter)			
8	EE 204	National Electric Code	2
8	EE 244	Electronic Control Systems	4
9	EE 250	Microprocessors	4
9	EE 254	Programmable Controller Systems or Approved Technical Elective	4
6	ENG 107	Technical Communications or approved non-technical elective	3
			<u>17</u>

***STUDENTS WHO PLACE HIGH ON THE MATH PLACEMENT AND ASSETT TESTS SHOULD CONSIDER ENROLLING IN EE 123.

Total Credit Hours for Program: 75

Telecommunication Technology
Two-Year Program: Code 836
Advisors: William Cleary, Larry Kramer,
Gary Downen, Ken Wheeler

This is 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. The technologist will use the English language to communicate effectively in oral and written form to other technologists; managers and customers.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
10	EE 101	Servicing Techniques	4
3	EE 105	Introduction to Telecommunications	3
1	EE 123A***	Fundamentals of Electricity (A)	5
1	EE 137	Switching Logic	3
			<u>16</u>
Second Term (Winter)			
2	EE 123B***	Fundamentals of Electricity (B)	5
5	EE 139	Computer systems I	4
2	EE 140	Software Concepts	4
3	EE 211	Basic Electronics	4
			<u>17</u>
Spring/Summer Term			
9	PLS 108	Government and Society	3
9	ENG 100	Communications Skills	4
			<u>7</u>

Third Term (Fall)			
7	EE 205	Basic Telephony	4
4	EE 215	Digital Communications I	3
7	EE 238	Electronic Analog Circuits	4
6	EE 240	Career Practices Seminar	2
4	EE 241	Digital Electronics	4
			<hr/> 17
Fourth Term (Winter)			
5	EE 225	Data Communications II	4
8	EE 245	Transmission Systems	4
6	EE 250	Microprocessors	4
8	EE 275	Switching Systems	4
			<hr/> 16

***STUDENTS WHO PLACE HIGH ON THE MATH PLACEMENT AND ASSET TESTS SHOULD CONSIDER ENROLLING IN EE 123

Total Credit Hours for Program: 73

Health Occupations Career Programs

Dental Auxiliary Career Programs

Dental Assisting

Certificate Program: Code 711
Advisor: Betty Finkbeiner

A one-year program 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 (R.D.A.). 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.*

Full-Time Sequence	Title	Hrs.
First Term		
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 — 2nd 7 weeks	2
*BIO 102	Human Biology	4
*ENG 091	Writing Fundamentals or	
ENG 100	Communication Skills	4
		<u>4</u>
		23
Second Term		
DA 122	Advanced Dental Science	4
DA 124	Advanced Clinical Dental Assisting — First 7 weeks	3
DA 121A	Oral Diagnosis Practicum I	1
DA 126	Dental Laboratory Procedures — First 10 weeks	4
DA 125	Dental Roentgenology — First 10 weeks	2
DA 103	Nutrition & Prevention	2
SO 101	Typewriting**	3
		<u>3</u>
		16-19
Third Term		
DA 121B	Oral Diagnosis Practicum II	
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
PSY 100	Psychology	3
		<u>3</u>
		19

Total Credit Hours for Certificate Program: 58-61

*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 Assisting
and
Associate Degree Program
Two-Year Program: Code 712**

Fourth Term		
DA 224	Advanced Functions	3
PLS 150	State and Local Government or	
PLS 108	Government and Society	3
MTH 090	Occupational Mathematics or	
MTH 165	Health Science Mathematics	3
		<u>3</u>
		9
		39

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

Total Credit Hours for Registered Dental Assisting Program: 66-70

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

Alternate Fourth Term

CIS 100	Introduction to Computers or	3
CIS 111	Computer Concepts	
PLS 150	State and Local Government or	
PLS 108	Government and Society	3
ACC 111	Principles of Accounting	3
DA 222	Advanced Dental Practice Management	<u>3</u>
		12

Total Credit Hours for Dental Office Management Program: 69-72

Nursing Career Programs

**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.) Students admitted to the Nursing Program will be required to purchase special uniforms and supplies. In addition to college general rules, nursing students are required to adhere to rules and the Nursing Code of Ethics as published in the Nursing Program Student Handbook. 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

This is a one-year program providing career training for licensed practical nursing. 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 and nursing homes, 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. In nursing homes some help supervise 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.
First (Fall) Term		
*BIO 111	Anatomy and Physiology	5
NUR 100	Nursing Fundamentals	5
NUR 110	Geriatric Nursing	1
*ENG 100	Communication Skills or	
*ENG 111	English Composition I	4
*HS 117	Nutrition	2
NUR 111	Pharmacology I	1
NUR 118	Personal and Community Health	1
		19
Second (Winter) Term		
NUR 125	Basic Medical-Surgical Nursing (first 7½ weeks, 23 hours practice per week)	6
NUR 126	Intermediate Medical-Surgical Nursing (second 7½ weeks, 23 hours practice per week)	6
NUR 122	Pharmacology II	2
*PSY 100	Introduction to Psychology	3
		17
Third (Spring-Summer) Semester		
NUR 135	Parent-Child Nursing (first 8 weeks, 18 hours practice per week)	6
NUR 145	Advanced Medical Surgical Nursing (second 6 weeks, 23 hours practice per week)	5
*HS 147	Growth and Development	3
NUR 133	Pharmacology III	2
		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
		16

Second (Winter) Term

NUR 255	Mental Health Nursing (7½ weeks, 12 hours practice per week)	5
NUR 235	Advanced Parent-Child Nursing (7½ weeks, 12 hours practice per week)	5
+ HS 244	Medical Ethics	2
*SOC 100	Principles of Sociology	3
		15

Third (Spring) Half-Semester

NUR 245	Complex Medical-Surgical Theory (7 weeks, 20 hours practice per week)	6
*PLS	Political Science Requirement (108, 122 or 150)	3
NUR 260	Nursing Management and Trends	2
		11

*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.
First (Winter) Semester		
+ HS 220	Pathophysiology	4
*BIO 237	Microbiology	4
*CEM 105	Fundamentals of Chemistry	4
NUR 200	Nursing Role Transition	4
		16

Second (Spring) Half-Semester

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

Third (Fall) Semester

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

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 Career Program

Pharmacy Technology
One-Year Program: Code 770
Advisor: Phyllis Grzegorzcyk

This one-year certificate Pharmacy Technician program combines classroom instruction with lab work and clinical experience to prepare students for technician jobs. The pharmacy technician works under the supervision of registered pharmacists in hospitals, health care agencies and retail outlets such as drugstores. *Good employability.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
	First Term (Winter)		
4	PHT 100	Introduction to Hospital & Community Pharmacy	3
1	RDG 115	Medical Terminology	2
1	SO 101	Typing**	3
2	MTH 165	Health Science Mathematics	3
3	CIS 100	Introduction to Computers	3
			<hr/> 14
	Second Term (Spring-Summer)		
2	PHT 101	Drug Product & Nomenclature	3
5	PHT 102	Drug Distribution Systems & Procedures	3
5	PHT 105	Preparation of Medications	2
			<hr/> 8
			<hr/> 43

Third Term (Fall)			
6	PHT 198	Pharmacy Field Experience	8
3	ENG	English Requirement	4
			<hr/> 12

Total Credit Hours for Program: 34

**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.

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 maybe 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.*

Full-Time

Sequence	Title	Hrs.
First (Summer) Term — 7 weeks		
RAD 100	Introduction to Radiography	2
RAD 101	Methods of Patient Care	2
MTH 165	Health Science Math	3
		<hr/> 7
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
RDG 115	Medical Terminology	2
		<hr/> 14

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 Requirement	4
		<hr/> 15

Fourth (Spring) Term — 7 weeks

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

Fourth (Summer) Term — 7 weeks

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

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
		<hr/> 15

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
		<hr/> 12

Seventh (Spring) Term — 7 weeks

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

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 at WCC with a grade of "C" or better; 4) One year of high school algebra or MTH 097 at WCC with a grade of "C" or better; 5) One year of high school physics of PHY 105 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.*

Course	Description	Hrs.
First Term		
*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	<u>4</u>
		17
Second Term		
RTH 148	Pharmacology for Respiratory Therapists	2
RTH 122	Respiratory Physiology	2
RTH 123	Respiratory Pathophysiology	3
RTH 149	Pathology for Respiratory Therapy	3
RTH 198	General Clinical Practice I	<u>3</u>
		13
Third Term		
RTH 213	Intensive Respiratory Care	3
RTH 212	Ventilators	3
RTH 214	Cardiodiagnostics	3
RTH 199	General Clinical Practice II	<u>3</u>
		12

Fourth Term

BIO 237	Microbiology or	4
BIO 147	Hospital Microbiology	1
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>14-17</u>

Fifth 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: 69-72

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 Technology****Two-Year Program: Code 641****Advisors: James Beaton, Don Garrett, Jillaine Beauchamp**

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
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 or	
4	CUL 150	Dining Room Management	6
			<u>15</u>
Second Term (Winter)			
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>
Third Term (Spring)			
9	CUL 227	Advanced Culinary Arts Technique	6
Fourth Term (Fall)			
12	ENG 100	Communication Skills	4
2	CUL 150	Dining Room Management	6
10	CUL 228	Layout and Equipment	4
			<u>14</u>
Fifth Term (Winter-Spring)			
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 Techniques	(3)
			<u>17-18</u>

Total Credit Hours for Program: 68-69

Food Production Specialist

One-Year Program: Code 642

Advisors: James Beaton, Don Garrett, Jillaine Beauchamp

This is a one-year program providing training as a Food Production 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
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 219	Elementary Baking	<u>4</u>
			16
Second Term (Winter)			
5	CUL 222	Quantity Food Preparation	6
3	ENG 100	Communication Skills	4
	CUL 225	Advanced Baking and Pastry	<u>(4)</u>
			14
Third Term (Spring)			
6	CUL 227	Advanced Culinary Arts Techniques	6
Total Credit Hours for Program:			36

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

This is a two-year program providing career training in hospitality management technology. 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.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
1	CUL 100	Introduction to Hospitality Industry Management	3
4	CUL 111	Elementary Food Preparation or	
	CUL 150	Dining Room Management	6
2	CUL 110	Sanitation and Hygiene	3
10	DP100	Introduction to Computers	<u>3</u>
			15
			49

Second Term (Winter)			
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>
Third Term (Spring)			
9	PSY 150	Industrial Psychology	3
8	CUL 250	Advanced Service Technique	3
			<u>6</u>
Fourth Term (Fall)			
7	CUL 220	Organization and Management	3
7	CUL 150	Dining Room Management	6
10	CUL 260	Catering and Banquets	3
	ENG 100	Communication Skills	4
			<u>16</u>
Fifth Term (Winter)			
8	HMT 230	Hospitality Law	4
8	HMT 222	Lodging Marketing and Promotion	3
10	HMT 223	Practicum in Lodging Management	3
9	PLS 108	Government and Society	3
			<u>13</u>
Total Credit Hours for Program: 66			

Public Service Career Programs

Child Care

Two-Year Program: Code 640

Advisor: Phillip A. Ludos, Patricia Travis

This is 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. *High employability.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
1	CCW 101	Child Development	3
	CCW 108	Educational Experiences in Expressive Arts	3
1	CCW 105	Practicum I	3
2	ENG 100	Communication Skills or	
	ENG 111	Composition I	4
2	CMT 101	Fundamentals of Speaking	3
			<u>16</u>

Second Term			
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>
Third Term			
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 or	
5	PLS 108	Government and Society	3
5	*	Elective	3
			<u>15</u>
Fourth Term			
6	CCW 100	The Exceptional Child	3
6	CCW 114	Practicum III	4
6	CCW 111	Day Care Administration or	
	CCW 116	Seminar in Infant Care	3
8	CCW 118	Childhood Nutrition	2
	CCW 121	First Aid for the Child Care Worker	2
			<u>14</u>

Total Credit Hours for Program: 61

*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

Correctional Science
One-Year Certificate Program: Code 415
Two-Year Associate Program: Code 650
Advisors: Phillip A. Ludos, Catherine Chaudoin

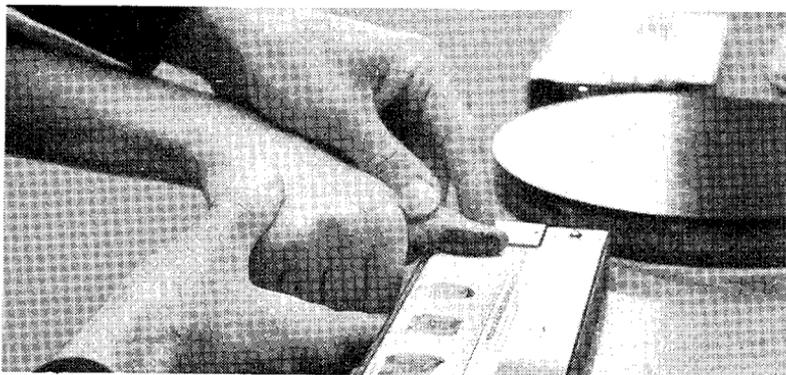
Both a certificate and two-year associate program are offered in the correctional field. The programs are designed so that upon completion the student is prepared to take the entry level exams at both the county and state levels. Further, the student who is already employed in the correctional field is assisted in his/her movement on the career ladder. The studies in the program broaden the student's skills by including strong emphasis on the social sciences. The intent is to enhance theoretical understanding and combine this with pragmatic applications. Numerous field trips are included activities in the programs. *High employability.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
1	ENG	100 or 107 English Requirement	4
2	PSY 100	Introductory Psychology	3
3	SOC 100	Principles of Sociology	3
1	COR 132	Correctional Institutions/Facilities	3
1	COR 122	Introduction to Corrections	3
			<u>16</u>
Second Term			
3	PLS	108 or 150 Political Science Requirement	3
2	COR 211	Legal Issues in Corrections	3
2	COR 219	Client Relations in Corrections	3
4	COR 228	The Correctional Client: Growth and Development	3
4	Approved Elective*		3
			<u>15</u>
Total Credit Hours for Certificate: 31			
Third Term			
4	PSY 209	Psychology of Adjustment	3
5	SOC 202	Criminology	3
5	SOC 250	Juvenile Delinquency or	
	CJ 223	Juvenile Justice	3
4	CMT 101	Fundamentals of Speaking	3
3	CJ 100	Introduction to Criminal Justice	3
			<u>15</u>
Fourth Term			
5	SOC 207	Social Problems	3
6	COR 218	Correctional Counseling	3
6	PSY 257	Abnormal Psychology	3
7	COR 227	Seminar in Corrections	3
7	Approved Elective*		3
			<u>15</u>

Total Credit Hours for Associate Degree: 61

*Approved electives for correctional certificate: (see program advisor for any/all exceptions)

PHL 101	Introduction to Philosophy
PSY 200	Child Psychology
PSY 207	Social Psychology
SOC 205	Racial and Ethnic Relations
SOC 207	Social Problems
MTH 090	Occupational Math
MTH 160	Basic Statistics
HUM 101	Introduction to Humanities
CIS 100	Introduction to Computers
BMG 230	Supervisory Management
SPN 111	First Year Spanish



Criminal Justice
Two-Year Program: Code 651
Advisor: Phillip A. Ludos

This is a two-year program providing career training as a criminal justice technician. Upon completion of the criminal justice program, a student has 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 Sequence	Title	Hrs.
First Term			
1	ENG	100, 107 or 111 (English Requirement)	4
1	CJ 100	Introduction to Criminal Justice*	3
2	PSY 100	Introductory Psychology	3
3	SOC 100	Principles of Sociology	3
3	PLS	108 or 150 (Political Science Requirement)	3
			<u>16</u>
Second Term			
4	PSY 209	Psychology of Adjustment	3
6	CJ 111	Police Community Relations	3
	SOC 250	Juvenile Delinquency or	
5	CJ 223	Juvenile Justice	3
5	CJ 122	Introduction to Corrections	3
2	SOC 207	Social Problems	3
			<u>15</u>
Third Term			
7	CJ 208	Evidence and Procedure	3
7	CJ 224	Criminal Investigations	3
6	SOC 202	Criminology	3
4	CMT 101	Fundamentals of Speech	3
		**Elective	<u>3</u>
			15

Fourth Term

	CJ 205	Applied Psychology for Police or	
7	PSY 257	Abnormal Psychology	3
8	CJ 209	Criminal Law	3
7	CJ 210	Introduction to Criminalistics	3
8	CJ 225	Seminar in Criminal Justice	3
8	Elective**		<u>3-4</u>
			15-16

Total Credit Hours for Program: 61-63

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

**ELECTIVES APPROVED: Please consult with program advisor prior to selecting electives.

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

**Criminal Justice
Law Enforcement — Certification
Two-Year Associate Program: Code 652
Advisors: Phillip A. Ludos, Ralph H. Galvin**

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

Full-Time Sequence	Title	Hrs.
First Term (Winter)		
ENG	100, 107 or 111 (English Requirement)	4
CJ 100	Introduction to Criminal Justice	3
PSY 100	Introduction to Psychology	3
SOC 100	Principles of Sociology	3
PLS	108 or 150 (Political Science Requirement)	<u>3</u>
		16

Second Term (Spring)

CMT 101	Fundamentals of Speech	3
CJ 150	Criminal Justice Physical Conditioning	3
		<hr/> 6

Third Term (Fall)

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

Fourth Term (Winter)

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

Fifth Term (Spring/Summer)

CJ221	Law Enforcement Training	16
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Total Credit Hours for Program: 65

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

This is a two-year program providing career training as a fire protection technician. After 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 employment 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 employability.*

Part-Time Sequence*	Full Time Sequence	Title	Hrs
First Term			
	FP 100	Introduction to Fire Protection	3
	FP 103	Flammable Hazardous Materials	3
	FP 111	Fire Hydraulics	3
	ENG	100, 107 or 111, English Requirement	4
	PSY 100	Introductory Psychology	3
			<hr/> 16

Second Term

FP 109	Incident Command	3
FP 112	Fire Company Supervision	3
FP 122	Fire Prevention Theory & Application	3
PLS	108 or 150, Political Science Requirement	3
CIS 100	Introduction to Computers	3
		<u>15</u>

Third Term

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

Fourth Term

FP 216	Legal Aspects of Fire Protection	3
FP 099	Labor Relations in the Public Sector	3
FP 224	Protection Systems	3
FP 250	Fire Protection Training Methodology	3
		<u>15-18</u>

Total Credit Hours for Program: 61-63

*An advisor can suggest a part-time sequence.

****ELECTIVES**

FP 124	Fire Protection Systems	3
SOC 100	Principles of Sociology	3
Non-traditional elective credit may be awarded for current certification from the following recognized fire and emergency courses:		
	Fire Fighter First Responder	3
	Emergency Rescue	2
	F.F.T.C. — 240 Hour Course	6
	EMT	6
	Fire Company Management	3
	Extrication	2

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* Title	Hrs.
First Term	
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	<u>2-3</u>
	15-16
Second Term	
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***	<u>2</u>
	15

See catalog for recommended business-related electives.

Recommended Business-Related Electives

SO 131 Shorthand	
SO 150 Office Proofreading	
SO 151 Information Processing Principles	
SO 154 Word Processing Appl/PC***	
ACC 091 Fundamentals of Accounting <i>or</i>	
ACC 111 Principles of Accounting	
BMG 200 Human Relations in Business and Industry	
CMT 101 Fundamentals of Speaking	

Total Credit Hours for Program: 30-31

*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.

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

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 sys-

tems to store and revise information. Specialists must be able to think logically, organize, proofread, transcribe, and work with and supervise others.

Full-Time

Sequence* Title Hrs.

First Term

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>

Second Term

SO 152	Information Processing Transcription Skills	3
SO 153	Information Processing Applications/Basic Practice***	2
SO 154	Word Processing Appl/PC***	2
SO 203	Typewriting	3
SO 107	Clerical Methods and Procedures	4
BMG 140	Introduction to Business	3
		<u>17</u>

Third Term

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
BMG 299	Intern-Externship <i>or</i> Business-Related Elective	3
		<u>16</u>

Fourth Term

SO 225	Information Processing Systems and Procedures	3
CMT 101	Fundamentals of Speaking	3
SO 130	Business Machines	3
BMG 200	Human Relations in Business and Industry	3
BMG 299	Internship/Externship <i>or</i> Business-Related Elective	3
		<u>15</u>

Recommended Business-Related Electives

SO 150	Office Proofreading
BMG 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
BMG 111	Business Law
RDG 115	Medical Terminology

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.

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

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.
First Term		
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
Second Term		
SO 102 <i>or</i>		
SO 203	Typewriting**	3
BIO 111	Anatomy and Physiology <i>or</i>	
BIO 102	Human Biology	4
SO 152	Information Processing Transcription Skills	3
SO 153	Information Processing	
	Applications/Basic Practice***	2
SO 154	Word Processing Applications/PC***	2
		14
Third Term		
SO 210	Medical Transcription	3
SO 107	Clerical Methods and Procedures	4
PLS 108	Government and Society	3
BMG 299	Intern/Externship <i>or</i>	
	Business-Related Elective	3
SO 130	Business Machines	3
		16

(continued on next page)

Fourth Term

SO 224	Information Processing for Medical Specialist	2
SO 223	Medical Office Procedures	3
CMT 101	Fundamentals of Speaking	3
HS 115	Medical Office Procedures (Clinical)	2
BMG 200	Human Relations in Business and Industry	3
BMG 299	Internship/Externship or Business-Related Elective	<u>3</u>
		16

Recommended Business-Related Electives

SO 131	Shorthand
SO 150	Office Proofreading
SO 151	Information Processing Principles
ACC 091	Fundamentals of Accounting or
ACC 111	Principles of Accounting

Total Credit Hours for Program: 63

*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.

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

Secretarial Technology**Two-Year Program: Code 561**

Advisors: Wanda Burch, Eleanor Chariton, Marie Juster, 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* Title Hrs.

First Term

SO 102	Intermediate Typewriting**	3
BMG 140	Introduction to Business	3
MTH 163	Business Mathematics	3
ENG 100	Communication Skills	4
SO 131	Beginning Shorthand	<u>4</u>
		17

Second Term

SO 203	Advanced Typewriting**	3
SO 132	Intermediate Shorthand	3
SO 130	Business Machines	3
PLS 108	Government and Society	3
CIS 100	Introduction to Computers	<u>3</u>
		15

Third Term

SO 152	Information Processing Transcription Skills	3
SO 107	Clerical Methods and Procedures	4
SO 153	Information Processing Applications/Basic Practice***	2
SO 154	Word Processing Appl/PC***	2
SO 231	Advanced Shorthand	3
ACC 091	Fundamentals of Accounting or	
ACC 111	Principles of Accounting	3
		<u>17</u>

Fourth Term

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

Recommended Business-Related Electives

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

Total Credit Hours for Program: 65

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

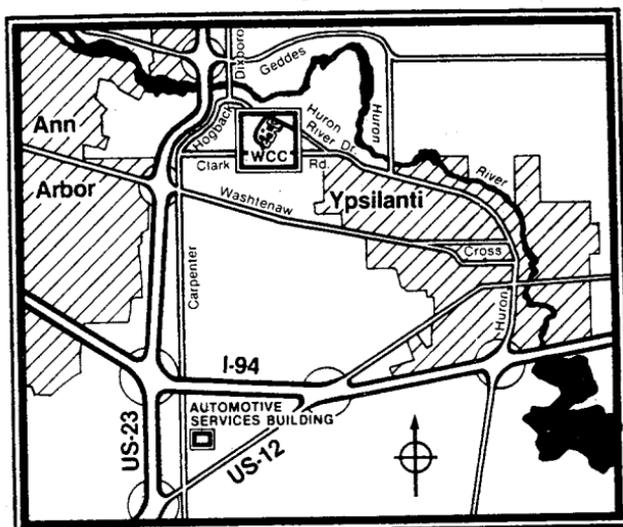
**Typewriting and shorthand credit and contact hours are progressive in accordance with student progress and proficiency level. (See catalog course description.)

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

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

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

This is 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 Sequence	Title	Hrs.
First Term (Fall)			
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>
	Second Term (Winter)		
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>
	Spring/Summer		
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

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
		First Term (Fall)	
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>

Second Term (Winter)			
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	<u>2</u>
			14
Spring/Summer			
5	ABR 125	Flat Rate Estimating	2
5	ABR 126	Fundamentals Frame & Body Alignment	<u>2</u>
			4
Third Term (Fall)			
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	<u>4</u>
			14
Fourth Term (Winter)			
8	ABR 230	Specialized Study	4
9	ABR 199	On-The-Job Training	4*
8	AS 227	Heating and Air Conditioning	2
9	PLS 108	Government and Society	<u>3</u>
			13

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 Mechanics
One-Year Program: Code 816
Advisors: Ken Barron, Scott Fisher, John Mann, Richard Weid

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
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>
	Second Term (Winter)		
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>
	Spring/Summer		
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 Spray Painting
One-Year Program: Code 813
Advisors: Edward Cammet, Lester Jordan

This is 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.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
	First Term (Fall)		
1	ABR 111	Auto Body Repair Fundamentals	4
1	ABR 112	Auto Refinishing Fundamentals	4
2	ABR 113	Light Body Service	1
2	ABR 114	Applied Auto Body Welding	1
2	WF 101	Acetylene Welding	2
3	MTH 090	Occupational Mathematics	3
			<u>15</u>
	Second Term (Winter)		
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>
	Spring/Summer		
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 Service Technology

Two-Year Program: Code 815

Advisors: Ken Barron, Scott Fisher, John Mann, Richard Weid

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
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
			16
Second Term (Winter)			
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
			14
Spring/Summer			
6	AS 219	Diagnosis and Repair II	3
7	AS 124	Wheel Balance and Alignment	2
			5
Third Term (Fall)			
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
			13
Fourth Term (Winter)			
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
			13
Spring/Summer			
12	AS 230	Practical Field Experience	2
11	AS 227	Heating and Air Conditioning	2
11	AS 232	Auto. Trans. and Overdrive Trans. or	
11	AS 238	Computer Engine Controls	2
			6

Total Program Credit Hours: 67

Approved List of Electives: PSY 150; BMG 160; BMG 209; EC 150.

Drafting Career Programs

Architectural Drafting Two-Year Program: Code 821 Advisor: Michael Pogliano

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
	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 or ENG III Composition I	4
			18
Second Term			
	2	ARC 122 Architectural Drawing	6
	2	ARC 120 Mechanical and Electrical Systems	3
	6	ARC 109 Site Layout or ARC 209 Surveying	3
	3	ARC 100 Specifications	1
	5	ARC 150 Presentation Drawings and Models	4
			17
Third Term			
	3	ARC 213 Architectural Drawing	6
	4	ARC 210 Structure in Architecture	2
	5	ARC 207 Estimating Construction Costs	2
	3	PHY 111 General Physics	4
	2	ENG 100 Communication Skills	4
			18
Fourth Term			
	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
			14
Total Credit Hours for Program: 67			

Architectural Drafting Detailing

One-Year Program: Code 822

Advisor: Michael Pogliano

This is 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.*

Part-Time Sequence	Full-Time Sequence	Description	Hrs.
First Term			
1	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 or	
	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 or	
	ARC 209	Surveying	3
4	ARC 100	Specifications	1
			<u>17</u>

Total Credit Hours for Program: 35

Computer Aided Drafting Technology (CAD)

This is 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 824

Advisors: Augustus Stager, Andrew F. Ford

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
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
			<hr/> 17
	Second Term (Winter)		
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	Introduction to FORTRAN Programming	4
			<hr/> 14
	Spring/Summer		
3	ID 218	Interactive Computer Aided Drafting	2
			<hr/> 2
	First Term (Fall)		
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
			<hr/> 14
	Second Term (Winter)		
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
			<hr/> 14
	Spring/Summer		
6	ID 260	Introduction to CIM	2-5
6	ID 223	Introduction to Mechanical Design	4
			<hr/> 6-9

Total Credit Hours for Program: 67-70

Computer Aided Drafting Technology (CAD) Electronic Option

Two-Year Program: Code 820

Advisors: Augustus Stager, Andrew F. Ford

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
		First Term (Fall)	
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
			<hr/> 16

Second Term (Winter)			
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	<u>3</u>
			15
Spring/Summer			
3	ID 218	Interactive Computer Aided Drafting	<u>2</u>
			2
First Term (Fall)			
4	ID 107	Mechanisms	4
4	ID 219	2-D CAD Planning and Drawing	3
4	MTH 179	Precalculus	4
4	EE	Elective	<u>3-4</u>
			14-15
Second Term (Winter)			
5	ID 220	CAD Application — Electronics	4
5	CPS 187	Introduction to FORTRAN Programming	4
3	MT 103	Introduction to Materials	3
6	PLS 108	Government and Society	<u>3</u>
			14
Spring/Summer			
5	ID 222	Introduction to Electronic Design	<u>4</u>
			4

Total Credit Hours for Program: 65-66

Construction Specialization
One-Year Program: Code 823
Advisor: Michael Pogliano

This is a one-year program providing career training as a construction specialist. The construction specialist is also called a contractor of construction. He/she is trained in subjects that render him/her proficient in construction supervising, and is generally skilled in one or more building trades. His/her training is in specializations — enabling him/her to estimate business real estate, improve his/her performance as a superintendent or obtain State of Michigan approval as a licensed person in his/her chosen phase of building contracting. *Average employability.*

Part-Time Sequence	Full-Time Sequence	Description	Hrs.
First Term			
1	ARC 111	Architectural Drawing	6
1	ARC 117	Construction Materials	3
2	ARC 207	Estimating Construction Costs	2
1	BPR 100	Blueprint Reading	2
4	BMG 111	Business Law	<u>3</u>
			16

Second Term			
3	ARC 109	Site Layout	3
3	ARC 208	Estimating Construction Costs	1
2	ARC 100	Specifications	2
2	BPR 110	Blueprint Reading for Construction Trades	2
	PSY 150	Industrial Psychology	3
4	ENG 100	Communication Skills	4
			<u>15</u>

Total Credit Hours for Program: 31

Drafting Detailing

One-Year Program: Code 827

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

This is 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.

Part-Time Sequence	Full-Time Sequence	Title	Hrs
First Term (Fall)			
1	ID 111	Industrial Drafting	4
2	ID 112	Descriptive Geometry	4
3	MT 111	Machine Shop Theory and Practices	4
4	MTH	Mathematics Elective	4
			<u>16</u>
Second Term (Winter)			
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 Geometrical	2
3	MT 103	Introduction to Materials	3
4	ENG	English Elective	4
			<u>17</u>

Total Credit Hours for Program: 33

Industrial Drafting Technology

Two-Year Program: Code 825

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

This is 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.

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term (Fall)			
1	ID 111	Industrial Drafting	4
1	ID 112	Descriptive Geometry	4
3	MT 111	Machine Shop Theory and Practices	4
1	MTH 151	Applied Algebra	4
			<u>16</u>
Second Term (Winter)			
2	ID 114	Industrial Drafting	4
4	ID 121	Theory of Jigs and Fixtures	2
4	ID 123	Tolerancing: Conventional and Geometrical	2
3	MT 103	Introduction to Materials	3
4	MTH 152	Applied Geometry and Trigonometry	4
			<u>15</u>
Third Term (Fall)			
4	ID 107	Mechanisms	4
3	ID 216	Introduction to Computer Aided Drafting	2
5	ID 251	Fundamentals of Electronic Drafting	2
5	CPS 183*	BASIC Programming	4
5	ENG 100	Communication Skills	4
			<u>16</u>
Fourth Term (Winter)			
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>16-18</u>

Total Credit Hours for Program: 63-65

*May substitute CPS 186 or 187.

**Suggested Electives: ID 218; ID 252; 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

This is 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.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
First Term			
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
			17
Second Term			
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
			17
Third Term			
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
			17
Fourth Term			
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
			16

Total Credit Hours for Program: 67

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

This is 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.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
First Term			
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
			17
Second Term			
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	CMT 101	Fundamentals of Speaking	3
			14
Third Term			
3	FLP 122	Hydraulic Pumps and Motors	2
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
			17
Fourth Term			
4	FLP 225	Fluid Power Instrumentation	3
		Elective in Industrial Technology	4
6	MT 122	Machine Tool Operation and Set-Up I	4
8	PLS 108	Government and Society	3
8		Elective	3
			17

Total Credit Hours for Program: 65

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

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
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
			15
Second Term			
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
			15

Total Credit Hours for Program: 30

Mechanical-Engineering Technology
Two-Year Program: Code 851
Advisors: Dean Avery, Burton Lowe

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
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 or	
	ENG 100	Communication Skills*	4
			<u>19</u>
Second Term			
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>
Third Term			
3	MT 103	Introduction to Materials	3
5	EE 123A	Fundamentals of Electricity	5
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>19</u>



Fourth Term			
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: 68

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

Integrated Manufacturing Career Programs

Robotic Technology Two-Year Program: Code 844 Advisor: George Agin

Full-Time Sequence

Course	Description	Hrs.
First Term		
EE 123A	Fundamentals of Electricity	5
FLP 111	Fluid Power Fundamentals	4
IM 121	Robotics I: Introduction	3
ID 100	Technical Drawing	4
		<u>16</u>
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
WF 090	Welding for Robotics	1
		<u>15</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: 68

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

Part-Time Sequence	Course	Title	Hrs.
First Term			
2	NC 121	Manual Programming and NC Tool Operation	3
1	MT 111	Machine Shop Theory and Practice	4
1	ID 100	Technical Drawing or	
	ID 111	Industrial Drafting	4
1	MTH 151	Applied Algebra	4
			<u>15</u>
Second Term			
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

This is 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 or she must also be able to program the machine to do its proper functions. He or she must be able to make minor repairs to the machine and maintain it. He or she also must have a knowledge of blueprints and be able to use precision measuring instruments. He or 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
	First Term		
1	NC 100	Introduction to Numerical Control	3
1	MT 111	Machine Shop Theory and Practice	4
1	ID 100	Technical Drawing or	
	ID 111	Industrial Drafting	4
2	MTH 151*	Applied Algebra	4
			<u>15</u>
	Second Term		
2	NC 121	Manual Programming and NC Tool Operation	3
2	MT 122	Machine Tool Operation and Set-Up I	4
3	ID 112	Descriptive Geometry	4
5	MTH 152*	Applied Geometry and Trigonometry	4
5	CPS 187	Introduction to FORTRAN Programming	4
			<u>19</u>
	Third Term		
4	NC 122	Advanced Manual Prog. and NC Tool Operation	3
6	NC 213	COMPACT II Computer Programming	4
3	ENG 100*	Communication Skills	4
5	ID 121	Theory of Jigs and Fixtures	2
4	PLS 108	Government and Society	3
			<u>16</u>
	Fourth Term		
7	NC 224	APT III Computer Programming	4
7	NC 225	Numerical Control Graphics	3
6	NC 111	Manufacturing Processes for NC Elective	4
			<u>3</u>
			<u>14</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; MTH 177; ENG 111.

