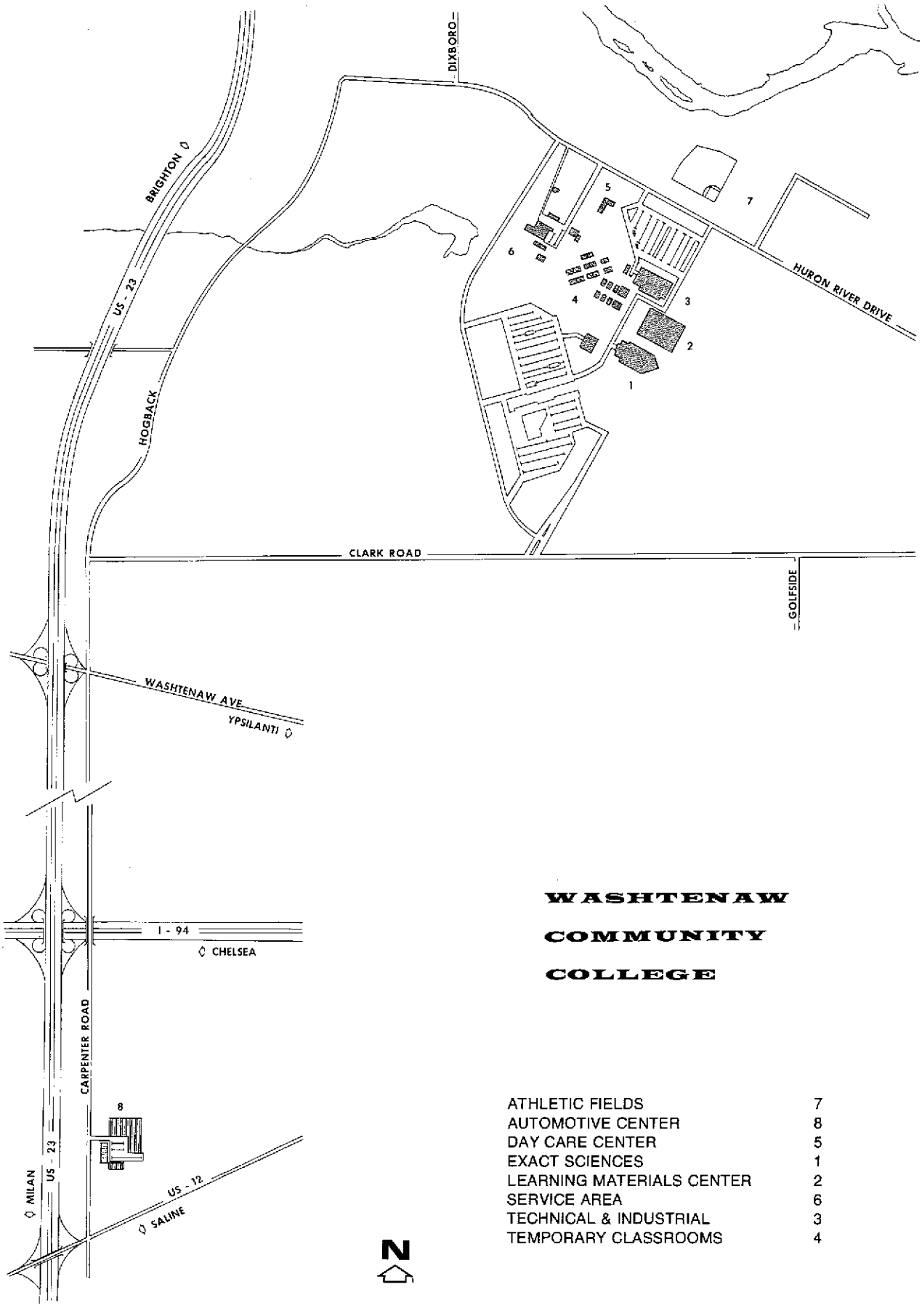
# WASHTENAW COMMUNITY COLLEGE BULLETIN 77-78

VOL. 8 ISSUE 2 APRIL 1978




# WASHTENAW COMMUNITY COLLEGE

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# Washtenaw Community College

4800 EAST HURON RIVER DRIVE

**ANN ARBOR, MICHIGAN 48106**

TELEPHONE: (Area Code 313) 973-3300

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# campus locations:

MAIN CAMPUS
4800 East Huron River Drive
Ann Arbor

AUTOMOTIVE CENTER
5115 Carpenter Road
Ypsilanti

YPSILANTI CENTER
411 Florence Street
Ypsilanti

The *Bulletin* is intended to be used with the *Schedule of Classes,* published each term, which provides more recent information on courses, as well as College regulations, and more details on the academic calendar and procedures.

Information on new courses is included in the supplement in this *Bulletin* (see pg. 149). . Details concerning changes in occupational programs are available through the College Counseling Office.

The provisions of this catalog are not an irrevocable contract between the student and the College. The College reserves the right to change any provision or requirement at any time within the student's attendance.

# Washtenaw Community College

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

Radiologic Technology Program
Provisionally Approved by
COUNCIL ON MEDICAL EDUCATION,
AMERICAN MEDICAL ASSOCIATION

Respiratory Therapy Program
Approved by
COUNCIL ON MEDICAL EDUCATION,
AMERICAN MEDICAL ASSOCIATION

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

An Institutional Member of
AMERICAN ASSOCIATION OF
COMMUNITY AND JUNIOR COLLEGES

A Member of
MICHIGAN COMMUNITY COLLEGE ASSOCIATION

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

# message from the president

The students at Washtenaw Community College represent a true cross-section of the people of the Washtenaw County area. They come from all of the communities in the county, and some come from the surrounding counties as well. Recently, we have taken our services to communities in the county by creating a number of small extension centers in cooperation with the ten public school districts. This is a part of our effort to be community-based, to be an educational resource center for the people we serve.

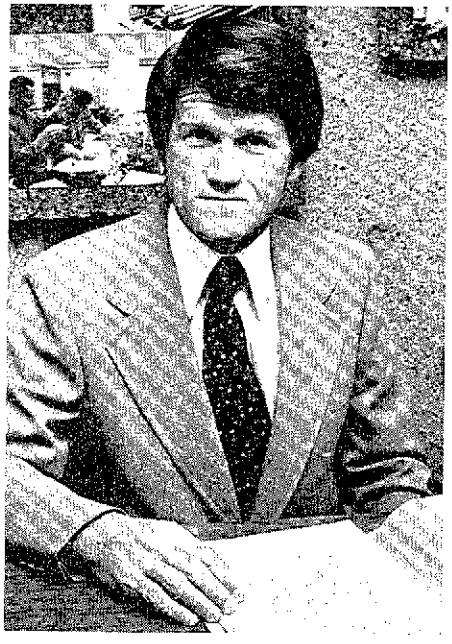
Our students range in age from 17 to over age 65. Many are recent high school graduates but equally as many are persons who have decided to return to college on a full-time or part-time basis while raising a family or holding a job. Over 40 percent of our students attend evening and weekend classes. Our students have a wide range of educational backgrounds as well. While the majority are high school graduates, persons who left high school before graduating are admitted and enabled to take the basic reading, writing, and math courses they need to handle a collegiate program. We also enroll many students who have attended one or more other colleges.

Our students come from all income levels. Over 60 percent receive some form of financial assistance to offset all or part of their educational expenses. It is a basic policy of the College to keep tuition as low as possible so that persons from all income levels can attend.

Our mandate centers on providing occupational programs which prepare persons for employment upon completion, and we view this as the cornerstone of future development. At the same time, our role as a "people's college" requires that we continue to provide for the diverse educational needs of the people who come to us: those seeking to prepare for or advance themselves in a career, those seeking to complete the first two years of a four-year college degree, those seeking to improve their basic math and communication skills, and those seeking educational experiences of a short-term nature which complement other important life roles. We value highly the opportunity we have to grow in service to these diverse student groups.

Washtenaw Community College will seek increasingly to become an integral part of the fabric and rhythm of communities throughout Washtenaw County. As an educational resource center for this area, we seek to be responsive to identified educational needs, and to provide quality programs in a responsible and prudent way. This is your college, and we invite you to participate in its educational programs.

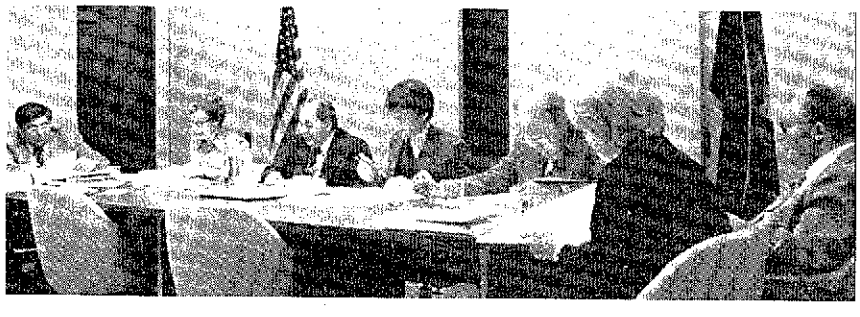
**Gunder A. Myran**
*President*

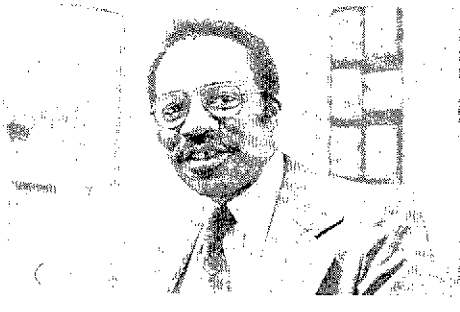


**Gunder A. Myran**

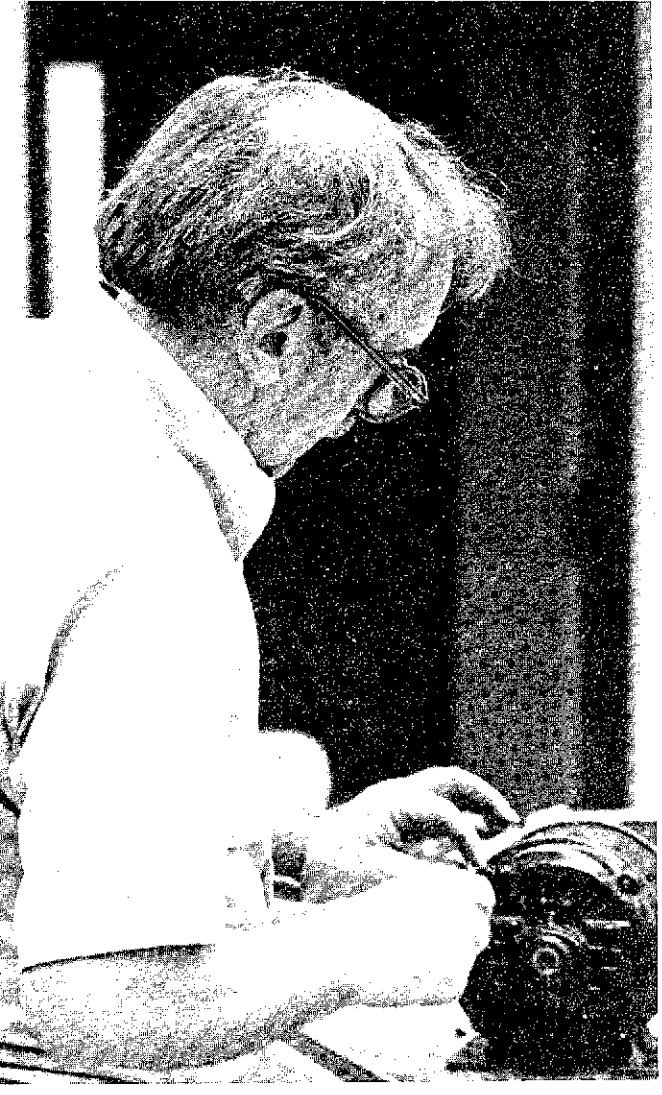
# president

# board of trustees





*Trustees of Washtenaw Community College (seated, left to right in photo above left) surrounding the College president, Gundar A. Myran, center, in the Board room: Henry S. Landau; Ann C. Kettles, secretary; Anthony J. Procassini, chairman; Dr. Myran; Richard W. Bailey, treasurer; Judy Shelton; Richard L. Boyd; and James W. Anderson, Jr. (in photo right above). The Board of Trustees meets monthly in public session. Trustees are elected by the voters of the College district for six year terms; usually two trustees are elected every two years at the general election in the Fall.*