Mechanical Technology Career Programs

Toolroom Machine Operation

One-Year Program: Code 853

Advisors: Dean Avery, Burton Lowe

This is 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.*

Part-Time Sequence	Full-Time Course	Sequence Description	Hrs.
First Term			
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
			18
Second Term			
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
			15

Total Credit Hours for Program: 33

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

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

This is 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*	Title	Hrs.
First Term		
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 or	
ENG 100	Communication Skills or	
ENG 111	Composition I	<u>4</u>
		18
Second Term		
WF 123	Advanced Oxy-Acetylene	4
WF 124	Advanced Arc Welding	4
WF 200	Layout and Theory for Welders	2
ID 100	Technical Drawing	4
MTH 177	Triangle Trigonometry	<u>3</u>
		17
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	<u>3</u>
		17
Fourth Term		
WF 226	Welding and Fabrication (Specialized)	4
FLP 111	Fluid Power Fundamentals	4
WF 229	Shape Cutting Operations	3
PLS 108	Government and Society	<u>3</u>
		14

Total Credit Hours for Program: 66

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

Welding Maintenance Mechanics
One-Year Program: Code 892
Advisors: William Figg, Clyde Hall

This is a one-year program designed to provide career training as a welding maintenance mechanic. Students weld metal parts together according to layouts, blueprints, or work orders using gas welding or brazing and any combination of

arc-welding processes. 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
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>
Second Term			
3	WF 123	Advanced Oxy-Acetylene	4
4	WF 124	Advanced Arc Welding	4
8	WF 215	Advanced TIG and MIG Welding	4
9	WF 227	Basic Fabrication	3
10	CMT 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

This is 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 Sequence	Title	Hrs.
First Term (Fall)			
1	GDT 100	Typography I	4
2	GDT 101	Design Survey	3
2	ART 112	Basic Design	4
1	ART 111	Basic Drawing	4
2	ENG 100	Communication Skills or	
	ENG 111	Composition I	4
			<u>19</u>
Second Term (Winter)			
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>
Third Term (Fall)			
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 or	3
	ID 216	Intro to CAD	2
			<u>15-17</u>
Fourth Term (Winter)			
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 or	
	BMG 209	Small Business Mgt.	3
			<u>16-20</u>

Total Credit Hours for Program: 68-73

***Approved Electives:**

GDT 228	Airbrush Techniques	4
GDT 229	Screenprinting Techniques	4
GDT 236	Specialized Study	2
PHO 112	Darkroom Techniques	5
PHO 113	Studio Techniques	3
PHO 219	Photographic Design	3
BMG 250	Principles of Marketing	3
BMG 270	Advertising Principles	3
TCA 100	Perspective Drawing	4

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 Assisting
One-Year Program: Code 886
Advisor: J. Raymond Steinbach

This is 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 negatives and positives in both black-and-white and color, copy negative and prints, and perform photographic retouching. The photographic assistant must have knowledge of small and large-format camera operation and functions and must be able to use the various accessories that can be used with the camera, including electronic flash, lenses, exposure meters, and studio-type lights. *Average to high employability.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
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	<u>4</u>
			19
Second Term			
2	PHO 112	Darkroom Techniques	5
2	PHO 113	Studio Techniques	3
4	PHO 114	Basic Color Photography	3
4	GDT 216	Graphic Reproduction	4
3	PHO 115	Photo Retouching	<u>2</u>
			17

Total Credit Hours for Program: 36

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

This is 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.*

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
1	PHO 111	Photography	4
3	ART 112	Basic Design	4
1	MTH 090	Occupational Mathematics	3
4	ENG 100	Communication Skills	4
			<u>4</u>
			15
Second Term			
2	PHO 112	Darkroom Techniques	5
2	PHO 113	Studio Techniques	3
6	PHO 114	Basic Color Photography	3
4	GDT 227	Graphic Reproduction	4
2	PHO 115	Photo Retouching	2
			<u>2</u>
			17
Third Term			
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	3
3	MGT 209	Small Business Management	3
			<u>3</u>
			15
Fourth Term			
6	PLS 108	Government and Society	4
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
			<u>3</u>
			14-16

Total Credit Hours for Program: 60-62

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

Part-Time Sequence	Full-Time Sequence	Title	Hrs.
First Term			
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
			<u>4</u>
			18

Second Term			
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
			<u>17</u>
Third Term			
3	PHO 220	Advanced Studio Techniques	3
3	PHO 221	Advanced Darkroom Techniques	3
6	PHO 222	Advanced Color Photography	3
6	MGT 160	Principles of Salesmanship	3
		1 Elective (2 credit minimum)	2
			<u>14</u>
Fourth Term			
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
		1 Elective (2 credit minimum)	2
			<u>14</u>

Total Credit Hours for Program: 67

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

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

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

Part-Time Sequence	Full-Time Sequence	Description	Hrs.
First Term (Fall)			
2	GDT 100	Typography I	4
1	ART 111	Basic Drawing	4
2	ID 100	Technical Drawing or	
	ID III	Industrial Drafting	4
1	BPR 100	Blueprint Reading for Construction Trades or	
	BPR 101	Blueprint Reading	2-3
1	MTH 090	Occupational Mathematics or	
	PHY 110	Applied Physics	3-4
			<u>17-19</u>
Second Term (Winter)			
3	TCA 100	Perspective Drawing	4
4	GDT 216	Graphic Reproduction	4
4	PHO 111	Photography	4
3	ENG 100	Communication Skills or	
	ENG 111	Composition I	4
			<u>16</u>
Third Term (Fall)			
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
			<u>16</u>
Fourth Term (Winter)			
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
			<u>19</u>
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 century 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. They differ from other training methods in several ways. First, when individuals enter an apprenticeship training program they are hired in jobs for which vacancies exist and are paid a percentage of the 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 apprenticable trades. The College's Director of Business and Industrial Services works directly with the apprentice and the sponsoring firm to meet these requirements. The related instruction program has been approved by the Bureau of Apprenticeship and Training of the U.S. Department of Labor.

Sponsoring firms are invited to contact the Director concerning individual employees who wish to participate.

Pre-Apprenticeship Training

Individuals who 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 Business and Industrial Services. 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 Trades

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

Two-Year Program: Code 943

Advisor: L. E. Pierce

Course	Description	Hrs.
MTH 151	Applied Algebra <i>or</i> Elective	4
RAC 111	Refrigeration I	5
RAC 122	Refrigeration II	5
WF 104	Soldering and Brazing	2
RAC 123	Refrigeration and Air Conditioning Systems	5
RAC 124	Basic Controls	5
RAC 213	Air Conditioning	5
RAC 214	Control Systems	5
RAC 215	Troubleshooting Controls	5
RAC 216	Systems Laboratory	5
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>

Total: 73 hours (minimum requirement is 60)

Statistical Process Control (Quality Control) Technician/Supervisor Two-Year Program: Code 944 Advisor: L. E. Pierce

Core Courses*

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

*Quality Control Core Courses are offered evenings only.

Management Option

QC	Core Courses	18
MTH 169	Intermediate Algebra	4
MTH 160	Basic Statistics	4
MTH 160	Basic Statistics	7-8
ENG 111	Composition I	4
ENG 122	Composition II	3
EC 211	Principles of Economics	3
EC 222	Principles of Economics	3
ACC 111	Principles of Accounting	3
ACC 122	Principles of Accounting	3
CIS 111	Computer Concepts	3
CIS 130	PASCAL For Business and Industry	6
PLS 112	Introduction to American Government or	
PLS 108	Government and Society or	
PLS 150	State and Local Government and Politics	3
CMT 101	Fundamentals of Speaking	3
CPS 186	Introduction to PASCAL Programming	4
		<u>68-69</u>
		Minimum Required 60

Electronics Option

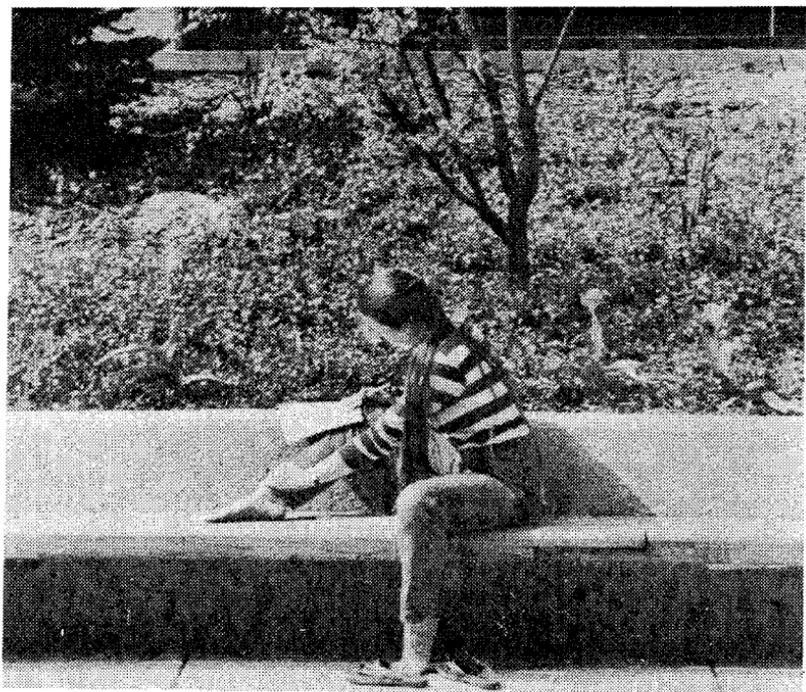
QC	Core Courses	18
MTH 169	Intermediate Algebra	4
EE 123A	Fundamentals of Electricity (A)	5
EE 123B	Fundamentals of Electricity (B)	5
EE 211	Basic Electronics	4
EE	EE Electives	8
PLS 112	Introduction to American Government or	
PLS 108	Government and Society or	
PLS 150	State and Local Government and Politics	3
ENG 111	Composition I	
ENG 122	Composition II or	
ENG 100	Communication Skills	7-8
CIS	or CPS Electives	5-6
		<u>59-61</u>
		Minimum Required 60

Specialty Option

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

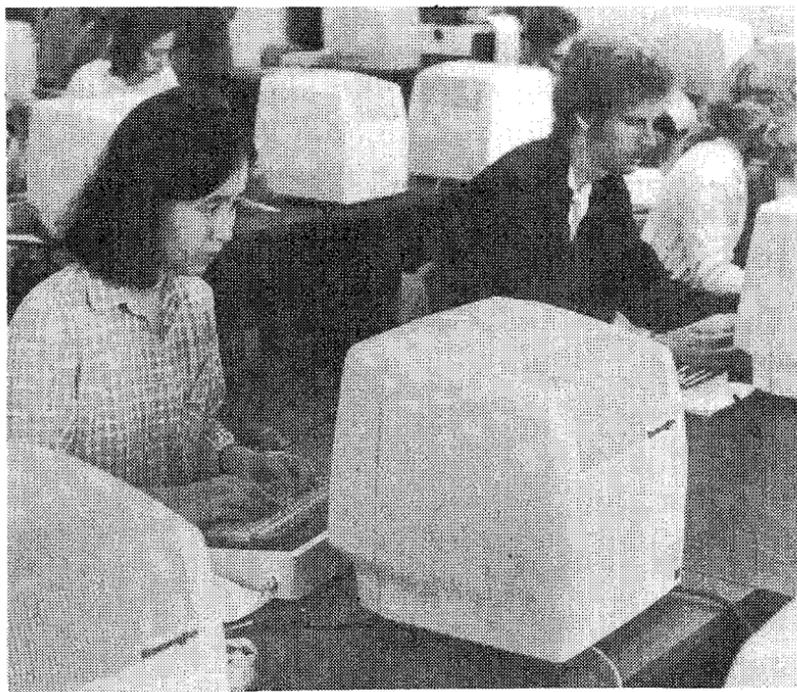
Science and Engineering Option

QC	Core Courses	18
MTH 169	Intermediate Algebra	4
MTH 179	Precalculus	4
MTH 191	Calculus I	5
MTH 192	Calculus II	4
PHY 111	General Physics I	4
PHY 122	General Physics II	4
CEM 111	General Chemistry	4
CEM 122	General Chemistry	4
ENG 111	Composition I	4
ENG 122	Composition II	3
PLS 112	Introduction to American Government or	
PLS 108	Government and Society or	
PLS 150	State and Local Government and Politics	3
		57
		Minimum Required 60





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. In many cases they are not described separately for each course area.

189. STUDY PROBLEMS 1-8 credit hours

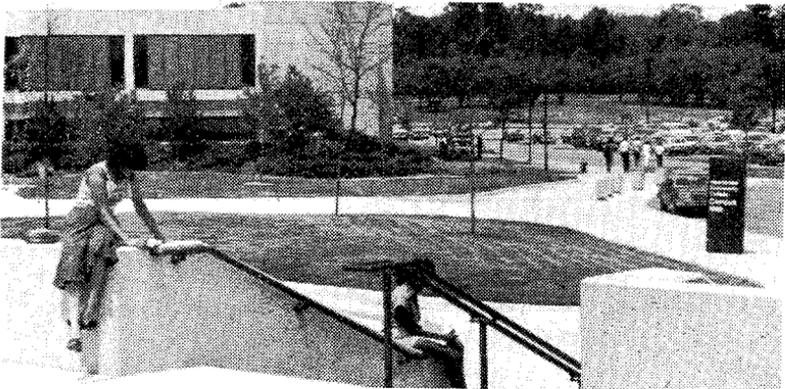
Prerequisite: Consent of area coordinator or instructor

This course involves 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 Dean 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

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

ACC 092. FUNDAMENTALS OF ACCOUNTING II 3 credit hours

Prerequisite: ACC 091

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

ACC 111. PRINCIPLES OF ACCOUNTING 3 credit hours

Prerequisite or Corequisite: MTH 163 or MTH 160

This is 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. It is 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. It is required of all Accounting majors and Business Administration transfer students.

ACC 131. COMPUTERIZED ACCOUNTING 3 credit hours

Prerequisite: ACC 092 or ACC 111

Accounting applications (Spreadsheet, General Ledger, Accounts Receiv-

able, 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. 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. Covers tax returns for individuals and unincorporated businesses.

ACC 213. INTERMEDIATE ACCOUNTING 3 credit hours

Prerequisite: ACC 122

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

ACC 225. MANAGERIAL COST ACCOUNTING 3 credit hours

Prerequisite: ACC 122

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

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 is provided in this class.

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

Prerequisite: Consent of instructor

This class provides individualized, directed activities in Anthropology. A specific problem/issue is studied, or a special project is assigned. (Hours arranged.)

ANT 201. INTRODUCTION TO CULTURAL ANTHROPOLOGY 3 credit

A study is provided 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

This class 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

This class is 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

This class concerns 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 is provided to building construction specifications, stressing the organization and preparation of specifications for construction contracts.

ARC 109. SITE LAYOUT 3 credit hours

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

ARC 111. ARCHITECTURAL DRAWING I 6 credit hours

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

ARC 117. CONSTRUCTION MATERIALS 3 credit hours

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

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

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

ARC 122. ARCHITECTURAL DRAWING II 6 credit hours

Prerequisite: ARC 111

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

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

Prerequisite: ARC 117, 120

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

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

Prerequisite: ARC 207

This is an advanced course in estimating construction cost. It is intended 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

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

ARC 213. ARCHITECTURAL DRAWING III 6 credit hours

Prerequisite: ARC 122

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 219. ARCHITECTURE, ENGINEERING AND CONSTRUCTION CAD 3 credit hours

Prerequisite: Practicing competence in architecture, engineering and construction

This class provides an introduction to the use of a large CAD system to

prepare construction drawings. Units include geometry creation, assembly of construction components and manipulation of data to form elementary structures.

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

This class is a 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

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

ART 111. BASIC DRAWING I 4 credit hours

This class is an introduction to fundamentals of drawing. Through projects the student is given experience in basic problems and issues of drawing. Emphasis on the training of the eye and the hand. This course serves as a basis for those who wish to improve their ability to think and articulate in visual terms. (6 hours per week)

ART 112. BASIC DESIGN I 4 credit hours

Study is carried out in this class of two dimensional structures through the exploration of the elements of art: line, value, shape, texture, color. The visual recognition that the predominance of the whole constitutes the composition of its parts is stressed. Emphasis is on experimentation and imagination to arrive at visual ordering. (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 are developed. Emphasis is 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. It is preferred that the students have 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 DESIGN 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 takes place of form, volume and structure with a variety of materials of different properties. (6 hours per week)

ART 124. IMAGINATIVE DRAWING I 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 ART 114, with emphasis on individual development. (6 hours per week)

ART 126. IMAGINATIVE DRAWING II 2 credit hours
Prerequisite: ART 124 or consent

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

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 is emphasized through class discussion, short papers and projects.

ART 140. LIFE DRAWING 4 credit hours

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

ART 141. ART OF BLACK FOLKS 3 credit hours

This class involves the use of the visual concept of art to aid in the emergence of Black people in America. It 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

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

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

Prerequisite: Consent of instructor

This class provides individualized directed activities in Art. A special project is assigned. (Hours arranged)

ASTRONOMY (AST 32)

AST 100. INTRODUCTORY ASTRONOMY 1 credit hour

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

AST 111. GENERAL ASTRONOMY 3 credit hours

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

This course involves repairs of damaged body panels and studying the

working properties of automobile sheet metal and basic damage conditions, analyzing typical damage conditions and establishing accepted repair procedures. (8 hours per week)

ABR 112. AUTO REFINISHING FUNDAMENTALS 4 credit hours

Methods and procedures used with automobile refinishing materials are covered in this course. Also included are: acrylic lacquers and enamels used to spray paint automobile body panels and complete automobiles; proper use of refinishing materials and the development of basic skills and procedures used in the trade. (8 hours per week)

ABR 113. LIGHT BODY SERVICE 1 credit hour

Principles of alignment and servicing of body components are a focus of this class. Students are exposed to the adjustments of various designs of hinges, latches, window regulators and the problems involved in servicing body trim, hardware and the sealing of water and dust leaks. Correct fit and the function of body parts are stressed. (4 hours per week, 7½ weeks)

ABR 114. APPLIED AUTO BODY WELDING 1 credit hour

This class is a demonstration-lab course developing basic welding skills used in auto body repair. Types of welded joints used to repair or replace damaged panels are taught with special emphasis on joint construction and heat control. (4 hours per week, 7½ weeks)

ABR 123. BODY REPAIR APPLICATIONS 4 credit hours

Prerequisite: ABR 111

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

ABR 124. AUTO REFINISHING APPLICATIONS 4 credit hours

Prerequisite: ABR 112

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

ABR 125. FLAT RATE ESTIMATING 2 credit hours

Prerequisite: Consent

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

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

Prerequisite: Consent

This class provides an opportunity to work with common types of body frame damage and the equipment used to make repairs. Laboratory assignments include use of frame gauges and portable body-frame straightening equipment to make a diagnosis and set up corrective hook ups. (4 hours per week)

ABR 127. MAJOR REPAIR FUNDAMENTALS 2 credit hours

Prerequisite: ABR 111 and WF 101

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

This class is a continuation of methods and procedures used in automotive custom painting. Lab assignments on actual automobiles provide opportunity to improve skills in pin striping, color design coordination, lettering on automobiles, mural development, and the use of specific effect color and related materials. (8 hours per week for 7½ weeks)

ABR 133. MORE MONEY FOR YOUR CAR 3 credit hours

This is a lecture and group participation class to teach students the fundamentals of body roof alterations necessary to lower the roof line of a late model automobile.

ABR 219. MAJOR REPAIR PROCEDURES 4 credit hours

This class provides a detailed study of the automobile body that includes use of hydraulic jacks and accessories to make repairs common to the front, side and rear sections of automobiles damaged by collision. Repair jobs are involved to provide 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 112 and 124

This class is a 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 226. UNIBODY STRUCTURAL ALIGNMENT 2 credit hours

Because the need to reduce weight and increase fuel economy, automobile body construction has changed dramatically in recent years. This course will offer training for the repair of structurally damaged unibody automobiles and light trucks. This course includes a detailed study of body construction, diagnostic procedures, repair techniques and structural parts replacement.

ABR 230. SPECIALIZED STUDY 2-8 credit hours

Prerequisite: Consent

In this class, 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 043. BASIC TUNE-UP I 1 credit hour

This course deals with the procedure of doing a minor tune-up. It will cover theory of the ignition system (both conventional and electronic.) There will be time provided to perform these service operations on your own vehicles. Operations will include replacing spark plugs, replacing and adjusting ignition points and condenser, setting ignition timing and adjusting the carburetor.

AS 043A. BASIC TUNE-UP II 1 credit hour

This course covers the proper procedure for tuning up vehicles with current electronic ignition systems and emission controls. An understanding of the basic ignition system, engine and fuel system is a necessary prerequisite for this course. The equipment required for these procedures will be

introduced as needed. Also included is an introduction to the automotive oscilloscope.

AS 059. CONSUMER CAR CARE 1 credit hour

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

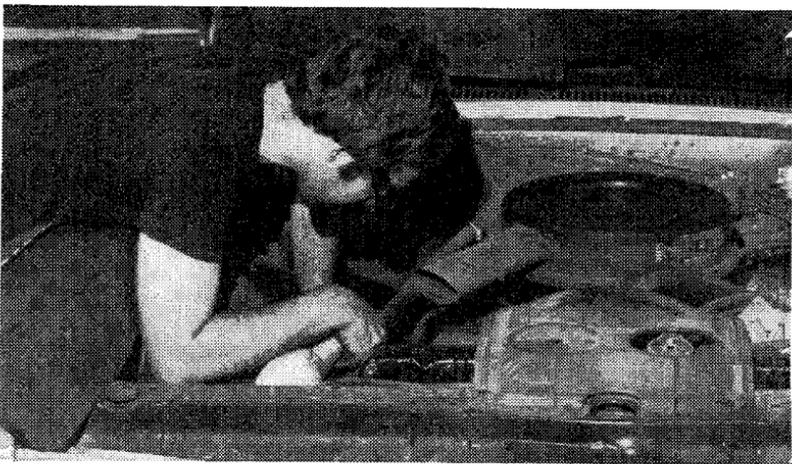
AS 110. AUTOMOTIVE SERVICE FUNDAMENTALS .. 2 credit hours

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, to expect success.



AS 113. MANUAL TRANSMISSIONS AND DRIVETRAINS 2 credit hours

Prerequisite or Corequisite: AS 110

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

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 student 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 AS 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 his/her 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 AS 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. Text, tools, manuals, and "live" automobiles will be used to teach 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

Building on the skills developed in 116 Automotive Electronics, students will explore electronic and computerized ignition, starting systems and charging systems. This is the middle class in a three (3) course sequence designed for in-depth understanding and skill development. It is strongly recommended that the first semester classes be completed prior to enrolling in this class.

AS 128. FUEL SYSTEM SERVICE 2 credit hours

Prerequisite: AS 118

Students will build on the theory learned in AS 118. 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 AS 118 to reinforce the concepts learned. Involvement in automatic electronics will enhance learning in this course.

AS 129. DIAGNOSIS AND REPAIR I 2 credit hours

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

This course is designed to provide students with the basic diagnosis and repair skills necessary to properly service late model automobiles. Specialized areas of instruction include engines, electrical systems, fuel systems and drive trains. Cooling, lubrication and exhaust system service are also included.

AS 160. SMALL ENGINE REPAIR 2 credit hours

This course covers the complete teardown and assembly of a small air cooled engine. It covers in detail the theory and operation of Briggs & Stratton, Tecumseh, and Kohler engines which constitute about 80% of the lawnmowers, garden tractors, tillers, mini-bikes, etc. in the area.

AS 162. ADVANCED SMALL ENGINE DIAGNOSIS & REPAIR 2 credit hours

Prerequisite: AS 160, 161

This advanced course is a continuation of the first two (2) courses dealing with small engine repair. This course will be almost 100% shop or "activity"-oriented. Students will perform diagnosis and repair procedures on live small engine units and any related powertrain or accessory systems.

Whenever possible, during this course, guest speakers who are currently technicians in the field will be brought in to explain in detail certain aspects of field repair and procedures.

AS 161. ADVANCED SMALL ENGINE REPAIR 2 credit hours

Prerequisite: AS 160

This course is a continuation of AS 160 Small Engine Repair. The student will perform in-depth diagnosis and repair of small gasoline engine units. In addition, units in electrical troubleshooting, advanced test equipment and driveline components will be studied.

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 is on proper removal and replacement of components. It is essential that students have all required hand tools and have successfully completed AS 124, or have previous alignment experience.

AS 215. BRAKE SYSTEM SERVICE 2 credit hours

Prerequisite: AS 125

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

This class involves the theory and application of automotive electronic circuits and accessories. It includes construction and servicing lighting systems, gauges, warning devices, windshield wipers and solid state devices.

AS 218. ENGINE PERFORMANCE DIAGNOSIS 2 credit hours

Prerequisite: AS 111, 126, 128

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 is made of "live" vehicles to enable students to learn in as close to a real situation as possible.

AS 219. DIAGNOSIS AND REPAIR II 3 credit hours

Prerequisite: First year auto service courses

This course is designed to provide students with basic diagnosis and repair skills necessary to properly service late model automobiles. Specialized areas of instruction include engine, brake systems, electrical systems and carburetion.

**AS 222. AUTOMATIC TRANSMISSION —
HYDRAULIC SYSTEMS 2 credit hours**

Prerequisite: AS 212

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

AS 227. HEATING AND AIR CONDITIONING 2 credit hours

Air conditioning now appears on 80% of all new cars produced. This unique accessory will be explained in depth including theory of refrigeration, servicing procedures and diagnostic techniques. Compressor service and distribution system will be studied. Laboratory experience will be given; testing and servicing a variety of systems and problems.

AS 228. DRIVEABILITY 2 credit hours

Prerequisite: AS 218

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

This course provides an opportunity to experience first-hand the occupation of auto mechanics. Resume writing, interviewing techniques and

customer relations will be highlighted, as well as an internship working in the field.

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

Two dynamics of the modern automobile industry require constant updating of technological information. This class allows the student an opportunity to learn the new technology which is now included in courses earlier taken without repeating that class. New technology and a review of important updates will be studied.

BIOLOGY (BIO 27)

BIO 101. CONCEPTS OF BIOLOGY 4 credit hours

Basic principles and concepts of biology are studied in lecture and laboratory with emphasis on practical applications and effects on the environment. It is designed for the non-science student, but provides basic introduction for advanced biology courses. Each week involves three hours of lecture and three hours of laboratory.

BIO 102. HUMAN BIOLOGY 4 credit hours

Structure, function and the place of human beings in the biological world are studied in lecture and laboratory. Labs involve use of microscopes and other medical equipment; dissection and observation; and, recording/reporting results of activities. Course covers basic anatomy and physiology of all body systems. Each week involves three hours of lecture and three hours of laboratory.



BIO 107. FIELD ECOLOGY 3 credit hours

The activities in this class stress campus wooded areas, ponds, fields and the Huron River system. Laboratory work and investigation of off-campus environmental problems are used as supplements.

BIO 108. HUMAN ECOLOGY 3 credit hours

Designed for the non-science student, the course emphasizes the problems of population, pollution, energy and environmental control. Investigated are the background of environmental problems, ecological concepts and current problems along with the outlook for the future.

BIO 111. ANATOMY AND PHYSIOLOGY 5 credit hours

The structure and function of all body systems is the foundation of this course. It covers diseases and other dysfunctions with emphasis on practical applications to various health fields. This course is designed for students pursuing nursing and other allied health programs. Each week involves four hours of lecture and three hours of laboratory.

BIO 127. BOTANY 4 credit hours

Prerequisite: BIO 101 or consent

In this class, field and laboratory investigations provide detailed study of plant structure and function. It is for the student with a general interest in plants or to provide a basis for further work in botany or other programs. Each week involves three hours of lecture and three hours of laboratory.

BIO 128. ZOOLOGY 4 credit hours

Prerequisite: BIO 101 or consent

In this class, field and laboratory investigation provide a detailed study of

classification, evolutionary relationships, structure and function of the animal kingdom. For the student with a general interest in animals or to provide a basis for further work in zoology or other programs. Each week involves three hours of lecture and three hours of laboratory.

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 human beings for food as well as pleasure in the home and outside. Practical experience is given in the College's greenhouse and gardens. This class is 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 BIO 132, BIO 133 and BIO 134. See individual courses below.

BIO 131. OUTDOOR GARDEN PREPARATION 2 credit hours

This Winter Semester course deals with the propagation of plants from cuttings and seeds, and the maintenance and care of indoor plants. Most class sessions 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 are 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 organisms 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 BIO 137. 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

This class provides 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 1-8 credit hours

Prerequisite: Consent

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

BIO 200. CURRENT TOPICS IN BIOLOGY 3 credit hours

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

BIO 208. GENETICS I 4 credit hours

This class involves study of basic principles of heredity and their applications to plants and animals, including classical genetic techniques as well as modern discoveries in human genetics. It includes 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 are studied. No laboratory. (3 hours per week)

BIO 237. MICROBIOLOGY 4 credit hours

Prerequisite: BIO 101 or consent.

Micro-organisms and their activities are 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
This class 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 in this class which is primarily conducted in the field.

BIO 248. FIELD STUDY OF REPTILES AND AMPHIBIANS 1 credit hour
Reptiles and amphibians are studied in the field with stress on recognition and habits.

BIO 249. FIELD STUDY OF BIRDS 1 credit hour
This class involves identification of birds and their songs and nesting habits.

BIO 250. FIELD STUDY OF MAMMALS 1 credit hour
This class studies the habits, food, behavior and life history of mammals.

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

BIO 257. FIELD STUDY OF MUSHROOMS 1 credit hour
This class stresses identification of flowerless plants.

BIO 258. FIELD STUDY OF TREES AND SHRUBS 1 credit hour
Identification and habitat study of woody plants takes place in this class.

BIO 259. FIELD STUDY OF COMMON PLANTS 1 credit hour
Non-woody higher plants are studied here 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
This is 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
This class deals with stocking the hive, ordering bees, handling the queen and the commercial aspects of beekeeping.

BIO 289. FIELD BEEKEEPING 2 credit hours
This class 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, 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.

BLACK STUDIES (BLS 10)

BLS 102. BLACK WOMEN 3 credit hours
(See SOC 102)

BLS 107. BLACK PSYCHOLOGY 3 credit hours
(See PSY 107)

**BLS 120. PORTRAIT PAINTING AND
LIFE DRAWING** 4 credit hours
(See ART 120)

BLS 143. ART AND CULTURE OF AFRO-AMERICA ... 3 credit hours
(See ART 143)

BLS 150. AFRO-AMERICAN HISTORY 3 credit hours
(See HST 150)

BLS 154. THE BLACK FAMILY 3 credit hours
(See SOC 154)

BLS 181. AFRO AMERICAN LITERATURE 3 credit hours
(See ENG 181)

BLS 183. AFROMUSICOLOGY 3 credit hours
(See MUS 183)

BLS 201. THE BLACK CHILD 3 credit hours

This course focuses on the Black child as a human being and a member of a Black subculture of American society. A study of the common pattern of growth stages and developmental tasks that the Black child shares with Euro-American children is done. Also, study is done on unique historical and current patterns of oppression in the American color caste system and the challenge this presents to Black families and the broader society in building a positive self concept in the Black child.

BLS 210. BLACKS IN THE CITY 3 credit hours
(See Sociology 210)

BLUEPRINT READING (BPR 64)

BPR 100. BLUEPRINT READING I 2 credit hours

This course includes elementary blueprint reading for the construction trades with emphasis on the development of visualization skills and the study of practices and symbols for interpreting construction prints. Smaller scale construction projects are studied.

BPR 101. BLUEPRINT READING II 3 credit hours

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

**BPR 102. BLUEPRINT READING/FACILITIES
MAINTENANCE** 3 credit hours

This is a basic course in reading engineering plans and drawings. Understanding electrical, mechanical, and fluid power systems through use of schematic diagrams is emphasized. Major units covered: elements of machine drawings, hydraulic and pneumatics, building drawings, electrical drawings, sheet metal drawings, piping drawings, and welding processes and symbols.

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

Elementary sheet metal layout with emphasis placed on developing sheet metal patterns by standard short cut methods is the focus of this course. Hands-on experience fabricating the patterns into actual sheet metal

locks, seams, clips, connectors, ducts, elbows, tees and offsets takes place in the sheet metal shop. (4 hours per week)

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

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

BPR 106. BLUEPRINT READING FOR WELDERS 3 credit hours

This class 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

This class is 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 MANAGEMENT (BMG 37)

BMG 100. INVESTMENTS 1 credit hour

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

BMG 107. WOMEN IN THE WORKPLACE 1 credit hour

This course is an inquiry into the economic and social factors affecting women in the workplace. It provides an opportunity to become familiar with current literature about the working woman and to examine attitudes towards women and of working women.

BMG 111. BUSINESS LAW I 3 credit hours

This course involves 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. It is offered all semesters and will transfer to EMU as BUS 293.

BMG 122. BUSINESS LAW II 3 credit hours

Prerequisite: BMG 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 and will transfer to EMU with departmental consent.

BMG 130. INVESTMENT STRATEGIES 3 credit hours

This is a course designed to help potential investors keep abreast of opportunities in today's changing financial world. The course will present current information on stock and bond markets, commodities, real estate investment, and other investment opportunities including antiques and gems. The student will be taught how to analyze risk and return and relate to the current tax structure.

BMG 140. INTRODUCTION TO BUSINESS 3 credit hours

This course covers functions, objectives, problems, organization, and management of modern business. Also the free-enterprise system of business-economic activity and the impact of the consumer and governmental forces upon the system. Develops insight into vital role of the administrative function in our economy as a whole and in the operation of a single business unit. Practical orientation in the career opportunities available in business and industry. This course is also taught as a television course using the program series "The Business File."

BMG 150. LABOR-MANAGEMENT RELATIONS 3 credit hours

This course covers fundamental forces affecting the labor-management relationship stressing development of insights into the growth, objectives and methods of organized labor and the significant managerial problems involved in dealing with labor. Analysis is done of the legal and institutional framework for collective bargaining; the nature, content and problem areas of the collective bargaining process.

BMG 160. PRINCIPLES OF SALES 3 credit hours

Prerequisite: BMG 140

This class studies the principles and concepts of the sales function in modern business- industrial enterprise in the marketing of goods and services. Analysis is done of sales techniques, the sales "cycle," sales demonstrations, as well as personal career salesmanship. Emphasis is 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.

BMG 200. HUMAN RELATIONS IN BUSINESS AND INDUSTRY 3 credit hours

Prerequisite: BMG 140

Modern concepts of administrative principles and practices are studied

with emphasis on the human relations aspect of management responsibility as it affects employee attitudes, morale and productivity. Major emphasis is on relationships among individuals and/or small groups, with problem-oriented sessions used to realistically relate the course materials to the human relations aspect of modern business-industrial enterprise.

BMG 207. BUSINESS COMMUNICATION 3 credit hours

This course develops oral and written communication skills as they relate to business enterprise. Emphasis is placed 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 is stressed, including business correspondence and reports and the gathering, preparation, organization and presentation of data.

BMG 208. PRINCIPLES OF MANAGEMENT 3 credit hours

This course is an introduction to the concepts and theories of management. Emphasis is on the functions of management — planning, organizing, staffing, directing, and controlling, including motivation, decision-making and communication. This course is also taught as a television course using the program series "The Business of Management."

BMG 209. SMALL BUSINESS MANAGEMENT 3 credit hours

This class is intended 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. It is required for the Photographic Technician program and a recommended elective for the Auto Body Specialist, Electronics Service, and Food Service programs.

BMG 211. SMALL BUSINESS MANAGEMENT FOR WOMEN 4 credit hours

This class is a combination of BMG 209 Small Business Management and WS 102 Growth Experience for Women, developed in conjunction with AAWCJC specifically for women considering entrepreneurship.

BMG 215. SMALL BUSINESS MANAGEMENT OPERATIONS 3 credit hours

This class is intended for persons expecting to be employed or already employed in a high technology or other smaller business. This course focuses on the management of small business, the small business environment, small business administrative and fiscal control, and small business marketing and operations. It is recommended for students in programs such as Numerical Control, Computer Information Systems, Robotics, Telecommunications, and Computer Aided Drafting.

BMG 220. PRINCIPLES OF FINANCE 3 credit hours

Prerequisite: ACC 122

A survey is provided of the whole field of finance, both private and public. Emphasis is on the nature and role of finance in our economy, monetary system of the United States, commercial banking, Federal Reserve System, savings, nature of business financing, international finance, nature of consumer credit, interest rates, money markets, financing, state and federal governments.

BMG 225. PUBLIC RELATIONS 3 credit hours

A survey is provided of public relations as a management responsibility. The course will provide an introduction to purposes and practices of public relations and its role in organizational management. Case studies of real situations will be used to review techniques for handling communications and managing crises.

BMG 230. SUPERVISORY MANAGEMENT 3 credit hours

This class focuses on the application of the principles of management. Emphasis is on the managerial process, examining the functions of planning, organizing, staffing, directing, and controlling, and their relationship to the job of a supervisor. It helps potential or practicing supervisors gain a broader perspective of their role in the organizational structure, enabling them to contribute more effectively to the goals of the organization.

BMG 235. WOMEN IN MANAGEMENT 3 credit hours

This is a course designed to help women develop management skills that establish competence, to examine how self-concept affects management style, and to assist in effecting behavioral changes to more effectively function as a manager. Topics covered include: problem solving and decision-making, planning for results, effective communication, motivation and team building.

BMG 240. PERSONNEL MANAGEMENT 3 credit hours

Prerequisites: BMG 140 and BMG 208

This class is an exposition of the fields of activity covered in modern personnel work. It covers employment techniques, wages and hours, job evaluation, training, employer ratings, collective bargaining, employment counseling and collateral benefits such as pensions and fringe benefits.