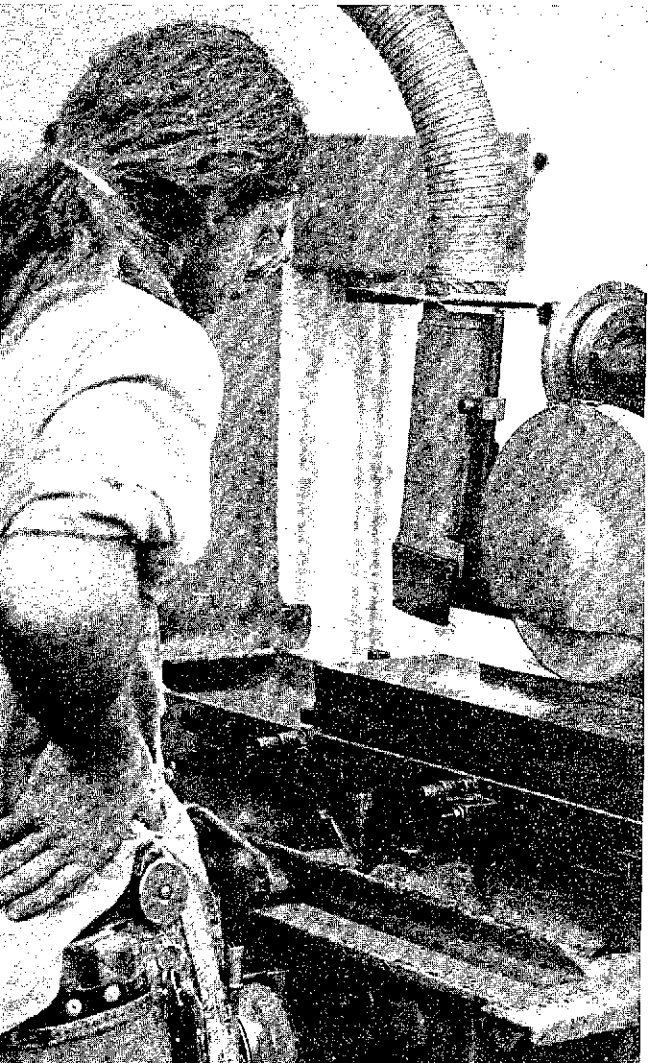


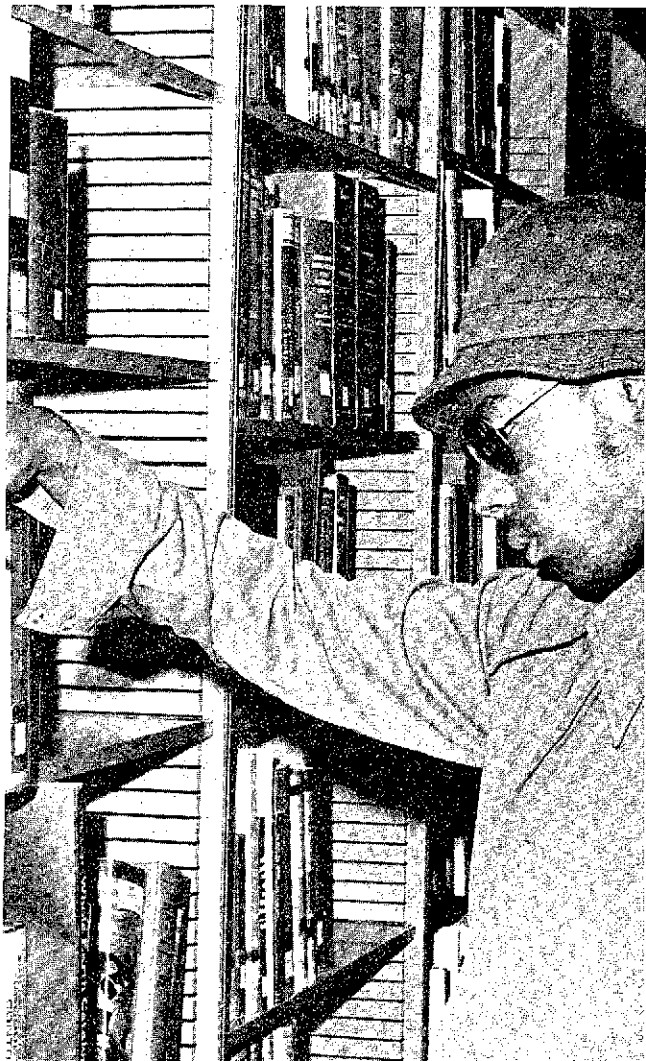
# education for all

*Washtenaw Community College grants admission to students from a wide range of backgrounds and with diverse educational objectives.*

*Ranging from recent high school graduates looking for occupational skills to senior citizens pursuing an academic interest, students choose from a variety of occupational and general studies courses and, with the aid of counselors, select and plan their own educational program.*

*Active counseling and effective student services contribute to the school's efforts to make education available to all.*



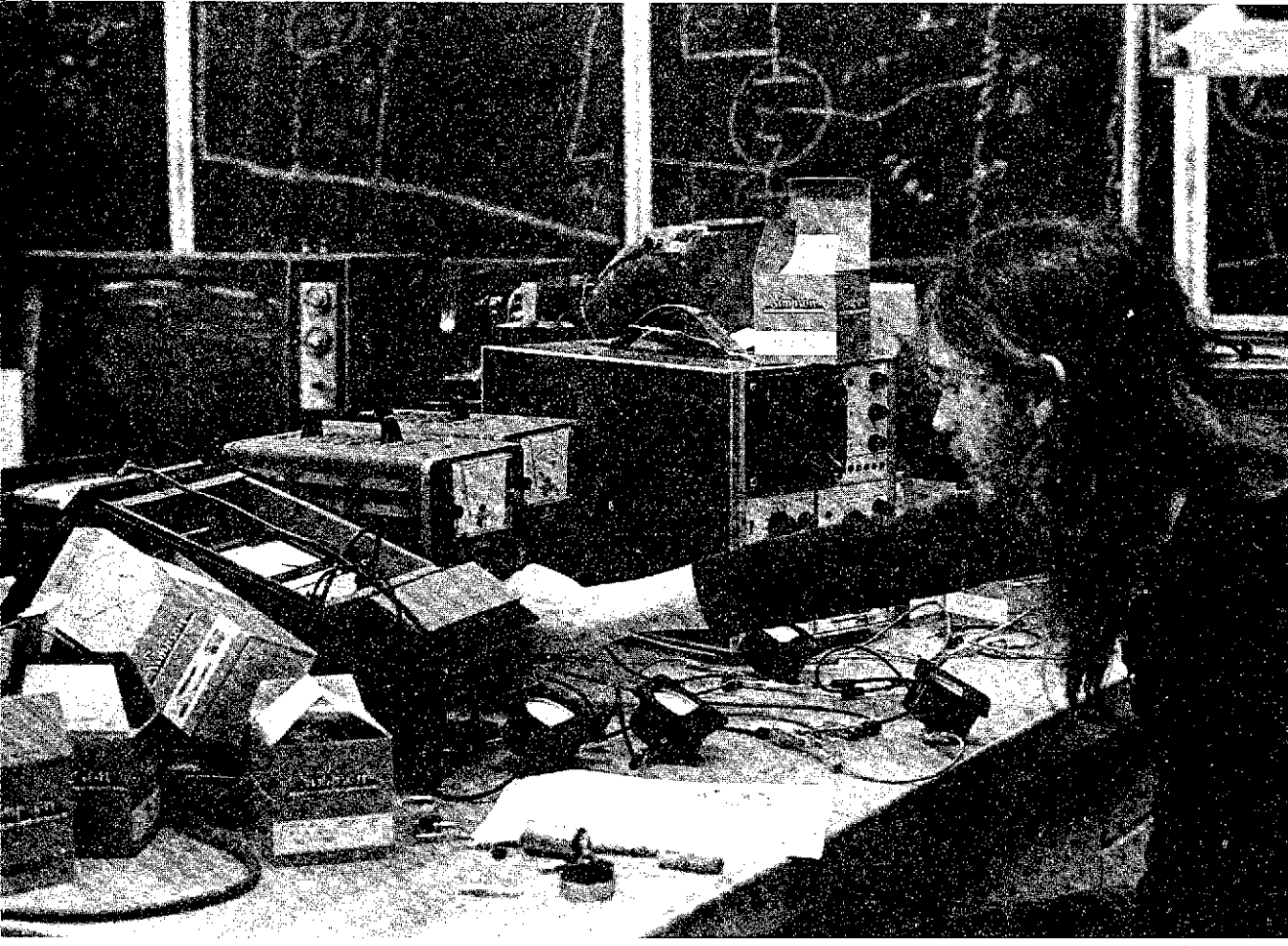


# a special faculty

*Members of the faculty and staff demonstrate their commitment to outstanding teaching and counseling through an active interest in the students.*

*Careful selection of instructors has led to an educational environment benefiting from a blend of formal instruction, skill expertise and "in-the-field" experience.*

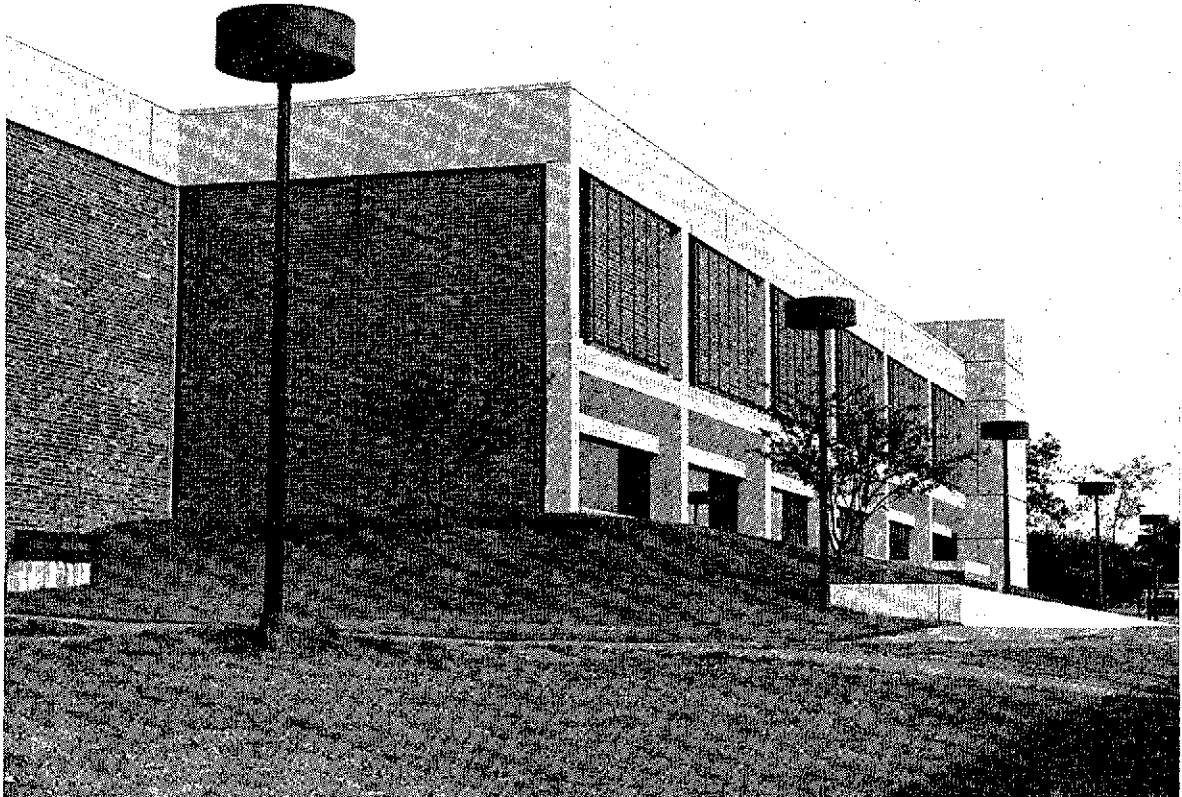
*Staff members insure that students receive ample qualified assistance, understanding and information related to their specific educational and occupational needs.*



# modern facilities

*The Community College campus, located near the population center of Washtenaw County, was opened in 1969 following the completion of the Technical and Industrial and later, Exact Sciences Buildings. Twenty-five temporary classroom buildings were added in 1970 and the Learning Resource Center, that will house classroom, laboratory and administrative facilities, is scheduled to be completed in 1976.*