BMG 250. PRINCIPLES OF MARKETING 3 credit hours

This course covers 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.

BMG 260. SALES MANAGEMENT 3 credit hours

Prerequisite: BMG 140 and BMG 160

Students learn managerial functions of planning, organization, direction of sales effort, and the management of sales and services. Personnel and control of sales operations are emphasized.

BMG 270. ADVERTISING PRINCIPLES 3 credit hours

Prerequisite or Corequisite: BMG 250

This is a managerial approach to the study of the basic principles and concepts which underlie advertising practice and procedure in the marketing- promotional and distribution aspects of modern business-industrial enterprise operations. It includes the role of advertising in the individual firm and the total economy; also advertising objectives, methods, techniques, preparation, research, surveys, copywriting, layout, media selection and testing advertising effectiveness, as well as advertising rates and budgetary factors.

BMG 290. INDEPENDENT DIRECTED STUDY 2-8 credit hours

Prerequisite: Consent. Credit hours determined prior to registration

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

BMG 299. 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.



CHEMISTRY (CEM 33)

CEM 057. INTRODUCTORY CHEMISTRY 3 credit hours

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

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

Prerequisite or Corequisite: CEM 057

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

CEM 095. COMBUSTION 2 credit hours

This is a study of the basic scientific principles involved in the combustion of gases, gas reactions, the transport of gases and safety considerations as they apply to furnaces. CEM 095 is for students desiring a background in industrial and metallurgical furnace design and control. (2 hours per week)

CEM 105. FUNDAMENTALS OF CHEMISTRY 4 credit hours

Prerequisite: High school chemistry or CEM 057

This course is a study of the principles of chemistry surveying the major topics in chemistry. CEM 105 is for students not needing a minor in

chemistry or with interests in nursing or other health related areas. This course may also serve as a general science elective. (3 hours lecture, and 3 hours laboratory per week)

CEM 111. GENERAL CHEMISTRY I 4 credit hours

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

This is a beginning general college chemistry course which includes the laws of chemical combination, states of matter, atomic and molecular structure, bonding and other basic principles. (3 hours lecture, and 3 hours laboratory each week)

CEM 122. GENERAL CHEMISTRY II 4 credit hours

Prerequisite: CEM 111 and MTH 169

This is a continuation of CEM 111, 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

This class is an introduction to organic and biochemistry, for those going into nursing and the health services. CEM 140 includes a 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. (3 hours lecture, and 3 hours laboratory each week)

CEM 211. ORGANIC CHEMISTRY I 3 credit hours

Prerequisite: CEM 111

This is a lecture course which deals with nomenclature stereo-chemistry and reactions of aliphatic and aromatic compounds. It is normally offered Fall Semester only. (3 hours lecture each week)

CEM 218. ANALYTICAL CHEMISTRY 4 credit hours

Prerequisite: CEM 122

This is a lecture and laboratory course which covers gravimetric, volumetric, instrumental, and separation techniques. (2 hours lecture, and 6 hours laboratory each week)

CEM 222. ORGANIC CHEMISTRY II 5 credit hours

Prerequisite: CEM 122, 211

This is a continuation of CEM 211 involving the study of the derivatives of aliphatic and aromatic compounds. Laboratory work will stress techniques

used in the preparation and handling of organic compounds. This course is normally offered Winter semester only. (3 hours lecture, and 6 hours laboratory each week)

CHILD CARE WORKER (CCW 76)

CCW 100. THE EXCEPTIONAL CHILD 3 credit hours

For those with no background in special education, this course presents an overview of the various physical, sensory, intellectual, social and emotional differences found in children from birth through six years of age. Identifying and working with handicapped and gifted children within the regular child care setting is stressed. Various community, state and national resources to assist exceptional children are identified.

CCW 101. CHILD DEVELOPMENT 3 credit hours

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

CCW 103. ALTERNATIVE PROGRAMS IN CHILD CARE 3 credit hours

The philosophy and theory of programs in child care are examined. Traditional, open, Montessori, Piaget Based, Head Start, parent involvement and kindergarten programs are explored. Observations of area child care centers will be frequently assigned.

CCW 105. PRACTICUM I 3 credit hours

This course provides supervised teaching at the WCC Children's Center. Students work in the classroom, supervised by a qualified teacher at the Center. One hour per week is spent attending a practicum seminar. Opportunities for observation, planning and participation are dependent on the student's readiness. The course should be taken during the first semester in the Child Care Worker program for 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
This course is 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. Topics include: learning to observe and teach the science and math around us every day; making materials, collecting resource files and practical application of ideas to be used in the child care setting. Community resources are explored.

CCW 108. EDUCATIONAL EXPERIENCES IN EXPRESSIVE ARTS 3 credit hours

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

CCW 109. LANGUAGE AND COMMUNICATION 3 credit hours

Designed for child care persons and parents, this course examines the theory of language development in children. Consideration is given to non-verbal communication and cultural differences. Basic methods, activities and materials are discussed.

CCW 110. SOCIAL/EMOTIONAL DEVELOPMENT 3 credit hours

This course provides a multi-cultural approach to the study of personality development during the first six years of life. The characteristics and needs that emerge with each developmental stage are explored. Methods, suggestions and practical guides for meeting these needs in the child care setting are emphasized.

CCW 111. DAY CARE ADMINISTRATION 3 credit hours

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

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

CMT 189. STUDY PROBLEMS IN SPEECH 1-8 credit hours

Prerequisite: Consent of instructor

This class involves individualized directed activities in Speech. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

COMPUTER INFORMATION SYSTEMS (CIS 40)

CIS 090. COMPUTER SKILLS 2 credit hours

This course teaches how to use a microcomputer, together with basic concepts. It makes use of the powerful software packages such as word processor, spreadsheet and filer.

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. It emphasizes how to use a microcomputer, and how to use powerful software packages such as spreadsheet, word processing, and database. The course teaches the basic vocabulary of computers, how computers are used in today's world, the basic cycle of computer operation, input and output devices, how computers follow directions and store information. This course is also taught as a telecourse using the series intitled "Making It Count."

**CIS 102. COMPUTER GENERATED
BUSINESS GRAPHS** 1 credit hour

This is an introductory course in computer generated business graphs using formulas and menu or command-driven microcomputer software. Topics include computer hardware requirements, loading/preparing data sources, selecting data for display, choosing graph type (pie, bar stacked bar, line, marked point, continuous data), displaying and printing the graph, naming and saving graph, recalling source data and graph, and producing complex graphs.



CIS 105. MICROCOMPUTER PROGRAMMING FOR BEGINNERS 2 credit hours

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

CIS 108. SOFTWARE TOOLS (SPECIAL SOFTWARE) 2 credit hours

This is an individualized course for persons who want to learn how to use the IBM Personal Computer or an application package on it. Individuals may choose a text processor, a spreadsheet, or a data management program. The course will utilize one-to-one instructor guidance as needed while the student works with tutorial guides and software. Individuals may work at their own pace. Those wishing to learn more than one of the three software packages may do so, but should finish one before starting another.

CIS 111. COMPUTER CONCEPTS 3 credit hours

This course provides an overview of Business Information Systems. Topics developed include basic terminology, the role of computers in society and the discussion of hardware and software with an emphasis on business applications. Students will survey microcomputer applications including word processing and electronic spreadsheets. (This course is offered in 15 week and 7½ week formats.)

CIS 112. COMPUTER FUNCTIONS 3 credit hours

Prerequisite or Corequisite: CIS 111

This course is a continuation of CIS 111. Topics developed include an introduction to Database Management Systems, a survey of programming languages and a discussion of the Systems development process. Some programming will be done to demonstrate problem solving using a computer. (This course is offered in 15 week and 7½ week formats.)

CIS 115. PROGRAMMING LOGIC 3 credit hours

Prerequisite: CIS 112

In this course students learn development of structured solutions to business computer problems using flowcharting techniques, pseudo code and other structured development tools.

CIS 130. PASCAL FOR BUSINESS AND INDUSTRY .. 4 credit hours

Prerequisite: CIS 112. Corequisite: CIS 115

This is a first course in Pascal covering structured algorithm development including branching and looping techniques. Strong emphasis 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

Infant development is studied. Theories of growth are examined and related to the characteristics and needs of the infant in group or an individual setting. Maternal care needs and facilities are also explored.

CCW 117. CHILDHOOD NUTRITION 2 credit hours

This course presents the study of nutritional needs of the child. Included are the changing needs that occur from infancy through adolescence. There is particular emphasis on the impact of nutrition on the growth and function of children in the day care setting.

CCW 121. FIRST AID FOR CHILD CARE WORKER ... 2 credit hours

This course consists of lectures, textbooks and practical work in first aid as outlined by the American Red Cross. Students will be certified in first aid and CPR. There will be additional emphasis on child safety.

CCW 189. STUDY PROBLEMS 1-6 credit hours

Prerequisite: Consent of program coordinator or instructor

Directed activities in child care are provided in this course. Working with child care faculty or other recognized child care specialists, the student will concentrate on an assigned problem and demonstrate understanding and skill development within the child care area.

CCW 200. STAFF/PARENT INTERPERSONAL RELATIONS 3 credit hours

This course explores the many facets of parent and staff involvement in the child care setting. Topics include: various forms of parent participation, ways of increasing positive communication with parents, cultural differences and goals of parents, and planning parent education programs. Emphasis is given to the preparation, mechanics and techniques for the individual parent/teacher conference.

COMMUNICATIONS AND THEATRE (CMT 38)

CMT 101. FUNDAMENTALS OF SPEAKING 3 credit hours

Instruction is provided in essential speech processes and skills. Organization of speeches and effective delivery are studied through the use of practical problems. The course attempts to relieve the stress the average person encounters when speaking in public, whether to a large group or to a familiar or an unfamiliar audience.



CMT 102. INTERPERSONAL COMMUNICATION 3 credit hours

This course covers basic elements of interpersonal communication in both theory and practice. Such concepts, meanings, listening, and emotions are stressed. Particular attention is paid to building positive relationships and resolving conflict.

CMT 131. RADIO-TELEVISION SPEECH 3 credit hours

This class studies the development of an effective voice for speaking on the microphone through a study of contemporary standards in broadcast diction and voice production. The study of voice requirements for standard broadcast forms, views, interviews, features, commercials and music continuity is involved as are basic oral reading techniques and a brief introduction to the International Phonetic Alphabet.

CMT 140. VOICE IMPROVEMENT FOR BUSINESS AND PROFESSION 1 credit hour

This is an introduction to contemporary scientific and linguistic theory of the human speaking voice. It provides a basic method for the improvement of the individual's speaking voice for business conversation. The new and unique qualities of the human speaking voice for controlled and effective use on the microphone and telephone is studied.

CMT 152. ACTING FOR THE THEATRE 3 credit hours

This class is an introduction to acting through the physical aspects of the stage, using the stage as a vehicle to promote ideas and feelings. Scenes will be assigned.

placed on good programming design using procedures and functions and efficient passing of parameters. Data structures, including arrays, records and sets will be covered. During the semester, students will write several programs, at least one of which will be a large program.

CIS 135. PL/1 PROGRAMMING 4 credit hours

Prerequisite: CIS 130 or consent

This is an introductory course in PL/1 covering structured algorithm development, various control structures, functions, procedures, simple data structures, and formatted and unformatted record input/output. The programming problems will relate to business applications using sequential, indexed sequential and random files on a large computer system. The operating system environment of the large system, the edit and command language, and file design topics will be covered in detail.

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 the IBM PC.

CIS 137. RPG 3 credit hours

Prerequisite: CIS 112

Report Program Generator is a language used to solve common business application problems. This course covers arithmetic operations, comparing, table handling and file building on auxiliary storage media. Students code and execute program assignments.

CIS 141. COMPUTER OPERATIONS I 3 credit hours

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 and software are covered. Other topics include data center operations, 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 or consent

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, as well as 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 4 credit hours

Prerequisite: CIS 130 or CPS 186

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

This course will emphasize the use of the 8088 Assembler on the IBM PC. The 8088 microprocessor organization and its machine code will be discussed as preliminary information to the use of the Assembler. Some of the topics discussed include the stack, calling internal and external procedures, and calling an Assembly language subroutine from a BASIC program. Students will write, assemble, link, and run several programs.

CIS 240. CAREER PRACTICES SEMINAR 2 credit hours

Prerequisite: ENG 100

This course covers career options available in the computer industry, how to develop a career plan, preparing a job hunting plan, hiring practices, resume preparation, interviewing skills, writing a journal of job-seeking activities, salary negotiations, customer relations and how to succeed on the job. 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 4 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 276. ADVANCED C PROGRAMMING LANGUAGE 4 credit hours

Prerequisite: CIS 275 or professional C programming experience

A course for programmers who have experience or coursework in the C language and want to learn advanced topics. Includes data structures, advanced I/O, dynamic memory management and successful techniques for team design of large programs.

CIS 282. SMALL SYSTEM DATA BASE 3 credit hours

Prerequisite: CIS 130 or consent

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 Unisys A5 computer.

CIS 284. DATA COMMUNICATIONS 3 credit hours

Prerequisite: CIS 130 or consent

This course introduces design issues in a network configuration, basic terminology and methodology, typical applications and uses of teleprocessing networks. The students will study in detail typical building blocks and types of network organizations, common carrier services, tariffs, transmission facilities and signal conversion devices.

CIS 286. OPERATING SYSTEMS 4 credit hours

Prerequisites: First year required CIS courses

Concepts and technical knowledge of operating systems, utilities and control languages are presented with case studies of several operating systems, such as UNIX, VAX VMS, IBM MVS and MCP. Students will write command procedures in control languages of the systems studied. Lecture and Lab (4 hours per week)

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

This class is of particular help to teachers in Washtenaw County seeking to become "computer literate." It includes "canned" programs, introduction to computer languages, games, drill and practice for students, and record keeping. No computer experience required.

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 and entertainment. This course is offered every term.

CPS 186. INTRO TO PASCAL PROGRAMMING 4 credit hours

Prerequisite: MTH 169

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

CPS 187. INTRODUCTION TO FORTRAN PROGRAMMING 4 credit hours

Prerequisite: MTH 169

This class is an introduction to the principles and practices of the FORTRAN 77 programming language. FORTRAN is designed for the science or business student who will use the computer as a tool in sorting, classifying, scheduling, performing complex or repetitive calculations, or evaluating models through simulation. Students will learn about problem-solving strategies, top-down program development, and good programming style. Students will write and execute selected programs in FORTRAN 77. This course does transfer to some four-year institutions.

CPS 187A. INTRODUCTION TO FORTRAN PROGRAMMING 3 credit hours

Prerequisite: MTH 169

This is an introduction to the principles and practices of the FORTRAN 77 programming language. This course is the first half of CPS 187. The combination of CPS 187A and CPS 187B would be equivalent to CPS 187. FORTRAN is a computer language often applied to scientific and engineering problems. The language is powerful enough to have been used in some business applications. This course assumes no prior knowledge of computers or programming. Topics included are: sequential structure, iterations, if-then-else, nesting of structures, one-dimensional arrays and character manipulations. Students will write and execute (outside class hours) programs in FORTRAN 77 covering the above topics.

CPS 187B. INTRODUCTION TO FORTRAN PROGRAMMING 3 credit hours

Prerequisite: CPS 187A

This is a continuation of an introduction to the principles and practices of the FORTRAN 77 programming language. This course is the second half

of CPS 187. The combination of CPS 187A and CPS 187B would be equivalent to CPS 187. Topics included in this course are searching, sorting, subprograms, formatting, multi-dimensional arrays. Students will design and execute significant programs that cover the above topics.

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 284. PRINCIPLES OF COMPUTER GRAPHICS 4 credit hours

Prerequisite: One computer language and 1 year algebra or permission

This course develops principles, algorithms and methods for graphics applications, using microcomputer enhanced BASIC language. Topics include function graphs, line, bar, pie graphs, polar coordinates, creative design, movement, 3D and color. Felt-tip pen plotters, graphics tablets, joystick and light-pen controllers are introduced. Includes graphics-enhanced discussion of topics in plane, solid, and analytic geometry.



practical trigonometry. All necessary mathematics and BASIC will be developed. This course is useful to all, including educators, students of mathematics, sciences, art, business and CAD. Students create professional quality graphics. Special projects are welcome.

CPS 286. ADVANCED PASCAL PROGRAMMING 4 credit hours

Prerequisite: MTH 169 and CPS 186 or 294 or CIS 130

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 structure such as stacks, queues, linked list trees and hash tables. At least two of these will be large programs. This course is normally offered in the Winter semester and transfers to some four-year institutions.

CPS 287. ADVANCED FORTRAN PROGRAMMING 4 credit hours

Prerequisite: CPS 187 or 294

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, 287 or 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, 287 or 288

This course has a transfer program orientation. It 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, or 187 or 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 several programs in assembler language. The course provides a foundation in assembler general enough to be applied easily to numerous machines.

CPS 294. COMPARATIVE LANGUAGES 4 credit hours

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

This course has a transfer program orientation. It 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.

CORRECTIONAL SCIENCE (COR 39)

COR 122. INTRODUCTION TO CORRECTIONS 3 credit hours
(see CJ 122)

This course is an introduction to the correctional system from historical to contemporary times. Examined are incarceration, probation, parole, and new programs in dealing with offenders.

COR 132. CORRECTIONAL INSTITUTIONS 3 credit hours

The course is designed to examine the various types of correctional institutions and the training of the personnel who staff them. There will also be an examination of the rights and responsibilities of both staff and inmates to include the social effects upon each.

COR 189. STUDY PROBLEMS 1-6 credit hours

Prerequisite: Consent of program coordinator or instructor.

Directed activities in corrections are provided in this course. Working with corrections faculty or other recognized corrections specialists, the student

will concentrate on an assigned problem and demonstrate understanding and skill development within the corrections area.

COR 199. CORRECTIONS ON-THE-JOB-TRAINING 1-6 credit hours

Prerequisite: COR 122 and 6 additional credits in corrections, and permission of department instructional coordinator.

In this course students will be given supervised, non-salaried positions as observers with various corrections agencies. Students will be required to maintain a log of activities and submit a report at the end of the semester. Some agency assignments may require additional corrections courses for eligibility. All activities are monitored by the instructor and regular meetings with the instructor are required.

COR 211. LEGAL ISSUES IN CORRECTIONS 3 credit hours

The course will give the student an overview of the law as it currently applies to the field of corrections. Included will be an in depth look at the application of the Constitution and the court processes, to include prisoners rights and section 42, 1983 concerns.

COR 218. CORRECTIONAL COUNSELING 3 credit hours

This course presents the casework method of diagnosing and treating criminal offenders. A variety of counseling methods and their application to correctional casework are discussed.

COR 219. CLIENT RELATIONS IN CORRECTIONS 3 credit hours

This course is designed to provide the student with a general knowledge of the various meanings and functions of cultures, as they might apply to the corrections setting. In addition, the student will be introduced to the impact of discrimination in corrections and the melting pot concept. There will also be work on how one's attitudes are formed and how their background has



an impact on them. In addition, the student will be exposed to the interaction approach in dealing with the correctional client, whomever they are, and the proper responses within the "walls."

COR 227. SEMINAR IN CORRECTIONS 3 credit hours

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

**COR 228. THE CORRECTIONAL CLIENT:
GROWTH AND DEVELOPMENT** 3 credit hours

The course is designed to examine the growth and development of the correctional client, with a particular emphasis on the early environment, psychological and sociological factors, specific problems (i.e. substance abuse, sexual, medical, mental, etc.) and finally intervention strategies.

CRIMINAL JUSTICE (CJ 78)

CJ 100. INTRODUCTION TO CRIMINAL JUSTICE 3 credit hours

This course provides an in-depth look at the Criminal Justice System including law enforcement, courts and corrections. Individuality and the purpose of each division is studied.

CJ 103. POLICE RESERVE TRAINING 3 credit hours

This course is designed to provide the auxiliary, reserve and/or part-time law enforcement officer with the skills necessary to function safely and effectively in that capacity. The course 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

The role of individual officer and the department in achieving and maintaining public support is studied. Topics include: customs, culture, and problems of ethnic and minority groups. Public information services, and techniques for the alleviation of community tensions are also covered.

CJ 122. INTRODUCTION TO CORRECTIONS 3 credit hours
(See COR 122)

The course is an introduction to the correctional system from historical to contemporary times. Examined are incarceration, probation, parole, and new programs in dealing with offenders.

**CJ 150. CRIMINAL JUSTICE PHYSICAL
CONDITIONING** 3 credit hours

Prerequisite: Physician's approval

This course is designed to build a skill/physical conditioning level to allow the student to successfully pass the Michigan Law Enforcement Officer's Training Council Pre-employment Physical Skill Test. The course is primarily for law enforcement students, but is also open to other students.

CJ 189. STUDY PROBLEMS 1-6 credit hours

Prerequisite: Consent of program coordinator or instructor

Directed activities in criminal justice are provided in this course. Working with criminal justice faculty or other recognized criminal justice specialists, the student will concentrate on an assigned problem and demonstrate understanding and skill development within the criminal justice area.

CJ 205. APPLIED PSYCHOLOGY FOR POLICE 3 credit hours

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

**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. Included are coverage of the motor vehicle law, traffic engineering, control devices and accident investigation.

CJ 208. CRIMINAL EVIDENCE AND PROCEDURE 3 credit hours

This course examines principles of constitutional, federal and state laws as applied to law enforcement. Topics include: adjectival law, the law of evidence; role of the police, prosecutor, defense counsel, judge and jury; the judicial process; criminal procedure in various courts; law of arrest and search and seizure; and constitutional restraints.

CJ 209. CRIMINAL LAW 3 credit hours

This course is designed in order for either lawyer or layman to broaden understanding of the the various agencies involved in the administration of criminal law. The more important law enforcement functions from arrest to executive pardon are emphasized.

CJ 210. INTRODUCTION TO CRIMINALISTICS 3 credit hours

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 221. LAW ENFORCEMENT TRAINING 16 credit hours

Prerequisites: 45 credit hours and successful completion of the Michigan Law Enforcement Training Council (MLEOTC) pretest.

This is a basic law enforcement training program, also known as the "Police Academy." It is intensive and challenging. The curriculum, established by the MLEOTC, includes physical conditioning, defensive tactics, firearms, and first aid as well as subjects requiring extensive reading, writing, and note-taking skills. Students must adhere to regulations in the policy and procedures manual. Students successfully completing the course will be eligible for the mandatory mastery examination administered by the MLEOTC for certification as a law enforcement person. The class meets at least 8 hours per day, 5 days per week for 12 weeks. Some weekends may also be involved.

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

This course is designed to provide a basic overview of investigative techniques as they pertain to many criminal justice agencies, including the police. The course includes practical applications at crime scenes.

CJ 225. SEMINAR IN CRIMINAL JUSTICE 3 credit hours

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

CULINARY ARTS (CUL 74)

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

This course is designed to give the student the history of the hospitality industry, trends, developments and opportunities in the industry today. It is an introduction to the study of the organizational structure and functions of management.

CUL 110. SANITATION AND HYGIENE 3 credit hours

This course 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

This course examines the 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 are discussed in this course as they pertain to selection of foods, nutritional needs of all age groups; the meaning of food to people; the relationship of food and nutrition to health menu planning.



CUL 150. DINING ROOM MANAGEMENT 6 credit hours

Focusing on the point of sale, the students in this class 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. (14 hours per week)

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

This course is designed 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 or consent

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 are central to this course. (6 hours per week)

CUL 219. ELEMENTARY BAKING 4 credit hours

Prerequisite: CUL 111 or consent

This is 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 FOOD SYSTEMS 3 credit hours

Prerequisite: CUL 100

This is 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

This course is a continuation of techniques learned in CUL 111. Students have opportunities throughout the course to learn expert preparation of soups, sauces, meats, breads, desserts, salads, appetizers and vegetables. (15 hours per week)

CUL 224. PRINCIPLES OF COST CONTROLS 4 credit hours

This course involves selection and purchasing of foods and materials used in the hospitality industry. The 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 is provided in this class 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

This course is 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 or 150

This class is designed to give necessary insight involved in establishing a restaurant or food service facility. Includes research, surveying, planning and construction of both menu and kitchen layout. (6 hours per week)

CUL 250. ADVANCED SERVICE TECHNIQUES 3 credit hours

Prerequisite: CUL 150

This class teaches wine and liquor identification and service, tableside preparation and flambe are covered in this advanced service techniques course. Students will learn how to satisfy the more discriminating diner.

CUL 260. CATERING AND BANQUETS 3 credit hours

Prerequisite: CUL 111 or consent

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

This course introduces dance as a creative art form. Basic movement vocabulary is taught along with body placement, alignment and simple tools for composing dance studies.

DN 102. BEGINNING MODERN DANCE II 2 credit hours

Prerequisite: DN 101 or consent

This course goes beyond the use of basic movement vocabulary by applying movement to more complex dance phrases and is paced faster than DN 101.

DN 103. BEGINNING TAP DANCE I 1 credit hour

Students will learn basic tap dance vocabulary which will be incorporated into traditional steps and dance routines. Rhythmical enjoyment will be emphasized.

DN 104. BEGINNING TAP DANCE II 1 credit hour

Prerequisite: DN 103 or consent

This is a more advanced course designed for those who have had previous tap experience 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 dance form originated in Africa and has evolved through American social and stage dance. The movement is rhythmical, bold, percussive, and expansive. Basic jazz vocabulary will be taught along with body alignment. This course helps to improve overall body control, agility, and coordination.

DN 106. BEGINNING JAZZ DANCE II 2 credit hours

Prerequisite: DN 105 or consent

This is a course designed 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

This course provides basic ballet movement vocabulary by associating the French ballet terms with the appropriate execution. Balance, body alignment, flexibility, and overall body control can be developed in this course and students will learn how to view performances.

DN 108. BEGINNING BALLET II 2 credit hours

Prerequisite: DN 107 or instructor consent

This course introduces more complex ballet movements and turns. Students who want to improve their proficiency at the barre, centre, and through the space will find this course appropriate.

DN 110. AFRO-AMERICAN DANCE I 1 credit hour

This course introduces the basic movements used in American "boogie," jazz, Dixieland, modern and Latin dance. The focus of the class is to

identify these movements and relate them to their ancestral African and African/American dance heritage.

DN 122. BALLROOM DANCE I 1 credit hour

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, rumba, polka and hustle. Designed for those with limited or no experience or for those who wish to review the basics.

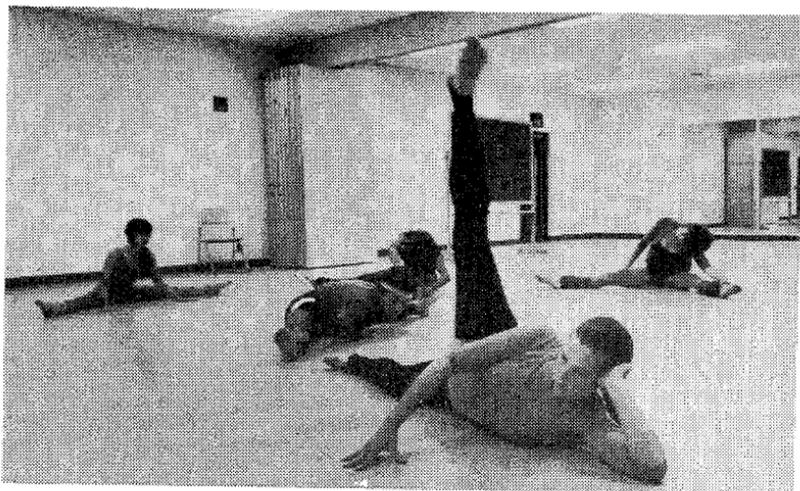
DN 123. DANCE EXERCISE I 1 credit hour

Designed for the student who is looking for a slower paced dance exercise course, this choreographed program of stretching and 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: Consent

This class helps students 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. Some principles of choreography will be covered.



DN 125. DANCE COMPOSITION I 3 credit hours

Prerequisite: Any dance activity class or consent

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 126. COUNTRY WESTERN DANCE 1 credit hour.

Students will learn the basics of country western music. They will learn to lead, follow and dance the Texas Two Step, Western Polka, Schottische, Waltz, Cotton Eyed Joe, and Swing. It is designed for those with limited or no experience or for those who wish to review the basics.

DN 201. CLASSICAL DANCES OF INDIA 2 credit hours

Students will learn the dance forms that were systematized by the sages of India centuries ago. Dances are performed to Indian music and incorporate many Yoga postures. This class is for anyone interested in Indian mythology, philosophy and Yoga.

DN 210. AFRO-AMERICAN DANCE II 1 credit hour

Prerequisite: DN 110 or consent

This class is designed 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 movement combinations; traditional African/Afro-American movement; exploring solo creation, and learning at least one Afro-American dance.

DN 221. MUSIC FOR DANCE 3 credit hours

This course is designed for the student who desires to use both dance and music media to promote and explore creative expression. Information will include standard music/dance forms of various cultures, how these different forms and styles evolved and how they 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 consent

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. It is designed for those who have previous ballroom dance.

DN 223. DANCE EXERCISE II 1 credit hour

Prerequisite: DN 123 or consent

This course 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 consent

This class is a continuation of DN 123 and 223. It is a fitness maintenance program for those who have already been introduced to aerobic dance exercise. Students 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 to 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

This course is designed to give dental assisting students an indepth awareness of nutrition and preventive dentistry. The etiology, prevention, and control of dental caries, and oral hygiene instructions 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 operator, equipment, and basic procedures used in four-handed dentistry.

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. This student will gain actual experience in manipulation of common dental materials used in the practice of dentistry.

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.

DA 120. ORAL DIAGNOSIS 2 credit hours

Prerequisite: A 2.0 Grade Point Average in DA 111 and 114

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 121A. ORAL DIAGNOSIS PRACTICUM 1 credit hour

Prerequisite: A 2.0 Grade Point Average in DA 111, DA 114, and DA 120

This clinical course is designed to actively involve the student in applying his/her knowledge of recording diagnostic data and treatment plans. Com-

plete 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 121B. ORAL DIAGNOSIS PRACTICUM 1 credit hour

Prerequisite: A 2.0 GPA in DA 121A

A clinical course designed to actively involve the student in applying his/her knowledge of clinical dental assisting 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

A continuation of Dental Science 111, this course provides a study of the relationship of systemic health to oral health and oral pathology.

DA 124. ADVANCED CLINICAL DENTAL ASSISTING . 3 credit hours

Prerequisite: A 2.0 Grade Point Average in DA 114

A continuation of Clinical Dental Assisting 114, this course provides a study of more complex clinical procedures and the instrumentation necessary to perform them.

DA 125. DENTAL ROENTGENOLOGY 2 credit hours

Prerequisite: Admission to the Dental Assisting Program or 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

This is 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: 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 structured 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 practice is provided 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. ADVANCED FUNCTIONS 3 credit hours

Prerequisite: A 2.0 Grade Point Average in all Dental Assisting courses

This course is designed to provide dental assisting students with knowledge and skill in performing intraoral functions as outlined in the Michigan State Dental Practice Act.

ECONOMICS (EC 02)

EC 107. ECONOMICS OF MONEY MANAGEMENT 2 credit hours

This course covers 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 and 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

This course 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

This provides 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

This is the first half of basic principles of economics. Emphasis is on macroeconomics concepts of national income, fiscal and monetary policy and problems of unemployment, inflation and economic growth. This course is required of all Business Administration transfer students. This course is also taught as a television course using the program series "The Money Puzzle."

EC 222. PRINCIPLES OF ECONOMICS II 3 credit hours

Prerequisite: EC 211 or consent

This is the second half of an introduction to basic principles of economics. Emphasis is on 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
- EE 105 Introduction to Telecommunications
- EE 123 Fundamentals of Electricity
- EE 123A Fundamentals of Electricity Part A
- EE 123B Fundamentals of Electricity Part B
- EE 134 Motors and Controls
- EE 137 Switching Logic
- EE 139 Computer Systems I
- EE 211 Basic Electronics
- EE 240 Career Practices Seminar

The following courses are **NORMALLY** offered in the Fall Term only:

- EE 205 Basic Telephony
- EE 215 Digital Communications I
- EE 224 Programmable Controllers
- EE 230 Computer Systems I
- EE 238 Electronic Analog Circuits
- EE 241 Digital Electronics

The following courses are **NORMALLY** offered in the Winter Term only:

- EE 204 National Electrical Code
- EE 225 Digital Communications II

- EE 234 VAX/VMS for Hardware Technicians
- EE 235 Computer Systems II
- EE 244 Electronic Control Systems
- EE 245 Transmission Systems
- EE 250 Microprocessors
- EE 254 Programmable Controller Systems
- EE 275 Switching Systems

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 055. APPLIANCE REPAIR 2 credit hours

This course has been developed to offer instruction in the repair of small, portable electrical appliances. All three classes of appliances (heat-producing, motor-driven, combination heat-producing motor-driven) will be considered. Adequate lab time will be provided to enable students to repair appliances of the types discussed in class. (10 weeks)

EE 070. USING THE OSCILLOSCOPE 2 credit hours

This is a short course on the theory of operation and practical use of a dual-trace laboratory cathode ray oscilloscope. Students will learn how to properly adjust and calibrate an oscilloscope, how to connect an oscilloscope to a circuit with minimum disturbance to the quantity being observed, how to display a waveform, how to interpret the results of oscilloscope measurements and the functions of all the oscilloscope controls. (4 hours per week, 7½ weeks)

EE 095. BASIC ELECTRICAL BLUEPRINT READING 2 credit hours

This is an introductory level course on reading basic electronic/electrical manufacturing drawings to determine if the hardware complies with the engineering design requirements. Students will learn to identify the basic graphical symbols used in electrical/electronic manufacturing drawings. The basic types of technical information contained in each category of manufacturing drawing will be studied.

EE 101. SERVICING TECHNIQUES I 4 credit hours

Corequisition: 123A

The student will develop skills and techniques for service and maintenance of electrical/electronic systems. The proper use and care of basic hand and power tools and measuring instruments will be practiced. Wire splicing and soldering, simple printed circuit board layout and fabrication are tasks to be completed during the course. The student will study common practices of working with materials and circuits found in residential wiring systems and common electronic equipment.
(Lecture and lab 6 hours per week)

EE 105. INTRODUCTION TO TELECOMMUNICATIONS 3 credit hours

This is an introductory level course designed to expose the entering student to the concepts, equipment, and terminology used in the telecommunication industry. Topics include: basic telephony, transmission systems, satellite communications, fiber optics, switching systems, data communications and local area networks. Lecture. (3 hours per week)

EE 123 FUNDAMENTALS OF ELECTRICITY 8 credit hours

An accelerated introductory course in electricity. BECAUSE OF THE ACCELERATED PACE, ONLY STUDENTS HAVING ABOVE AVERAGE OR EXCELLENT MATH AND READING SKILLS SHOULD ENROLL IN THIS COURSE. The student will study theory and applications of direct current (D.C.), alternating current (A.C.), Ohms law, Kirchoff's law, superposition, Thevenin's theorems and the j operator. In the laboratory the student will apply the theory to lab projects by wiring circuits, measuring voltage, current, resistance and analyzing waveforms. (Lecture 9 hours per week plus open lab time)

EE 123A. FUNDAMENTALS OF ELECTRICITY (PART A) 5 credit hours

The topics covered in the first half of EE 123 are covered here. STUDENTS ENTERING AN ELECTRONICS PROGRAM WITH AVERAGE MATH AND READING SKILLS SHOULD ENROLL IN THIS COURSE. Lecture topics include: theory and applications of direct current (D.C.), Ohms law, Kirchoff's laws and Thevenin's theorems. The lab exercises include: wiring circuits, making voltage, current and resistance measurements with laboratory test equipment. (Lecture 6 hours per week plus open lab time)

EE 123B. FUNDAMENTALS OF ELECTRICITY (PART B) 5 credit hours

The topics covered in the second half of EE 123 are covered here. The lecture topics include: theory and applications of alternating current (A.C.), Ohms law, Kirchoff's law and the j operator. The lab exercises include: drawing and wiring A.C. circuits and circuit measurement. The student will

gain proficiency in the uses of oscilloscopes, signal generators and other associated test equipment. (Lecture 6 hours per week plus open lab)

EE 131. PROGRAMMABLE CONTROLLERS 4 credit hours

Prerequisites: EE 110, EE 111, EE 137

This is a course in automatic machine control. Topics include I/O devices, number systems and codes, logic concepts, P/C hardware components, P/C software components, ladder diagrams, symbols, and typical PC control functions.