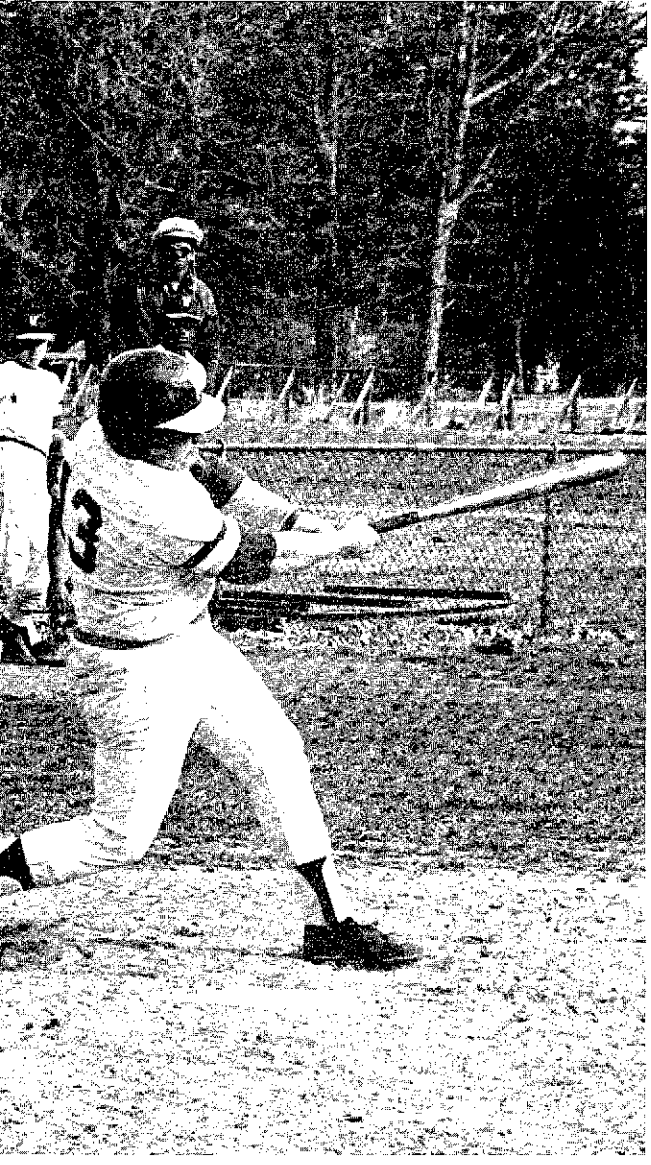
*The continual acquisition of equipment insures that students have access to the most recent educational aids and enter occupations with a knowledge of the latest equipment used on the job.*



# student life

*While enrolled at W.C.C., students receive dedicated service through a staff that assists with counseling, student initiated activities, financial aids, job placement, admissions, registration and emergency first-aid treatment.*

*Specialized assistance is available to veterans and senior citizens, and the college operates a cooperative day care facility to open up educational opportunities for people with family responsibilities.*



# WCC:

# founded to serve the community

## a dynamic decade

Washtenaw Community College was created in 1965 when the citizens of Washtenaw County followed the recommendations of a special study group and voted financial support for its establishment. A Board of Trustees was elected and a nation-wide search for administrators and faculty was initiated while a study to look for a permanent campus was begun.

**The Board decided to open the college and begin instruction in September 1966 and a 100-day push to prepare temporary facilities in the Willow Village area of Ypsilanti Township began.** The first students were enrolled on September 12, 1966, and were joined by 1200 others who signed up for some 30 different occupational programs and comprehensive transfer courses.

Classes opened in Willow Run Village in an elementary school, a wooden structure, constructed in the early years of World War II; a fire station that once protected the frame barracks of assembly-line workers who were employed at the Willow Run B-24 bomber plant; and a bowling alley which had originally been used by defense plant workers. Students in automotive programs took courses in a one-time dairy distribution plant, while those in para-medical training were taught in the basement of a church in downtown Ann Arbor.

**The completion of the Technical and Industrial and Exact Sciences Buildings in 1969 marked the opening of the permanent campus between Clark Road and Huron River Drive, near Ann Arbor.** A growing student population made the addition of 25 temporary classroom buildings necessary in 1970 and the new Learning Materials Center opened in 1976.

The Automotive Center, 5115 Carpenter Road, was completely remodeled and modernized in 1975.

An off campus center was established in 1975 at 214 North Huron, Ypsilanti, for extension classes, workshops, seminars and counseling.

Enrollment has steadily increased and in the Winter term of 1976, included more than 6,800 students who were enrolled in more than 80 occupational programs, general studies courses and transfer classes.

Courses are offered in cooperation with several school districts in Washtenaw County as well as correctional institutions resulting in classes being taught at 19 off campus locations.

## opportunities for all

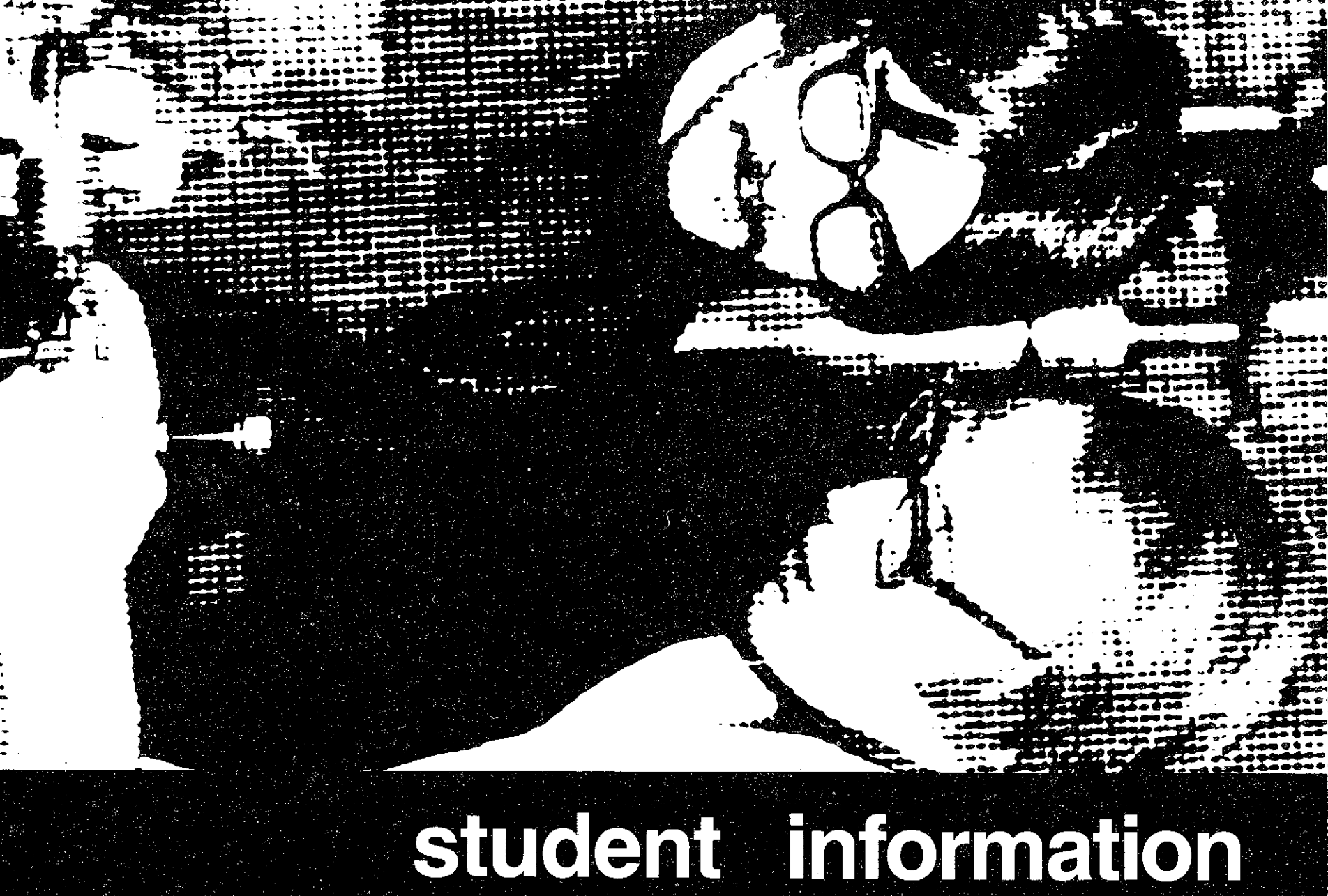
Objectives of Washtenaw Community College are focused on providing educational opportunities to people of all ages and backgrounds.

Intentions expressed by the Board of Trustees and supported by faculty and staff members, emphasize examining what a student is ready to do rather than what he or she has done, and to provide students with the opportunity to pursue any course of instruction that they have the aptitude and ability to undertake.

**The College is dedicated to providing counseling for students of all backgrounds and abilities, in order to help them select courses that are appropriate for their capabilities and ambitions.**

To reach these objectives, W.C.C. has developed and is expanding one-and two-year vocational, technical and semi-professional education programs designed to prepare individuals for employment. The College has a two-year general education program aimed at the social, cultural and personal development of individuals desiring to continue their education, while also providing general educational and pre-professional programs as preparation for transfer to other colleges and universities.

The creation of a mobile counseling facility and the opening of a counseling and classroom facility in downtown Ypsilanti, are indicative of W.C.C.'s efforts to provide assistance to area residents.



# student information

# admissions eligibility and procedure

## admissions

A student may apply for admission to one of the following periods:

Fall Semester
Winter Semester
Spring Session
Summer Session

## eligibility for admission

A student who has completed high school is eligible for admission.

A student who is not a high school graduate, but is 18 years of age or older, is eligible when:

a. he or she submits an equivalency diploma, or
b. he or she can profit from instructional programs for which they have the proper background, experience, and capability.

## admission procedure

1. The student must fill out the Application for Admission form supplied by the Registrar's Office.
2. A non-refundable application fee of $10 is required of all students who wish to enroll. A check or money order for this amount made payable to Washtenaw Community College must accompany the application.
3. The students must request their high school to send a transcript of their record to the Registrar's Office.
4. Students intending to use courses completed at another college toward earning a Certificate of Achievement or an Associate Degree, must request a complete transcript of their record to date. If presently enrolled, the student should request that an additional official transcript be forwarded immediately upon completion of the present semester's work. Transcripts must be sent from each college directly to the Registrar's Office.

Students will be notified of their admission status when the above procedure has been completed.

## 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.

## counseling

The College Counseling Services are available to all students admitted to the College. The new student must arrange an appointment with the Counseling Office to plan his career objectives prior to enrolling for classes.

## registration

Prior to the beginning of each semester, each student will receive registration information and a scheduled period of registration. Full tuition fees must be paid at registration.

No person is allowed to attend a class unless officially enrolled on a credit or non-credit basis with the appropriate fees paid.

## veterans eligibility

Washtenaw Community College is approved for training allowance for enrolled veterans as follows:

| | |
|---|---|
| Full Time | 12 or more credits |
| ¾ Time | 9 through 11 credits |
| ½ Time | 6 through 8 credits |
| Less than ½ Time | Less than 6 credits |

Students who are eligible for veterans' benefits should clear their eligibility for training with the Veterans' Representative in the Registrar's Office.

# tuition, fees, and residency policy

## tuition*

In-District Resident:
$14.00 per credit hour

Michigan, Out-of-District Resident:
$27.00 per credit hour

Out-of-State Resident:
$38.00 per credit hour

Courses, varying in length from several clock hours up to a semester (fifteen weeks), will be offered for part-time, adult students. Tuition for these courses will be determined by the subject content and the length of the course.

## fees*

Application and records fee.....$10

A non-refundable fee of $10.00 is assessed one time for *all* students applying for admission to the College. This fee is collected at the time of application and must be paid before the student can register for classes.

Late registration fee.....$ 5

In some cases students may be required to purchase certain individual supplies and materials.

## refunds

Refund of seventy-five percent (75%) of tuition will be made to a student who withdraws from the College during the first ten (10) days of classes. A fifty percent (50%) refund will be made for students withdrawing after the first ten (10) days of classes but before the end of the fourth (4th) week of classes. No tuition refund will be made after the fourth (4th) week of classes.

If in the case of extreme hardship a student must withdraw after the fourth week of classes and wishes to be considered for a refund, he must petition the Registrar, in writing, stating the reasons why such a refund should be granted.

*All tuition and fees are subject to change by the Board of Trustees.

## residency policy

Tuition costs at the College are based on a sharing by the student, the taxpayer of the district, and the state. District taxes supplement student tuition and state aid for *in-district* students; therefore, the tuition charged the student who lives outside the College district but within the state is greater than the tuition charged the in-district student. Students who reside out-of-state are charged the highest tuition.

## in-district residency

A student who is a resident of the Washtenaw Community College District, as determined by the College.

## veteran students

**In compliance with the Department of Veteran Benefits, Circular 20-75-84, the College has developed the following "Standards of Progress". Each Veteran student must meet these standards to be eligible for certification for Veterans Administration Educational Benefits.**

1. **A Veteran student is required to make satisfactory progress towards his/her academic goal. To continue certification for benefits, a minimum GPA, according to the followign schedule, must be maintained:**

| | |
|---|---|
| **24 - 35 credits earned** | **1.70 GPA** |
| **36 - 47 credits earned** | **1.80 GPA** |
| **48 - 59 credits earned** | **1.90 GPA** |
| **60 or more credits earned** | **2.00 GPA** |

**A 2.00 GPA is required for graduation.**

**A Veteran student not meeting the requirements for satisfactory progress, will be placed on a one semester "Probation" status.**

2. **A Veteran student, receiving a "N" (non-attendance) on the final grade report, will be reported to the Veterans Administration as having registered for the class but did not attend.**
3. **A Veteran student, receiving W, N, I, or F grades for more than one-half the credit hours enrolled, in one semester, will be placed on "Probation".**

## out-of-district resident

A student who is not a resident of the Washtenaw Community College District, but is a resident of the State of Michigan.