EE 134. MOTORS AND CONTROLS 4 credit hours

Prerequisite: EE 123 or 123A and 123B

The student will learn theory and applications of D.C. motors and generators, A.C. motors and generators and their controls in this course. Other topics include JIC symbols and ladder diagrams. The student will be involved with lab experiments covering speed control, measurement of torque, power and analysis of three phase circuits, transformers, stepper and D.C. brushless motors. (Lecture and lab 6 hours per week)

EE 136. FUNDAMENTALS OF DIGITAL ELECTRONICS 2 credit hours

This is an introductory level course in digital electronics circuits. Hands-on exercises provide experience in analyzing modern integrated digital circuit.

EE 137. SWITCHING LOGIC 3 credit hours

This is a beginning course in digital fundamentals. The student will learn different number systems and codes, logical operations using basic logic gates and combinational logic circuits that are used in computers. Other topics are: Boolean algebra, sequential logic, memories and arithmetic logic. (Lecture 4 hours per week)

EE 139. COMPUTER SYSTEMS I 4 credit hours

Prerequisites: EE 137, 140.

Corequisite: EE 140

This course is an introduction to the physical and logical makeup of a computer system. The major functional elements 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 and machine language programming. The laboratory exercises provide hands-on experience with computer hardware and machine language programming. (Lecture and lab 6 hours per week)

EE 140. SOFTWARE CONCEPTS I 4 credit hours

Prerequisite: EE 123. Corequisite: EE 139

Students 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 and executing programs on a computer system. Introductory file concepts and data structures will be covered in addition to fundamental operating concepts. Students will compare high level languages. (Lecture and lab 6 hours per week)

EE 204. NATIONAL ELECTRICAL CODE 2 credit hours

Prerequisite: EE 123 or EE 123A and EE 123B

This lecture course deals with the aspects of the National Electrical Code and its applications as it is applied to electrical safety, industrial electrical and residential electrical installations. Other topics include: CPR, symbols, schematics and wiring diagrams. (Lecture 3 hours per week)

EE 205. BASIC TELEPHONY 4 credit hours

Prerequisite: EE 105

This course covers the theory, maintenance, and installation of telephone systems. Topics include state of the art telephone system technology, basic electromechanical and electronic key systems with emphasis placed on voice systems. Laboratory experiments involve measurements, troubleshooting, transmission lines and switching concepts. (Lecture and lab 6 hours per week)

EE 207. MICROCOMPUTER SYSTEMS 5 credit hours

Prerequisite: EE 137, 139, 211. Corequisite: EE 241, 250

This course covers the theory of operation, servicing techniques and trouble-shooting of a microcomputer system with emphasis on the operation of a microcomputer system in a business office environment. Students assemble a microcomputer system to learn the detailed design, construction and operational details. The relationship between the disc drives, monitor, printer and option boards are also studied. (Lecture and lab 9 hours per week)

EE 211. BASIC ELECTRONICS 4 credit hours

Prerequisite: EE 123 or EE 123A and EE 123B

The student taking this course will learn the theory and applications of basic transistors with a hands on approach. The lecture topics are: semiconductor materials, PN junction, bipolar junction transistor and the common emitter, common base and common collector transistor circuits. In the laboratory the student will build and test transistor circuits using common laboratory test equipment. (Lecture and lab 6 hours per week)

EE 215. DIGITAL COMMUNICATIONS I 3 credit hours

Prerequisite/Corequisite: EE 105

This is a lecture course in data communication principles and techniques. The student taking this course will learn about communication media, data codes, circuit types, protocols, data transmission integrity and distributed data processing networks. Other topics include: modems and modulation, multiplexers, digital transmission and network types and services. (Lecture 3 hours per week)

EE 221. COMPUTER PERIPHERALS 3 credit hours

Prerequisite/Corequisite: EE 139

This course studies the input/output (peripheral) devices of a computer system. The basics of magnetic recording theory, theory of operation of magnetic I/O devices are thoroughly discussed. Other topics include: device control units and their interaction with the CPU. (Lecture 4 hours per week)

EE 224. PROGRAMMABLE CONTROLLERS 4 credit hours

Prerequisites: EE 123 or EE 123A and EE 123B

The theory and operation of programmable controllers. The student will review digital logic principles needed to understand programmable controllers. The lecture topics include ladder diagrams, relays, programming and interfacing. Types of programmable controllers discussed are the Modicon Micro-84, Allen Bradley PLC-4 and selected I/O devices. (Lecture and lab 6 hours per week)

EE 224A. PROGRAMMABLE CONTROLLERS A 3 credit hours

Prerequisites: EE 123 or EE 123A and 123B

This course covers the first half of EE 224. The theory and operation of programmable controllers with emphasis placed on the Modicon Micro-84 programmable controller. Other lecture topics are ladder diagrams, relays, programming and interfacing. (Lecture and lab 4 hours per week)

EE 224B. PROGRAMMABLE CONTROLLERS B 3 credit hours

Prerequisites: EE 123 or EE 123A and 123B

This course covers the second half of EE 224. The theory and operation of programmable controllers with emphasis placed on the Allen Bradley PLC-4 programmable controller. Other lecture topics are ladder diagrams, relays programming and interfacing. (Lecture and lab 6 hours per week)

EE 225. DATA COMMUNICATIONS II 4 credit hours

Prerequisites: EE 205 and EE 215

The theoretical and practical aspects of digital communication systems. Major lecture discussions will be directed toward telephone system performance requirements, transmission of data, digital modulation and net-

work protocols. Other topics are operation of data communication links and software, pulse transmissions and the effects of noise and other distortions in data communications. (Lecture and lab 6 hours per week)

EE 230. COMPUTER SYSTEMS II 4 credit hours

Prerequisites: EE 137, EE 139, and EE 140

The operation, servicing and troubleshooting of a digital computer system based on the PDP-11 minicomputer are the main subjects of this course. Emphasis is placed on the operation of the CPU. Lecture topics include assembly language programming, addressing modes and instruction sets. The architecture, implementation and operation of the KD-11A CPU is studied. (Lecture and lab 6 hours per week).

EE 234. VAX/VMS FOR HARDWARE TECHNICIANS .. 3 credit hours

Prerequisites: EE 140, EE 230

Corequisite: EE 235

This course deals with the practical skills needed to perform hardware maintenance on VAX systems. Topics include maintenance of the current diagnostic files, management of account privileges, installation of current version of operating system. The student will learn to run the User Test Programs 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

Prerequisites: EE 221 and EE 230

Corequisite: EE 234

This course is a more detailed study of digital computer operation and servicing based on the VAX computer. Topics include: mainframe maintenance, troubleshooting diagnostics; disk operation, maintenance and diagnostics. (Lecture and lab 6 hours per week)

EE 236. COMPUTER VIDEO-DISPLAY TERMINALS ... 4 credit hours

Prerequisites: EE 238, EE 241. Corequisite: EE 235

This course includes 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. Lecture and Lab. (6 hours per week)



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 amplifiers are studied in this course. Other topics covered are operation and characteristics of IC operational amplifiers used as inverting/non-inverting amplifiers, differential amplifiers and the application of IC operational amplifiers for signal processing, comparators and oscillators. (Lecture and lab 6 hours per week)

EE 240. CAREER PRACTICES SEMINAR 2 credit hours

Prerequisite: English 100 Communication Skills

This course studies career options in the computer and electronics industry. The student will learn how to develop a career plan, prepare a job hunting plan, and a successful resume. Salary negotiations, interviewing for the job and how to succeed on the job are other topics discussed. (Lecture 2 hours per week)

EE 241. DIGITAL ELECTRONICS 4 credit hours

Prerequisites: EE 137 and EE 211

This course is an in depth study of the logic presented in EE 137. The operation, electrical parameters and application of logic gates with emphasis on TTL and CMOS logic families are studied here. Combinational logic

circuits such as adders, subtractors, shift registers, multiplexers, encoders and memories are also covered in this course. Experience in the use, operation, testing and troubleshooting of integrated circuits is gained in the lab. (Lecture and lab 6 hour per week)

EE242. HIGH FREQUENCY TRANSMISSION 4 credit hours

Prerequisite: EE 211

This course covers high frequency transmission line and antenna concepts. The student will be introduced to transmission line analytical concepts, measurement techniques and high frequency generating sources. The study of various antenna types and applications, basic antenna measurement and analytical techniques to determine gain radiation patterns and impedance are included (lecture and lab 6 hours per week)

EE 244. ELECTRONIC CONTROL SYSTEMS 4 credit hours

Prerequisites: EE 134, EE 211 and PHY 110

The theory and practical aspects of maintaining and troubleshooting an automatic control system are covered in this course. Other topics include open and closed loop control of linear and rotational actuators, constant speed control, position control, sensors and transducers. (Lecture and lab 6 hours per week)

EE 245. TRANSMISSION SYSTEMS 4 credit hours

Prerequisites: EE 205, EE 215

Corequisite: EE 225

The principles of digital and analog transmission systems. Topics covered in the course are transmission codes, conventions, and hierarchy. Specific subjects include the T-1 system, Time Division Multiplexing, Frequency division Multiplexing, multiplexer interfacing and system maintenance (Lecture and lab 6 hours per week)

EE 250. MICROPROCESSORS 4 credit hours

Prerequisites: EE 139 or permission from instructor

This is an advanced level course covering theory, hardware, software and applications of microprocessors. Other topics include architecture, machine code programming with heavy emphasis on interfacing. (Lecture and lab 6 hours per week)

EE 254. PROGRAMMABLE CONTROLLER SYSTEMS 4 credit hours

Prerequisites: EE 224, EE 139, EE 244

This course deals with the intercommunication systems between networks of programmable controllers, master computers, master programmable

controllers and machines and/or processes. Other topics covered are data highways and Modbus communications. (Lecture and lab 6 hours per week)

EE 264. MICROPROCESSOR SYSTEMS 4 credit hours

Prerequisites: EE 250, EE 134, EE 244

This is a course in microprocessor interfacing with emphasis placed on open/closed loop systems. Topics include sensors, transducers, counters and temperature, position and speed control. (Lecture and lab 6 hours per week)

EE 274. MEASUREMENTS AND INSTRUMENTATION 4 credit hours

Prerequisite: EE 244

This course studies the theoretical and practical characteristics of a measurement and its sources of errors. The student will learn advanced procedures for measuring position, velocity, acceleration, force, temperature, flow rate and pressure. Laboratory topics and exercises include oscilloscopes, meters, tachometers, strip chart recorders, strain gages, sensors, transducers, grounding and shielding. (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)

EE 290. MICROPROCESSOR INTERFACING AND CONTROL APPLICATIONS 1 credit hour

Prerequisite: A working knowledge of microprocessors

This is an introductory technical level course in microprocessor interfacing and control applications. Hands-on exercises provide experience in analyzing the operating characteristics of modern microprocessor based control circuits. (Lecture and lab 6 hours per week)

EE 299. CUSTOMER RELATIONS 1 credit hour

Students will enhance their technical skills through the techniques gained in this course. Developing insight using demonstrations, video tape, role playing, and interaction, the student will be guided in a curriculum which builds a value added attitude for customer service personnel. Skills learned will include controlling one's emotions in difficult situations and increasing customer satisfaction.

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 and assignments vary 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

This course provides individualized instruction. Students may be referred to this course by their instructor to remove a specific deficiency in their writing. Students may enroll in course to improve writing or receive help in completing writing assignments for English classes or other courses requiring writing.

ENG 015. TEXT EDITING 1 credit hour

This course 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 020. ENGLISH AS A SECOND LANGUAGE I 8 credit hours

Placement: Based on oral interview

This class is designed for students who do not speak or understand spoken or written English.

ENG 021. ENGLISH AS A SECOND LANGUAGE II 8 credit hours

Placement: Based on oral interview

This class is designed for students who have had some exposure to and/or instruction in English. This course will teach the survival language necessary for minimum functioning in the community.

ENG 022. ENGLISH AS A SECOND LANGUAGE III ... 8 credit hours

This class is designed as a continuation of ENG 021 and is for students who have had some exposure to and/or instruction in English. This course

will go beyond minimal survival English toward communication for daily living.

ENG 030. ENGLISH FOR THE FOREIGN BORN I 2 credit hours

Individualized instruction is provided 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. This course offers extensive practice in understanding, speaking, pronouncing, and writing basic American English. Special attention is given to spelling and daily usages.

ENG 031. ENGLISH FOR THE FOREIGN BORN II 2 credit hours

This course is a continuation of all the areas covered in English 030.

ENG 040. BASIC WRITING — ESL 3 credit hours

Prerequisite: Score of 75 on English Placement Test or consent

Corequisite: ENG 000

This course provides opportunities for developing skills in formal written English for non-native speakers of English. It emphasizes rhetorical structures, vocabulary, and a review of individual problem areas in grammar.

ENG 050. BASIC WRITING I 4 credit hours

Corequisite: ENG 000

This is a Pass/Fail course 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 is on sentences and paragraphs.

ENG 051. BASIC WRITING II 4 credit hours

Corequisite: ENG 000

This is a continuation of English 050 with an individualized program of study in basic writing skills.

ENG 085. REVIEW OF ENGLISH GRAMMAR 3 credit hours

This course 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 090. PARENTS: CHILDREN'S READING 2 credit hours

For parents who are concerned about their children's reading. Special attention is given to methods for preparing preschoolers for reading, using the home as a learning environment. Focus is on reading related to home and school problems. (3 hours per week)

ENG 091. WRITING FUNDAMENTALS 4 credit hours

Corequisite: ENG 000

This is a course for writers who have mastered most of the grammar and mechanical skills (spelling and punctuation) necessary for successful college writing. This course focuses on longer paragraph and short narrative essays. Individualized instruction is 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. This course is intended primarily for native speakers of English. Students must select a writing lab section with this course.

ENG 102. TERM PAPER 1 credit hour

This course provides individual instruction for students engaged in preparing a research paper. Step-by-step help is provided in topic selection, information gathering, note taking, organization, writing, documenting, and revising. Students who enroll in this course must use a text processor (computer) to complete their work. Student-accessible computers are available at several locations on campus, including the Writing Lab.

ENG 107. TECHNICAL COMMUNICATIONS 3 credit hours

Prerequisite: ENG 100

This course is a continuation of work with writing skills and situations presented in ENG 100. Emphasis is on writing longer and more sophisticated occupational communication and oral presentations.

ENG 111. COMPOSITION I 4 credit hours

Corequisite: ENG 000

This course is focused on 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

This course is a continuation of English 111 with emphasis on research and critical literary papers along with narrative and persuasive writing.

Note: Courses in literature offer a wide variety of study and reading. Please check the time schedule for special sections which may offer a particular emphasis or syllabus.

ENG 140. SCIENCE FICTION 3 credit hours

This course looks at the relevancy of science fiction as prophecy and as a guide to shaping future societies. The course centers around a series of 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 is provided in this class which 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

This course is a 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 is 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, the structural design and the effects upon the reader.

ENG 175. LITERATURE OF NATURE 3 credit hours

This is 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. AFRO-AMERICAN LITERATURÉ 3 credit hours

This course provides a critical analysis of Black emotions in the world of literature with the goal of raising the level of Black consciousness. The course is an introduction to contemporary Black literature, letters and thought.

ENG 189. STUDY PROBLEMS IN ENGLISH 1-8 credit hours

Prerequisite: Consent

This course involves individualized directed activities in English. A special project is assigned. (Hours arranged)

ENG 200. SHAKESPEARE 3 credit hours

This course provides introductory reading and discussion of the varieties of Shakespeare's plays: comedy, history, tragedy and dramatic romance. All periods of Shakespeare's work are represented. Wherever possible, the opportunity to 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 are discussed.

ENG 211. AMERICAN LITERATURE I 3 credit hours

The nation's literature from it's beginnings to the Civil War are discussed, stressing the major authors of the period. The course relates trends of the period to contemporary problems and readings.

ENG 212. ENGLISH LITERATURE I 3 credit hours

The course concerns English literature from the Anglo-Saxon period through the 18th Century. Readings stress the major authors from Chaucer to Johnson.

ENG 213. WORLD LITERATURE I 3 credit hours

World Literature 213 and 224 are 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

This course is a continuation of American Literature 211, covering the period from the Civil War to the present. It relates trends of the period to problems and writings occurring after the Civil War.

ENG 223. ENGLISH LITERATURE II 3 credit hours

This course is ENG 212 continued, involving a study of representative writers of the Romantic, Victorian and Modern periods.

ENG 224. WORLD LITERATURE II 3 credit hours

This course is a continuation of ENG 213, exploring some of the great literary experiences since the Renaissance with attempts to show how they have contributed to 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 is discussed. Consideration is given of English from its beginning to the present. Language is examined in its social context and also in terms of dialects, speech and formal structure.

ENG 240. CHILDREN'S LITERATURE 3 credit hours

This course is a survey of prose, poetry and illustrated books suitable for the preschool, elementary, and early adolescent child. This course is required of students entering elementary education; also for library studies or work, teacher aide program, nursery and day care work and as general education for parents.

ENG 241. ADOLESCENT LITERATURE 3 credit hours

This course is a survey of prose and poetry suitable for adolescent readers. It is recommended for students entering upper elementary and high school teacher training programs; also for library science students and as a general education for parents.

ENG 260. JOURNAL WORKSHOP I 3 credit hours

This 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. The student composes his or her 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. Journals remain confidential. The course is transferable to four year colleges.

ENG 261. JOURNAL WORKSHOP II 3 credit hours

Prerequisites: ENG 260

This is a continuation of ENG 260, for students who have already completed 260, and who wish to continue to develop their skills and produce additional written work.

ENG 270. CREATIVE WRITING I 3 credit hours

Students will explore processes by which writers discover ideas. Aided by a series of writing exercises, students will create elements of poetry, fiction, drama, and/or non-fiction such as dialogue, point of view, voice, and rhythm. Students will also explore relationships between form and ideas in writing. Writing will be viewed as a means of personal expression and as a craft with definable measures of quality.

ENG 271. CREATIVE WRITING II 3 credit hours

Prerequisite: ENG 270

This course is a continuation of English 270, Creative Writing, for those students who have already completed 270 and who wish to continue to develop skills. Students will develop individual writing projects. Designated sections will coordinate publication of Northern Spies, WCC's creative arts journal.

FIRE PROTECTION (FP 79)

**FP 099. LABOR RELATIONS
IN THE PUBLIC SECTOR** 3 credit hours

Labor relations in the public sector are studied using simulated collective bargaining procedures and case studies. A field study report is required.

FP 100. INTRODUCTION TO FIRE PROTECTION 3 credit hours

Covered in this course are the history and development of fire protection, the role of the fire service in the development of civilization; personnel in fire protection; introduction to general fire hazards; and the problems and possible solutions for current and future fire protection.

FP 103. FLAMMABLE HAZARDOUS MATERIALS 3 credit hours

Designed for students in the Fire Protection program, this course covers the chemistry of flammable and explosive materials with special emphasis on hazards. Information from DOT and other agencies dealing with hazardous material response is provided.

FP 109. INCIDENT COMMAND 3 credit hours

Prerequisite: FP 100 or consent

The student is exposed to the decision making process required to manage fireground operations. Emphasis is on methods used in rescue, exposure, confinement, extinguishment and overhaul.

FP 111. HYDRAULICS 3 credit hours

Prerequisites: Math 097 and consent

This course covers basic skills and knowledge relevant to fire service hydraulics operation. Emphasis is placed on types and styles of pumps, construction, testing and maintenance procedures. In addition, main streams water distribution systems and automatic extinguishing systems are discussed. Partial coverage of NAPA Standard 1002 objectives is provided.

FP 112. FIRE COMPANY SUPERVISION 3 credit hours

Prerequisite: Consent

The theory and practice of supervision are studied. Included are the relationship of supervision to leadership; leadership styles; individual differences; problems of morale and motivation; interpersonal communication; instructional basics; supervision and strategy.

FP 116. BUILDING CONSTRUCTION FOR FIRE SERVICE 3 credit hours

Prerequisite: Consent

Firefighters are confronted with many unknown factors at the fire ground. Among these is the questionable structural stability of the fire building. The design of the building also contributes to fire spread and extinguishment in direct forms. This course provides a study of the fundamental concepts of building design and construction, including site selection, code compliance, architectural plans, terminology and explorations of design. Emphasis is focused on fire protection concerns.

FP 122. FIRE PREVENTION THEORY AND APPLICATIONS 3 credit hours

Prerequisite: FP 100 or consent of department

The development of fire prevention laws and ordinances for elimination of fire hazards is studied. Topics included are: inspection organization, practices and procedures; theory and application of laws and ordinances in modern concepts of fire prevention.

FP 124. FIRE PROTECTION SYSTEMS I 3 credit hours

This course provides an introduction to the concepts of fire protection systems and their relationship to the control and extinguishment of fires. The course includes a review of extinguishing agents and their application, study of sprinkler systems, automatic fire detection systems and municipal fire alarm systems.

FP 209. COMMAND AND CONTROL OF MAJOR FIRES 3 credit hours

Prerequisite: Consent

Covered in this course are fireground operations, strategy and judgments. Topics include: when to call for additional equipment, why buildings col-

lapse, when to retreat, when or when not to ventilate and how to best augment systems which are installed in the building. Factors or conditions which affect and determine a department's operations are studied.

FP 210. INTRODUCTION TO FIRE ADMINISTRATION 3 credit hours

Prerequisite: Consent

This course provides a study of the practical application of records, reports, and training in fire administration. Topics included are: the municipal fire problem, organization for fire protection to include manpower, equipment and facilities; principles of organization; methods of supervision and discipline; relations with the public and other city departments; budget and purchasing practices; rating systems and their application to the fire service; and ways to handle personnel problems and employee suggestions.

FP 189. STUDY PROBLEMS 1-6 credit hours

Prerequisite: Consent of program coordinator or instructor

Directed activities in fire protection are provided in this course. Working with fire protection faculty or other recognized fire protection specialists, the student will concentrate on an assigned problem and demonstrate understanding and skill development within the fire protection area.

FP 213. FIRE INVESTIGATION AND ARSON 3 credit hours

Prerequisite: Consent

The fire fighter's role in arson investigations is studied. Topics include: method and mechanics of protecting, searching and controlling the fire scene; determining the point of origin, path of fire travel and fire causes; interviews and interrogations; and recognizing and preserving evidence. This course covers Michigan laws, alibis, motives and proving the corpus delicti; preparation of the case, court testimony, reports and records and juvenile fire setters.

FP 216. LEGAL ASPECTS OF FIRE PROTECTION 3 credit hours

Legislative and court decisions which will affect the fire service are studied. This course reviews criminal and administrative law, tort actions against municipalities, legal implications of hiring, discipline and promotions.

FP 224. PROTECTION SYSTEMS 3 credit hours

This course covers attitudes prevalent in industry toward fire protection; development of fire and safety organizations in industry; relationships between private and public fire protection organizations; industrial obligations to communities in regard to fire and safety; current trends, deficiencies, and possible solutions for fire protection problems facing industry today.

FP 250. FIRE PROTECTION

TRAINING METHODOLOGY 3 credit hours

This course is designed to prepare training officers to conduct fire protection training programs. The course includes the study of various components essential in the development and delivery of fire protection training. This course is equivalent to the National Fire Academy Educational Methodology I course.

FLUID POWER (FLP 67)

FLP 111. FLUID POWER FUNDAMENTALS 4 credit hours

This is a beginning course in fluid power that deals with the basic principles of hydraulics and pneumatics. (Hydraulics is used as a means of teaching the fundamentals.) Directional valves, pressure control valves, flow control valves, actuators and basic pump theory are studied. ANSI symbols are used to design simple circuits. Disassembly of components and assembly of circuits make up the lab experiences.

FLP 122. HYDRAULIC PUMPS AND MOTORS 2 credit hours

Prerequisite: FLP 111

This course takes a look at the principles of the major positive displacement pumps. Building on the information from FLP 111, the students will study hydraulic pump controls, and multi-pressure systems. Other topics include hydrastatic drives, power unit construction, and rotary actuator principles and controls. Lab sessions are an important part of the class.

FLP 201. PLUMBING AND PIPEFITTING I 3 credit hours

This is a practical study of plumbing and pipefitting fundamentals as well as the classifications and functions of boilers, steam and hot water heating systems. Heating code is included.

FLP 202. PLUMBING AND PIPEFITTING II 4 credit hours

This course is a continuation of FLP 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

Corequisite (recommended): FLP 214

FLP 213 parallels FLP 214 concentrating on the controls used in hydraulic circuits. The course takes a closer look at the directional, pressure and flow

controls studied in FLP 111. We concentrate on specialty type valves such as stack modules, cartridge valves, proportional and servo valves. Other topics include electric components used in sequencing of hydraulic activators, and component trouble shooting. Lab time is an integral part of this course.

FLP 214. BASIC HYDRAULIC CIRCUITS 3 credit hours

Prerequisite: FLP 111

Corequisite (recommended): FLP 213

This course parallels FLP 213 and deals with circuits as the application of hydraulic controls. Circuit design, application and trouble shooting are major topics studied. Electric logic for hydraulic sequencing is included along with open loop and closed loop servo circuits. Lab time is an important part of this course.

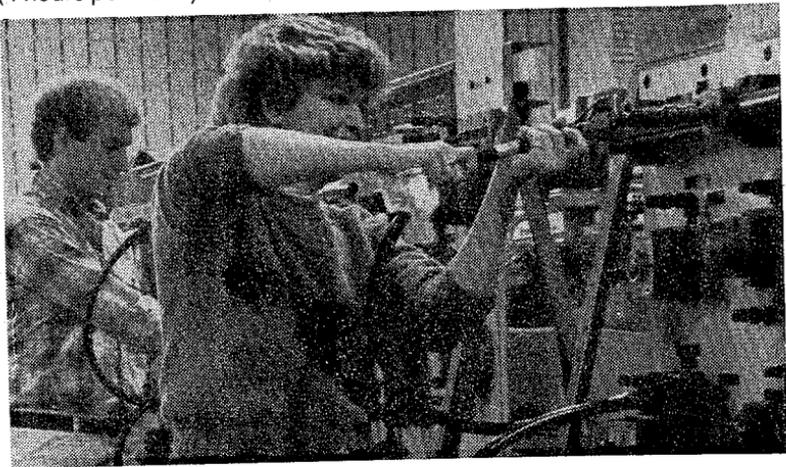
FLP 225. FLUID POWER INSTRUMENTATION 3 credit hours

Prerequisites: FLP 111 and EE 123A

This course includes the study of electronic instrumentation as it applies to hydraulics and an introduction to automatic control. Discussion and laboratory exercises will involve sensors of all types, oscilloscopes, and X/Y recorders. Characteristics of various pressure controls and electro-hydraulic valves will be studied utilizing this equipment. The course will conclude with an introduction to feedback control theory.

FLP 226. PNEUMATICS 3 credit hours

Basic air systems are studied as a control medium in industrial applications such as presses, clamps, transfer devices, etc. Valves, cylinders, motors, compressors, regulators, filters and other power components are included. (4 hours per week)



FRENCH (FRN 18)

FRN 111. FIRST YEAR FRENCH I 4 credit hours

This is a beginning and transferable course in French which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language.

FRN 120. BEGINNING CONVERSATIONAL FRENCH 2 credit hours

This is a basic French course, mainly conversational in approach, which assumes no previous knowledge of the language. It is chiefly for persons interested in foreign travel through a basic knowledge of spoken and written French. It may also be taken as a preview for students entering the first year college French studies or students already enrolled in the first year course.

FRN 121. INTERMEDIATE CONVERSATIONAL FRENCH 2 credit hours

Prerequisite: FRN 120

This is a continuation of FRN 120. The course provides vocabulary expansion and cultural insights through student involvement in conversation practice sessions.

FRN 122. FIRST YEAR FRENCH II 4 credit hours

Prerequisite: FRN 111

This is a continuation of FRN 111. Continuing classroom work and language sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

FRN 189. STUDY PROBLEMS IN FRENCH 1-8 credit hours

Prerequisite: Consent

This course includes directed activities in French. These activities are individualized. 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

This course provides a review of first year French language, as well as an introduction to cultural and commercial French. Students with good high school backgrounds or previous language experience in French may be eligible for admission without FRN 111 and 122.

FRN 224. SECOND YEAR FRENCH II 3 credit hours

Prerequisite: FRN 213 or consent

This is a continuation of FRN 213. Short-wave broadcasts and language laboratory practice augment the oral-aural method. The course covers aspects of Canadian as well as French cultural life.

GENERAL STUDIES (GS 15)

GS 111. FIRST YEAR RUSSIAN I 4 credit hours

This is a beginning and transferable course in Russian which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language. No prerequisite is necessary.

GS 120. CONVERSATIONAL RUSSIAN 2 credit hours

Designed to be a short term, seven week, non-sequential conversational course. This course is intended for those interested in basic and essential aspects of the Russian language and culture for the purpose of travel and enjoyment. The writing system, useful everyday expressions, and current topical informational items are studied. No prerequisite is necessary.

GS 122. FIRST YEAR RUSSIAN II 4 credit hours

Prerequisite: GS 111 or consent

This is a continuation of GS 111. Continuing classroom work and language laboratory sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

GS 189. STUDY PROBLEMS IN RUSSIAN 1-8 credit hours

Prerequisite: Consent

This class involves individualized directed activities in Russian. Special aspects of the Russian language or culture are studied. (Hours arranged)

GEOGRAPHY (GEO 03)

GEO 100. GEOGRAPHY AND ENVIRONMENT 3 credit hours

This is a survey of contemporary global society emphasizing the inter-relationships between developed and developing nations. It introduces students to the theory and methodology of the discipline and examines current environmental issues such as land use, acid rain, and soil erosion.

GEO 200. MICHIGAN GEOGRAPHY 3 credit hours

This is a 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 is on points of history with geographic interest. The economic, social and political development of the territory as part of the history of the Great Lakes area are covered.

GEOLOGY (GLG 34)

GLG 100. INTRODUCTION TO EARTH SCIENCES 4 credit hours

For students who desire to obtain a broad perspective of the science, this course provides practical training in earth science including work with soils, minerals, glaciers, volcanism, maps, meteorology, astronomy and oceanography. Field trips to points of interest are included. (2 hours lecture, and 3 hours laboratory each week)

GLG 103. FIELD GEOLOGY 3 credit hours

This class is Geology taught in the field. Students study processes that have formed or are forming the landscape. This course is normally offered only during the summer term. (6 hours each week for 7 weeks)

GLG 104. WEATHER 3 credit hours

Atmospheric processes and phenomena that produce the day-to-day weather changes experienced throughout the world will be studied. Emphasis is placed on empirical observation of cloud type, development and movement. Weather map interpretation and analysis including elementary weather forecasting techniques will be presented. Field trips are included. This course is normally offered only during the spring term. (6 hours each week for 7 weeks)

GLG 109. COMMON ROCKS 3 credit hours

The identification of rocks and minerals will be studied. This course is for students interested in becoming school teachers, or needing a science elective. (3 hours each week)

**GLG 110. GEOLOGY OF THE NATIONAL
PARKS AND MONUMENTS** 2 credit hours

This course is a survey of the geological setting of specific National Parks and Monuments. It includes the interpretation of the geological principles and processes which shaped them. Slide programs will be presented. (2 hours lecture.)

GLG 114. PHYSICAL GEOLOGY 4 credit hours

Prerequisite: GLG 100 or consent

The physical features and processes of the earth are studied. Plate tectonics along with the interpretation of topographic maps and the study of common rocks and minerals are included. A three day weekend field trip is required with food and housing expenses the responsibility of the student. (2 hours lecture, and 3 hours laboratory each week)

GLG 125. HISTORICAL GEOLOGY 4 credit hours

Prerequisite: GLG 100 or consent

The development of North America as a typical continent is presented including the formation of mountains, plains, the evolution of life on land and water, and the identification of fossils. A three day weekend field trip is required with food and housing expenses the responsibility of the student. (2 hours lecture, and 3 hours laboratory each week)

GERMAN (GRM 11)

GRM 111. FIRST YEAR GERMAN I 4 credit hours

This is a beginning and transferable course in German which emphasizes the aural-oral approach. Classroom work and language laboratory sessions assist the student in establishing and perfecting basic conversational tools in the language. No prerequisite is necessary.

GRM 122. FIRST YEAR GERMAN II 4 credit hours

Prerequisite: GRM 111 or consent

This is a continuation of GRM 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.

GRM 189. STUDY PROBLEMS IN GERMAN II 1-8 credit hours

Prerequisite: Consent of instructor

This is a class with individualized directed activities in German. Special aspects of the German language or culture are studied. (Hours to be arranged)

GRAPHIC DESIGN TECHNOLOGY (GDT 77)

GDT 100. TYPOGRAPHY I 4 credit hours

Prerequisite: MTH 151 or equivalent proficiency

This is an introduction to evolution/principles of typography with concentration on typeface identification, copyfitting, and layout formulation. Assignments investigate lettering as design element for graphic design and advertising. (6 hours per week)

GDT 101. DESIGN SURVEY 3 credit hours

This course surveys historical and contemporary styles and influences in graphic design, and typography.

GDT 112. GRAPHIC COMMUNICATION 4 credit hours

Prerequisite: GDT 100, ART 112

This class provides 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

This class provides study of art production mechanics and techniques including keylining, page formatting, and camera ready art preparation. It focuses on industry related assignments. (6 hours per week)

GDT 214. PUBLICATION LAYOUT 4 credit hours

Prerequisite: GDT 112, GDT 113

This course involves production of varied media comprehensives for advertising, typography and graphic design including page formatting, posters and newspaper/magazine advertisements. Marker sketches to highly refined presentation works constitute coursework. (6 hours per week)

GDT 215. TYPOGRAPHY II 2 credit hours

Prerequisite: GDT 112, GDT 113

This course involves the study of 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

This class covers basic printing processes and terminology of the various stages required for producing printed materials. Students concentrate on hands-on execution and take projects through printing preparation to the final printed piece. (6 hours per week)

GDT 227. GRAPHIC TECHNOLOGY 4 credit hours

Prerequisite: GDT 216. Corequisite: GDT 230

This class provides 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

This class provides an introduction to various rendering techniques using an airbrush and various associated materials. Assignments deal with illustrative and graphic design solutions to industry related projects. (6 hours per week)

GDT 229. SCREENPRINTING TECHNIQUES 4 credit hours

Prerequisite: GDT 216 or consent

This is an introductory course in screen process printing (known as silk-screen 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

This class provides an overview of various professional design operations, career options, media services, freelancing, resume and portfolio preparation/presentation procedures. Lectures also touch on the fundamentals for operating a small design office. (4 hours per week)

GDT 232. ILLUSTRATION 2 credit hours

Prerequisite: ART 111, GDT 214

The course is an investigation of conceptual and technical skills required for communication of ideas. Exercises and projects aim to develop visual awareness and accuracy in illustrative drawing using various media. (4 hours per week)

GDT 236. SPECIALIZED STUDY 2 credit hours

Prerequisite: GDT 113, GDT 214

This class provides 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

Anatomy and physiology principles for students in HS 220 are reviewed. 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

This course consists of lecture on office examining room procedures, sterile technique, medical emergencies, specimen collection and minor surgery. Laboratory experience applies course material from the lectures.

HS 117. NUTRITION 2 credit hours

This course presents normal nutrition and its relation to health, including nutritional needs for various age groups and introduces nutrition. The importance of nutrition in the growth and functioning of the human body is emphasized.

**HS 121. INTERPERSONAL DYNAMICS OF
PATIENT CARE** 2 credit hours

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 are studied. An understanding of self and human behavior in general is developed.

HS 147. GROWTH AND DEVELOPMENT 3 credit hours

Corequisite: NUR 135 or consent of faculty

The physical, psychological and social growth of the individual from birth to death and the role of the family in society are studied.

HS 210. BASIC EMT FOR NURSES 4 credit hours

Prerequisite: Currently licensed RN or LPN

This course prepares registered and practical nurses for licensure as Basic Emergency Medical Technicians under the guidelines of the Michigan Department of Public Health. Topics of study include: legal implications, topographic anatomy, triage, prehospital patient assessment, environmental emergencies, spinal injuries, splinting and backboarding, automobile extrication and 24 hours of clinical experience. Students must pass a written and practical exam at the end of the course for EMT licensure.