A student who is a resident of, or whose parents reside in another state is classified as an out-of-state student for tuition purposes.

A student shall not be entitled to a refund of any portion of his tuition or fees by virtue of any change of residency which may have occurred after the date of his registration.

# general regulations

Students entering college for the first time might need to be reminded of the added responsibilities of attending college. It should be recognized that the College must have a minimum number of rules if its objectives are to be accomplished. Regulations are based upon respect for the rights of others and observance of civil and moral laws. All who enroll in Washtenaw Community College must realize that success rests upon personal efforts, attitudes, honor, integrity, and common sense; that attendance at this institution is a privilege.

## credit hours

All courses are given on a semester basis, and credits earned are semester credits.

Each course usually carries a specific number of credits based upon the number of hours each week for lecture and laboratory plus the estimated time which an average student spends in outside preparation.

Generally, one credit hour is earned by attending a lecture class for a fifty-five minute period, once a week, for a fifteen-week session. In a laboratory class, one credit hour is granted for, from two to four, fifty-minute periods per week in a laboratory.

## credit load

The normal credit load for a full-time student is fifteen credit hours. Special permission must be obtained from the Dean of Student Services to register for more than eighteen credit hours. A full-time course load for the spring or summer session is six to eight credit hours and special permission must be obtained from the Dean of Student Services to register for more than eight credit hours.

**Students must carry at least twelve credits a semester in order to:**

1. **be qualified to hold student office**
2. **qualify for the Dean's Honor List for the semester**

Most scholarships, awards, and financial aids are limited to students carrying at least twelve credits a semester. Students should determine the specific requirements from the appropriate agency.

It is recommended that employed students consult with a counselor about their course load.

## classification of students

**Full-time:** A student who carries twelve or more credit hours.

**Part-time:** A student who carries less than twelve credit hours

**First-year (Freshman):** A student who has completed fewer than twenty-eight credit hours.

**Second-year (Sophomore):** A student who has completed twenty-eight 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.

**Special:** A student who is enrolled for courses but is not pursuing a degree or certificate of achievement.

## grading

A system of evaluation and a means of letting the student know the degree of progress he is making can be achieved in numerous ways. One means is by testing, assigning of grades, completion of credit hours, and accumulation of grade points.

| 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 | |
| I—incomplete — credit withheld | |
| W—withdrawal | |
| DF—deferred | |
| N—non-attendance | |
| V—visitor | |

**Satisfactory 'S' or Unsatisfactory 'U':** in courses numbered below 040 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.

**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'.

**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.

**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.

# repeating a course

A student who received a grade of 'D' or below may repeat that course on a credit basis.

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.

# student evaluation (examinations)

Washtenaw Community College believes that scheduled evaluations are a very important part of the instructional program. As such, the student should be prepared not only for mid-semester and 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.

# grade-point average

Honor points or grade points measure the achievement of the student for the number of credit hours he has attempted.

A student who enrolls in college for the first time usually is not familiar with the terms grade points and grade-point average. 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.

Grades are issued at the end of each semester, and each spring and summer session. Final grades are mailed to the home address of the student.

| Courses | Credit Hours Attempted | Final Grade | Grade Points |
|---|---|---|---|
| English | 3 | B | 3 grade points (3x3)= 9 |
| History | 3 | F | 0 grade points (0x3)= 0 |
| Mathematics | 3 | C | 2 grade points (2x3)= 6 |
| Electronics | 2 | A | 4 grade points (4x2)= 8 |
| Physics | 5 | C | 2 grade points (2x5)=10 |
| Physical Education | 1 | D | 1 grade point (1x1)= 1 |
| | 17 | | 34 |

# attendance

It is consistent with the College philosophy that regular class attendance is necessary if a student is to receive maximum benefits from his work. Students are expected to attend all sessions of the classes for which they are registered. The individual instructor may determine that the quality of the student's work has been adversely affected by absence or tardiness.

1. Students should explain the reason for absence to their instructors.
2. It is the responsibility of the student to make up work missed because of any absence.
3. Students are required to be present at examination in order to receive credit in a course.

# credit for military

**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 the VA representative in the Registrar's Office.

# change of enrollment

Students are expected to complete the courses in which they are registered. If a change is necessary, it may be made only with the appropriate approvals as explained below.

**To Add a Course:** Students should have their added course approved by their advisor or counselor. 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 first five (5) days of classes. On the sixth (6th) through (8th) day, the signature of the appropriate instructor 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 may drop a course prior to the final examination period and the letter "W" will be assigned. All Drops must be authorized by a counselor or advisor. 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 fifth (5th) day of classes.

**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, and Residency Policy section of this catalog.

# 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 effective date of the withdrawal under the Change of Enrollment, To Drop a Course, 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 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.

# 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 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 below 040 do not count toward graduation.
2. Complete three credit hours of English.
3. Complete three credit hours of political science. (State of Michigan requirement)
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 Registrars 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.

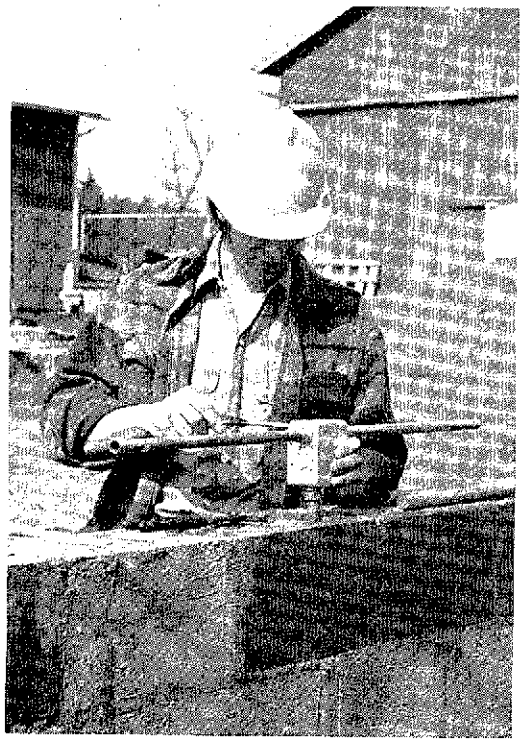
To be eligible for the CERTIFICATE OF ACHIEVEMENT a student must:

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 below 040 do not count toward graduation.
2. Complete three credit hours in speech or 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 Registrars Office.

Commencement ceremonies for all Washtenaw Community College graduates are held in 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 required 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.



# scholastic honors

Recognition is given to all students obtaining high scholastic achievement while attending the College.

**Dean's Honor List:** The Dean's Honor List honors all full-time students in the College who earn a 3.50 or better average for a semester. The list is prepared each semester and posted in prominent places on the campus.

**Graduation Honors:** High scholastic achievement is recognized at graduation for students earning a 3.50 or better average for all work completed prior to the semester of graduation. Graduation with honors is indicated on the student's permanent record, the commencement program, and lists released to the press.

Students earning a 3.80 or better are designated as "High Honors".

# seminars and workshops

The College offers opportunities for students to enroll in short courses, conferences, workshops, and seminars. These vary in length from one or two meetings of short duration to units necessitating several clock hours accumulated over a period of weeks. These specialized courses will be offered by various divisions to meet the explicit needs of business and industrial firms in Washtenaw County.

# request for transcript

A student requesting that a transcript of his grades be sent to an educational institution or to a prospective employer must complete the appropriate form in the Registrar's Office. There is no charge for the first copy; there is, however, a service charge of $1.00 for each additional copy.

A hold may be applied to the release of a transcript for a student who has an overdue indebtedness or other obligation to the College.

# dismissal

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

# student services

The Student Services staff assists with counseling student-initiated activities, financial aids, job placement, admissions, registration, and emergency first-aid services, veteran's affairs, day care services, and athletics.

## counseling

The entire faculty of Washtenaw Community College has a major commitment to help each individual student pursue a course of study planned to fulfill their 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.

In addition to the assistance provided by the faculty, full-time counselors are available at the Counseling Office. Each student entering the College is assigned to a counselor who will discuss career goals and plan an initial program of classes at the College.

Counselors aid students in clarifying their vocational objectives. Interest inventories can be administered and reference made to the extensive occupational information which is available to students. In order to aid the student in planning for his future education, an extensive collection of college catalogs is maintained in the Counseling Office.

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.

All full-time students are required to take the American College Test (ACT) after they are admitted to complete their credentials. Results of these tests are interpreted to students and used by counselors in helping students select appropriate classes. The test is not required for admission to the College.

This division offers seminars of interest to students who desire to examine their personal growth and development. The main thrust of each offering will be to deal with ways in which to maximize the student's college experiences as well as individual life styles.

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.

## student programs

The college offers students an opportunity to carry forward their existing interests, and to explore new ones. The student's college life is enhanced by a viable student program which allows him or her to integrate and utilize classroom learning.

Participation in student programming offers students the opportunity to enjoy a wide range of physical, intellectual, and social interests.

## alumni association

Because the college doesn't exist in a vacuum, its relations with the community become a potent factor. The entire concept of the community college implies involvement with the community in which it exists.

The college alumni are the single largest group in the community with direct ties to the college. These ties are fostered and maintained in the form of an active alumni organization.

Further, the college seeks to provide benefits to the community through direct service by faculty and students and by making available the use of college facilities where feasible.

## student government

All enrolled students are eligible for membership. Its purposes are:

1. to provide for dialogue among students in order to clarify and implement their needs and interests at the college;
2. to resolve grievances and to allow for student input into the governance of the college;
3. to promote fellowship among students and to encourage leisure-time activities.

## student organizations

Responding to student interest, groups of students are organizing activity clubs with the assistance of the Office of Student Services. Such groups include the Ski Club, Bowling Club, Future Secretaries Club, Chess Club, Consumer Interests, and Ecology Concerns Org. (ECO).

Participation in the organizations enables students to discover friends and identify activities compatible with their interests and aptitudes. Service clubs, hobby clubs, professional groups, and organizations related to occupational preparation, under the sponsorship of faculty members, are available to all students.

# job placement

Assistance is provided to students completing occupational programs to secure full-time employment appropriate to their training at the College. Contact with business and industry in the area is maintained by instructors in Occupational Studies as well as the Job Placement Office, which is located on the second level of the Learning Materials Center.

The Job Placement Office also maintains a list of part-time and seasonal work which is available to students. Students seeking part-time employment while attending school are encouraged to seek help in the Placement Office.

# athletics

The College offers the student opportunity to compete in a variety of intercollegiate sports. Cross country, basketball, track, baseball, and golf are currently offered. Other sports will be added in the future.

Washtenaw Community College is a member of the Eastern Collegiate Conference, Michigan Community College Athletic Association, and Region XII of the National Junior College Athletic Association. Several College teams have won conference titles and individuals have won conference state recognition. Teams and individuals qualifying for national tournaments have been accorded this privilege.

Intramural and extramural sports activities are organized in response to student interest and facility availability.

# student publications

THE VOICE is the official College newspaper. It is published by the students in conjunction with journalism instruction. Students interested in the newspaper may participate in the writing and editing of THE VOICE by contacting the faculty sponsor.

# 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 Student Health Service.

# health service

The Student Health Service provides many services for the student — pregnancy testing and counseling, menu planning for weight reduction, first-aid, referrals, and general health counseling.

# housing

The College is primarily an institution for commuting students; therefore, no dormitory facilities are provided. Students who require accommodations should contact the Office of Student Services.

## bookstore

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.

## student center

A lounging area equipped with vending machines for snacks, light lunches, and beverages is provided for students. Additionally, grill service is available during the day.

# student financial services

The Student Financial Services Office at Washtenaw Community College exists to help students with financial difficulties they may encounter while attending W.C.C. The main function of Student Financial Services is that of providing financial assistance to students who are in need of additional funds to attend college. W.C.C. 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 making available free money management publications and financial counseling.

Students are invited to stop in to see the staff on the second level of the Learning Materials Center or to call at 313-971-6300, extension 211 or 212, whenever they have any questions relating to budgeting, meeting college costs or applying for 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 Student Financial Services Office by the following dates, in order of priority: Fall Semester: July 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 W.C.C. 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, listed briefly elsewhere in this brochure, which include adequate minimum amounts for costs of tuition, books and supplies, transportation, room and board, and personal expenses.

The expected family contribution is calculated by a systemized method of needs analysis used by College Scholarship Service and based on the following assumptions:

1. The student's family bears a primary responsibility for the student's education. Thus, if a student has been dependent in any way upon his parents or other person(s) during two years prior to the beginning of the academic year, the parents (or other person) are expected to make a reasonable contribution toward the student's college expenses. The expected contribution from parents is based on supplemental income available to the family, after allowing for essential living expenses and a modest retirement allowance for the parents.
2. The student bears the major responsibility for his/her education. Thus, all resources available to him/her, including earnings, nontaxable benefits, savings and other assets, are considered in determining a reasonable student's contribution toward educational costs.
3. Basic Educational Opportunity Grant Application (for students who did not enroll in a post-secondary educational institution prior to April 1, 1973), a separate application which must be processed by American College Testing Service. Results are sent directly to the student, who must then bring them to W.C.C. to receive the award.
4. Parental Affidavit of Non-Support—required from all students who are claiming self-supporting status.
5. Financial Aid Transcript—for students transferring from other institutions.
6. Additional documentation of student resources or status or family resources may be required for evaluation of the student's aid application, such as IRS 1040's.