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

Various philosophies of ethics (Kantian, utilitarian, natural law) are introduced. Models for decision making using a multifaceted approach and incorporating philosophy, values clarification, and legal aspects, are used to examine current ethical issues. Among topics discussed are: patient rights, confidentiality, informed consent, abortion, genetic manipulation, experimental procedures, treatment of defective newborns and euthanasia.

HEATING (HTG 81)

HTG 090. FURNACE OPERATION 2 credit hours

This is a special course for Ford Motor Company-Rawsonville Plant.

HTG 100. BOILER OPERATIONS 3 credit hours

Prerequisite: Employment working with boilers or consent

This is the 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 applica-

tion of physics; heat, steam, water, pressures, etc. is studied. Safety is included, along with basic codes governing the operation of boilers.

HTG 101. BOILER ACCESSORIES 3 credit hours

Prerequisite: HTG 100 or consent

This class is devoted to boiler settings, combustion equipment, fuels, heating surfaces, stokers, pumps, safety valves, steam traps, separators, and other accessories. Includes keeping of records, logs and inspection preparation.

HTG 102. BOILER AUXILIARIES 3 credit hours

Prerequisite: HTG 101 or consent

This provides continuing 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. Construction, mechanisms, engine indicators, governors, engine rating and efficiency are other topics.

HTG 104. POWER PLANT REFRIGERATION 3 credit hours

This is a basic refrigeration course for Boiler Operators and Power Plant Engineers covering fundamentals of refrigeration including: terminology, cycle, mechanics of compression, fundamentals of energy, elementary thermo-dynamics, refrigerators and lubricating oils.

HTG 105. POWER PLANT AIR CONDITIONING SYSTEMS 3 credit hours

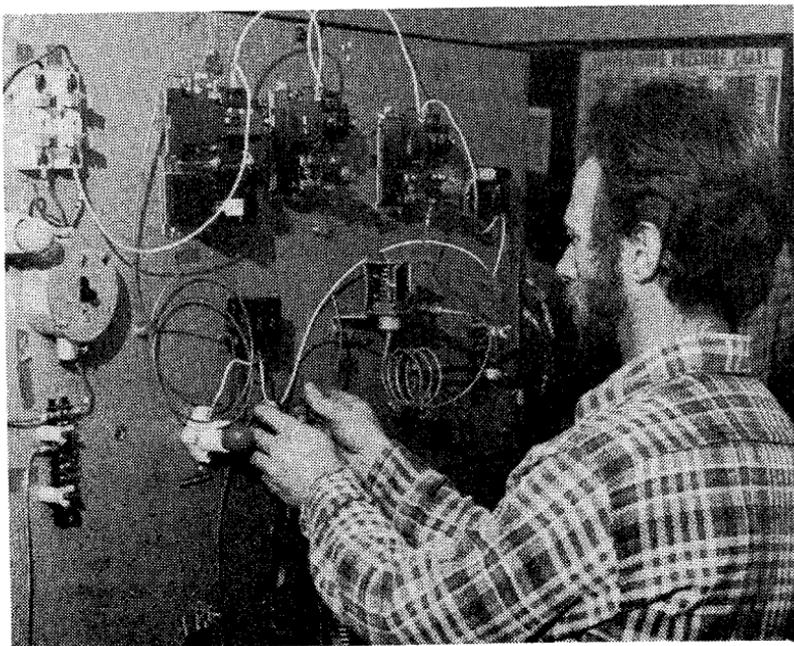
Prerequisite: HTG 104

This course is a continuation of Heating 104 devoted to Power Plant cooling systems covering centrifugal, reciprocating cascade and absorption systems, evaporators, controls and metering devices, cooling towers, water problems and treatment.

HTG 106. POWER PLANT ELECTRICITY I 3 credit hours

Prerequisite: Employed Operating Boilers or consent

This class introduces operators to basic electricity and the basic application of electrical measuring instruments including: basic terms, volts, ohms, amps, power factors, AC and DC principles, single and 3 phase circuits, motor protectors (fuses, heaters, breakers, etc.) sub-stations, transformers, etc.



HTG 107. POWER PLANT ELECTRICITY II 3 credit hours

Prerequisite: HTG 106 or consent

A continuation of Heating 106, this course studies types of motors and generators employed in Power Plants to generate electricity. It also looks at the application and maintenance of motors, induction, synchronous, single and 3 phase; power transmission, transformer lines, breakers, start and run capacitors; and control of plant power factors. Safety and appropriate codes are discussed.

HTG 109. REVIEW FOR BOILER EXAMINATIONS 3 credit hours

Prerequisite: Employed operating boilers or consent

This class reviews major units of boiler operations and refrigeration which will assist operators in passing the licensing examination for Boiler Operator, High Pressure, Third Class, and for Third Class refrigeration operator.

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

This is the first in a series of courses introducing heating and air conditioning service personnel to the fundamentals of heating fuels, heating equipment and systems.

HTG 122. HEATING SYSTEMS 5 credit hours

Prerequisite: HTG 111 or consent and Refrigeration Service Engineers Society membership

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 are 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

This includes a review of fundamentals, understanding heat loss/gain, heat pump principles, heat pump application and installation, compressors, refrigerant reversing components, wiring, auxiliary heaters, defrost controls, electrical controls, air distribution, equipment performance, troubleshooting, and customer relations. Upon examination 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

This class develops an understanding of the installation, maintenance and function of pneumatic temperature control systems. It covers pneumatic controls, applications and functions, plus air compressors and maintenance, variation of applied control system, room stat., master stat., damper motors, automatic water and steam valves, return and fresh air damper blades.

HISTORY (HST 04)

HST 101. WESTERN CIVILIZATION TO 1600 3 credit hours

This course examines the development of the cultures and institutions of the ancient Near East and Classical, Medieval and Renaissance civilizations.

HST 102. WESTERN CIVILIZATION FROM 1600 TO THE PRESENT 3 credit hours

This course studies cultural developments and the growth of institutions from the Renaissance to the present. Emphasis is on the expansion of European civilizations.

HST 150. AFRO-AMERICAN HISTORY 3 credit hours

The class surveys and analyzes the literature and some of the problems and interpretations of the history of the Afro-American from the Revolutionary War to the present.

HST 160. AMERICAN FILM 3 credit hours

(See HUM 160)

The development of American cinema from its beginnings in 1896 to the present is studied. The films, viewed in class, are discussed in terms of film techniques as well as in terms of content. The course relates cinema to themes in American culture.

HST 189. STUDY PROBLEMS IN HISTORY 1-8 credit hours

Prerequisite: Consent

This involves 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

Focusing on the history of the State of Michigan, including its geographical, economic, social, and political development is examined. 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, this class re-examines 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 are studied. This includes an examination of social and cultural unrest of growing America to better understand and to deal with stresses of the present. It is a continuation of U.S. 1500-1865.

HST 204. ORAL HISTORY 3 credit hours

This class includes tape recording the memoirs of people around us, oral history project initiation and management via lectures and guest speakers. Special emphasis is on class participation and practical field work. Guidance is given to persons developing individual projects for themselves or their sponsoring institutions.

HOTEL-RESTAURANT MANAGEMENT (HMT 75)

HMT 100. HOSPITALITY INDUSTRY ACCOUNTING ... 3 credit hours

The course provides basic knowledge of bookkeeping and accounting skills and orientation to office procedures as related to the hospitality industry.

HMT 104. FRONT OFFICE PROCEDURE 3 credit hours

The class provides an introduction to a systematic approach to front office operations as well as an overview of the flow of business through the hotel organization.

**HMT 222. LODGING MARKETING 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. Includes official Certificate of Completion from Institute of Hotel/Motel Management.

**HMT 223. PRACTICUM IN LODGING
MANAGEMENT** 3 credit hours

This permits 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 is the focus for this course. Functional hotel problems, policy problems, and the legal resolution of a controversy are studied. Also includes 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

This course explores 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

This course provides a survey of important foreign (primarily — though not exclusively — European) films and film makers. The films viewed in class are discussed in terms of film techniques as well as in terms of content. No foreign language ability is assumed.

HUM 160. AMERICAN FILM 3 credit hours
(See HST 160)

This course examines the development of American cinema from its beginning in 1896 to the present. The films, viewed in class, are discussed in terms of film techniques as well as in terms of content. It relates American cinema to themes in American culture.

HUM 189. STUDY PROBLEMS IN HUMANITIES 1-8 credit hours

Prerequisite: Consent of instructor

This is 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 AND DESIGN (ID 63)

ID 100. TECHNICAL DRAWING 4 credit hours

This is an introduction to the graphic language and 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 or equivalent

The development of perspective and isometric drawings suitable for engineering studies, parts catalogs, and assembly and service manuals is the focus of this course. Emphasis is 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 or equivalent

Principles of gears, cams, pulleys and other mechanical means to transmit motion and energy are studied. Included are graphic and mathematical techniques to solve force, displacement and motion application problems. (4 hours per week)

ID 111. INDUSTRIAL DRAFTING 4 credit hours

Prerequisite: ID 100 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 are examined. 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 or consent

Points, lines and planes and their relationships in space are studied, with 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 or equivalent

This class provides practices and procedures for preparing assembly drawings from given details. An introduction to types of dies and their representation is included, with emphasis on the use of standard part catalogs is also covered. (6 hours per week)

ID 121. THEORY OF JIGS AND FIXTURES 2 credit hours

Prerequisites: ID 100, MT 111

The various types of jigs and fixtures and their combined use are studied. Development of skills in the proper location and clamping of a part is included, with emphasis on the application principles and presentation of a practical design. The use of standard parts catalog is also covered.

ID 123. TOLERANCING: CONVENTIONAL AND GEOMETRICAL 2 credit hours

Prerequisite: ID 111 or equivalent

This course is an analysis of tolerancing in both the conventional and geometrical systems of dimensioning. Emphasis is placed upon definitions, terminology, and practical application of principles to typical problems in industry. (3 hours per week)

ID 212. THEORY OF DIES 2 credit hours

Prerequisite: Apprentice in Tool and Die Making or ID 111

The nomenclature and the basic types, principles and standards used in the design of dies are studied. Special attention is given to the use of standard parts catalogs and the standard die detailing and assembly drawing practices. (3 hours per week)

ID 216. INTRODUCTION TO COMPUTER AIDED DRAFTING 2 credit hours

Prerequisite: ID 100

The principles and applications of computer-aided drafting systems and familiarity with the hardware components of the CAD system are emphasized. Use of the interactive graphic software, development of input and output skills, and familiarity with software, languages and systems hierarchy. (3 hours per week)

ID 217. INTRODUCTION TO 3-D CAD 2 credit hours

Prerequisites: ID 112 and ID 216

A continuation of ID 216, this class introduces the use of three axes to create drawings. Also included 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 or consent

This is 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 or equivalent

This class is 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 and ID 251

The course examines the principles of electronic layout including the application of CAD to develop block diagrams, electronic symbolization, component and hardware representations. Types of layout and assemblies are included. (6 hours per week)

ID 221. CAD APPLICATION — MECHANICAL 4 credit hours

Prerequisite: ID 219

This course studies 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

Emphasized in this class are 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

This class includes design principles of developing machine components, assemblies, and specifications of typical products requiring large volume production processing. Emphasis is given to tolerancing, production method and product maintenance.

ID 230. ADVANCED PRODUCT DRAFTING 4 credit hours

Prerequisite: ID 107, ID 111 or consent

Students study the development of a machine from conception through design and layout stages to the preparation of working drawings. Emphasis is on preparation of a layout drawing incorporating a maximum of commercially available components, fastening techniques, use of standard and special methods, keeping maintenance of the machine as a design criteria. (6 hours per week)

ID 250. STATICS AND STRENGTH OF MATERIALS 3 credit hours

Prerequisite: MTH 177 and ID 219 or consent

Students learn about the identification and definition of internal stresses and deformation of elastic bodies as a result of internal and external forces. Other topics include principles of strength of materials in the design of structures, machines and 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 3 credit hours

Prerequisite: ID 217 or equivalent

This is 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 252. FUNDAMENTALS OF ELECTRONIC DRAFTING 4 credit hours

Prerequisite: ID 251 or consent

This class involves principles of laying out and preparing single and double sided printed circuit boards, preparing printed circuit assemblies, prepara-

tion 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: consent

In this course a team of students from CAD, NC, and Integrated Manufacturing are assigned a product. Course activities require the development of a suitable design identification of manufacturing techniques, and the assembly and testing of the completed product utilizing a "work cell" model. (4-10 hours per week)

INTEGRATED MANUFACTURING (IM 36)

IM 121. ROBOTICS I 3 credit hours

This is an introductory course exposing students to automated manufacturing systems. Emphasis is placed on applications of flexible automation, types of programming, sensors, and feedback devices. Open and closed loop systems will be studied. Good safety practices along with the sociological impact of robots in the work place are among other topics covered. Field trips to local users or manufacturers of robotic equipment are an integral part of this course.

IM 212. ROBOTICS II 4 credit hours
Prerequisite: IM 121

This class concentrates on programming techniques. Students will learn to program different types of robots incorporating inputs and outputs into their programs. The course is based on a series of student projects that will, step by step, introduce each new command or concept. Students will spend most of the class time in the lab and will be expected to spend extra hours during scheduled open labs.

IM 223. ROBOTICS III 4 credit hours
Prerequisite: IM 121, 212

Students learn to work with peripheral devices in various robotic workcells. Experiments include part recognition, counting, distance measuring, sorting, and palletizing. Programmable controllers are interfaced with robots in an integrated manufacturing cell. Automated welding, (GMAW) Gas-Metal Arc Welding, using an industrial robot is also developed in this course.

IM 224. ROBOTICS IV 4 credit hours

Prerequisite: IM 121, 212, 223

This course involved advanced programming of robots and programmable controllers in an integrated workcell. Problems related to maintenance and trouble-shooting constitute a major segment of the course. A group project involving the design and construction of a workcell that simulates some industrial process is an enjoyable conclusion to this program.

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. Explores the origin of "math anxiety" and gives help in reducing such anxiety and changing attitudes toward mathematics. This is a service course which may not be used as a substitute for a required mathematics course. (1 hour per week)

MTH 037. INDEPENDENT STUDY 1-3 credit hours

Prerequisite: Consent

This course allows students to improve specific mathematical skills according to their individual needs, with an instructor of their choice. It is not intended as a substitute for any other formal math course. The content, time and 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 1 credit hour

This course is designed to increase confidence levels in math-anxious people by providing instruction in problem solving techniques. Topics covered include: calculator skills, story problem techniques, graphing, logic, and spatial relationships. Grading uses the satisfactory/unsatisfactory system.

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 045. MATH REVIEW FOR NURSES 3 credit hours

A study of whole numbers, fractions, decimals and percents with mental arithmetic, and estimation development. Accuracy and speed of calculations will be emphasized with timed tests. Ratio and proportion will be studied with applications to health emphasized. Taught with a lecture mode of instruction. Designed for students preparing for nursing and pharmacology courses. No prerequisites.

MTH 053. MATHEMATICAL THINKING 3 credit hours

This course is designed to help students organize their thinking and improve retention. Topics covered in the course include: organization, orientation in space, analytical perception, comparisons, following instructions and categorizing.

MTH 090. OCCUPATIONAL MATHEMATICS 3 credit hours

Prerequisite: MTH 039 or placement test equivalent

This course provides the computational skills needed to solve problems commonly encountered in various general occupational fields. Students with an interest in business should consider MTH 163, Business Mathematics. Students with an interest in health fields should consider MTH 165, Health Science Mathematics. Topics covered include: sets, whole and integer number systems, practical algebra, geometry, measurements, the metric system, ratio and proportion problems, graphs, and statistics.

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 whole, integer, rational and real number systems, algebraic operations, solving equations, practical applications, inequalities, graphing, systems of equations, polynomials, rational expressions, roots and radicals, and quadratic equations. This 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 equa-

tions, 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

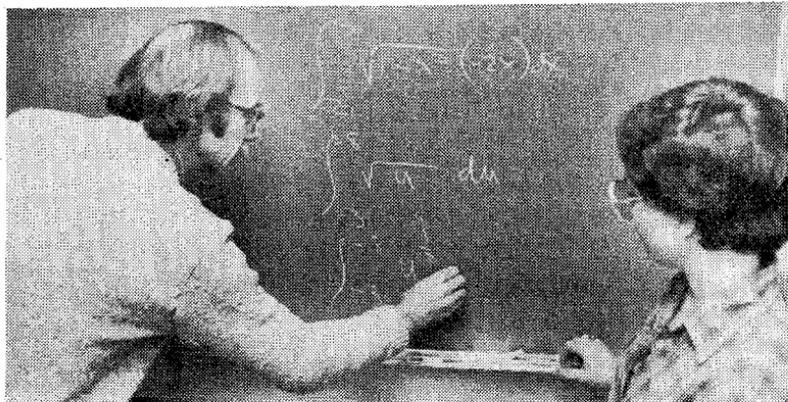
Prerequisite: MTH 097 or Consent

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. This course currently offered only in the self-paced format.

MTH 114. COMPUTER ASSISTANCE FOR STUDENTS WITH SPECIAL NEEDS 1-6 credit hours

Prerequisite: Consent

This course provides assistance to students with special needs, especially those wishing to strengthen particular areas or handicapped students,



using microcomputers and terminals. The course is project-oriented with activities centered primarily around mathematics classes. Typical projects would be: typing notes and homework assignments, word-processing, writing computer programs, solving mathematical problems, using Data Base Management systems. (6 hours per week)

MTH 118. MATHEMATICS AND THE ENVIRONMENT 1 credit hour

Current critical issues such as pollution, population growth, hunger, resources scarcity and the arms race are explored. Mathematics is used to provide understanding. The topics covered include: calculations, ratios, percents, graphs, and statistics. (Offered irregularly.)

MTH 148. FUNCTIONAL MATH FOR ELEMENTARY SCHOOL TEACHERS 4 credit hours

Prerequisite: MTH 097

This course presents the mathematical concepts and problem solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for teachers of mathematics, rather, it provides the general mathematical background for teachers on all subjects. Topics covered include: problem solving, sets, whole numbers, integers, rational numbers, decimals, number theory, geometry, probability and statistics, and measurement. This course transfers to some four-year institutions.

MTH 150. PRECISION MEASUREMENT 4 credit hours

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. (This course is offered irregularly and intended as an enrichment not a transfer course.)

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 or computer mathematics; the metric system; signed numbers; solving equations; ratio and proportion; percent applications; circle, bar, and line graphs; savings and loans; taxes and payroll; and an introduction to statistics. This course is currently offered only in the self-paced format.

MTH 165. HEALTH SCIENCE MATHEMATICS 3 credit hours

Prerequisite: MTH 039 or placement test equivalent

This course provides the 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; fractions and decimal fractions; geometry; the metric system; the apothecary and household systems; signed numbers; solving equations; ratio and proportion; instrumentation; circle, bar, and line graphs; an introduction to statistics; and exponents and logarithms. This course is currently offered only in the self-paced format.

MTH 169. INTERMEDIATE ALGEBRA 4 credit hours

Prerequisite: MTH 097 or placement test equivalent

This course is second-year high school algebra. Topics include: the real number system, polynomials, linear equations, inequalities, absolute value, exponents, complex numbers, quadratic equations and inequalities, linear and quadratic functions, inverse functions, linear and non-linear systems of equations and inequalities, and determinants and matrices. 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, systems of inequalities, and determinants

and matrices. This course is the second half of MTH 169, and is currently offered only in the self-paced format. The combination of MTH 169A and MTH 169B transfer to some four-year institutions as MTH 169.

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 3 credit hours

Prerequisite: MTH 169A or placement test equivalent (MTH 178 and MTH 179 may be taken concurrently. It is recommended that MTH 179 be taken first if the two are not taken concurrently).

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, sequences, binomial theorem, and mathematical induction. 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 039, 179A and 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 or 179

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 184. DISCRETE MATHEMATICS I 4 credit hours

Prerequisite: MTH 179

This course provides the necessary mathematical skills and ideas needed to formulate and solve problems, primarily those encountered in the computer science and engineering fields. Topics covered include: set theory, logic, discrete number systems, and algorithms. This course transfers to some four-year institutions and provides support for computer science majors.

MTH 185. DISCRETE MATHEMATICS II 4 credit hours

Prerequisite: MTH 184, 191 also encouraged

This course is a continuation of the topics and ideas presented in MTH 184. Topics covered include: polynomial algebra, graph theory and combinations. This course transfers to some four-year institutions.

MTH 189. STUDY PROBLEMS 1-8 credit hours

Prerequisite: Consent

This includes directed activities in mathematics and 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 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, 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 3 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 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 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

This class is designed to teach machine shop theory to those who have had or are presently receiving "hands on" or practical experience in the

machining field. Precision and semi-precision measuring instruments, layout tools and procedures, proper use of hand tools, and the basic principles of machine tool operations will be covered. Films supplement classroom instruction.

MT 101. MILLWRIGHT THEORY 2 credit hours

This course includes millwright practices encompassing major units such as millwright fundamentals, fiber and steel rope, hoisting, structural woods and steels, scaffolding, strengths of timber and metal beams, cranes and derricks, rigging, transporting heavy shop equipment, accident prevention, standards, laws and codes. Maintenance of bearings, belts, chain drives and conveyors included.

MT 103. INTRODUCTION TO MATERIALS 3 credit hours

This course includes an introduction to the basic terms, processes and structures of materials. Hardness testing, classification systems and demonstrations of testing equipment are studied. Principles of heat treatments are studied and demonstrated. (3 hours per week)

MT 111. MACHINE SHOP THEORY AND PRACTICES 4 credit hours

This is 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

This is a machine shop class for those who have either completed the beginning level machine shop or have gained equivalent experiences elsewhere. Each of the five basic machine tools will be studied in depth. The projects are designed to facilitate more advanced set-ups and operations so that the cutting of spur gears, multiple threads, tapers and internal grinding operations can be performed.

MT 123. MACHINE TOOL OPERATIONS AND SET-UP II 4 credit hours

A continuation of MT 122, this class is 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 tech-

niques. 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, this course emphasizes 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 are studied.

MT 240. PLANT LAYOUT AND MATERIAL HANDLING SYSTEMS 4 credit hours

Prerequisite: ID 100

This class includes blueprint Reading and simplified drawing of typical free and power type conveyor systems as well as plant layout drawing of machinery, foundations, exhaust systems, heat treat furnaces, hoists, catwalks and platforms.

MUSIC (MUS 20)

MUS 100. CONCERT BAND 1 credit hour

This is a course in performance open to all students and the public upon registration for the class. It may be repeated for credit up to a maximum of four times. (2 hours per week)

MUS 102. STRING ENSEMBLE 2 credit hours

This is A course in performance open to all students and public upon registration for class. It may be repeated for credit up to a maximum of four times. (2 hours per week)

MUS 103. WCC JAZZ ORCHESTRA 1 credit hour

This is a course in performance open to those who desire to read, improvise and perform. Audition is necessary for registration; the course may be repeated for credit up to a maximum of four times. (2 hours per week)

MUS 106. JAZZ COMBO 1 credit hour

The Jazz Combo is designed for the musician with some degree of competency to gain experience and skill in performance and improvisation of different styles of jazz and blues. The group is a performing one and offers concerts in the community.

MUS 109. BRASS ENSEMBLE 2 credit hours

This is an ensemble course designed for brass quartets and 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 group is open to all students. It may be repeated for credit up to a maximum of three times.

MUS 136. GOSPEL CHORUS 1 credit hour

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

This is 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

This class is designed to enable students to develop skills and techniques in music composition, orchestration and arranging for all musical mediums.

MUS 146. CREATIVE IMPROVISATION: SONGWRITING 3 credit hours

For the prospective song writer, this class deals with lyric writing and musical accompaniment. Students collaborate using their talents to produce songs and also become acquainted with musical styles through recordings and demonstrations, 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

This is a music course for the serious music student and professional musician covering basic agreements, contracts, royalties, copyrights and other legal aspects in the music industry.

MUS 149. SIGHT SINGING/EAR TRAINING 2 credit hours

This class provides an approach to listening to and reading music designed to develop composing and listening skills. It also offers an introduction in training the ear to identify intervals, chords, scales and chord progressions.

MUS 152. MUSIC THEORY I 3 credit hours

This includes an in-depth study of melodic, harmonic and rhythmic aspects of tonal music related to various styles: European, rock, jazz, ballads and the Blues. This class is 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

This course in jazz theory 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 are used depending on the student's musical proficiency. The course focuses on the development of Black music from Africa to the Americas.

MUS 159. SOUTH INDIAN MUSIC 3 credit hours

This focuses on theory and practice of South Indian music. Sacred and secular roles of music in the Indian culture are examined. The course includes basic notes and their variations; definition of terms; the analysis of the basic melody; musical terms; instruments of South India, such as the veena, flute, tamboura and table. 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

The course deals with various styles and techniques of conducting ensembles and covers styles of all music periods. Hand position, metric conducting, dynamics and such other techniques as score reading and musical phrasing techniques are discussed.

MUS 170. AUDIO RECORDING TECHNOLOGY 3 credit hours

The class is designed to provide the student with the fundamentals necessary for a career-oriented study in creative audio recording. Audio-visual and "hands on experience" (professional recording studio access) is provided, as is lecture and studio experience on automated recording techniques and multitrack.

MUS 180. MUSIC APPRECIATION 3 credit hours

This is an introduction to music, using innovative techniques on how to listen to music after becoming acquainted with the socio-cultural values of the people who produced the many kinds of music in our world. All styles of music covered. Presentations deal with the growth and development of musical forms and different styles through recordings and demonstrations.

MUS 181. JAZZ HISTORY 2 credit hours

Jazz History is a study in the development of jazz, starting from African roots and continuing to 20th century developments.

MUS 182. DEVELOPMENT OF AMERICAN MUSIC 2 credit hours

An introduction to American music from the 1900s to the 20th century, this course features the music of William Billings, the pioneering approach of Charles Ives, music after WWII and the avant-garde contribution.

MUS 183. AFROMUSICOLOGY 3 credit hours

Afromusicology is a relatively new discipline of musical studies which combines the areas of Anthropology, (Egyptology) Organology, World and Social History, and Musicology to explain the creative and artistic developments of Africa and Africa-American peoples of the world. The mode of presentation deals with an ethnomusicological approach, focusing on the lifestyle, traditions and mores, to define the visual and musical arts.

MUS 186. PIANO LITERATURE 3 credit hours

This is 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 1-8 credit hours

Prerequisite: Consent

This features directed activities in a selected music area. These activities are individualized. A specific problem/issue is studied or a special project is assigned. (Hours arranged)

MUS 203. INTRODUCTION TO VOICE 2 credit hours

Students learn techniques in performing songs. Opportunities to work with musicians and sound equipment are available.

MUS 204. VOICE 2 credit hours

This is an extension of Introduction to Voice that studies vocal techniques in depth.

MUS 206. VOCAL PERFORMANCE 1 credit hour

Students learn techniques in performing songs, and get opportunities to work with musicians, sound equipment and with groups.

MUS 210. FUNCTIONAL PIANO 2 credit hours

This is 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 MUS 210, this course provides piano studies beyond the elementary or beginning stage. It is for those with some experience in piano playing.

MUS 216. PIANO: JAZZ AND BLUES 2 credit hours

This is 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

Instruction geared to student's level in this introductory group instruction in brass instruments.



MUS 225. BEGINNING JAZZ DRUM 2 credit hours

Rudimentary skills in jazz drumming are learned; class includes study of historical styles such as Swing, Be-Bop, and South American and African rhythms. This is for the experienced drummer.

MUS 226. STEEL DRUM MUSIC 3 credit hours

This is an applied laboratory demonstration in the making and performance of the steel drum.

MUS 230. FOLK GUITAR 2 credit hours

Students learn techniques necessary to play folk music and folk songs. The course is for those with some experience in guitar playing, and is keyed to students' interests and needs.

MUS 233. BEGINNING GUITAR 2 credit hours

Designed for those with limited or no experience playing the guitar, this course teaches basic chords and techniques as well as folk and Blues songs. Class is keyed to 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, the course includes improvisation work and chording. It requires basic guitar playing experience.

MUS 242. BASS GUITAR 2 credit hours

This is 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

This is 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

The course provides group instruction for beginners in banjo to provide the necessary skills for performing elementary banjo music.

MUS 249. INTRODUCTION TO JAZZ FLUTE 2 credit hours

This is an introductory course in jazz flute for students of varying ability.

MUS 250. BEGINNING FLUTE/SAX 2 credit hours

This is 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, this course requires basic playing experience and auditions.

MUS 269. SAXOPHONE (JAZZ) 2 credit hours

Introductory group instruction in jazz saxophone techniques and various styles are emphasized. Requires basic saxophone playing experience.

MUS 270. APPLIED VIOLIN 2 credit hours

This is 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)

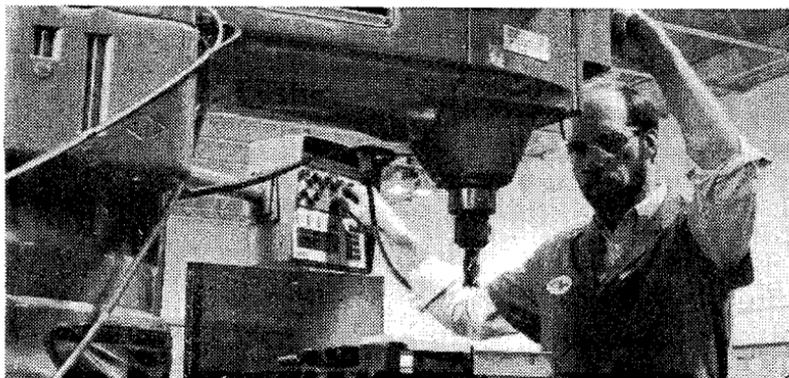
**NC 100. INTRODUCTION TO
NUMERICAL CONTROL** 3 credit hours

This course involves the principles, history and applications of numerical control with special emphasis on tape formats and programming techniques. Point to point and continuous path programs written, studied and demonstrated. (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 151, MT 111

This is the first in a two-course study of manual programming of CNC milling and turning machines. Students experience the entire process of part manufacture by processing blueprints of sample parts, writing and editing of programs, set up and operation of the machine tool, inspection of finished product. Feeds and speeds, "fixed cycles," program editing, set up procedures, and tape preparation are major topics presented. Laboratory time is required outside of class time.

NC 122. ADVANCED MANUAL PROGRAMMING AND NC TOOL OPERATION 3 credit hours

Prerequisite: NC 121, MTH 152

This is the second of a two-course study of Manual Programming and CNC Machine Tool Operation. Complex cutter path generation, cutter compensation, repetitive programming, multi-quadrant circular interpolation, three axis interpolation, threading, and other advanced programming techniques are practiced. The class format is similar to that of NC 121, and laboratory time outside of class is required.

NC 125. COMPUTER OPERATION AND PROGRAMMING FOR NUMERICAL CONTROL 3 credit hours

Prerequisite: NC 100

This provides an introduction to computers for COMPACT II and APT II Numerical Control programming courses. This course emphasizes how to use the "in house" system. The course teaches the basic vocabulary, historical development, cycle of operation, information storages and input and output devices of computers. Students gain hands on experiences using COMPACT II, APT III, QED and EDT editing software. Laboratory time is required outside of class time.

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 practiced. Program verification is completed by the use of plotters, and NC tool operation. (4 hours per week)

NC 225. NUMERICAL CONTROL GRAPHICS 3 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 226. ADTIV COMPUTER PROGRAMMING 4 credit hours

Students learn computer assist programming techniques, including all of the latest features. Specific NC program de-bugging techniques to enhance the NC programmer are studied. (4 hours per week)

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 to 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

This course is designed for persons who successfully completed a NAPNES pharmacology course but have not passed the NAPNES challenge exam. It 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

This course assists graduates of the Nursing Program to prepare for the State Board of Nursing Examinations. Emphasis is placed on reviewing learned materials and on taking national competitive examinations.

NUR 050. PHARMACOLOGY PREPARATION 2 credit hours

This course is intended to prepare Licensed Practical Nurses for taking their first courses in pharmacology and drug administration. Included is a review of mathematics and an introduction to drug therapy.

NUR 100. NURSING FUNDAMENTALS 5 credit hours

Principles of nursing are presented with emphasis on social, psychological, and physical needs of the patient. Included are units on first aid, geriatric nursing, history and nursing organizations.

NUR 110. GERIATRIC NURSING PRACTICE 1 credit hour

The natural aging process is presented, with emphasis on the health care needs of the geriatric population. Included is supervised clinical experience in a long term health care facility applying basic nursing skills in geriatric nursing situations.

NUR 111. PHARMACOLOGY I 1 credit hour

This course includes the study of metric and apothecary systems, drug classification and legislation. Extensive practice is provided in solving drug dosage problems. Principles of safe drug administration are introduced.

NUR 118. PERSONAL AND COMMUNITY HEALTH 1 credit hour

This course reviews resources available in the community for the promotion of health. It includes a survey of current public health problems and concepts of personal health.

NUR 122. PHARMACOLOGY II 2 credit hours

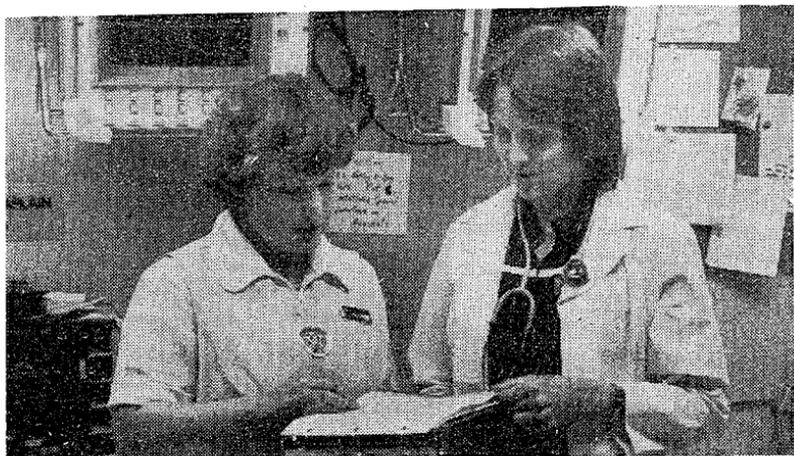
Prerequisite: NUR 111

This class is a study of drug action, uses and effects in the administration of drug therapy. Included is a unit on drug abuse.

NUR 125. BASIC MEDICAL-SURGICAL NURSING 6 credit hours

Prerequisite: First semester courses

This course includes study of the adult patient with common medical-surgical problems. Included are principles and skills that assist the student in meeting the needs of the client in the clinical situation. Pharmacology and diet therapy are interrelated with the study of disease conditions. The



practice portion of this course provides laboratory experience with commonly encountered medical-surgical procedures and CPR. Supervised clinical experience in caring for adult patients with medical problems is included. (23 hours practice per week, 7½ weeks)

NUR 126. INTERMEDIATE MEDICAL-SURGICAL NURSING 6 credit hours

Prerequisite: NUR 125

This course provides continued study of the adult with common medical-surgical problems. The practice portion provides supervised clinical experience in caring for adults with medical-surgical problems. Observation experiences may include operating room, recovery room, emergency room and the outpatient department. Also includes clinical experience in the administration of medications. (23 hours practice per week, 7½ weeks)

NUR 133. PHARMACOLOGY III 2 credit hours

Prerequisite: NUR 111 and 122

This course continues the study of drug action, uses and effects, with emphasis on body systems. A unit on drug abuse is included.

NUR 135. PARENT-CHILD NURSING 6 credit hours

Prerequisite: NUR 125

The nursing care of parents during the reproductive cycle, the care of the newborn and the care of ill children are studied. Clinical experience is provided in obstetric and pediatric units of the hospital to develop skills in caring for parents and children. (18 hours practice per week, 8 weeks)

NUR 144. PHARMACOLOGY FOR NURSES 5 credit hours

Prerequisite: LPN, RN, GPN, GN, or consent

This course is designed for currently practicing nurses. Included is a study of safe drug administration, drug actions, uses and effects of drug therapy, as well as drug abuses. The student also receives laboratory practice in preparing and administering medicines. LPNs may take NAPNES challenge exam at end of course.