Upon receipt of all applications, and additional necessary information, the student's application will be evaluated and the student will receive written notification of the action taken.

# financial aid programs

A student must meet the following elegibility requirements to receive financial aid at W.C.C.

1. Must carry at least six (6) credit hours per semester.
2. Must be U.S. citizens or permanent residents.
3. Can receive aid for no more than six semesters at W.C.C.
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.

# basic educational opportunity grant program:

This program provides direct student grants of up to $1,400 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. Students are eligible to apply for a BEOG if they did not attend a post-secondary school before April 1, 1973 and if they expect to carry at least six credit hours per semester. The student must complete an "Application for Determination of Basic Grant Eligibility" which is submitted to the American College Testing Service for processing, and usually takes three or four weeks. The student will receive from ACT a Student Eligibility Report (SER) which he/she must take to the college of their choice to determine the specific amount for which the student is eligible for.

Applicants wishing consideration for the academic year must submit the application prior to March 1 of that academic year. Students can receive the BEOG for a maximum of four academic years.

# 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 grants made available by the Board of Trustees of Washtenaw Community College to assist students with financial need who may not be eligible for other types of financial assistance or who do not receive enough assistance from other sources to meet their entire financial need.

# scholarships

Most academically-based scholarships at Washtenaw Community College come in the form of donations from groups outside the College who wish to help meet one or more students' educational costs. Only a few scholarships are available each year which are awarded through the college. Students are chosen for these scholarships on the basis of academic achievement and financial need as well as particular requests made by the donating group.

# national direct student loan program

The NDSL program provides loan funds of up to $1500 per academic year and up to $5000 for four years of study.

Repayment at 3% interest normally begins nine months after a student ceases to be at least a half-time student at Washtenaw Community College, and may be extended over a ten-year period. Repayment deferment options are available if the student enrolls in another college or university or enters the Peace Corps, VISTA, or Military Service. In certain situations, a portion of the loan may be cancelled for full-time teaching in a formally defined "disadvantaged" school setting, full-time teaching of the handicapped, full-time educational position in an approved preschool program, and full-time military service in an active combat zone.

Students must complete the application for financial aid and must demonstrate need to be eligible for the NDSL program.

# college work-study program (CWS)

The College Work-study Program provides jobs for students with financial need for up to twenty hours a week on the W.C.C. 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.

# student expenses

Students are expected to live at a modest standard while attending college. Student budgets are determined yearly in an attempt to define realistic figures relating to student expenses in the Washtenaw County area. Following are some budget models to help students compare their expenses with those allotted for them by Student Financial Services.

Tuition is $14.00 per credit hour for Washtenaw County residents, $27.00 per credit hour for out-of-county residents, and $38 per credit hour for out-of-state students. Books and supplies are estimated at $125 for two semesters.

**DEPENDENT STUDENT BUDGET:**

| | |
|---|---|
| Room & Board | $840 |
| Personal | 360 |
| Transportation | 360 |
| | 1560 |

**SELF-SUPPORTING SINGLE STUDENT BUDGET:**

| | |
|---|---|
| Room & Utilities | $1,000 |
| Food | 560 |
| Medical | 120 |
| Transportation | 360 |
| Personal | 300 |
| | $2,340 |

**MARRIED, OR SINGLE STUDENT WITH CHILD BUDGET:**

| | |
|---|---|
| Room & Utilities | $1680 |
| Food | 960 |
| Medical | 240 |
| Transportation | 560 |
| Personal | 560 |
| | $4,000 |

**SEP/DIV/WID WITH CHILDREN:**

| | |
|---|---|
| Room and Utilities | $1,680 |
| Food | 800 |
| Medical | 240 |
| Transportation | 480 |
| Personal | 560 |
| | $3,760 |

# additional programs

**Guaranteed Student Loan Program (MHEAA Loan):** 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 W.C.C. 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 W.C.C. are notified if the loan is approved. Undergraduates may borrow a maximum of $1500 if full-time and $750 if part-time.

The maximum interest rate charged to the student is 7% simple interest which begins the day the loan proceeds are disbursed. If the borrower has an adjusted family income under $15,000, he is eligible for federal interest benefits while in school or in an eligible deferment category. Students whose family-adjusted income exceeds $15,000 must pay their own interest unless a financial need-analysis by the W.C.C. aid officer shows need for the loan. During the repayment period, all students pay the interest charge.

In 1976-77 a new Direct State Guaranteed Student Loan Program will begin. Requirements are similar to those of the loan program available through banks, but the student applies directly to the state. More information is available in Student Financial Services.

# w.c.c. deferred tuition loan

Deferred tuition loans are available to spread out tuition for students over the first two months of the semester. A down payment is required and the balance of the loan is paid prior to the end of the second month of classes. Students must be able to demonstrate the ability to pay the tuition. Applications are available during the registration period in Student Financial Services.

# 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.

# w.c.c. student emergency loan fund

A small revolving loan fund is available to W.C.C. students for emergency situations. Students can receive up to $50, depending on the availability of funds and their stated need. Applications are available thru Student Financial Services.

# law enforcement education program

Grants for tuition are available to full-time law enforcement and corrections officers to attend W.C.C. Students must make a commitment to the field for a period of two years after receiving the grant. Applications are available in Student Financial Services.

# special opportunities

Washtenaw Community College operates a number of special programs aimed at making educational opportunities available to all segments of the area population.

These include:

## community outreach

Washtenaw Community College has developed a special instructional program to serve the educational and training needs of institutionalized people in the Michigan State Correctional System.

Known as the Community Outreach Project, it allows residents of the institutions to work toward their short-, intermediate-, and long-range educational goals.

Community Outreach Project is aimed at providing institutionalized people with an opportunity to enhance their knowledge and skills giving them greater vocational employability and improved chances of adapting to society.

Classes offered include oral and written communicative skills, psychology, biology, ecology, food service occupations, automotive services and other occupational career programs as well as personal and consumer finance insights.

In addition, learning opportunities are offered in the areas of political science, art and music to contribute to the students' political awareness and cultural enhancement.

Timing of the courses and programs are adapted to the students' residency periods to allow regular attendance and completion.

## golden eagle club

Senior citizens have special opportunity at W.C.C. as members of the Golden Eagle Club.

Any senior citizen, in the Washtenaw Community College District, who is over 55 and retired or over 60, retired or not, may take any course at the College. Other courses, designed for senior citizens, are offered, off-campus, at places convenient for senior students.

Any senior citizen, who enrolls at the College, is also entitled to make use of all the College facilities and to attend College events, such as art exhibits, special lectures and performances.

For any senior citizen, who is in the district, everything at the College is available, free of charge.

In addition, if an enrollment of at least 25 people can be guaranteed, the College will offer courses which are not part of its regularly scheduled offerings. This includes craft or activity classes.

Membership in the Golden Eagle Club is maintained by registering in a class offered by the College. Senior citizens can enroll for a class by following regular Registration procedures without experiencing any additional costs.

For additional information on special courses, call the College: 971-6300, extension 209.

## learning resource center

The Learning Resource Center is an integral segment of the total WCC learning environment which offers students and faculty the opportunity to use a book and media collection of nearly 40,000 books; 10,000 pamphlets and over 400 magazines as well as sound filmstrips, audio-tapes, video-tapes, video-cassettes, 16mm films, microfilms and slides.

The equipment necessary for use of resources such as tapes, records, record players and projectors are also available to student and faculty.

Faculty and LRC staff select the best of current and retrospective materials to respond to students, curriculum needs, interests, to keep information up to date and to present varying viewpoints on subjects and issues.

If materials are not available in the LRC, the librarian will arrange, on request, an inter-library load.

## children's center

Washtenaw Community College attempts to make educational opportunities more available to parents by operating the W.C.C. Children's Center.

Composed of five portable classrooms, located on the northwest section of the campus, the center includes one classroom for toddlers, age 18 months to 2-½ years; one for 2-½ - 3-½ year olds; one for 3-½ - 5 year olds, part time; and one classroom for children 3 year through 6 years of age, full time.

Objectives of the center are to: (1) provide day care services allowing parents to attend Washtenaw Community College, (2) provide environmental educational opportunities for well-rounded growth and development of the children at the center and (3) provide educational opportunities for students in the Child Care Worker program or related fields on campus.

The Children's Center is open Monday through Friday, 7:30 a.m. to 5:30 p.m. and accepts children 18 months through 5 years of age. Student parents may enroll their children at WCC Children's Center while they are attending classes and for on-campus study time. Each student parent may enroll his or her child or children for at least two study hours per week and up to a maximum of 50% of the credit hours they are enrolled for.

**Example: a student parent signed up for eight credit hours may enroll his or her child or children for 8 hours plus 4 hours of study time, a total of 12 hours per week of center use per child.**

To enroll your child at the Center:

1) Go to the Center, work out a tentative schedule, pick up information packet.
2) Register for your classes.
3) Go to Center with WCC class registration form and complete enrollment of child at Center.

**Enrollment for the Center closes when quotas are reached.** These quotas are determined by State Standards requiring specific space, toilet, equipment, and staff ratios.

The first two weeks of WCC registration will be reserved for registration of children currently enrolled at the Center. The third week of registration will be open to all on a first come — first served basis.

Information about the W.C.C. Children's Center is available at 971-6300, ext. 283.

# student programs

# general studies program

One of the objectives of Washtenaw Community College is to develop "general educational and pre-professional programs, both one- and two-year, transferrable to other colleges and universities" and another is to develop "a two-year general education program for the social, cultural, and personal development of individuals desiring to continue their education beyond high school." These objectives, together with the aim of better preparing an individual to work at their desired occupation in conjunction with vocational education, help form the basis of the General Studies programs at Washtenaw Community College.

The General Studies programs are specifically designed to prepare students for the responsibilities as citizens in a free society; to prepare them to communicate on the job; to assist them in social, cultural, and personal development. Also offered as part of the General Studies curriculum are college preparatory and remedial courses for those who need to make up deficiencies for college-level work.

These courses and programs are carefully designed to meet the requirements of four-year universities and colleges to which the students of Washtenaw Community College transfer.

Courses and programs in General Studies cover the following areas:

Communication Arts

Exact Sciences

Social Sciences

The General Studies offerings are designed to prepare the Washtenaw Community College students to assume their role as an individual, member of a family, and as a citizen. They contribute to the choice of occupation and success therein. The intent is to assist the student to feel intellectually and psychologically at home in a world which daily makes new demands; social, economic, psychological, spiritual, and intellectual. The General Studies courses and programs are so constructed to help a student meet, and adjust to, the problems of everyday living, to cope with these problems, and to understand them. It is the basic intent of General Studies to develop approaches to help the more average student.

## 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 transfer of credit earned 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 who 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 transferrable (i.e., developmental courses, and some technical or occupational courses) are not included in the basic requirements.

## value of agreement

Graduates of Washtenaw who complete the basic two-year requirements of this agreement will not be required to pursue further basic courses in the four-year institutions to which they transfer.

## category requirements

| Basic Two-Year Requirements | Hours |
|---|---|
| English Composition | 6 |
| Social Science | 8 |
| Natural Science | 8 |
| Humanities | 8 |

Note: In each area (except English) courses will be taken in more than one academic discipline.

At least one of the Natural Science courses will be a laboratory course. Humanities (at Washtenaw) include courses in Art, Foreign Language, Humanities, Literature, Music, and Philosophy.

## engineering transfer program

An engineering transfer program acceptable to each of the engineering colleges in Michigan has been prepared by the Engineering College — Community College Liaison Committee. A brochure describing this transfer agreement is available from the Counseling Office or from the Office of the Dean of any of the engineering colleges.

# division of communication arts

The Communication Arts Division offers a variety of courses in the visual arts and music; English studies in writing, literature, and language; modern language courses in French and Spanish; journalism and mass media; reading improvement and study skills, and communication courses in speech.

Studies in this division are based on the principle that good communications is basic and that each individual must have the ability to read competently; to listen, observe, and evaluate; and then to be able to effectively transmit ideas, impressions, and attitudes to others.

Specific instruction in Communication Arts areas is designed to provide a wide range of services to assist students to:

- Improve basic skills in reading, writing, and speaking.
- Develop communicative support skills required in studies leading to specific career occupations.
- Complete the first two years of college studies acceptable for transfer to four-year institutions.
- Pursue studies of general enrichment and of general community interest.
- Study in the basic areas of the liberal arts and humanites.

Practical assistance is available to students, on the basis of need and interest, in the Writing Workshop (a writing skills laboratory), the Reading Laboratory, and in the Language Laboratory (a sound lab for foreign language and speech students).

Outlets for development and publication of students' creative writing and reporting skills are available in opportunities to work on student publications — THE VOICE (newspaper), WASHTENAW (news magazine), and ANN ARBOR REVIEW (arts magazine).

# division of exact sciences

In this division the College provides studies which supply a basic knowledge of the world, the environment, and the means used to understand and alter man's environment. The Exact Sciences include biology, chemistry, geology, mathematics, and physics.

Courses in the Exact Sciences enable man to grasp the significance of modern life with its technological foundation. A study of the science of man and machines promotes an appreciation of the limitations and potential of the technology on which people depend for food, clothing, entertainment, transportation, housing, and life support.

Biology deals with living things, plants, animals, and human beings. Physics and chemistry are more concerned with the why of drugs, stars, fire, rockets, electricity, and nuclear energy. Laboratories where students actually use the research equipment are important to the teaching of all science, and are readily available at Washtenaw Community College.

Mathematics is essential to everyone. Washtenaw offers a unique service through the Mathematics Laboratory; there it is possible to start where you are and learn at an individual pace with the help of a specially trained instructor acting as a tutor.

# division of social sciences

The Social Sciences curriculum is set up specifically:

1. To meet the requirements of Michigan law with respect to government and political sciences courses.
2. To meet the requirements of most four-year institutions to which the students of the College transfer.
3. To make life more meaningful and rewarding in general for those enrolled in social science courses.

It is the function of the Social Sciences division to enable people to interact meaningfully with their fellows and thus make life more rewarding. The Social Sciences curriculum is constructed in such fashion as to give the student vocational adjustment, insights into oneself, society, one's fellowmen, family relationships and responsibilities, and obligations as well as rights as a citizen. Training the student for responsible citizenship is one of the most important objectives of the Social Sciences curriculum. Courses are arranged and set up in accord with the requirements of Michigan law. Students planning to transfer to four-year institutions will find the requirements of those schools met by the course offerings in history, psychology, humanities, economics, and political science.

The Social Science offerings are designed with these specific aims in mind:

1. To help the student develop a set of sound moral values.
2. To help in the role as citizen.
3. To teach one to think discriminately where problems and values are concerned.
4. To help one understand his cultural heritage so he or she may gain a perspective of their time and place in the world.
5. To help understand the biological and physical environment so that we may better adjust to it and work to improve it.
6. To assist in personal and social adjustment, in the development of satisfactory home and family life.
7. To help achieve a good vocational adjustment.

# black studies division

Black Studies Division is an integral part of the college because students, black and white as well as members of the community wanted a meaningful educational experience available for the total community. The mere existence of Black Studies is evidence for everyone that minority persons and minority views also have a right to be and to be expressed.

The Black Studies Division is interdisciplinary in its approach to curriculum content. Presently we offer courses in the areas of art, music, drama, and the social sciences. We are specifically concerned that a relevant educational experience be extended to blacks in America that will prepare them to live humanely

in an oppressive society. We are working diligently to change specific negative situations. To provide educational experiences relevant to special needs of blacks, we are concerned that this institution provide a learning experience that counters the distortions and miseducation which permeate educational systems.

The college does not offer a degree in Black Studies. Students who wish to obtain a degree in the field are encouraged to do so at the senior college level.

Black Studies courses are an intregal part of some of the occupational programs. We want to have relevant courses included in all of the programs offered at the college. It is recommended, however that every student who attends the college take at least one Black Studies course.

The overall goal of the Black Studies Division is to free the minds of people by exposing them to the truth of the Black experience. We are pledged to work with the Black community toward goals consistent with their needs and aspirations. The program is to be service-minded, constantly seeking solutions to the multiplicity of problems Black people are enduring. The division considers relevant community service, academic excellence, and future-oriented plans as serious responsibilities and a noble mission. It explores new dimensions and seeks unique solutions to concerns of the Black community; develops and evaluates innovative programs keyed to rapidly changing social, economic, and political conditions of our society.

# occupational programs

Washtenaw Community College offers a wide range of fully developed vocational, technical, and semi-professional career programs. The following listing encompasses programs designed to meet individual educational and training requirements for job-entry, upgrading, and other employment opportunities. Both one-and two-year programs are offered, as well as special certificate programs.

For details and course listings for a specific program or area of interest, the student should write or telephone the Registrar's Office requesting the program listing desired.

# business and industrial management occupations

## internship-externship programs

The Division of Business and Industrial Management offers cooperative occupational-experience programs to interested and qualified students. These programs are known as Internship-Externship Programs. They are designed to implement students' academic and occupational education with on-the-job business and/or industrial experience.

The Internship-Externship Programs involve the students in real-life occupational experiences specially programmed, through the cooperative effort of the participating firms and the College program coordinator, to meet the students' particular occupational needs.

Interns and externs may be placed in all kinds of business-industrial firms and/or educational and governmental establishments. Occupational experience is available through these organizations in the diverse areas of manufacturing, marketing, office systems and procedures, data processing, and many others.

Student time schedules for the Internship-Externship Programs may be flexible to meet the students' needs. Occupational-experience assignments may be arranged on a half-day basis, alternate daily work-study combination, or alternatively — a full semester of work and/or study, or a summer occupational-experience program.

## special programs and courses

In addition to its regularly scheduled occupational courses and programs, the Division of Business and Industrial Management has developed specialized short course and program offerings (seminars, work-

shop, series of sessions, etc.) which are available thru appropriate arrangement during the college year. These short-course offerings are designed to meet the particular needs of the business and industrial firms and their employees in the immediate service area of the College.

Among the short-course subject areas are the following:

Basic Personal Income Tax

Key-Punch Operations

Data Processing/Unit Record Operations

Basic Personal/Career Salesmanship

Office-Type Offset Duplicating Machinery Operations

Data Processing Fundamentals Seminar

Data Processing/Computer Operation and Programming

## ACCOUNTING TECHNICIAN

### Two-Year Program—Code 521

**Advisors — P. Kokkales, Mrs. J. Patt**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| G B 140 | Business Occupational Foundations | 3 |
| ACC 111 | Principles of Accounting | 3 |
| D P 111A | Data Processing/Computer Concepts* | 3 |
| D P 111B | Data Processing/Computer Functions | 3 |
| MTH 167 | Finite Mathematics or | |
| MTH 090 | Fundamentals of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| | | 18 |
| | SECOND TERM | |
| ACC 122 | Principles of Accounting | 3 |
| S O 130 | Business Machines | 3 |
| ENG 111 | English Composition or | |
| ENG 122 | English Composition | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| PLS 108 | Government and Society | 3 |
| | | 15 |
| | THIRD TERM | |
| ACC 213 | Intermediate Accounting | 3 |
| G B 111 | Business Law | 3 |
| E C 211 | Principles of Economics | 3 |
| G B 207 | Business Communication | 3 |
| MGT 230 | Office Management | 3 |
| | | 15 |
| | FOURTH TERM | |
| ACC 224 | Intermediate Accounting or | |
| ACC 225 | Principles of Cost Accounting | 3 |
| MGT 200 | Human Relations in Business & Industry | 3 |
| E C222 | Principles of Economics | 3 |
| FIN 220 | Principles of Finance | 3 |
| I E 200 | Internship-Externship or Business Elective** | 3 |
| | | 15 |

Total Credit Hours For Program—63

*Student may elect additional course in data-record operations.
**G B 122 Business Law.
**ACC 200 Personal Tax Accounting
**Other Electives (with) Program Adviser Consultation.

## DATA PROCESSING TECHNICIAN

### Two-Year Program—Code 531

**Advisor — R. Worting**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| G B 140 | Business Occupational Foundations | 3 |
| D P 111A | Data Processing/Computer Concepts | 3 |
| D P 111B | Data Processing/Computer Functions | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| | | 15 |
| | SECOND TERM | |
| D P 122A | Data Processing/Computer Flowcharting Techniques | 3 |
| D P 122B | Data Processing Programming/ RPG I & II | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| S O 130 | Business Machines | 3 |
| ENG 111 | English Composition or | |
| ENG 122 | English Composition or | |
| G B 207 | Business Communication | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | | 18 |
| | THIRD TERM | |
| D P 213A | Computer Programming/ Introductory COBOL | 3 |
| D P 213B | Computer Programming/ Intermediate COBOL | 3 |
| ACC 092 | Fundamentals of Accounting or | |
| ACC 122 | Principles of Accounting | 3 |
| G B 111 | Business Law | 3 |
| EC 211 | Principles of Economics | 3 |
| PLS 108 | Government and Society | 3 |
| | | 18 |
| | FOURTH TERM | |
| D P 213C | Computer Programming/ Advanced COBOL | 3 |
| D P 224A | Data Processing/Computer Design Concepts | 3 |
| MGT 230 | Office Management | 3 |
| MGT 200 | Human Relations in Business & Industry | 3 |
| EC 222 | Principles of Economics | 3 |
| I E 200 | Intership-Externship or Business Elective (Optional) | 3 |
| | | 18 |

Total Credit Hours For Program—66-69

## DATA RECORD OPERATOR
### One-Year Program—Code 532
**Advisor — R. Wotring**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| D P 111A | Data Processing/ComputerConcepts | 3 |
| D P 111B | Data Processing/Computer Functions | 3 |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| | | 15 |
| | SECOND TERM | |
| D P 122A | Data Processing/Computer Flowcharting Techniques | 3 |
| D P 112B | Data Processing Programming/ RPG I & II | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| MGT 200 | Human Relations in Business & Industry | 3 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | | 18 |

Total Credit Hours For Program—33

## PUBLIC ADMINISTRATION TECHNICIAN
### Two-Year Program—Code 551
**Advisor — R. Zeeb**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| PLS 108 | Government and Society or Elective** | 3 |
| PSY 100 | Introductory Psychology | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | | 15 |
| | SECOND TERM | |
| MGT 208 | Principles of Management | 3 |
| PLS 150 | State and Local Government & Politics | 3 |
| PHL 101 | Introduction to Philosophy | 3 |
| ENG 111 | English Composition or | |
| ENG 122 | English Composition | 3 |
| | Elective** | 3 |
| | | 15 |
| | THIRD TERM | |
| MGT 240 | Personnel Management | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| G B 111 | Business Law | 3 |
| D P 111A | Data Processing/Computer Concepts* | 3 |
| D P 111B | Data Processing/Computer Functions | 3 |
| I E 200 | Internship-Externship or Elective** | 3 |
| | | 18 |
| | FOURTH TERM | |
| EC 111 | Consumer Economics | 3 |
| ACC 092 | Fundamentals of Accounting or | |
| ACC 122 | Principles of Accounting | 3 |
| G B 207 | Business Communciation | 3 |
| SOC 100 | Principles of Sociology | 3 |
| I E 200 | Internship-Externship or Elective** | 3 |
| | | 15 |

Total Credit Hours For Program—63

*Student may elect additional courses in data-record operations.

**Electives may be chosen from the following recommended courses:

MGT 200 Human Relations in Business & Industry.
MGT 150 Labor-Management Relations.
PSY 209 Psychology of Adjustment.

## ASSESSMENT ADMINISTRATION
### A Special Certificate Program and An Associate Degree Career Program
**Advisor — A. Lamminen**

The student may earn a special Certificate in Assessment Administration from Washtenaw Community College and, simultaneously, prepare to meet the examination requirements of the Michigan State Assessors Board certification plan, through successful completion of the specialized courses designed to meet overall program objectives, which include:

1. Development of essential technical knowledge and skills for effective exercise of vocational responsibilities and the pursuit of advancement opportunities in the assessment field.
2. Development of appropriate occupational identity along with broad knowledge of the diverse functional aspects of property valuation and assessment, productive working relations, and the economies of standardization of procedures and practices, forms and reports.

3. Enhancement of personal and professional growth and development of those currently involved in the assessment field.

4. Provision of an educational-training resource for those seeking certification in the assessment-appraisal field.

For the student desiring an Associate Degree, the specialized Assessment Administration course requirements may be merged into the Public Administration Technician program . . . giving the student the opportunity to develop greater insights into the public service sector while, simultaneously, enhancing the essential knowledge and skills for rendering more productive public service through everyday work activity in the specialty area, Assessment Administration.

The following specialized courses comprise the approved Assessment Administration program:

111 Assessment Administration-Basic.....3 credit hours
122 Assessment Administration-Intermediate.....3 credit hours
123 Assessment Administration-Advanced.....3 credit horus
211 Appraisal-Basic.....3 credit hours
222 Appraisal-Intermediate.....3 credit hours
223 Appraisal-Advanced.....3 credit hours

## LEGAL ASSISTANT

### A Special Certificate Program for the Legal Assistant

**Advisor — A. Lamminen**

The student may earn a special Certificate as a Legal Assistant from Washtenaw Community College in any of four specialized areas . . . General Practice, Litigation, Probate and Real Estate, and/or Business Organization.

The overall program objective is to develop in the student the necessary knowledge and skills for the position as a legal assistant in the private law firms, in trust companies and in other related positions with private and/or public agencies.