NUR 145. ADVANCED MEDICAL-SURGICAL NURSING 5 credit hours

Prerequisite: NUR 126.

Medical-surgical problems in the specialty areas are studied. The student is prepared for the role of the practical nurse, including ethical implications and employment procurement. The practice of nursing skills including the administration of medications and assisting in the teaching of preparing for discharge from the health care agency is provided. (23 hours practice per week, 6 weeks)

NUR 150. EXTENDED CARE NURSING 3 credit hours

This course includes essentials of the nursing process related to geriatrics and care of the long-term chronically ill patient. Patients' psychological needs, nutrition, problem solving, rehabilitation and maintenance regimens are examined through case studies and special student projects. It is 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 settings.

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

This course includes study of nursing history and development of associate degree nursing programs, nursing roles, change theory and individual reactions to change. Also included are an introduction to general systems theory and advanced study of the nursing process. The laboratory components will include nursing skills review/update, CPR update and nursing assessment practice.

NUR 235. ADVANCED PARENT-CHILD NURSING 5 credit hours

Prerequisite: Successful completion of all Nursing Level I courses or LPN accepted into Level II of the program, all first semester Level II courses.

This course provides further study of the family with parent-child health related needs begun in NUR 135. Focus is on emotional aspects of parenting, pregnancy, and health problems related to these processes. Family structure, function, and health teaching, including concepts of nutrition and normal growth and development, are discussed. Parent-child nursing concepts are applied in hospital situations. Students 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. (12 hours practice per week, 7½ weeks)

NUR 245. COMPLEX MEDICAL-SURGICAL NURSING 6 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. An application of the nursing process is emphasized in meeting these needs in an acute care setting. (20 hours practice per week, 7½ weeks)

NUR 255. MENTAL HEALTH NURSING 5 credit hours

Prerequisite: Successful completion of all first semester Level II courses

Knowledge of common mental health problems and skills necessary to provide basic mental health nursing care to selected clients in hospital or community settings are developed. The central focus is to help the student become more sensitive to human behavior and to use himself/herself in a therapeutic manner. Prevention of mental illness, and maintenance and restoration of mental health are discussed. Mental health nursing concepts are applied in hospital and community situations. The student will have experience with current methods of prevention, maintenance and treatment. (12 hours practice per week, 7½ weeks)

NUR 260. NURSING MANAGEMENT AND TRENDS 2 credit hours

Prerequisite: Successful completion of all first and second semester Level II courses and Mental Health Nursing. Corequisite: NUR 245

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 Complex-Medical-Surgical Nursing.

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 3 credit hours

Prerequisite: PHT 100 or consent

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 189. STUDY PROBLEMS 1-8 credit hours

Prerequisite: Consent

This is a directed study in the pharmacy technician program.

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 course introduces the general nature of philosophical thought, its basic methods, problems and goals. It includes representative philosophers and such classic philosophical problems as the meaning of existence, the nature of reality, criteria of morality and the nature of the human mind. The class also uses philosophical concepts to help understand oneself, other people and the world around us, and focuses on formulating and defending individual viewpoints and developing personal skills in abstract thinking.

PHL 189. STUDY PROBLEMS IN PHILOSOPHY 1-8 credit hours

Prerequisite: Consent

This includes 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 is provided as it is presented in the works of such representative thinkers as Nietzsche, Kierkegaard, Heidegger, Sartre and Camus. Special attention is paid to major existentialist themes; for example, authentic existence, integrity, freedom, anxiety, non-being, melancholy, death, guilt, conscience and values.

PHL 205. VALUES: ETHICS AND AESTHETICS 3 credit hours

An introduction to the analysis of valuing behaviors is provided. The course deals with social values and aesthetic values. Some writing will be required in which the student will give evidence of his or her increased capacity to make distinctions in these areas.

PHL 250. LOGIC 3 credit hours

This course offers an introduction to the nature of logical reasoning, especially as found in examples of everyday thought and studies the role of language in reasoning and communication, the influence of emotions on logical thinking and the nature of inductive as well as deductive reasoning. Emphasis is on developing habits of good reasoning, as well as the ability to recognize and avoid bad reasoning.

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 is the focus of this course. It emphasizes expressing and developing the philosophy you live by and includes a discussion of various approaches that may be helpful in the process of personal growth and development.

PHOTOGRAPHY (PHO 72)

PHO 090. GENERAL PHOTOGRAPHY 2 credit hours

This is a course for individuals who have an interest in photography. Primary emphasis is on picture taking, composition, lighting, films, etc. No dark-room work is included in the course. Students should own or have the use of some type of camera. (4 hours per week)

PHO 100. PORTRAIT PHOTOGRAPHY 2 credit hours

Prerequisite: PHO 220, 221

This is an in-depth study and appreciation of the art of portrait photography through lecture, demonstration and field trips to commercial portrait studios. (3 hours per week)

PHO 101. PHOTOGRAPHY AND ENVIRONMENT 3 credit hours

This is 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. (4 hours per week)

PHO 103. HISTORY OF PHOTOGRAPHY 2 credit hours

Designed to introduce students to the history of photography, this class studies the development of the important processes for making photographs and the philosophy of the most significant photographers of the 19th and 20th centuries. (2 hours per week)

PHO 111. PHOTOGRAPHY 4 credit hours

This course studies 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 are included. Students must have an adjustable camera. (6 hours per week)

PHO 112. DARKROOM TECHNIQUES 5 credit hours

Prerequisite: PHO 111; Corequisite: PHO 113

This class features 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 are practiced. (7 hours per week)

PHO 113. STUDIO TECHNIQUES 3 credit hours

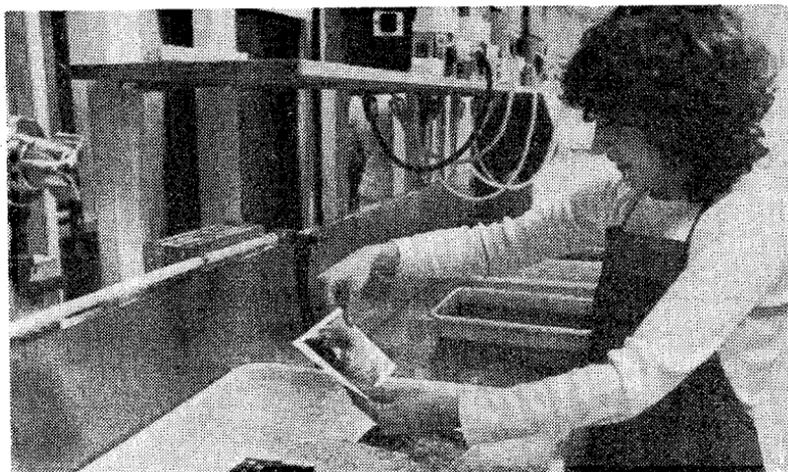
Corequisite: PHO 112

This includes specialized instruction in large format photography under controlled lighting situations and the 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 is provided. Emphasis is 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 are learned. (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

This is an intensive review of photographic composition and design techniques with emphasis on design in the photographic image through lecture, demonstration, critique, and darkroom practices. Included is a survey

of contemporary photographers and new directions in modern photographic images and design. (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, this course emphasizes roll and sheet film cameras, 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 is provided. How to produce acceptable results under difficult situations is the major emphasis. (6 hours per week)

PHO 222. ADVANCED COLOR PHOTOGRAPHY 3 credit hours

Prerequisite: PHO 114

This is a continuation of the studies begun in Basic Color Photography 114. Emphasis is placed on color correction from unusual situations and color distortion to achieve special effects and experience in automated color production techniques and equipment. (6 hours per week)

PHO 223. PHOTOGRAPHIC OCCUPATIONS 3 credit hours

Prerequisite: PHO 113

This is a survey of photographic occupations with guest lecturers, field trips and discussion. An in-depth study of the problems involved in operating a freelance photography business also is included. (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. (4 hours per week)

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 tech-

niques, demands, and operations will be studied and a portion of the class meetings will be held within an operating professional color laboratory environment. (4 hours per week)

**PHO 230. SPECIALIZED STUDIES
IN PHOTOGRAPHY** 2-5 credit hours

Credits to be assigned prior to registration

This is an opportunity for students to work independently with faculty consultation in major areas of photography.

PHO 231. PORTFOLIO SEMINAR 2 credit hours

Prerequisite: Consent

This covers development of materials and samples to be presented for employment. Professional critiques conducted and evaluations are made; the course is offered Spring term only. (4 hours per week)

PHYSICS (PHY 35)

OPEN PHYSICS LABORATORY

Physics courses numbered 105, 111, 122, 131, 143 operate under an open laboratory format. This means that the laboratory is open about thirty 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, PHY 105 surveys the major topics of physics: motion, heat, waves, electricity, magnetism, light, and atomic energy. It offers a conceptual approach with a minimum of mathematics is used to obtain a working knowledge of the principles of physics. (3 hours lecture, and 3 hours open laboratory per week)

PHY 110. APPLIED PHYSICS 4 credit hours

Prerequisite: MTH 090

This is an introductory course for technical-vocational students with no previous physics. The following topics are covered: properties of matter, motion, force, energy, machines, fluids, heat, electricity, and wave motion. Laboratory exercises enable the student to learn the use of basic instruments and acquire hands-on experience. (6 hours each week)

PHY 111. GENERAL PHYSICS I 4 credit hours

Prerequisite: MTH 169. Corequisite: MTH 177

This class is for both pre-professional transfer and liberal arts students. No previous physics is necessary. PHY 111 surveys the topic of mechanics, heat, and wave motion. Open laboratory enables students to learn the use of basic scientific instruments and the techniques used in physics laboratory. (3 hours lecture, and 3 hours open laboratory each week)

PHY 122. GENERAL PHYSICS II 4 credit hours

Prerequisite: PHY 111

This is a continuation of General Physics I with topics including electricity, magnetism, 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

This is a course in basic physics for students in the respiratory therapy program. No previous knowledge of physics is assumed. Topics discussed are: basic mechanics, energy in the human body, properties of fluids and gases, molecular phenomena, heat, and the physical principles of selected respiratory therapy equipment. (2 hours discussion and 2 hours open laboratory per week)

PHY 143. RADIOLOGIC PHYSICS 4 credit hours

Prerequisite: H.S. Physics or PHY 105 and MTH 165

A course for radiology students that covers the following topics: basic mechanics, structure of matter, wave motion, electromagnetism, the X-ray circuit, production of X-rays, interactions with matter, radioactive decay, ultrasound, and nuclear magnetic resonance. (4 hours discussion, and 2 hours open laboratory each week)

PHY 211. ANALYTICAL PHYSICS I 5 credit hours

Prerequisite: MTH 191, H.S. Physics or PHY 105 or 111

This is a course for students intending to major in science or engineering, and for those liberal arts students with a calculus background. PHY 211 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

This is a continuation of Analytical Physics I with topics including: electromagnetism, light, and modern physics. (4 hours 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

This is an introductory course on the American political system: executive, legislative, and judicial functions; processes and machinery of popular control (public opinion, media, interest groups, parties, and elections). It is designed to help the student to more clearly define and express his or her own political ideas.

PLS 112. INTRODUCTION TO AMERICAN GOVERNMENT 3 credit

The class studies the forms and functions of American government with emphasis on national government. The decision-making process in the Congress, the Presidency and the federal court system are studied. The course also examines the relationship of political parties and public opinion to the electoral process.

PLS 150. STATE AND LOCAL GOVERNMENT AND POLITICS 3 credit hours

Forms and functions of state and local governments in the United States are studied. The relationships of development of the urban community to the politics of metropolitan areas are analyzed while theories of studying community decision-making evaluated.

PLS 189. STUDY PROBLEMS IN POLITICAL SCIENCE 1-8 credit hours

Prerequisite: Consent

This class offers 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 are studied from the perspective of current international issues with emphasis on major power relations and attempts at international organization.

PLS 211. INTRODUCTION TO COMPARATIVE GOVERNMENT 3 credit hours

This class surveys the political systems of Great Britain, France, Italy, Germany, the Soviet Union and China. The importance of ideologies to the development of political systems will be emphasized.

PLS 230. POLITICAL PARTIES AND PRESSURE GROUPS 3 credit hours

This course provides an analysis of American political parties and pressure groups; with emphasis on 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

This class provides an introduction to the scientific study and interpretation of human behavior surveying such topics as psychological development, learning, thinking, motivation, emotion, perception, intelligence, aptitudes and personality. Basic principles and their practical application discussed. This course also is taught as a television course using the program series "Understanding Human Behavior."

PSY 106. PSYCHOLOGY OF AGING 2 credit hours

An overview of the psychology of aging is presented, including: study of personality traits, emotional problems and adjustments common in the process of aging; general psychological theories related to the problems experienced by the aged.

PSY 107. BLACK PSYCHOLOGY 3 credit hours

This course is organized around the premise that there is a distinctive Afro-American psychological frame of reference that is evident in the behavior and lifestyles of Black Americans. This is an attempt to build a conceptual model to help understand and explain the psychosocial behavior of Black Americans.

PSY 109. PSYCHOLOGY OF MID-LIFE CAREERS 2 credit hours

This course involves discussion of the following: finding your interests and aptitudes; life review and 300 job options; multiple career planning to meet present and future manpower needs; goals for mid-life and pre-retirement; life-time learning and creativity; group interaction; individual counseling.

PSY 111. AGING PARENTS 3 credit hours

This class provides an exploration into the problems of the adult child and his/her relationship with aging parents. Emphasis will be placed on inter-generational living, role reversals and problem solving.

PSY 114. LEARNING TO LEARN 3 credit hours

This is 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 115. MODERN PARENTING 3 credit hours

This course is designed to help develop an understanding of modern times, high technology and the demands of parenting. Parents, caregivers and anyone interested in children will be taught information and techniques modern thinkers offer to provide the emotional and intellectual stimulation children need to survive in contemporary society.

PSY 130. ALCOHOLISM: ITS EFFECTS, IMPACT AND TREATMENT 3 credit hours

This course is a presentation of information concerning most aspects of alcoholism and how it affects the afflicted physically, socially, psychologically, vocationally and spiritually. Also, its effect on the significant others in his/her life is discussed.

PSY 150. INDUSTRIAL PSYCHOLOGY 3 credit hours

This course involves discussion of human relations in business and industry. Special attention is given to occupational information, personnel selection, training and development and employee appraisal. This is a practical introduction to the psychological dimensions and implications of the modern working world.

PSY 160. COPING WITH STRESS 3 credit hours

This course studies the 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 technologies 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

This class provides individualized directed activities in Psychology. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

PSY 200. CHILD PSYCHOLOGY 3 credit hours

This course stresses the child as an individual, his or her original nature and temperament and position as part of the group. Introduction of social raw materials is considered. In addition, such topics as the conditioning and reconditioning of behavior patterns and the individuality and similarity of responses are developed.

PSY 201. THE BLACK CHILD 3 credit hours

This course focuses on the Black child as a human being and a member of a Black subculture of American society. A study of the common pattern of growth stages and developmental tasks that the Black child shares with Euro-American children is done. Also, study is done on unique historical and current patterns of oppression in the American color caste system and the challenge this presents to Black families and the broader society in building a positive self-concept in the Black child.

PSY 209. PSYCHOLOGY OF ADJUSTMENT 3 credit hours

This course is a study of the processes involved in the adjustment of the individual to the problems of everyday living. Emphasis is given to the study of the development of techniques or adjustment to meet conflict situations in the social environment. It includes consideration of adjustment mechanisms of major societal institutions.

PSY 222. LOSSES AND GRIEVING 3 credit hours

This course, concerned with 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 people react to their own losses and the role of friends and professionals in helping complete the grieving process. Problems resulting from incompleting grieving and the nature of grief work will be considered in depth. The class blends theory with practice.

PSY 257. ABNORMAL PSYCHOLOGY 3 credit hours

This is a course dealing with the abnormalities of certain types of personalities, their origin, symptoms, developments and treatment, short of psychiatric competence. Main topics include: simple maladjustment; disturbances of emotional nature, of perception, memory, judgment, thought, disorders of mobility, speech, etc.; early symptoms of schizophrenia.

STATISTICAL PROCESS CONTROL (Quality Control) (QC 70)

QC 097. QUALITY: AN OVERVIEW 2 credit hours

Goals in this course 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 have 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 are discussed. An in-depth working knowledge of process control is imparted through the use of capability analysis and statistical control charts. Industrial applications are presented and class participation is used extensively in workshops.

QC 107. APPLIED STATISTICS: PROCESS MEASUREMENT AND CONTROL 3 credit hours

Prerequisite: Basic Algebra preferred

This is 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 course involves the theory of probability and basic concepts of statistical sampling; the development of sampling plans, the effect of sample size and acceptance number on the probability of acceptance, and the use of interpretation of sampling acceptance plans are discussed. Military 105D, sequential and variable sampling are introduced and their effectiveness and industrial applications are analyzed.

QC 213. QUALITY CONTROL BY STATISTICAL METHODS 3 credit hours

Prerequisites: QC 101, 122

This is an introduction to statistical testing for differences in sample means, variability and fraction defectives. The concepts of linear correlation and regression analysis are introduced. Practical problems encountered in industrial quality control are solved in the classroom to illustrate the techniques presented.

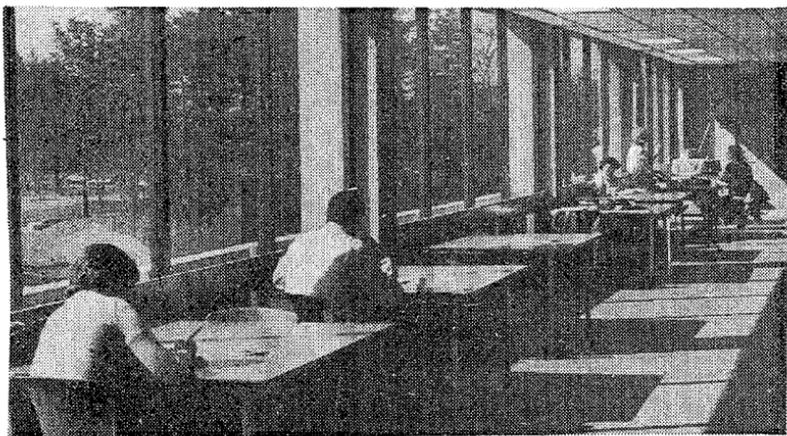
QC 224. QUALITY CONTROL PROBLEM SOLVING ... 3 credit hours

Prerequisites: QC 213 and knowledge of basic algebra

This course provides the student with a synopsis of the material presented in the previous three (3) courses (Process, Sampling and Statistical Methods). The material is developed with a minimal amount of mathematical jargon which often does more to confuse than clarify. Course work stresses how to perform specific studies or techniques and does not merely inform the student. Generally, it provides a simplified procedure for applying the statistical tools which are most often used by the quality control practitioner.

QC 225. QUALITY CONTROL MANAGEMENT 3 credit hours

The total quality control concept in planning, organizing and implementing an effective system is the focus of this course. Details of how to plan a quality system, set up the organizational structure, integrate 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

This is a general introduction into the more important aspects of non-destructive testing as related to inspection and quality control. Included are the scientific techniques and instrument applications used in determining dimensional measurement as practiced by skilled tradesmen, inspectors and quality control technicians.

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

This course assists graduates of the Radiography Program to prepare for the Registry Examination.

RAD 100. INTRODUCTION TO RADIOGRAPHY 2 credit hours

Prerequisite: Admission to the Radiography Program

This course includes the history of radiography, medical specialties, health care delivery, organizational structure of a radiology department, professional development and ethics. It is an introductory course for the beginning radiographer with emphasis on acquainting 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

This course is designed to teach the radiographer how to interact with the patient, to provide for his or her physical and emotional needs and how to assist in moving patients by using various transfer methods. Included is some lab practice in basic techniques such as taking vital signs, blood pressure and airway management. (4.2 hours per week, 7 weeks)

RAD 110. CLINICAL EDUCATION 1 credit hour

Corequisite: RAD 112

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper extremity, chest and abdomen; and the demonstration of knowledge concerning professional ethics, courtesy and empathy in handling patients, film processing and darkroom procedures. (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

This course includes pertinent nomenclature for radiographic positioning, preliminary steps in radiography, operation of the radiographic control panel, processing the radiograph and positioning of the chest, abdomen and upper extremity. (3 hours per week)

RAD 113. RADIOGRAPHIC PROCESSING 2 credit hours

This course covers the principles of processing including discussion on darkroom design, radiographic film characteristics, processing chemistry, trouble shooting, maintenance, evaluation of radiographic films to determine diagnostic inadequacies resulting from artifacts and to correct or compensate for the cause. (4 hours per week, 7½ weeks)

RAD 120. CLINICAL EDUCATION 2 credit hours

Corequisite: RAD 123

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine and selected contrast studies, and the demonstration of knowledge on the design and operational characteristics of equipment and accessories in a general radiographic room. (16 hours per week)

RAD 123. RADIOGRAPHIC POSITIONING II 2 credit hours

Prerequisite: RAD 112

This course covers proper positions for radiography of the lower extremity, trunk and spine. Critiques on positioning and the anatomical appearance of structures on the radiograph are an essential function of the course. (3 hours per week)

RAD 124. PRINCIPLES OF RADIOGRAPHIC EXPOSURE 3 credit hours

This course includes a comprehensive study of radiographic exposure techniques, radiographic quality, the use of radiographic accessories and how to select and apply this equipment to various situations.

RAD 125. RADIOGRAPHIC PROCEDURES AND RELATED ANATOMY 3 credit hours

This course covers radiographic procedures in which a contrast medium is used for demonstrating structures which are not well visualized on routine radiographs.

RAD 127. PRINCIPLES OF RADIOGRAPHIC EXPOSURE LABORATORY 1 credit hour

Corequisite: RAD 124

This course provides structured laboratory experience designed to illustrate film response to various exposure techniques. Emphasis is on evaluation of exposure techniques used in obtaining diagnostic information on x-ray film. (2 hours per week)

RAD 130. CLINICAL EDUCATION I 2 credit hours

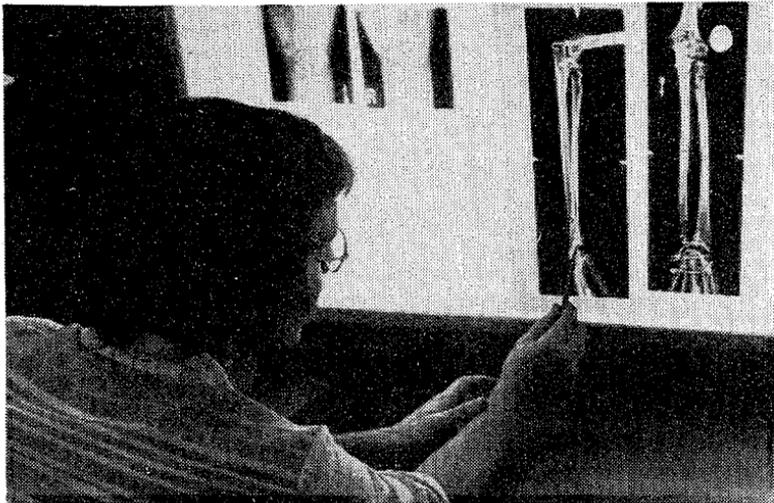
Structured clinical experience is provided in the application of knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine, procedures requiring the use of a contrast medium and in the demonstration knowledge of the components and operational characteristics of the fluoroscopic unit. (32 hours per week, 7 weeks)

RAD 135. PATHOLOGY FOR RADIOGRAPHERS 2 credit hours

This course is a survey of basic pathology and includes a study of the disease process and how various diseases alter the appearance and function of human organisms, including infectious diseases, tumors, chemical injuries and the conditions of illness involving the systems of the body. (4.2 hours per week)

RAD 140. CLINICAL EDUCATION 2 credit hours

This course is a continuation of Clinical Education 130. Students will demonstrate a knowledge of orthopedic radiography. (32 hours per week, 7 weeks)



RAD 215. RADIOGRAPHY OF THE SKULL 2 credit hours

Anatomy and radiography of the skull are studied so that the student can correlate the relationship of external landmarks and positioning lines to specific internal structures. The course includes laboratory experience in skull positioning. (3 hours per week)

RAD 217. CLINICAL EDUCATION 3 credit hours

Corequisite: RAD 215

Structured clinical experience is provided in the components and operational characteristics of radiographic equipment used in radiography of the skull. The student will apply knowledge and skill in positioning the upper and lower extremities, chest, abdomen, trunk, spine and skull and in procedures requiring the use of a contrast medium. (24 hours per week)

RAD 218. RADIATION BIOLOGY 2 credit hours

This course is designed 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

The interaction of radiation with matter and the effect of exposure factors on radiation dose, biological effects, unit of measurement, maximum permissible dose and exposure monitoring are covered in this course. (4 hours per week, 7½ weeks)

RAD 220. MANAGEMENT OF RADIOLOGICAL ENVIRONMENT 2 credit hours

Designed to acquaint students with various aspects of managing the modern radiology department, this course includes: department organization and operations, equipment specifications, quality assurance guidelines, patient education, planning and design.

RAD 225. CLINICAL EDUCATION 3 credit hours

Structured clinical experience is provided in all areas of radiography. Electives in specialized areas are explored (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 is provided. (32 hours per week, 7 weeks)

RAD 255. QUALITY ASSURANCE IN RADIOGRAPHY 3 credit hours

This course is 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 such as 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

This course provides the remedial reader with basic reading skills. A program of instruction is 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 3 credit hours

This course is designed for parents who are concerned about their children's reading. Attention will be given to any reading related problem brought to class. Methods and materials to help students at any reading level, preschool through high school, will be available.

RDG 100. VOCABULARY AND SPELLING POWER ... 2 credit hours

This course is designed for the student interested in strengthening spelling skills and expanding vocabulary. Emphasis is placed on meeting the individual student's needs. This is not a remedial course; students in need of basic spelling and/or vocabulary skills should elect RDG 040. The class meets for half a regular semester.

RDG 103. STUDY SKILLS 3 credit hours

Prerequisite: High school reading ability

This course is designed for the student interested in improving study and note taking skills. Reading and note taking techniques appropriate to specific course materials are stressed. It is essential that a student electing

this course be concurrently enrolled in an English, Humanities, Social or Exact Science course so that the student will be able to apply his or her newly learned study skills in those other disciplines.

RDG 104. STUDY SKILLS 2 credit hours

Prerequisite: High school reading ability

This course is designed for the student interested in improving study and note taking skills. Reading and note taking techniques appropriate to academic materials are stressed. It is essential that a student electing this course be concurrently enrolled in an English, Humanities, Social or Exact Science course so that the student can apply his or her newly learned study skills. Class meets for half a regular semester.

RDG 105. VOCABULARY AND SPELLING POWER ... 3 credit hours

This course is designed for the student interested in improving spelling skills and expanding vocabulary. Emphasis is placed on meeting the individual student's needs. This is not a remedial course; students in need of basic spelling and/or vocabulary skills should elect Reading 040.

RDG 106. SPEED READING 2 credit hours

Prerequisite: High school reading ability

This course is 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

This course is 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 his or her 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

This course acquaints students with the origin and structure of medical terms. It is designed to help students interpret and understand requests for radiographic and other examinations and to read and to understand medical articles and reports.

RDG 189. STUDY PROBLEMS IN READING 1-8 credit hours

Prerequisite: Consent

This course provides individualized directed activities in Reading. (Hours arranged)

REAL ESTATE (RE 48)

RE 100. REAL ESTATE PRINCIPLES 3 credit hours

This is 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 is provided for the student to participate in an essential learning process leading to a 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

This is the foundation course in a series of courses presented with a practical approach to servicing refrigeration air conditioning systems. Major units covered include mathematics, principles of refrigeration, refrigerants and refrigerant tables, refrigerant oils, contaminants and dryers, moisture in the air, food preservation, basic electric wiring and insulation. (5 hours per week)

RAC 122. REFRIGERATION II 5 credit hours

Prerequisite: RAC 111 and consent; RSES membership required

Emphasis in this course is on the functional principles and servicing of the following units: compressors, condensers (air and water-cooled), cooling towers, evaporator selection, metering devices (expansion valves, capillary tubes), motors and accessories, defrost systems, supermarket refrigeration, fresh meats, soda fountains and ice cream dispensers, ice

making machines, beer cooling, milk cooling, estimating heat loads, commercial refrigeration. (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 are the focus of this class. Calibration and efficiency balance of these units are stressed. Troubleshooting electrical controls and additional study in thermodynamics are included. (6 hours per week)

RAC 124. BASIC CONTROLS 5 credit hours

Prerequisite: RAC 111 and consent; RSES membership required

This is the first in a series of courses designed to provide a sound understanding of the principles and applications of electricity in refrigeration and air conditioning service, providing the essentials of the major objectives; reading and understanding complex electrical drawing, wiring diagrams and the schematics associated with refrigeration/air conditioning controls. Safety is included and emphasized. (5 hours per week)

RAC 213. AIR CONDITIONING 5 credit hours

Prerequisite: RAC 122 or consent; RSES membership required

This course covers the operating principles of modern mechanical equipment and troubleshooting approaches to these systems. Units covered are: air conditioning (general), psychrometric charts, insulation in air conditioning, thermostatic and pneumatic controls, heat pumps, room air conditioning units, heating and cooling systems and equipment, ducts and grills, blowers and fans, air filters, safety, first aid and codes. (5 hours per week)

RAC 214. CONTROL SYSTEMS 5 credit hours

Prerequisite: RAC 124 and consent; RSES membership required

This course presents further study and practice in reading electronic wiring diagrams and schematics as applied to the electrical controlling systems of refrigeration and air conditioning, including alternating current, motors, starters, capacitors, transformers, motor protectors, standard service techniques and troubleshooting industrial controls. (5 hours per week)

RAC 215. TROUBLESHOOTING CONTROLS 5 credit hours

Prerequisite: RAC 214 and consent; RSES membership required

This is an advanced, comprehensive study of the theory and applications of refrigeration and air conditioning control systems and devices; electromechanical, 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 are provided in refrigeration/air conditioning remote control systems. Calibrating and efficiency-balancing of commercial systems continues as the major thrust. (6 hours per week)

RESPIRATORY THERAPY (RTH 54)

RTH 097. RESPIRATORY THERAPY REVIEW 1 credit hour

This course is designed to assist graduates of Respiratory Therapy Programs studying for their certification or registry exams. It is offered the five Saturday mornings preceding the exam. Emphasis placed on sample examinations. (5 three- hour sessions)

RTH 106. CHEMISTRY FOR RESPIRATORY THERAPISTS 3 credit hours

Prerequisite: CEM 057, 058

This course is intended primarily for students in Respiratory Therapy Program. It is a study of the chemical and physiochemical behavior of gases, solutions, acids, bases, pH and electrolytes, encompassing topics in organic chemistry and biochemistry related to metabolism and respiration.

RTH 121. BASIC EQUIPMENT AND PROCEDURES ... 4 credit hours

Prerequisite: Admission to the Respiratory Therapy Program

This is an introductory course dealing with the instruments and techniques used by the respiratory therapist; principles of operation and maintenance repair of various analyzers, humidifiers, masks, catheters, respirators, tents and regulators. (2 hours laboratory, 2 hours lecture)

RTH 122. RESPIRATORY PHYSIOLOGY 2 credit hours

Prerequisite: BIO 111, RTH 106

For respiratory therapy students only, this course is an in-depth study of the anatomy and physiology of the respiratory system and the diseases that affect it.

RTH 123. RESPIRATORY PATHOPHYSIOLOGY 3 credit hours

Prerequisite: BIO 111, RTH 122

This course should be taken concurrently with Respiratory Physiology 122. It is intended for respiratory therapy students only. It is the study of the

causes, treatment and assessment of respiratory disorders and other diseases treated by the respiratory therapist.

RTH 148. PHARMACOLOGY FOR RESPIRATORY THERAPISTS 2 credit hours

Prerequisite: BIO 111

The course provides a survey of drugs used to treat disease, with emphasis on drugs commonly used to treat cardiopulmonary disorders.

RTH 149. PATHOLOGY FOR RESPIRATORY THERAPISTS 3 credit hours

Prerequisite: BIO 111

The course provides a survey of anatomical pathology including inflammation, infection, tuberculosis, viral disease, poisons, tumors, cardiovascular disease, shock and diabetes.

RTH 198. GENERAL CLINICAL PRACTICE I 3 credit hours

Prerequisite: RTH 121

This course provides bedside practice of general respiratory therapy techniques such as intermittent positive pressure breathing, oxygen therapy, humidity therapy, cardiopulmonary resuscitation, sputum induction and equipment rounds. It meets in a cooperating hospital. Experience 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, 122, 123, 198, 199, 212, 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 is provided. Students are assigned to intensive care units of cooperating hospitals. Two eight-hour sessions per week are involved. (16 hours per week)

RTH 201. SPECIALTY CLINICAL PRACTICE 2 credit hours

Prerequisite: Completion of third semester of Respiratory Therapy Program

Experience is provided in one of the following specialty areas; management, teaching, cardiognostics, burn medicine, home care, research, pulmonary function testing. (16 hours per week for 7½ weeks)

RTH 202. PEDIATRIC CLINICAL PRACTICE 2 credit hours

Prerequisites: RTH 200, 212, 213, 219, successful completion of Pediatric Qualification Exam

Structured, at the bedside, practice of respiratory therapy is provided in the neonatal intensive care unit and pediatric units.

RTH 212. VENTILATORS 3 credit hours

Prerequisite: RTH 121

This course gives an in-depth study of the use, classification, operation, advantages, modifications, maintenance repair and troubleshooting of medical ventilators, pulmonary function testing devices and other respiratory therapy equipment.

RTH 213. INTENSIVE RESPIRATORY CARE 4 credit hours

Prerequisites: RTH 106, 212

A detailed study is provided emphasizing the treatment of acute and chronic respiratory failure; the treatment of overwhelming pneumonias, adult respiratory distress syndrome, post-operative problems, poisonings and the rehabilitation of patients with chronic pulmonary disease. Medical specialists will discuss the respiratory care of their patients.

RTH 214. CARDIODIAGNOSTICS 3 credit hours

Prerequisite: BIO 111 or equivalent (Open to students other than those in Respiratory Therapy)

A survey is provided of invasive and noninvasive methods of studying the heart and cardiovascular system. Swan Gantz catheterization, echocardiography, stress tests, EKG interpretation, etc. are discussed.

RTH 217. SEMINAR — RESPIRATORY THERAPY 2 credit hours

This course is a discussion of current problems, credentialing systems, job attainment skills, psychological assessment of patients, teaching and management techniques.

RTH 219. PEDIATRIC RESPIRATORY THERAPY 3 credit hours

Prerequisites: RTH 121, and 122

This is a study of the physiology of children explaining modes of therapy used to treat cardiopulmonary diseases of children, infants and neonates.

RTH 220. EXERCISE TECHNOLOGY 4 credit hours

Prerequisite: CPR provider card, successful completion of e.c.g. test

This course is a study of equipment, techniques and medications employed in graded exercise testing of patients with suspected heart disease. It includes units on physiology, anatomy, emergency procedures and psychology.

ROBOTICS
(See Integrated Manufacturing)

RUSSIAN
(See General Studies)

SECRETARIAL AND OFFICE
(SO 49)

SO 090. FUNDAMENTALS OF TYPEWRITING 1 credit hour

This is a basic course designed to meet the needs of the non- secretarial student in developing basic keyboarding skills. (This is a 1 credit/2 contact hour course, plus 4-6 practice hours.)

SO 101. BEGINNING TYPEWRITING 3 credit hours

This 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. (4 contact hours per week)

SO 102. INTERMEDIATE TYPEWRITING 3 credit hours

Prerequisite: SO 101 or equivalent (Minimum of 35 wpm with 5 errors or less for 5 minutes)

This course is 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. (4 contact hours per week)

SO 107. CLERICAL METHODS AND PROCEDURES . . . 4 credit hours

Prerequisite: Typewriting proficiency of 45 wpm or concurrent enrollment in SO 102

In this course the student will prepare for employment, improve typewriting skills, perform 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. The emphasis given to business mathematics will help the student to understand and perform many office jobs successfully and to manage personal matters effectively. (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. (5 contact hours per week)

SO 132. INTERMEDIATE SHORTHAND 3 credit hours

Prerequisites: SO 101, SO 131 or equivalent

This 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. (4 contact hours per week)

SO 150. OFFICE PROOFREADING 2 credit hours

This course is designed for the office worker or for the student preparing to work in an office to develop skills in proofreading and editing. The student learns the proper techniques for checking the accuracy of business materials and for making changes to improve the written message. Topics include formatting, grammar review, use of abbreviations, word usage, punctuations, spelling, capitalization, use of numbers, tables and charts, clarity, conciseness and other content considerations.