For the student desiring an Associate Degree, the specialized Legal Assistant course requirements may be expanded to include the general requirements for an Associate Degree and, in addition thereto, the student is expected to take two additional electives from the specialized law courses.

Students in all four Legal Assistant specialities shall take the following three required basic courses:

L A 100 Foundations of Law.....3 credit hours
L A 111 Legal Assistant Practicum.....3 credit hours
L A 122 Legal Research.....3 credit hours

Students electing to specialize in General Practice are required to take the two courses as follows:

L A 201 Real Estate and Probate Law.....3 credit hours
L A 211 Litigation I (Civil, Divorce, Criminal).....3 credit hours

and one elective from the following three courses:

G B 111 Business Law I.....3 credit hours
L A 127 Domestic Relations.....3 credit hours
L A 200 Income Tax.....3 credit hours

Students electing to specialize in Probate and Real Estate are required to take the following three courses:

L A 200 Income Tax Law.....3 credit hours
L A 201 Real Estate and Probate Law.....3 credit hours
L A 202 Real Estate and Probate Law.....3 credit hours

Students electing to specialize in Litigation are required to take three courses as follows:

L A 211 Litigation (Civil, Divorce, Criminal).....3 credit hours
L A 222 Litigation (Civil).....3 credit hours

and one elective from the following three courses: D.S.

G B 111 Business Law.....3 credit hours
L A 127 Domestic Relations.....3 credit hours
L A 201 Real Estate and Probate Law.....3 credit hours

Students electing to specialize in Business Organization are required to take the following three courses:

G B 111 Business Law ..... 3 credit hours
L A 200 Income Tax Law ..... 3 credit hours
L A 210 Business Organization (Partnership & Corporation) ..... 3 credit hours

## MANAGEMENT TECHNICIAN

### Two-Year Program—Code 541

**Advisors — Mrs. E. Wilson, R. Paulson, R. Zeeb**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| EC 211 | Principles of Economics | 3 |
| ENG 091 | Fundamentals of English or | |
| ENG 111 | English Composition | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | | 15 |
| | SECOND TERM | |
| MGT 208 | Principles of Management | 3 |
| E C 222 | Principles of Economics | 3 |
| S O 130 | Business Machines | 3 |
| D P 111A | Data Processing/Computer Concepts* | 3 |
| D P 111B | Data Processing/Computer Functions* | 3 |
| ENG 111 | English Composition or | |
| ENG 122 | English Composition | 3 |
| | | 18 |
| | THIRD TERM | |
| MGT 250 | Principles of Marketing | 3 |
| MGT 240 | Personnel Management | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| G B 111 | Business Law | 3 |
| MGT 160 | Principles of Salesmanship or | |
| I E 200 | Internship-Externship | 3 |
| | FOURTH TERM | |
| MGT 200 | Human Relations in Business & Industry | 3 |
| ACC 092 | Fundamentals of Accounting or | |
| ACC 112 | Principles of Accounting | 3 |
| G B 207 | Business Communication | 3 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| PLS 108 | Government and Society | 3 |
| | | 15 |

Total Credit Hours For Program—63

*Student may elect additional courses in data-record operations.

## MARKETING TECHNICIAN

### Two-Year Program—Code 542

**Advisor — R. Zeeb**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| PLS 108 | Government and Society | 3 |
| | | 15 |
| | SECOND TERM | |
| MGT 250 | Principles of Marketing | 3 |
| D P 111A | Data Processing/Computer Concepts | 3 |
| D P 111B | Data Processing/Computer Functions* | 3 |
| MGT 208 | Principles of Management | 3 |
| S O 130 | Business Machines | 3 |
| ENG 111 | English Composition or | |
| ENG 122 | English Composition or | 3 |
| G B 207 | Business Communication | 3 |
| | | 18 |
| | THIRD TERM | |
| MGT 200 | Human Relations in Business & Industry | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| G B 111 | Business Law | 3 |
| EC 211 | Principles of Economics | 3 |
| MGT 160 | Principles of Salesmanship | 3 |
| | | 15 |
| | FOURTH TERM | |
| MGT 260 | Sales Management | 3 |
| MGT 270 | Advertising Principles | 3 |
| ACC 092 | Fundamentals of Accounting or | |
| ACC 122 | Principles of Accounting | 3 |
| EC 222 | Principles of Economics | 3 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| | | 15 |

Total Credit Hours For Program—63

*Student may elect additional courses in data-record operations.

## MARKETING AIDE
### One-Year Program—Code 543
**Advisor — R. Zeeb**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| PSY 100 | Introductory Psychology | 3 |
| | | 15 |
| | SECOND TERM | |
| MGT 250 | Principles of Marketing | 3 |
| MGT 160 | Principles of Salesmanship | 3 |
| MGT 200 | Human Relations in Business & Industry | 3 |
| G B 111 | Business Law | 3 |
| S O 130 | Business Machines | 3 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| | | 18 |

Total Credit Hours For Program—33

## SECRETARIAL TECHNICIAN
### Two-Year Program—Code 561
**Advisors — Mrs. E. Charlton, Mrs. J. Patt, Mrs. E. Wilson**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| S O 110 | (A, B, C) Typewriting and/or Elective* | 3 |
| S O 100 | (A, B, C) Shorthand and/or Elective** | 3 or 4 |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| | | 15 or 16 |
| | SECOND TERM | |
| S O 110 | (A, B, C) Typewriting and/or Elective* | 3 |
| S O 100 | (A, B, C) Shorthand and/or Elective** | 3 |
| S O 130 | Business Machines | 3 |
| I E 200 | Internship-Externship or Business Elective*** | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | | 15 |
| | THIRD TERM | |
| S O 100 | (A, B, C) Shorthand and/or Elective** | 3 |
| D P 111A | Data Processing/Computer Concepts | 3 |
| D P 111B | Data Processing/Computer Functions | 3 |
| G B 111 | Business Law | 3 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| | | 18 |
| | FOURTH TERM | |
| S O 150 | Office Systems & Procedures | 4 |
| ACC 092 | Fundamentals of Accounting or | |

| | | |
|---|---|---|
| ACC 122 | Principles of Accounting | 3 |
| MGT 200 | Human Relations in Business & Industry | 3 |
| G B 207 | Business Communication | 3 |
| PLS 108 | Government and Society | 3 |
| | | 16 |

Total Credit Hours For Program—64 or 65

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

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

***May be continued second year.

Electives may be chosen from the following recommended courses:

E C 211 Principles of Economics
G B 122 Business Law
MGT 230 Office Management

## CLERK-TYPIST
### One-Year Program—Code 562
**Advisors — Mrs. E. Charlton, Mrs. J. Patt, Mrs. E. Wilson**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| S O 110 | (A, B, C) Typewriting and/or Elective* | 3 |
| G B 140 | Business Occupational Foundations | 3 |
| MTH 090 | Foundations of Occupational Mathematics or Math Elective | 3 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |
| | Business Elective | 3 |
| | | 15 |
| | SECOND TERM | |
| S O 110 | (A, B, C) Typewriting and/or Elective* | 3 |
| G B 207 | Business Communication | 3 |
| S O 130 | Business Machines | 3 |
| S O 107 | Clerical Methods and Procedures | 4 |
| I E 200 | Internship-Externship or Business Elective | 3 |
| | | 16 |

Total Credit Hours For Program—31

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

# human services occupations

## CHILD CARE WORKER
### Two-Year Program—Code 460
**Advisor — Paul Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| CCW 101 | Child Development | 3 |
| *CCW 108 | Educational Experiences in Expressive Arts | 3 |
| *CCW 105 | Practicum I | 3 |
| ENG 111 | English Composition | 3 |
| P E 130 | American Red Cross | 3 |
| | | 15 |
| | SECOND TERM | |
| CCW 103 | Alternative Programs in Child Care | 3 |
| CCW 110 | Social/Emotional Development | 3 |
| BLS 150 | Afro-American History or | 3 |
| BLS 157 | Afro-American Music | 3 |
| ENG 210 | Children's Literature | 3 |
| IFM 129 | Nutrition and Life Cycle | 3 |
| | | 15 |
| | THIRD TERM | |
| *CCW 107 | Educational Experiences in Science & Math | 3 |
| *CCW 106 | Practicum II | 3 |
| CCW 109 | Language and Communication | 3 |
| BLS 107 | Black Psychology | 3 |
| PLS 150 | State and Local Government | 3 |
| | | 15 |
| | FOURTH TERM | |
| CCW 100 | Exceptional Pre-School Child | 3 |
| CCW 200 | Staff/Parent Interpersonal Relations | 3 |
| *CCW 114 | Practicum III | 3 |
| | Choose **One** of the following: | |
| *CCW 111 | Day Care Administration | 3 |
| | or | |
| *CCW 115 | Research in Child Care | 3 |
| | or | |
| *CCW 116 | Seminar in Infant Care | 3 |
| | | 15 |

Total Credit Hours For Program—60

*These courses must be taken concurrently

**Part-Time Students: Students enrolling for less than full time must arrange their schedules with their advisor.

## FIRE PROTECTION TECHNICIAN
### One-Year Certificate Program
**Advisor — P. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST SEMESTER | |
| F P 100 | Introduction to Fire Protection | 3 |
| F P 101 | Hydrostatics I | 3 |
| CEM 097 | Chemistry of Combustibles | 3 |
| F P 122 | Fire Prevention Theory & Application | 3 |
| F P 109 | Fire Operation Strategy | 3 |
| | | 15 |
| | SECOND SEMESTER | |
| F P 213 | Fire Investigation and Arson | 3 |
| BPR 100 | Blueprint Reading for Construction Trades | 2 |
| F P 209 | Advanced Strategy | 3 |
| F P 224 | Protection Systems in Industry | 3 |
| | | 11 |
| | THIRD SEMESTER | |
| F P 111 | Hydrostatics II | 3 |
| F P 210 | Introduction to Fire Administration | 3 |
| | | 6 |

Total Credit Hours for Program — 32

## CULINARY ARTS TECHNICIAN
### Two-Year Program—Code 641
**Advisors — E. Alpha, P. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| CUL 100 | Introduction to Restaurant Management | 3 |
| CUL 110 | Sanitation and Hygiene | 3 |
| CUL 111 | Elementary Food Preparation | 6 |
| CUL 109 | Food Systems Seminar | 2 |
| ENG 091 | English Elective* | 3 |
| | | 17 |
| | FIRST YEAR WINTER TERM | |
| CUL 224 | Economics of Volume Feeding | 4 |
| CUL 120 | Organization and Management of Food Systems | 3 |
| CUL 122 | Quantity Food Production | 6 |
| | | 13 |
| | FIRST YEAR SPRING TERM | |
| CUL 227 | Advanced Culinary Techniques | 6 |
| ACC 091 | Fundamentals of Accounting or | |
| ACC 111 | Principles of Accounting | 3 |
| | | 9 |
| | SECOND YEAR FALL TERM | |
| CUL 228 | Layout and Equipment | 6 |
| CUL 118 | Principles of Nutrition | 3 |
| PLS 108 | Government and Society | 3 |
| | | 12 |
| | SECOND YEAR WINTER TERM | |
| D P 111 | Principles of Data Processing (7½ weeks) | 3 |
| D P 122 | Data Processing Applications (7½ weeks) | 3 |
| CUL 199 | On The Job Training | 3 |
| | | 9 |

Total Credit Hours for Program—60

*Must meet State requirements.

## FOOD SERVICE SPECIALIST

### One-Year Program—Code 642

**Advisors — E. Alpha, Dr. P. W. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM FALL | |
| CUL 100 | Introduction to Restaurant Management | 3 |
| CUL 111 | Elementary Food Preparation | 6 |
| CUL 110 | Sanitation and Hygiene | 3 |
| | | 12 |
| | SECOND TERM WINTER | |
| CUL 228 | Layout and Equipment | 6 |
| CUL 122 | Quantity Food Production | 6 |
| CUL 224 | Economics of Volume Feeding | 4 |
| | | 16 |
| | THIRD TERM SPRING | |
| CUL 227 | Advanced Culinary Techniques | 6 |
| ENG | English Elective* | 3 |
| | | 9 |

Total Credit Hours For Program—37

*State required for 1 year Certificate.