SO 151. INFORMATION PROCESSING PRINCIPLES 3 credit hours

This is 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 are discussed. 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 SO 102 or equivalent.

An integrative approach is provided 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. (4 contact hours per week)

**SO 153. INFORMATION PROCESSING
APPLICATIONS/BASIC PRACTICE** 2 credit hours

Prerequisite: High school typewriting proficiency or concurrent enrollment in SO 102 or equivalent. (Minimum 35 wpm with 5 errors or fewer)

An integrative, applied approach is provided 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. (7½ week course)

**SO 154. WORD PROCESSING APPLICATION/
PERSONAL COMPUTER** 2 credit hours

Prerequisite: SO 153 or comparable word processing skills

This is a course for the experienced office worker who needs word processing skills as they relate to the personal computer. Wordstar 2000 software program is used.

SO 200. INDEPENDENT DIRECTED STUDY 1-3 credit hours

This course includes a planned program of studies under the guidance and direction of a regular staff member. (Hours to be arranged)

SO 203. ADVANCED TYPEWRITING 3 credit hours

Prerequisite: SO 101 and 102 or equivalent. (Minimum of 45 wpm with 5 errors or fewer for 5 minutes)

This course is designed to build on the foundations of earlier training in correspondence, reports and tables. The student will have a variety of increasingly difficult 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. (4 contact hours per week)

SO 210. MEDICAL TRANSCRIPTION 3 credit hours

Prerequisite: SO 102 or equivalent

This is 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. (4 contact hours per week, plus a minimum of 4 weekly machine hours)

SO 214. INFORMATION PROCESSING APPLICATIONS/ADVANCED PRACTICE 3 credit hours

Prerequisite: SO 153, 154 and high school typewriting proficiency or concurrent enrollment in SO 102 or equivalent

This is advanced practice in information processing applications as it relates to business and industry and other specialized fields such as law. Skill development and speed building in revising and printing completed information processing assignments and list processing is emphasized. (4 contact hours per week)

SO 223. MEDICAL OFFICE PROCEDURES 3 credit hours

Prerequisite: SO 102 or equivalent

This course covers secretarial responsibilities in a medical office or hospital including appointments, patient records, pegboard bookkeeping, telephone procedures, credit and collection procedures and medicolegal considerations. Medical insurance will be studied. The student will complete forms for Blue Cross/Blue Shield, Medicare, Medicaid, Workers' Compensation, CHAMPUS and private insurances using the proper coding system. (4 contact hours per week, 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

This course provides advanced practice in information processing applications related to medical offices, hospitals and other medical related fields. Skill development in document formatting, revising, printing and list processing is emphasized.

SO 225. INFORMATION PROCESSING SYSTEMS AND PROCEDURES 3 credit hours

Prerequisite: SO 151, SO 152, SO 153, SO 154, SO 214 and high school typewriting proficiency or concurrent enrollment in SO 203 or equivalent.

Practical study is provided 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 is emphasized. The course includes information processing alternatives, equipment and needs surveys, organizing and implementing information processing, and management and control of the information processing function. (4 contact hours per week)

SO 231. ADVANCED SHORTHAND (DICTATION/TRANSCRIPTION) 3 credit hours

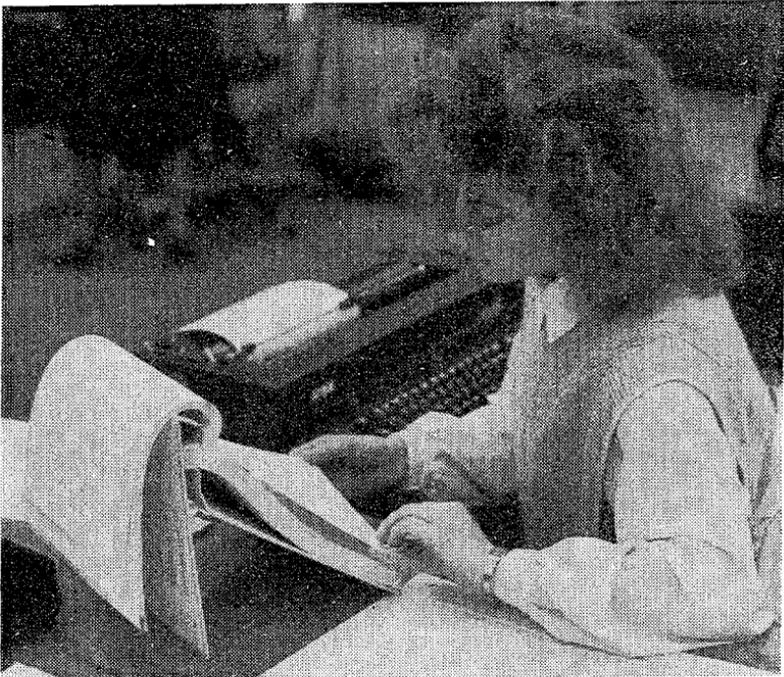
Prerequisite: SO 102, 131 and 132 or equivalent

This course reinforces Gregg Theory and emphasizes the improvement of transcription techniques, grammar and punctuation skills, and the ability to transcribe office style dictation as rapidly and accurately as possible.

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 is recommended.

As the capstone of the Secretarial Program, this course covers most of the operational functions required of the secretary that have been changed by technology. This course emphasizes the development of decision-making



ability, time management and the exercise of good human relations. Because competent secretaries today must become "word specialists," continuing importance is placed on the area of effective communications. The student prepares travel itineraries, agendas and minutes of meetings, investment records and statistical data in proper graphic form to correlate with written reports.

SOCIOLOGY (SOC 09)

SOC 100. PRINCIPLES OF SOCIOLOGY 3 credit hours

This course examines human interaction and the products of that interaction which include social structure and institutions, culture, social order, conflict and change. Emphasis is placed on the connection between self and society: that we think, feel and act as we do largely because of social forces (power, sanctions, needs, values) that pressure us to conform or to deviate from social expectations. Some issues to be examined include ethics and applications of social research, social responsibility and management of change. This course is also taught as a television course using the series "Focus on Society."

SOC 102. BLACK WOMAN 3 credit hours

Inner and outer aspects of Black women throughout history are discussed. The role of the Black woman is examined in areas of society: the family, the church, politics, community, education, etc. All these factors are considered in determining how Black women's roles differ from those of other women.

SOC 150. MARRIAGE AND THE FAMILY 3 credit hours

This course examines the principles, practices and problems of mate selection, marriage, family and singleness. Emphasis is placed on how socio-cultural changes are reshaping lifestyle choices, parenting, communication, building and maintaining relationships. Some issues to be examined pertain to family planning, sexuality, sex education, single-parenting, divorce, child and spouse abuse.

SOC 154. THE BLACK FAMILY 3 credit hours

Structure and functions of the Black family as a dynamic social organization are discussed in this class. An analysis is made of African roots, the impact of the slave experience on Black families in the Americas, an assessment of family strengths and the implications for the present and future struggle for survival.

SOC 189. STUDY PROBLEMS IN SOCIOLOGY 1-8 credit hours

Prerequisite: Consent

Individualized directed activities in Sociology make up this course. A specific problem/issue is studied, or a special project is assigned. (Hours arranged)

SOC 201. MEDICAL SOCIOLOGY 3 credit hours

This course examines social and behavioral factors that account for the social differences in getting sick, getting care, getting well and staying well. Emphasis is placed on the socio-cultural definitions and distributions of illness, lifestyle, stress and illness, taking the sick role, seeking and using health care services, socialization of health workers, consumer-provider interaction, organization and distribution of services. Some issues which are examined pertain to the cost of care and health insurance, prevention, self-help movement, underserved groups, bio-medical technology and the quality of life.

SOC 202. CRIMINOLOGY 3 credit hours

An examination is provided of the theories which attempt to explain criminal behavior. Punishment versus rehabilitation schools of thought is dealt with as well as capital punishment. Attention also given to the functioning of police and court systems.

SOC 203. AGING AND SOCIETY 3 credit hours

This course examines social and personal responses to the aging process. Emphasis is placed on social attitudes, preparation for the adaptive challenges of retirement, role changes in midlife, youth and aged interaction, problems of housing, family bonds, illness, victimization, substance abuse, finances, and community services and personnel. Also examined are issues such as caring for elderly relatives, ageism, senior power, medicare and social security, substance abuse and meeting the needs of the aging population.

SOC 205. RACIAL AND ETHNIC RELATIONS 3 credit hours

This course provides an examination of the basic concepts of racial and ethnic relations and the concept of race. It examines and analyzes the course of oppression and suppression, superiority and inferiority, majorities and minorities in racial subgroups.

SOC 207. SOCIAL PROBLEMS 3 credit hours

This course uses sociological concepts to explain how social forces can create and maintain as well as prevent major social problems that result from man's effort to meet his needs for survival and growth. Emphasis is placed on the institutional, social-structural, technological and social psychological reasons for: (a) global and environmental problems (population, energy, environmental depletion and pollution); (b) inequalities (poverty,

sexism, racism, ageism, handicapism); (c) deviance and social control (crime, war and the arms race, interpersonal violence, substance abuse, mental and physical illness); (d) institutional crises (family and divorce, work, education, media, economy and government).

SOC 210. BLACKS IN THE CITY 3 credit hours

The social forces that played a role in developing the urban setting, with particular emphasis on the role of the Afro-American are examined in this course. The focus is on the migration movement as the first stage in the development of urban and racial crises as factors in the urbanization of 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. The emphasis is on Black ideological and institutional development.

SOC 211. DEATH AND DYING 3 credit hours

This course examines social and social-psychological aspects of death and dying. Topics focus on social arrangements and practices in caring for the dying, professional care-givers' attitudes and roles, burial practices and the funeral industry, personal coping and the dying experience, family and survivor's grief and coping strategies. Some issues to be examined include hospice care, home care, protracted dying, living will and euthanasia, cost of dying, suicide and other unusual deaths.

SOC 250. JUVENILE DELINQUENCY 3 credit hours

The growing-up process of late childhood and adolescence from a sociological and cultural viewpoint is a focus of this class. Problems of the individual in his/her social environment, group forces which lead to maladjustment and sociological principles for working with youth from the viewpoint of parent, teacher, police and youth organization leader are analyzed.

SOC 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

This course is a practical study of the legal and ethical responsibility of health care providers. Course coverage includes: malpractice, negligence, medical ethics, federal and state laws governing medical practice, patient

informed consent, medical experimentation, FDA and HEW guidelines and the consumer health movement.

SPANISH (SPN 21)

SPN 111. FIRST YEAR SPANISH I 4 credit hours

This is a beginning course in Spanish using the conversational approach. Spoken language is mastered through classroom and laboratory practice. Cultural aspects of Spain and Latin America are highlighted.

SPN 112. SPANISH LABORATORY I 1 credit hour

Prerequisite: Current enrollment in SPN 111

This course is intended to augment SPN 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

This is 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

This is a course of independent study can 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, this course assumes no previous knowledge of the language. It is designed for students interested in practicing the fundamentals of spoken Spanish to enhance their travel enjoyment in

Spain and Latin America as well as to promote an appreciation of these exciting cultures. Course may be taken as a review for students already enrolled in the first year course.

SPN 121. INTERMEDIATE CONVERSATIONAL

SPANISH 2 credit hours

Prerequisite: SPN 120 or equivalent

A continuation of Spanish 120, this flexibly structured course provides vocabulary expansion and cultural insights through total student involvement in the conversation practice sessions.

SPN 122. FIRST YEAR SPANISH II 4 credit hours

Prerequisite: SPN 111 or equivalent

Continuation of SPN 111. Emphasis is on the spoken form and on the cultures of Latin American countries and Spain

SPN 123. SPANISH LABORATORY II 1 credit hour

Prerequisite: Current enrollment in SPN 122

This course is intended to augment SPN 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

This is an intermediate course in Spanish using the conversational approach. First year emphasis is on spoken form; culture reviewed. Attention is given to the written form.

SPN 224. SECOND YEAR SPANISH II 3 credit hours

Prerequisite: SPN 213, its equivalent or consent

This is a continuation of SPN 213 with special attention to Latin American and Spanish literature.

SPEECH
(See Communication and
Theatre Arts)

STUDENT PERSONNEL SERVICES (SPS 07)

SPS 100. CAREER PLANNING SEMINAR 3 credit hours

This course is designed for persons undecided about a career goal or program of study or interested in making a career change. Students will complete a thorough self-assessment of interests, work values, skills, and abilities through exercises and vocational inventories. They also will learn how to research careers and become more knowledgeable of careers, career alternatives, and employment trends through course materials, class activities and in-class guest speakers. Other topics covered will include decision-making skills, time management, and job hunting techniques (resumes, job interviews, job leads, correspondence). Students will complete a personal career plan at the end of the course.

SPS 101. STUDENT SUCCESS SEMINAR 1 credit hour

This is a college survival, college success course. It is recommended for all WCC students, particularly those entering college for the first time, returning after an absence from College, or interested in improving class performance. Topics covered include introduction to the library (LRC), to student support services and good study habits (reading, writing, outlining, notetaking, test taking and time management). Career and academic goal-setting also will be addressed in class sessions.

SPS 102. INDEPENDENT STUDY — CAREER PLANNING 1 credit hour

Independent Study is designed for those 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, interests, 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 with instructor)

SPS 189. STUDY PROBLEMS 2-8 credit hours

Prerequisite: Consent

This course provides 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

Prerequisite: ID 100 or Consent

This course includes 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

This course includes illustration projects utilizing perspective and parallel projection and mechanical art aids; information for problems obtained from blueprints, written communication and other sources. Assignments deal with the presentation of assemblies, exploded views, 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

This class is an introduction to the various materials and rendering techniques used by the commercial artist. Renderings of commercial illustrations are done 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

This course involves 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 225. MODEL CONSTRUCTION 2 credit hours

Prerequisites: ART 111, 112, and TCA 100 or consent

This course focuses on visualization and construction of three-dimensional forms from blueprints, sketches and schematics using wood, plastic, cardboard, clay and plaster for construction. Emphasis is placed on use of shop equipment; blueprint reading, use of model construction materials and cost estimating. (3 hours per week)

TCA 226. COMMERCIAL DISPLAY 4 credit hours

Prerequisite: Demonstration of working knowledge of color and color relationships

An introduction is provided to the techniques of the design and construction of two- and three-dimensional displays. Emphasis is on design, the working drawing or blueprint and the construction of a functioning model. (6 hours per week)

TCA 230. FREELANCE OPERATIONS 3 credit hours

Prerequisite: GDT 214

An in-depth study is provided of some of the problems involved in operating a free-lance commercial art studio through a survey of types of commercial art and advertising design that the Freelance Commercial Artist comes in contact with as a one person operation. Guest speakers and various field trips will be taken to studios. (4 hours per week)

TCA 231. INTRODUCTION TO SCIENTIFIC ILLUSTRATION 2 credit hours

An introduction is provided to scientific illustration including a technique for accurate drawing (vs. freehand sketch) as well as overview of different rendering styles. (3 hours per week)



TCA 236. SPECIALIZED STUDY 2-6 credit hours

Prerequisite: Consent

This course provides an opportunity for students to work independently with faculty consultation in major study areas of Commercial Art and Technical Illustration with directed periods of concentrated effort on assignments to demonstrate the individual's development and understanding with selected occupational areas. Major study areas for specialization may include cartooning, editorial illustration, animal illustration, commercial photography, graphic reproduction, advertising and lettering, layout, fashion illustration and commercial displays. (Class hours arranged)

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 091. WELDING PROCEDURES FOR
ROBOTICS** 1 credit hour

This course will give students a thorough knowledge of the arc welding processes used in Robotic Manufacturing. Selection of weldments, procedure development, safety, along with brief training in G.M.A.W., G.T.A.W. and S.M.A.W. will also be presented.

WF 100. FUNDAMENTALS OF WELDING 2 credit hours

This is a basic combination welding course dealing with oxy-acetylene and arc welding designed to meet the needs of students enrolled in Auto Body Repair, Auto Mechanics, Detailer Draftsman, etc. Typical applications are made in a laboratory setting. (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

This is 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 is 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

This course is designed to provide basic knowledge of soft soldering, brazing, silver soldering, copper tubing and fittings, brazing of steel, silver soldering of copper and stainless. Practical application included.

**WF 105. FUNDAMENTAL WELDING FOR ART/
ENGINEERING SCHOOLS** 2 credit hours

This is a basic welding class. No welding experience is necessary. Oxy-acetylene (welding and cutting), arc welding and soldering and brazing will be explored with hands-on training provided. Students will be working on class competencies, at their own pace, beginning with safety practices and set-up in each area. The welding lab has individual work stations for a "no waiting to work" and a safe atmosphere. Students will be given personalized instruction on every class objective to help with their mastery of the art of welding.

WF 111. WELDING (BASIC OXY-ACETYLENE) 4 credit hours

This course focuses on the use of oxy-acetylene equipment to perform such operations as butt, lap, and fillet welds using filler rods; flame cutting, brazing and silver soldering. Safety procedures and practices of gas welding are emphasized. (8 hours per week)

WF 112. WELDING (BASIC ARC) 4 credit hours

This course involves the use of arc welding equipment both A.C. and D.C. to perform such operations as butt, lap and fillet welds using bare and shielded electrodes, all-purpose and special electrodes. Study of electrical welding, power supplies and electrodes is included. Safety procedures stressed. (8 hours per week)

WF 123. WELDING (ADVANCED OXY-ACETYLENE) . . . 4 credit hours

Prerequisite: WF 111

Advanced instruction is provided in oxy-acetylene welding with emphasis on "out of position" welded joints. Procedures are covered and put in practice for fabricative welded joints on steel plate and pipe. Related theory included. (8 hours per week)

WF 124. ADVANCED ARC WELDING 4 credit hours

Prerequisite: WF 112

Advanced instruction is provided in arc welding using both A.C. and D.C. arc welding equipment. Emphasis is on "out of position" welded joints in mild steel, alloy steels and procedures covered for cutting, beveling and fabricating various welded joints. Related theory, codes and standards are included. (8 hours per week)

WF 200. LAYOUT FOR WELDERS 2 credit hours

This course concerns layout problem solving for the welder including techniques using layout die, combination squares, protractors, center heads trammel, points, dividers and straight edges. Template making for pipe cutting and joining is emphasized. A basic math review and the properties of a circle such as radius, chords, and degrees of angularity for jobs done in the field are included. (3 hours per week)

WF 210. WELDING METALLURGY 3 credit hours

This course concerns metal properties and identification properties through testing, effects of alloying element, specification use and application of mild steel, low steel alloys, stainless steels, principles of electricity as they apply to different welding applications heat treatment of metals. (3 hours per week)

WF 215. ADVANCED T.I.G. AND M.I.G. WELDING 4 credit hours

This course concerns 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 is provided in the application of welding fundamentals with emphasis on cutting and brazing. (2 hours per week, 7½ weeks)

WF 226. SPECIALIZED WELDING PROCEDURES 4 credit hours

Prerequisite: Consent

This course involves specialized oxy-acetylene welding, inert gas-shield arc and consumable carbon dioxide welding. Emphasis is given to aluminum, stainless steel, high alloy steels and cast iron. Procedures for welding

of the exotic metals such as titanium, columbium, zirconium, and molybdenum are included. (8 hours per week)

WF 227. BASIC FABRICATION 3 credit hours

Prerequisite: Consent

For advanced welders planning to use their welding skills in manufacturing, this class teaches the skills necessary to design, cut and fit pieces to be welded. Welders are trained in the use of modern machines for bending, punching, cutting and shaping. Each student takes a self-chosen project and carries it through from blueprints to actual assembly. Estimation of material and labor costs is included.

WF 229. SHAPE CUTTING OPERATIONS 3 credit hours

Prerequisite: Consent

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

This course is a consciousness-raising, support, therapy group emphasizing 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

This course is 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. WOMEN IN HISTORY 3 credit hours

An analysis is provided of the role of American women from the colonial period through the 20th century. The course will explore the work role of

women in domestic and public economies; women in the family; the women's political involvement and will debate within the sphere of women's political participation.

WS 105. WOMEN AND THE LAW I 1 credit hour

This course provides 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 ISSUES 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 and other issues relating to medical care for women are discussed. 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 is provided at the topics covered in "Women and the Law." Discussions of credit, discrimination, employment, insurance, ERA. Emphasis is on individual cases and the process involved in making laws.

WS 112. ASSERTIVENESS TRAINING FOR NURSES .. 1 credit hour

Prerequisite: Involved in Nursing career

Participants will learn to differentiate between assertive, aggressive and non-assertive behavior. They will become familiar with several assertiveness techniques and will learn how to apply these techniques to nursing situations.

WS 115. ASSERTIVENESS TRAINING 3 credit hours

This course 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 is provided of the Judeo-Christian tradition and how that tradition affects both the liberation and oppression of women. The many options women are exploring in spirituality will be examined.

WS 122. CONCEPTS OF THE FEMINE IN CLASSICAL LITERATURE 3 credit hours

Participants will have the opportunity to investigate how women are depicted in classical literature to gain a better understanding of how attitudes and concepts of women have shaped modern concepts. This is achieved through the exploration of the writings of Homer, Sappho, Sophocles, Euripides, Plato and others.

WS 203. ADVANCED WOMEN'S STUDIES

SEMINAR 2 credit hours

Prerequisite: WS 103 or equivalent

A more in-depth theoretical examination is provided of specific experiences of women in society through the continued exploration of history, theory and their cultural interpretation. Course includes readings, discussions and lectures with special emphasis on recent feminist research and literature.

WS 215. ADVANCED ASSERTIVENESS

TRAINING 3 credit hours

A continuation of WS 115, stressing effective communication styles. Special emphasis will be placed on work-related issues and situation role-playing. Applications will be used to express feelings, thoughts and belief systems.





GENERAL INFORMATION



ENROLLMENT INFORMATION

Admissions and Registration (973-3543 and 973-3548):

Washtenaw Community College is open to anyone who can benefit from the College's instructional and service programs. The focus is on career and personal goals rather than on previous educational background. In the admissions assistance process, 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 which College programs best 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. 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.

To apply for admission, fill out an application form. This form can be ordered by phone (313) 973-3543 or picked up at the Admissions Office on the second floor of the Student Center Building. The \$10.00 fee should accompany your completed application. The fee and tuition can be paid together if formal registration has begun.

Admission Options:

Washtenaw Community College is interested in helping students gain a head start in college studies, and when possible, a savings in tuition and fees. Several options are available.

Dual Enrollment (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. Students will be allowed to enroll for a maximum of six (6) credit hours. Application for admission should be initiated through the high school, signed by the high school principal, and forwarded to the WCC Admissions Office.

Lenawee County Vocational Articulation (973-3544):

An agreement similar to the Washtenaw County Vocational Articulation exists with Lenawee County Vocational Center. Students in the areas of Automotive Mechanics, Electrical-Electronics, Machine Shop, Office Education, and Welding & Fabrication should inquire about articulation. Students should begin the process of receiving credit with their high school vocational education instructors.

Washtenaw County Vocational Articulation (973-3544):

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 & 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.

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. Books and supplies are estimated at \$200 for two semesters.

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 \$10.00 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 instructors'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:

Orientation sessions are 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	= <u>116.00</u>
	Student pays	\$ 29.00

Exceptions to this are cancelled classes, or instructors shifting student to higher or lower levels of classes (i.e. Mathematics, English, Reading). Check the spring/summer schedule of courses for modified refund deadlines.

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 the WCC district either 60 days as a non-student immediately prior to enrollment if previous residency was within Michigan **or** six months as a non-student if previous residency was outside of Michigan.
- Applicants who live *with* and whose spouse has resided in the WCC district either 60 days as a non-student immediately prior to enrollment if previous residency was within Michigan **or** six months as a non-student if previous residency was outside of Michigan.
- Applicants who live *with* and are dependent on parents or a legal guardian who has resided in the WCC district either 60 days as a non-student immediately prior to enrollment if previous residency was within Michigan **or** six months as a non-student 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:*

This school is authorized under Federal law to enroll non-immigrant students.

F-1 — An International student must enroll full-time (at least 12 credit hours) upon admission to Washtenaw Community College. In order to be eligible for re-enrollment the following semester, the student must earn a passing grade (A, B, C, D or S) in twelve credit hours. Admission will be based on satisfactorily meeting the following requirements:

1. A completed WCC application for admission.
2. A notarized financial statement or affidavit of support, reflecting the student's ability to meet all tuition, fees and living expenses while attending WCC.
3. Original certified transcripts (in English) of all previous high school and post-secondary work.
4. Proof of English language proficiency shown by a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) or 75% on the Michigan Language Test.
5. Interview with Enrollment Services staff person.
6. Verification of visa status.

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 Visa Status) 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.

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 (five or less for Spring or Summer sessions).

A **Freshman** or **First Year Student** is one who has completed fewer than 28 credit hours.

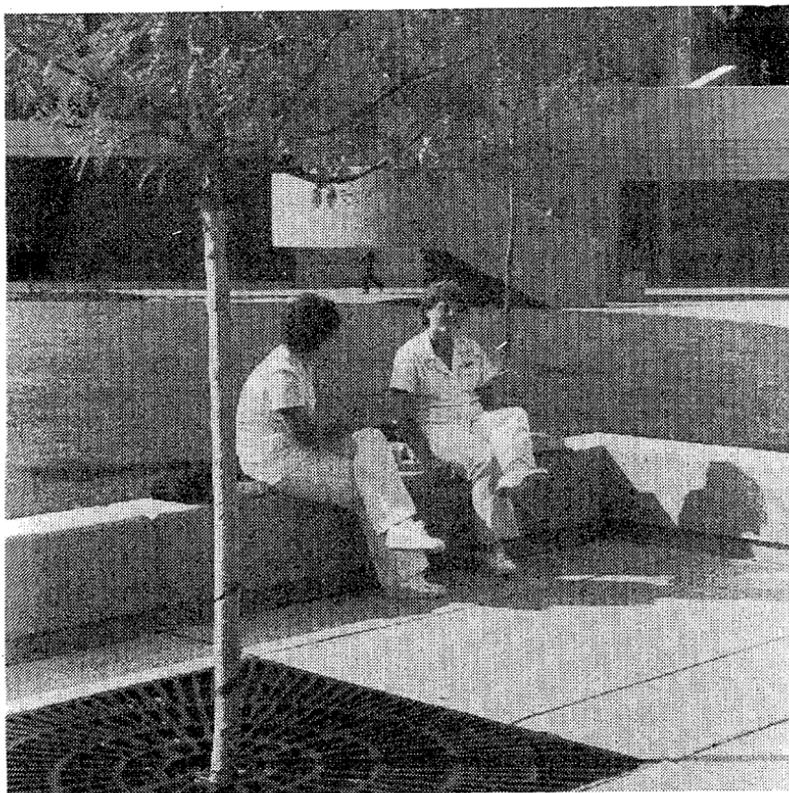
A **Sophomore** or **Second Year Student** is one who has completed 28 or more credit hours but has not received an associate degree or has not qualified for upper division classification in a four-year college or university.

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 a non-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 minute) 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.

Credit by Exam:

Credit applicable toward a degree or certificate may be earned by students who demonstrate competency by exam and/or demonstration in designated departmental courses. Students should contact appropriate faculty for more information.

CLEP and AP:

The College accepts AP (Advanced Placement) and CLEP (College-Level Examination Program) credit. Scores should be sent to the Admissions Office.

Non-Traditional College Credit:

Students with background experiences obtained through military service, on-the-job training, and apprenticeships, for example, may have this prior learning evaluated for credit. The student should contact appropriate faculty in that program to begin the process.

Traditional Transfer of College Credit:

Students who have attended another college/university and would like to apply credit earned toward a program at WCC should have their transcripts mailed to the Admissions Office. An evaluation will be made.

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.

Courses	Credit Hours Attempted	Final Grade	Grade Points
English	3	B	3 grade points (3 × 3) = 9
History	3	F	0 grade points (0 × 3) = 0
Mathematics	3	C	2 grade points (2 × 3) = 6
Electronics	2	A	4 grade points (4 × 2) = 8
Physics	5	C	2 grade points (2 × 5) = 10
Speech	1	D	1 grade points (1 × 1) = 1
TOTAL	17		34

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 with a 3.50 or above grade point average. "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 pro-

gram, and lists released to the press.

Students earning a 3.80 or better are designated as "High Honors."

Student Assessment Policy:

WCC is committed to maximizing success for each student who attends. We are also committed to an open access, student-oriented college in which each student has the opportunity to acquire basic literacy skills for life survival. While our open door policy provides students with immediate acceptance into our College*, our assessment interview for new full-time students provides us with information that helps us do our best to match your skill level with the right courses. This interview process may include reviewing past educational work experiences as well as current life and educational goals and/or testing.

*Some health-related programs, however, have an additional screening process.

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 Counseling 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 Counseling 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 Aid 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.

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.

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.

President's Honor Scholarship: The purpose of the President's Honor Scholarship is to promote the image of Washtenaw Community College as an excellent educational facility with quality educational resources and to encourage the enrollment of outstanding high school graduates. The recipients of this scholarship are graduates from Washtenaw County high schools who have a cumulative high school grade point average (g.p.a.) of 3.20 or better on a 4.0 scale. Students must complete a minimum of 24 credit hours in an academic year and maintain a 3.0 g.p.a. to renew the scholarship.

Departmental Scholarship: The purposes of this proposal are to encourage student enrollment in specific academic departments at Washtenaw Community College to meet the needs of worthy students. Focus will be on the adult returning student currently seeking to be retrained to enhance his/her marketability in the workplace. Candidates for the award must live in-district. New students as well as continuing students will be eligible for the award. This scholarship will pay for tuition and books for two concurrent semesters or one academic year. The award is non-renewable.

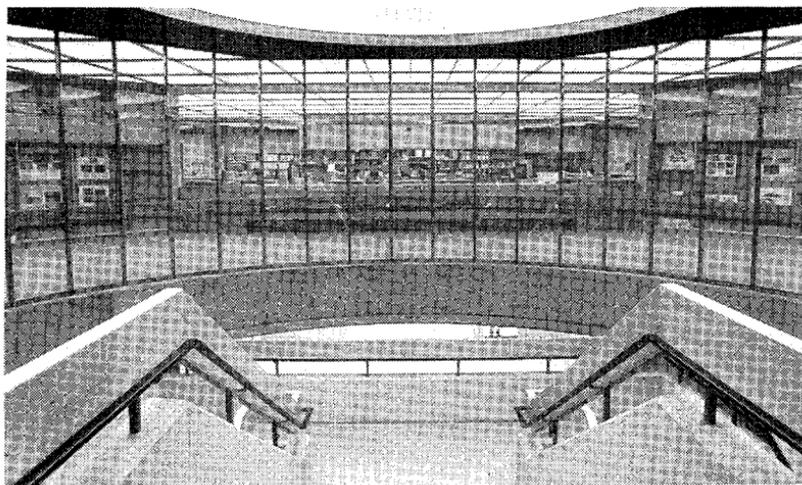
State of Michigan Scholarship: The State Scholarship Program currently measures academic potential on the basis of performance on the ACT Exam. Applicants with qualifying academic credentials are screened on the basis of financial need and other program requirements. Those found eligible may receive up to the amount of demonstrated need, the amount of tuition or \$1,200 per academic year, whichever is least.

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.





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
Communications	CMT 101, 102, 131, 052

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, SC-140B, 4800 East Huron River Drive, Ann Arbor.

Emeritus Program—Mature Adult Development:

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.

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.

WCC scholarships for a limited number of credit hours are also available to first-time WCC students.

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 nine or more make reservations by calling 973-3584.

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.

Career Development Center (973-3558):

The Career Development Center Room 141, Student Center Building, helps persons make a career change or career decision. Individual career counseling and interest inventories are available as well as other tests. 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 Center maintains a list of job openings and offers information on job-hunting techniques and employers. Resume writing assistance is also available. 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."

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. We are proud of its comprehensive child development program which emphasizes the emotional, social, intellectual and physical development of the young child.

Staff: Our teaching staff is 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 both senior aides and 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. Earlier times may be available for WCC classes with advance permission of the coordinator.

Ages: 1½-9 years (Children need *NOT* be toilet trained.)

Attendance: The Center's first purpose is to care for children of WCC students and staff, while parents are attending class, studying or working 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 offers credit courses at Briarwood Mall as 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 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 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 Community Services (973-3493):

The Continuing Education Services Department extends the resources and facilities of Washtenaw Community College to the community. Special seminars and workshops provide education and training for groups in industry, government, organizations, agencies and the professions, as well as for the general public.

Local businesses, organizations and industries can have workshops and seminars custom-designed to meet their training needs. Hours and locations are flexible.

A wide variety of workshops and short courses are offered each semester to the general public. Individuals or groups may explore new career options and develop skills for their professional or community activities.

Certificate and licensing programs including real estate, builders, alcohol management, plastics technology, management, and computer software training are offered regularly. Other certificate or licensing programs can be developed upon request.

Continuing Education Units (CEUs) are offered for some programs as a measurement of completion for a course or workshop. One CEU equals ten hours of classroom contact.

Continuing Education/Community Services offers adult learners education that builds on their life experiences. CE/CS keeps pace with the topics and issues of interest to adults in a rapidly changing world.

Counseling Center (973-3464):

Counselors are available at the Counseling Center Monday through Thursday, 8:00 a.m.-8:30 p.m., and Friday 8:00 a.m.-5:00 p.m. 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 in the Career Development Center (SC 141).

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 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, including Briarwood Mall, the high school in Brighton, Chelsea, Dexter, Saline, and the Ypsilanti Community Center Building.

Learning Resource Center (973-3429):

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

As the materials center of the College, the LRC provides the use of over 61,000 books, 520 magazines and 20 newspapers. Micro-publications, career materials and pamphlet collections are also available. A growing collection of media software such as audio and video tapes, films, recordings, slides, video discs and microcomputer programs is used on equipment in the LRC or in College classrooms.

Faculty and librarians select the best of retrospective and current materials to respond to students' curricular needs and to provide accurate, up-to-date information and varying viewpoints on subjects and issues. To help students use the LRC, the librarians provide group instruction and assist in independent study activities. Librarians provide faculty a full range of reference services, including electronic delivery of information.

The Instructional Media Area of the Learning Resource Center maintains instructional hardware and software for class use. In addition, a variety of production techniques are used to accommodate college requests concerning signs, transparencies, slides, audio tapes and video programs.

LRC facilities include a microcomputer lab housing more than 25 microcomputers for use by students and staff. The Center also includes small seminar rooms, traditional study tables, informal lounge seating, and carrels specially equipped for the use of tapes, slides, and other audiovisual materials. The College Archives collections of documents and records of WCC history, are also located in the LRC.

Math Center (973-3392):

The Mathematics Center (LA 320, 322 and 323) provides many services — all designed to improve the students' mathematical skills in a non-threatening environment. Many of the self-paced mathematics classes meet in this area. They are numbered MTH 039, 090, 097A, 097B, 163, 165, 169A, 169B and 177. 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 and degree program requirements is readily available. Some instructors have their self-paced mathematics students utilize the available microcomputers for additional practice.

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 a learning area where Reading classes are taught and students who have questions about reading may come for help. Within the Center, there is a "lab" which students enrolled in Reading classes are encouraged to use the facility regularly during the semester. If you have any questions related to reading or study skills, please contact the Reading Center Office located in SC301.

Seminars and Groups:

A number of seminars will be offered by the Center throughout the semester. Specific dates will be announced. Seminar topics are as follows:

Women's Support Group — An open, drop-in Women's Support Group meets in the ARC Lounge SC-101 on announced days and times to provide an informal setting for women to share ideas, experiences, problems and/or needs.

Minority Support Group — An open drop-in support group meets in the ARC Lounge on announced days and times to focus on special concerns of minority students.

Women in Non-Traditional Careers Support Group and Men in Non-Traditional Careers Support Group — An open drop-in support group for

women and men in non-traditional careers meeting to focus on coping strategies unique to each situation. Times and location will be posted each semester.

Test-Taking Techniques and Anxiety Management — Group will meet 1½ hour per week for 2 weeks. This seminar will be repeated throughout the semester.

The Balancing Act: Managing Home and Going to School — Group will meet 1½ hours per week for 2 weeks. A person's re-entry into academic life requires the balancing of many responsibilities. If you are returning to school or going to school for the first time, this seminar is designed for you. Topics include: time-management, goal-setting, decision-making, family support, re-establishing basic academic skills.

Registration process and dates will be announced. **All seminars are free.** For further information on these and other programs call 973-3528.

Special Needs Program (973-3342):

The Special Needs Office, located in SC227-D, provides services to disabled, 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)

Technical Job Training (973-3533):

Representatives are available to assist in the development of apprenticeship and other employee training programs. Related instruction can be provided for most apprenticeable trades with the College representative working directly with the employer and employee to meet the require-

ments. 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.

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 TELE-COURSE 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/first class meeting 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 most veteran matters. Services include interpretation of military records, and discharge up-grade counseling. Appropriate agency referral service is available when necessary.

All veterans receiving benefits must see a counselor or advisor before registering.

Any drops or changes made by veteran students are to be reported to the Veteran Certification Office immediately.

New Students:

Veterans and other eligible dependents receiving educational benefits under Chapters 32, 34, 35 and 106, Title 38 U.S.C. who have never used their V.A. educational benefits and would like to make application for benefits should report to the Veteran Certification Office, SC 227A, after registering for classes. Please bring with you certified copies of your DD-214, marriage license and birth certificates of dependent children, if applicable.

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.

Previously Enrolled Veterans:

Veterans who have not attended classes during the previous semester should bring a copy of their registration receipt to the Veteran Certification Office.

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 Veteran Certification Office. DD-214 and transcripts from colleges or universities where the student has completed previous training must accompany the application.

Continuing Veterans:

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

Credit for Formal Service School Experience:

Credit 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.

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.

Washtenaw County Vocational Articulation (973-3544):

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):

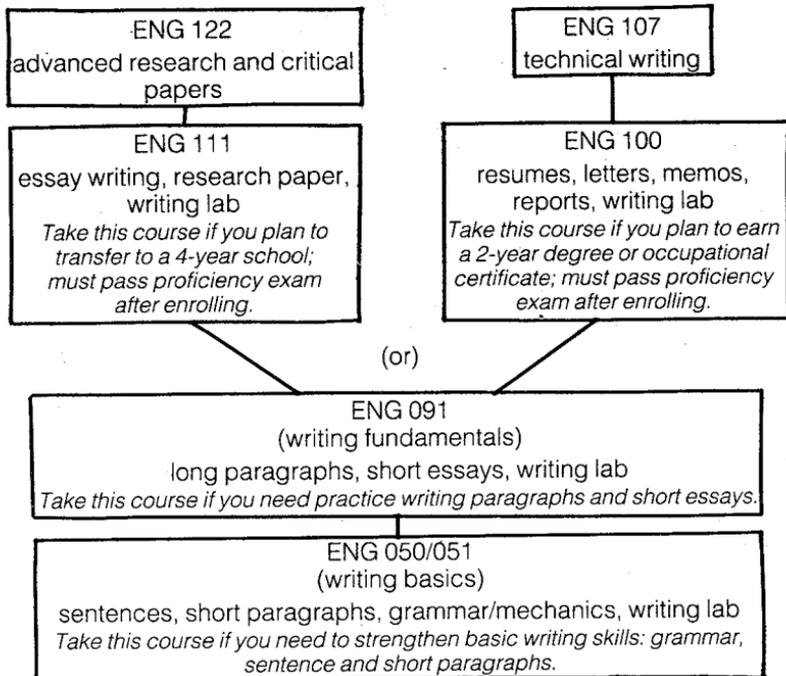
In order to meet the changing educational and occupational needs of the increasing numbers of adult women students, several Washtenaw Community College departments have cooperated with Continuing Education/Community Services to offer a variety of courses, workshops, seminars and special events. These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

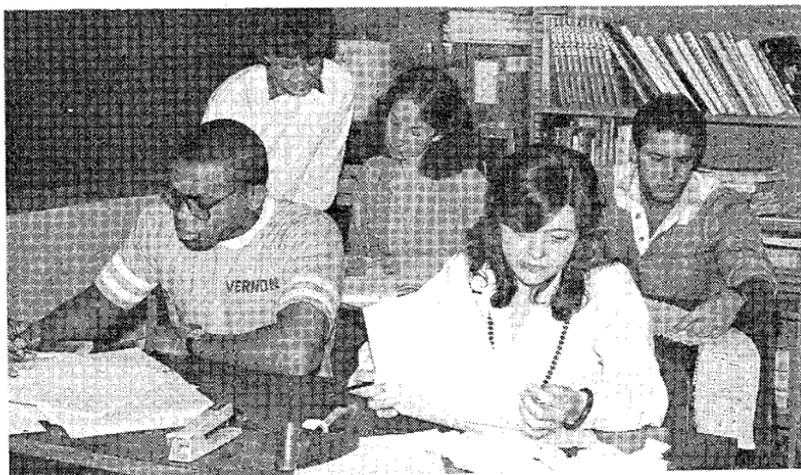
Writing Course Offerings



ENG 010
(writing practicum)

guided writing program, tailored for your needs.

Take this course if you want to work on modules designed to increase particular writing skills.



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.

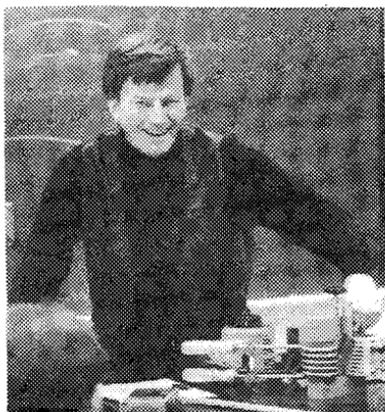
b. This document was prepared on August 1, 1987 and is subject to change without prior notice.

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.

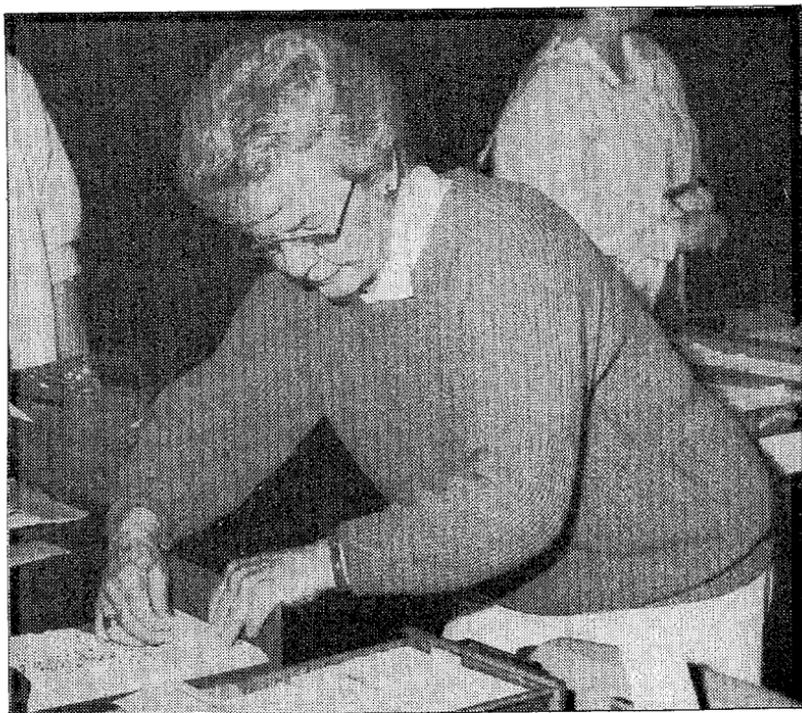
Details concerning new developments and changes in occupational programs are available through the College Counseling Center.

AFFIRMATIVE ACTION/NON-DISCRIMINATION

It is the policy of Washtenaw Community College to comply with all affirmative action laws and specifically, 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
Richard W. Bailey , <i>Chairperson</i> Ann Arbor	December 31, 1990
Vanzetti M. Hamilton , <i>Vice Chairperson</i> Ypsilanti	December 31, 1992
James W. Anderson, Jr. , <i>Secretary</i> Ann Arbor	December 31, 1990
John W. Corey , <i>Treasurer</i> Ann Arbor	December 31, 1990
Marcia D. Harrison , <i>Trustee</i> Ypsilanti	December 31, 1988
Nancy N. Margolis , <i>Trustee</i> Ann Arbor	December 31, 1988
Anthony J. Procassini , <i>Trustee</i> Ann Arbor	December 31, 1992

*Date following each name indicates individual's
first full-time employment association with the college.*

Executive Officers

Myran, Gunder A.	1975
<i>President</i>	
B.S.—Mankato State University	
M.A.—University of Iowa	
Ed.D.—Michigan State University	
Konschuh, Harry J.	1972
<i>Vice President</i>	
B.Ed. — University of Alberta	
M.A. — Michigan State University	
Altieri, Guy	1987
<i>Vice President for Instruction and Student Services</i>	
B.A. — Glassboro State College	
M.A. — Glassboro State College	
M.A. — West Chester University	
M.A. — Columbia University	
Ed.D. — Columbia University	

Administrative/Professional Staff

- Andrews, Jacqueline Parks** 1984
Coordinator, Educators Collaborative for Unemployment Services
 B.A. — University of Minnesota
 M.A. — Eastern Michigan University
 Ph.D. — 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
- Cain, Ronald L.** 1986
Coordinator, Instructional Media
 B.S. — University of Minnesota
 M.A. — University of Minnesota
- Cash, Marjorie O.** 1980
Coordinator, Special Needs
 B.A. — Prairie View A. & M. College of Texas
 M.Ed. — University of North Dakota
- Chambers, JoAnn** 1983
Analyst, Personnel Services
 Washtenaw Community College
- Dodge, Gary** 1980
Supervisor, Weekend, Evening, and Extension Programs
 B.A. — Eastern Michigan University
 M.A. — The University of Michigan
- Featheringham, Lee R.** 1981
Director, Computer Services Center
 B.S. — Kent State University
 B.S.E.E. — The University of Michigan

- Galant, Richard L.** 1978
Dean of General Education
 A.B. — The University of Michigan
 A.M. — The University of Michigan
 Ph.D. — The University of Michigan
- Galvin, Ralph H.** 1984
Coordinator, Public Service Training Programs
 B.S. — Nazareth College
- Gerhardt, Laura J.** 1985
Director, Job Training School
 B.A. — Eastern Michigan University
 M.A. — Eastern Michigan University
- Grzegorzczuk, Phyllis** 1978
Dean, Health and Public Service
 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
- Hann, David F.** 1986
Coordinator, Accounting Services
 B.S. — Brigham Young University
- Hansknecht, Suzanne** 1987
Coordinator, Grants Development
 B.A. — Oakland University
- Heator, Martin G.** 1985
Coordinator, Publications
 B.S. — Eastern Michigan University
- Hill, Birgitte** 1986
Accountant for Cash Management and Development
 B.A. — The University of Michigan
- Horowitz, Marian S.** 1985
Coordinator, Job Training and Business Development Services
 B.A. — The University of Michigan, Dearborn
 M.A. — The University of Michigan
- Jacques, Edith N.** 1976
Dean, Continuing Education and Community Services
 B.A. — D'Youville College
 M.A. — The University of Michigan
 Ph.D. — The University of Michigan
- Jordan, Cole L.** 1978
Supervisor, Custodial Services
 A.D. — Washtenaw Community College
 B.A. — Wayne State University
- Kooi, Lucy A.** 1977
Programmer Analyst II
 A.B. — The University of Michigan
 Washtenaw Community College

- Levy, Mary L.** 1981
Programmer Analyst I
 B.A. — College of Wooster
 M.A. — The University of Michigan
- Little, Patrick J.** 1986
Supervisor, Security and Plant Department
 A.D. — Washtenaw Community College
 Licensed GMT — State of Michigan
 Certificate — F.B.I. National Academy
 Detroit Police Academy
- Lutz, Geoffrey A.** 1986
Programmer/Analyst I
 B.S. — The University of Michigan
- Medeiros, Neil O.** 1980
Supervisor, Maintenance Department
 R.E.T.S. Electronics Engineering School
 Washtenaw Community College
- Nair, Damodaran** 1980
Director, Continuing Education Services
 B.A. — Gandhigram University
 M.A. — Gandhigram University
 M.S. — Michigan State University
 Ph.D. — Michigan State University
- Peoples, Gregory A.** 1985
Director, Enrollment Management
 B.A. — Allegheny College
 M.Ed. — Kent State University
- Phibbs, John** 1969
Supervisor, Reprographic Services
 A.D. — Washtenaw Community College
 B.B.A. — Eastern Michigan University
- Pierce, Leslie (Les) E.** 1984
Director, Technical Job Training Programs
 B.A. — University of Florida-Gainesville
 M.A. — University of Florida-Gainesville
- Pulter, Kim M.** 1984
Systems Analyst
 A.D. — Henry Ford Community College
 B.B.A. — Eastern Michigan University
 M.S. — Eastern Michigan University
- Reeves, Cornelius** 1966
Supervisor, Power Plant
 A.D. — Washtenaw Community College
- Reeves, Robert A.** 1968
Assistant Vice President for Employee Relations
 B.A. — Eastern Michigan University
 M.A. — Eastern Michigan University

- Reid, Juanita H.** 1984
Assistant to the President
 B.S. — West Virginia State College
 M.A. — Eastern Michigan University
- Roberts, Shirley** 1968
Dean, Student Services
 B.A. — The University of Michigan
 M.A. — The University of Michigan
- Sabada, Mary L.** 1966
Director, Personnel Services
 Ohio University
 Washtenaw Community College
- Scott, Adella** 1975
Director, Learning Resource Center
 A.B. — The University of Michigan
 M.A.L.S. — The University of Michigan
- Sims, Donald L.** 1966
Director, Registration and Counseling
 B.S. — Wayne State University
 M.A. — The University of Michigan
- Spickard, James F.** 1977
Director, Plant Operations and Security
 B.S. — Eastern Michigan University
- Stallworth, Clarence A.** 1974
Director, Management and Auxiliary Services
 B.S.E. — The University of Michigan
 M.S.E. — The University of Michigan
- Travis, Patricia A.** 1974
Coordinator, Children's Center
 B.A. — The University of Michigan
 M.A. — Eastern Michigan University
- Westcott, Richard** 1984
Supervisor, Plant Operations
- Wilkins, Barry L.** 1982
Assistant Supervisor, Plant Operations
 A.D. — Washtenaw Community College
- Wojnowski, Judith L.** 1978
Controller
 B.S. — Canisius College
 C.P.A.

Faculty

- Allen, Jacqueline** 1978
Technician
B.A. — Case Western Reserve University
M.A. — The University of Michigan

AUTOMOTIVE SERVICE

John B. Mann, Instructional Coordinator

- Barron, Kenneth E.** 1966
Automotive Service
B.S. — Central Michigan University
A.S.E. — Certified Master Automotive Technician
State of Michigan — Licensed Master Mechanic
- Bogue, Robert A.** 1984
Technician
A.D. — Washtenaw Community College
B.S.Ed. — The University of Michigan
- Cammet, Edward** 1975
Automotive Body Repair
Army Mechanic School
Ford Motor Institute
Bear Frame School
Ditzler Paint Instructors School
Martin Senour Refinishing School
- Fisher, Scott** 1982
Automotive Service
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
- Jordan, Lester** 1979
Automotive Body Repair
B.A. — Eastern Michigan University
M.Ed. — Wayne State University
- Mann, John B.** 1971
Automotive Service
Washtenaw Community College
B.S. — Eastern Michigan University
M.A. — The University of Michigan
A.S.E. and State of Michigan — Certified Mechanic

Weid, Richard, 1979
Automotive Service
 B.S. — Eastern Michigan University
 M.A. — Eastern Michigan University
 M.S. — Eastern Michigan University

BEHAVIORAL SCIENCES

Bylsma, Donald Jr. 1966
Sociology
 B.S. — Wayne State University
 M.S. — Wayne State University
 Ph.D. — The University of Michigan

Kollen, Michael 1969
Psychology
 B.A. — Knox College
 M.S. — New Mexico Highlands University
 M.A. — The University of Michigan

Martin, Herbert L. 1967
Psychology
 B.A. — Eastern Michigan University
 M.A. — Eastern Michigan University
 M.S.W. — The University of Michigan

Moy, William 1968
Psychology
 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

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
Janet Remen, Instructional Coordinator

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, J. Robert 1969
Computer Information Systems
 B.A. — University of Philippines

COMPUTER SERVICES CENTER

- Casey, Debra** 1984
Technician
Washtenaw Community College

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
- Walline, Cynthia** 1987
Technician
B.S. — Eastern Michigan University
- 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 of 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 Michigan University
M.A. — Eastern Michigan University
The University of Michigan

BUSINESS AND ACCOUNTING
Gwen Arnold, Instructional Coordinator

Arnold, Gwen	1966
<i>Management, Intern-Extern</i>	
A.D. — Washtenaw Community College	
B.B.A. — Cleary College	
M.A. — The University of Michigan	
Bellers, Clifford	1969
<i>Business, Accounting</i>	
B.B.A. — Eastern Michigan University	
M.A. — Eastern Michigan University	
Kokkales, Paul C.	1966
<i>Accounting</i>	
B.S. — Eastern Michigan University	
M.A. — The University of Michigan	
McNally, Robert C.	1966
<i>General Business</i>	
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
<i>Accounting</i>	
B.B.A. — The University of Michigan	
M.B.A. — Eastern Michigan University	
Ross, Frank J.	1981
<i>Finance, Marketing, Management</i>	
B.S. — Wayne State University	
M.A. — Central Michigan University	
Wilson, Rosemary	1986
<i>Management/Business</i>	
B.S. — Milligan College	
M.B.A. — University of Notre Dame	
Zeeb, Ronald E.	1968
<i>Marketing/General Business</i>	
B.S. — Eastern Michigan University	
M.A. — Eastern Michigan University	

DENTAL ASSISTING
Betty Ladley Finkbeiner, Instructional Coordinator

Finkbeiner, Betty Ladley	1969
<i>Dental Assisting</i>	
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

Andrew F. Ford, Instructional Coordinator

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 — State of 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
Philip G. Mullins, Instructional Coordinator

- Bellers, Bob** 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
- Robinson, Albert** 1974
Electricity/Electronics
 B.A. — Indiana University
 M.S. — Eastern Michigan 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

ENGLISH AND WRITING
Ruth Hatcher, Instructional Coordinator

Croake, Edith M.	1966
<i>English</i>	
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
<i>English</i>	
B.A. — Wayne State University	
M.Ed. — Wayne State University	
Gaughan, John T.	1968
<i>English</i>	
B.A. — St. Mary's College	
B.S. — St. Mary's College	
M.A. — Eastern Michigan University	
Hatcher, Ruth	1981
<i>English</i>	
B.A. — Earlham College	
M.A. — The University of Michigan	
Hunt, Barbara	1968
<i>English</i>	
B.A. — University of Toledo	
M.A. — The University of Michigan	
D.A. — The University of Michigan	
Minock, Daniel W.	1983
<i>English</i>	
Ph.D. — Ohio State University	
Mitchell, W. Bede	1967
<i>English</i>	
A.B. — Wayne State University	
M.A. — Wayne State University	
Salerno, Douglas	1969
<i>English, Speech</i>	
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
<i>English</i>	
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 MANAGEMENT

- Grotrian, Paulette** 1980
Admissions Officer
 B.A. — Valparaiso University
 M.A. — Valparaiso University
- Hoth, Bradley** 1987
Technician, High School Recruitment
 B.A. — Michigan State University

FINANCIAL AIDS

- DeMerrill, Diane** 1978
Technician
 Washtenaw Community College
- Frye, Iota H.** 1975
Financial Aids Officer
 B.S. — Eastern Michigan University
 M.A. — Eastern Michigan University
 Graduate — Rhema Bible Training Center
- Hower, Guy W.** 1966
Financial Aids Officer
 B.B.A. — The University of Michigan
 M.A. — The University of Michigan

FOODS AND HOSPITALITY

Don L. Garrett, Instructional Coordinator

- 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

Sheets, Andrew F. 1986
Technician
 A.D. — Washtenaw Community College

HUMANITIES

Paul Zenian, Instructional Coordinator

Biederman, Rosalyn L. 1967
Spanish, E.S.L.
 B.A. — Ohio State University
 M.A. — Ohio State University

Devereaux, William 1976
Speech
 B.A. — Michigan State University
 M.A. — Michigan State University
 Ed.D. — Laurence Universtiy

Hanson, Charlotte 1966
Speech
 A.B. — The University of Michigan
 M.A. — The University of Michigan

Horowitz, Frederick A. 1968
Art
 B.A. — Yale University
 B.F.A. — Yale University
 M.F.A. — The University of Michigan

Kibens, Maija 1976
Philosophy
 B.A. — Mount Holyoke College
 M.A. — The University of Michigan
 Ph.D. — The University of Michigan

Lockard, Jon M. 1970
Art
 Certificate — Meinzinger Art School
 Certificate — Obleton Advertising Company
 Wayne State University

Radick, Lawrence J. 1966
French, Russian
 B.A. — Michigan State University
 M.A. — Michigan State University
 Certified Flight Instructor, ASELS

Zenian, Paul 1968
Art
 B.S. — The University of Michigan
 M.F.A. — The University of Michigan

INDUSTRIAL TECHNOLOGY
George C. Agin, Instructional Coordinator

- Agin, George C.** 1968
Mechanical Technology, Fluid Power, Robotics
 B.S. — Wayne State University
 M.A. — Eastern Michigan University
- Avery, Dean** 1981
Mechanical Technology
 B.S. — Ferris State College
 M.S. — Wayne State University
- Dick, 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
 A.D. — Washtenaw Community College
 B.S. — Eastern Michigan University
 DeVilbiss Robotics School
 Unimation Puma Robotics School

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

James M. Davenport, Instructional Coordinator

- Davenport, James M.** 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

Percy Mealing, Instructional Coordinator

- 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

- Lewis, 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
- Mealing, Robert C.** 1966
Mathematics
 Ford Motor Company Apprenticeship School
 B.S. — Wayne State University
- Palay, Roger M.** 1976
Mathematics
 B.S. — University of Chicago
 M.S. — University of Wisconsin
- Prichard, Lawrence** 1968
Mathematics
 B.S. — Eastern Michigan University
 M.A. — Eastern Michigan University
- Remen, Janet M.** 1982
Mathematics/Computer Science
 B.Sc. — University of Durham
 M.S. — The University of Michigan
- Showalter, Martha** 1980
Mathematics, Computer Science
 B.S. — Ohio State University
 B.A. — Ohio State University
 M.S. — University of Houston

MUSIC

Morris J. Lawrence, Instructional Coordinator

- Lawrence, Morris J.** 1969
Music
 Certificate — Straight Business College
 B.S.M.E. — Xavier University
 M.M. — The University of Michigan
 Ph.D. — Bernadean University

NURSING
Gladys Knoll, Instructional Coordinator

Evans, Kay E.	1986
<i>Clinical Technician</i>	
B.S.N. — The University of Michigan	
Goodkin, Barbara H.	1975
<i>Nursing</i>	
B.S.N. — The University of Michigan	
M.S. — The University of Michigan	
Knoll, Gladys	1981
<i>Nursing</i>	
Diploma — Henry Ford Hospital School of Nursing	
B.S.N. — The University of Michigan	
M.S. — The University of Michigan	
R.N.C. — Certified Inpatient Obstetric Nurse	
Regensburg, Janice	1981
<i>Clinical Technician</i>	
B.S.N. — Eastern Michigan University	
VanderVeen, Judith, Sister	1976
<i>Nursing</i>	
Diploma — Mercy Central School of Nursing	
B.S.N. — Mercy College of Detroit	
M.A. — The University of Michigan	
Specialist in Aging — The University of Michigan	
Specialist in Aging — Wayne State University	

OCCUPATIONAL EDUCATION CO-OP

Vrabel, George	1969
<i>Professional Service</i>	
B.S. — Western Michigan University	
M.A. — Wayne State University	

PHYSICAL SCIENCES
George H. Griswold, Instructional Coordinator

Amundsen, Jack	1975
<i>Physics</i>	
B.A. — The University of Michigan	
M.A. — The University of Michigan	
French, Gargi	1974
<i>Chemistry</i>	
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

Phillip Ludos, Instructional Coordinator

- Chaudoin, Catherine G.** 1986
Corrections
 B.S. — Eastern Michigan University
- Ludos, Phillip** 1978
Public Service Careers/Police Academy
 A.D. — Schoolcraft College
 B.S. — Madonna College
 M.A. — University of Detroit

RADIOGRAPHY

Robert Nelson, Instructional Coordinator

- Baker, Gerald A.** 1975
Radiologic Technology
 A.D. — Wayne County Community College
 B.S. — Ferris State College
 R.T. — The American Registry of Radiologic Technologists

- Nelson, Robert** 1966
Radiologic Technology
 A.A. — Fort Scott Community Junior College
 A.D. — Washtenaw Community College
 B.S.Ed. — The University of Michigan
 M.S. — The University of Michigan
 Alexian Brothers Hospital School of Radiologic Technology

READING

Rosemarie E. Nagel, Instructional Coordinator

- McGee, Sophie** 1969
Reading
 A.B. — The University of Michigan
 M.G. — The University of Michigan
- Martin, LaRuth E.** 1974
Medical Terminology/Dental Assisting, Health Science
 C.D.A. — American Dental Assisting Association
 B.S. — Shaw College at Detroit
 M.A. — The University of Michigan
 E.F.D.A. — University of Indiana Dental School
 Vocational Teaching Certificate — State of Michigan
 R.D.A. — Michigan State Board of Dentistry
 Gerontology Specialist — The University of Michigan
- Nagel, Rosemarie E.** 1967
Reading
 A.B. — The University of Michigan
 M.A. — The University of Michigan

RESPIRATORY THERAPY

Carl F. Hammond, Instructional Coordinator

- Flint, Ann M.** 1986
Clinical Technician
 A.A.S. — Carteret Technical College
- Hammond, Carl F.** 1967
Respiratory Therapy
 A.S. — Jackson Junior College
 B.S. — Eastern Michigan University
 M.S. — The University of Michigan
 R.R.T. — National Board for Respiratory Therapy
- Redick, Martin** 1978
Respiratory Therapy
 B.S. — The University of Michigan
 M.S. — The University of Michigan
 R.R.T. — National Board for Respiratory Therapy

SECRETARIAL AND OFFICE
Wanda Burch, Instructional Coordinator

Burch, Wanda	1977
<i>Office Occupations</i>	
A.D. — Washtenaw Community College	
B.S. — The University of Michigan	
M.A. — The University of Michigan	
Charlton, Eleanor	1966
<i>Secretarial Studies</i>	
B.S. — Central Michigan University	
M.A. — Central Michigan University	
Juster, Marie S.	1982
<i>Secretarial Studies</i>	
B.S. — The William Paterson College	
M.A. — New York University	
Patt, Jerry	1968
<i>Secretarial Studies/Accounting</i>	
B.S. — Central Michigan University	

SOCIAL SCIENCES
Steven T. Vass, Instructional Coordinator

Amaru, Augustine	1966
<i>Political Science</i>	
B.A. — Boston University	
M.A. — Michigan State University	
The University of Michigan	
University of Washington	
Gaughan-Mickelson, Joan M.	1969
<i>History</i>	
B.A. — St. Teresa College	
M.A. — Eastern Michigan University	
Ph.D. — The University of Michigan	
Glusac, Ivan C.	1966
<i>Political Science</i>	
B.S. — Wayne State University	
M.A. — The University of Michigan	
Holmes, George H., III	1968
<i>History</i>	
B.A. — University of North Carolina	
M.A. — Xavier University	
Miller, Louis R.	1969
<i>Political Science</i>	
B.S. — Eastern Michigan University	
A.M. — The University of Michigan	

- Reps, Flavia P.** 1966
History/Western Civilization
 B.A. — St. Joseph College
 M.A. — Georgetown University
- Susnick, Stuart B.** 1969
Anthropology/Political Science
 B.A. — Brooklyn College
- Thomas, Ervin L.** 1969
Anthropology/Philosophy/Sociology
 B.A. — Wayne State University
 M.A. — Wayne State University
- Vass, Steven T.** 1967
Economics
 B.S. — Academy of Military Science
 B.S.Ed. — Black Hills State College
 M.A. — The University of Michigan
 Ph.D. — The University of Michigan
- Whiteford, Priscilla S.** 1971
Anthropology
 B.A. — Western Michigan University
 M.A. — The University of Michigan

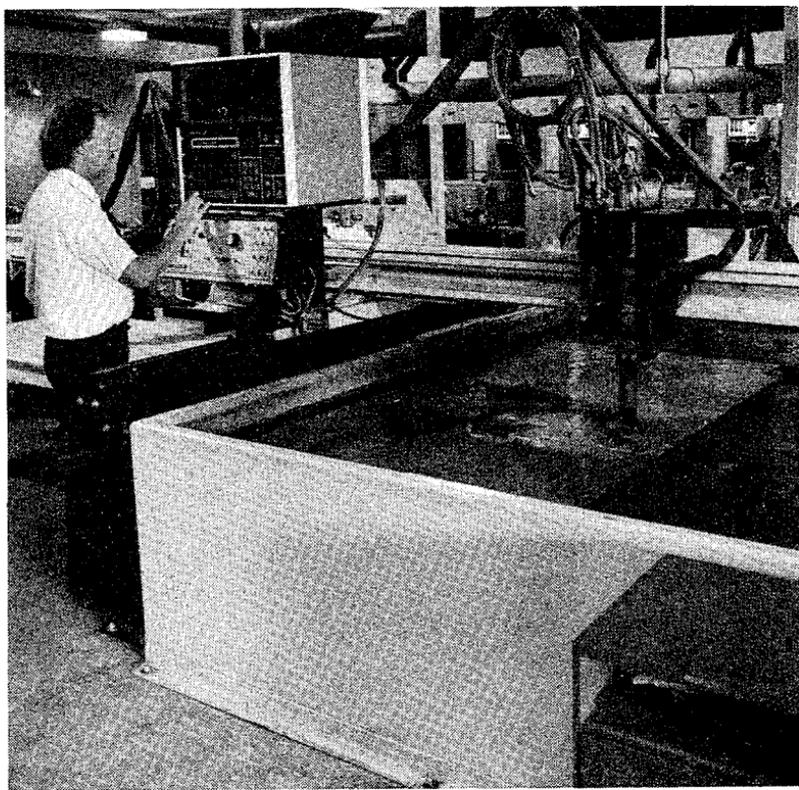
VISUAL ARTS TECHNOLOGY

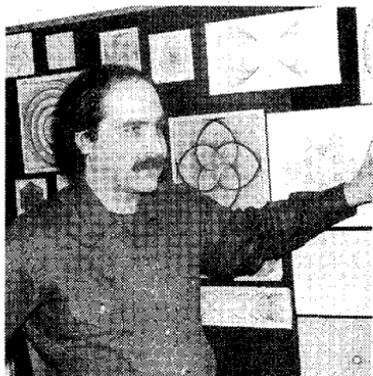
J. Raymond Steinbach, Instructional Coordinator

- Guastella, C. Dennis,** 1980
Commercial Art
 A.D. — Macomb County Community College
 B.F.A. — Wayne State University
 M.F.A. — Eastern Michigan University
- Hogue, Cheryl** 1985
Technician, Photography
 A.D. — Washtenaw Community College
 B.F.A. — The University of Michigan
- Martin, John W.** 1968
Commercial Art/Technical Illustration
 Certificate — Miensinger Art School
 Certificate — Arts and Crafts School
 A.A. — Macomb County Community College
- Steinbach, J. Raymond** 1969
Photography
 B.S. — Michigan State University
 Brooks Institute, School of Photographic Art and Science
 The University of Michigan
 M.S.O.E. — Ferris State College

WELDING AND FABRICATION
William Figg, Instructional Coordinator

- Figg, William** 1972
Welding and Fabrication
A.D. — Washtenaw Community College
- Hall, Clyde** 1978
Welding and Fabrication
A.D. — Washtenaw Community College
B.S. — The University of Michigan





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 excluding PEA courses and courses number 051 and below, including all the classes in a program, three credits of English (writing), and three credits of political science (PLS 108 or 112 or 150), 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.

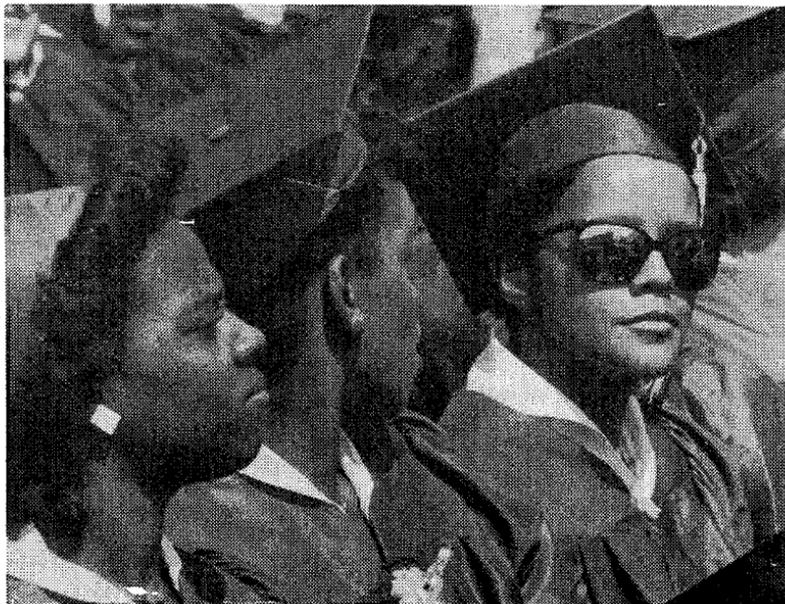
Self-Paced: A type of teaching in which the student controls how fast he or she goes through what there is to learn. Programmed instruction (see definition) is usually self-paced.

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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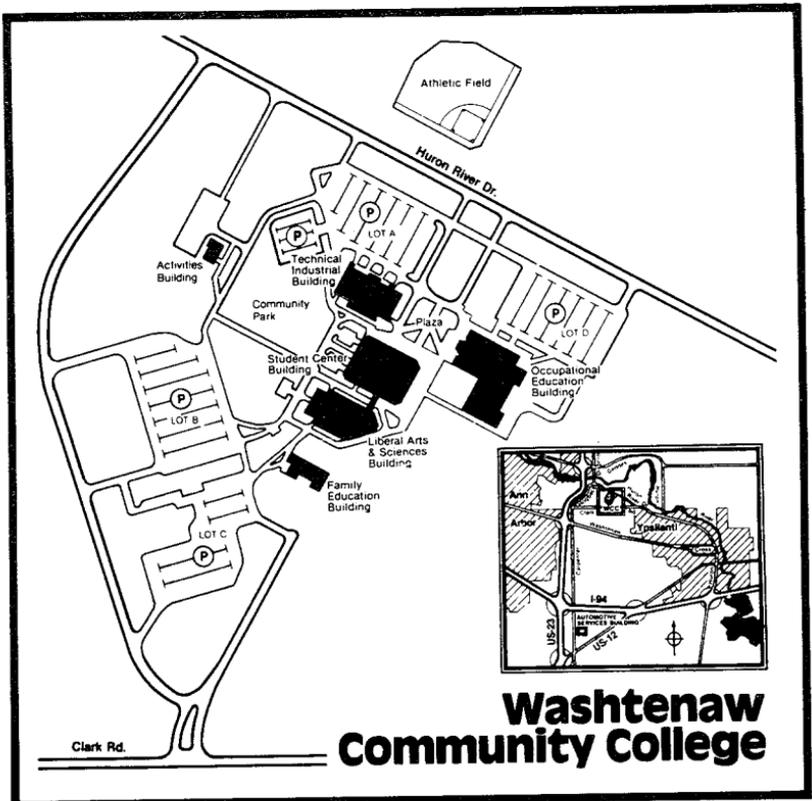
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Building Abbreviations

- 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



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