## DIETETIC ASSISTANT

### One-Year Certificate Program

**Advisor — E. Alpha, P. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST SEMESTER | |
| D T 101 | Introduction to Allied Health | 3 |
| CUL 111 | Elementary Food Preparation | 6 |
| D T 117 | Supervised Field Experience | 3 |
| CUL 118 | Principles of Nutrition | 3 |
| | | 15 |
| | SECOND SEMESTER | |
| ENG 111 | English Composition | 3 |
| D T 217 | Supervised Field Experience | 3 |
| D T 219 | Clinical Nutrition | 3 |
| D T 229 | Quality Control of Food Systems | 3 |
| | | 12 |
| | THIRD SEMESTER | |
| CUL 110 | Sanitation and Hygiene | 3 |
| CUL 120 | Organization and Management of Food Systems | 3 |
| | | 6 |

Total Credit Hours for Program—33

## CRIMINAL JUSTICE TECHNICIAN

### Two-Year Program—Code 651

**Advisor — P. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| ENG 100 | Technical Communication or | |
| ENG 111 | English Composition | 3 |
| PSY 100 | Introductory Psychology | 3 |
| PLS 150 | State & Local Government | 3 |
| *C J 100 | Intro. to Criminal Justice | 3 |
| SOC 100 | Introductory Sociology | 3 |
| | | 15 |
| | SECOND TERM | |
| PSY 108 | Dynamics of Behavior | 3 |
| C J 111 | Police Community Relations | 3 |
| SOC 250 | Juvenile Delinquency | 3 |
| SOC 202 | Criminology | 3 |
| BLS 107 | Black Psychology | 3 |
| | | 15 |
| | THIRD TERM | |
| C J 209 | Criminal Law | 3 |
| C J 224 | Criminal Investigation | 3 |
| C J 205 | Applied Psychology for Police | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | One of the Following: History Political Science Economics Logic | 3 |
| | | 15 |
| | FOURTH TERM | |
| C J 220 | Administration of Criminal Law | 3 |
| C J 208 | Criminal Evidence and Procedure | 3 |
| C J 250 | Law Enforcement Problems Seminar | 4 |
| C J 225 | Seminar in Criminal Justice | 3 |
| | Elective (open choice) | 3 |
| | | 16 |

Total Credit Hours For Program—61

*May be waived depending upon academy training and background experience. Must substitute an elective.

## HOTEL-MOTEL MANAGEMENT TECHNICIAN

### Two-Year Program—Code 661

**Advisor — P. Davis**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| ENG 100 | Technical Communications | 3 |
| PSY 100 | Introduction to Psychology | 3 |

| | | |
|---|---|---|
| PLS 108 | Government and Society | 3 |
| EC 111 | Introduction to Economics | 3 |
| ACC 111 | Principles of Accounting | 3 |
| | | 15 |

SECOND TERM

| | | |
|---|---|---|
| HMT 102 | Introduction to Service Industries | 3 |
| CUL 111 | Elementary Food Preparation | 6 |
| HMT 120 | Practicum in Organization & Management | 3 |
| EC 211 | Principles of Economics | 3 |
| | | 15 |

THIRD TERM

| | | |
|---|---|---|
| HMT 104 | Service Industry Equipment & Utilities | 5 |
| MTH 169 | Intermediate Algebra | 3 |
| HMT 222 | Lodging Management | 3 |
| D P 111 | Principles of Data Processing* | 5 |
| | | 16 |

FOURTH TERM

| | | |
|---|---|---|
| HMT 211 | Food Production Systems | 6 |
| HMT 223 | Practicum in Organization and Management | 3 |
| HMT 224 | Service Industry Accounting | 3 |
| HMT 230 | Hotel Law | 4 |
| | | 16 |

Total Credit Hours For Program—62

*Student may elect additional course in Data-Record Operations.

# health occupations

## DENTAL ASSISTANT

### Two-Year Program—Code 711

**Advisor — Miss P. Ladley**

(The program requires four consecutive semesters and may be started in September or January)

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| D A 110 | Introduction to Dental Assisting | 3 |
| D A 111 | Dental Science | 4 |
| BIO 111 | Basic Anatomy & Physiology | 4 |
| BIO 112 | Basic Anatomy & Physiology Laboratory | 1 |
| ENG 111 | English Composition or | |
| ENG 091 | English Fundamentals | 3 |
| | | 15 |
| | SECOND TERM | |
| D A 120 | Oral Diagnosis Technique | 1 |
| D A 121 | Introduction to Clinical Procedures | 5 |
| D A 122 | Advanced Dental Science | 4 |
| S O 110A | *Typewriting | 2 |
| | **Elective in English, Speech, or Art | 3 |
| | | 15 |
| | THIRD TERM | |
| D A 200 | Dental Assistant Clinical Practice | 5 |
| D A 210 | Principles of Dental Laboratory Procedures | 4 |
| D A 212 | Dental Office Systems and Practive Management | 5 |
| D A 213 | Dental Roentgenology | 2 |
| | | 16 |
| | FOURTH TERM | |
| D A 214 | Dental Roentgenology | 2 |
| D A 222 | Dental Assistant Clinical Practice | 5 |
| PLS 108 | Government and Society or | |
| PLS 150 | State and Local Government | 3 |
| | **Elective in Psychology, Sociology, or History | |
| | **Elective in Chemistry, Mathematics, Geology, or Physical Science | 3-4 |
| | | 16-17 |

Total Credit Hours For Program—62-63

*A student who has had one year of typing may elect a course of his choice.

**Electives subject to approval of advisor.

A student must maintain a C average in all dental courses to qualify for graduation and meet the standards of the National Certification Examination.

## RADIOLOGIC TECHNOLOGY (X-RAY)

**Advisor — R. Nelson**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| R T 111 | Fundamentals of Radiologic Technology | 3 |
| R T 112 | Radiologic Technology Laboratory | 1 |
| BIO 111 | Basic Anatomy and Physiology | 4 |
| R T 110 | Clinical Practicum | 1 |
| | English or Speech Elective | 3 |
| | | 13 |

SECOND TERM

| | | |
|---|---|---|
| R T 112 | Fundamentals of Radiologic Technology | 3 |
| R T 123 | Radiologic Technology Laboratory | 1 |
| BIO 105 | Medical Terminology | 2 |
| R T 125 | Radiologic Anatomy and Physiology | 2 |
| | English Elective | 3 |
| R T 120 | Clinical Practicum | 2 |
| | | 13 |

SPRING - SUMMER

| | | |
|---|---|---|
| MTH 090 | Foundations of Occupational Math | 3 |
| R T 130 | Clinical Practicum | 3 |
| | | 6 |

THIRD TERM

| | | |
|---|---|---|
| R T 213 | Principles of Radiologic Technology | 3 |
| R T 215 | Radiologic Technology Laboratory | 1 |
| PHY 141 | Radiologic Physics | 3 |
| R T 217 | Clinical Practicum | 2 |
| PSY | Elective | 3 |
| | | 12 |

FOURTH TERM

| | | |
|---|---|---|
| R T 224 | Principles of Radiologic Technology | 3 |
| R T 227 | Radiologic Technology Laboratory | 1 |
| PHY 142 | Radiologic Physics | 3 |
| R T 225 | Clinical Practicum | 2 |
| PLS | Political Science (108, 112 or 150) | 3 |
| | | 12 |

SPRING - SUMMER

| | | |
|---|---|---|
| R T 228 | Supervisory Management | 2 |
| R T 240 | Clinical Practicum | 4 |
| | | 6 |

Total Credit Hours For Program—62

High School Biology, Chemistry and/or Physics — ACT Required. One Year Math-Algebra combination recommended. A minimum of 2200 hours of structured clinical work experience is required to qualify for graduation and meet the standards of the National Registry Examination.

The Radiologic Technology Program is conducted in cooperation with: Beyer Memorial Hospital, Ypsilanti — St. Joseph Mercy Hospital, University of Michigan Medical Center, Veterans Administration Hospital, Ann Arbor.

*Program has special application procedure. Contact advisor for details. Limited number of students accepted each year. One entrance date — Fall.

Student must maintain a C average in the program to qualify for graduation and to take the National Registry Examination.

## RESPIRATORY THERAPIST**
## Two-Year Program—Code 721
**Advisor — C. Hammond**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| BIO 111 | Basic Anatomy and Physiology | 4 |
| BIO 112 | Anatomy and Physiology Lab | 1 |
| BIO 105 | Medical Terminology | 2 |
| H S 113 | Introduction to Medical Science | 2 |
| CEM 106 | Chemistry for Respiratory Therapy | 3 |
| PHY 131 | Physics for Respiratory Therapy | 3 |
| | | 15 |
| | SECOND TERM | |
| RTH 122 | Respiratory Physiology | 2 |
| RTH 123 | Respiratory Physiology Lab and Recitation | 3 |
| RTH 121 | Basic Equipment and Procedures | 4 |
| BIO 147 | Hospital Microbiology | 1 |
| BIO 148 | Pharmacology for Respiratory Therapy | 1 |
| BIO 149 | Pathology for Respiratory Therapy | 1 |
| RTH 199 | General Clinical Practice | 3 |
| | | 15 |
| | SPRING TERM | |
| RTH 212 | Ventilators & Diagnostic Tests | 3 |
| | SPRING-SUMMER TERM WORK EXPERIENCE | |
| | SECOND YEAR | |
| | For Inexperienced Therapists Spring & Summer Sessions — Work Experience | |
| | FALL TERM | |
| RTH 213 | Intensive and Rehabilitative Respiratory Care | 3 |
| RTH 217 | Seminar-Respiratory Therapy | 2 |
| RTH 200 | Advanced Clinical Practice | 4 |
| PSY | Psychology Elective (Psy 100, 108, Bls 107) | 3 |
| *MTH | Mathematics Elective (097 or higher number) | 3 |
| | | 15 |
| | WINTER TERM | |
| SOC | Sociology Elective (Medical Soc. 201, or 100, 150, 202, 207, 250) | 3 |
| PLS | Political Science (PLS 108, 112, or 150) | 3 |
| ENG | English or Speech Elective | 3 |
| RTH 200 | Advanced Clinical Practice | 4 |
| | | 13 |

Total Credit Hours for Program—61

*Students are required to take a Math placement test in the Math Lab.

High School Chemistry-Biology-One year High School Algebra-ACT Tests are required. 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, Annapolis Hospital, and McPherson Health Center.

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

**Alternate "B" One-Year Program—Code 723**

For persons holding a baccalaureate degree with a science major, consult advisor.

| | | |
|---|---|---|
| | WINTER TERM | |
| RTH 122 | Respiratory Physiology | 2 |
| RTH 123 | Respiratory Physiology Lab and Recitation | 3 |
| RTH 121 | Basic Equipment & Procedures | 4 |
| BIO 147 | Hospital Microbiology | 1 |
| BIO 148 | Pharmacology for Respiratory Therapy | 1 |
| BIO 149 | Pathology for Respiratory Therapy | 1 |
| RTH 199 | Advanced Clinical Practice | 3 |
| | | 15 |
| | SPRING TERM | |
| RTH 212 | Ventilators and Diagnostic Tests | 3 |
| | | 3 |
| | SPRING-SUMMER TERM | |
| RTH 200 | Advancement Clinical Practice | 4 |
| | FALL TERM | |
| RTH 213 | Intensive and Rehabilitative Respiratory Care | 3 |
| RTH 217 | Seminar—Respiratory Therapy | 2 |
| RTH 200 | Advanced Clinical Practice | 4 |
| BIO 105 | Medical Terminology | 2 |
| | | 11 |

Total Credit Hours For Program—32

*Final approval of a Natural Science Minor rests with the National Board for Respiratory Therapy.

## MEDICAL OFFICE SPECIALIST
## Code 731
**Advisors — Mrs. E. Charlton, Mrs. J. Patt, Mrs. E. Wilson**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| S O 110 | A, B, C) Typewriting | 3 |
| S O 100 | (A, B, C) Shorthand | 4 |
| H S 113 | Introduction to Medical Science | 2 |
| ENG 091 | English Fundamentals or | |
| ENG 111 | English Composition | 3 |

| | | |
|---|---|---|
| MTH 090 | Foundations of Occupational Mathematics | 3 |
| BIO 105 | Medical Terminology | 2 |
| | | 17 |

SECOND TERM

| | | |
|---|---|---|
| S O 110 | (A, B, C) Typewriting | 3 |
| S O 100 | (A, B, C) Shorthand | 4 |
| M O 199 | On-the-Job Training | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| PSY 100 | Introductory Psychology | 3 |
| | | 16 |

THIRD TERM

| | | |
|---|---|---|
| S O 150 | Office Systems and Procedures | 3 |
| M O 199 | On-the-Job Training | 3 |
| D P 111 | Principles of Data Processing | 5 |
| BIO 111 | Basic Anatomy and Physiology | 4 |
| | | 15 |

FOURTH TERM

| | | |
|---|---|---|
| M O 199 | On-the Job Training | 3 |
| D P 122 | Data Processing Applications | 5 |
| PLS 108 | Government and Society | 3 |
| ENG 100 | Technical Communications | 3 |
| PSY 200 | Child Psychology | 3 |
| | | 17 |

Total Credit Hours For Program—62

## PRACTICAL NURSE*
## Code 760
**Advisor — Mrs. H. Harris**

Students accepted for the **Fall semester** must take the following courses in sequence.

| Course | Description | Hrs. |
|---|---|---|

FALL SEMESTER

| | | |
|---|---|---|
| BIO 111 | Anatomy and Physiology | 4 |
| BIO 112 | Anatomy and Physiology Laboratory | 1 |
| BIO 147 | Hospital Microbiology — 2 times a week (7½ wks.) | 1 |
| NUR 100 | Nursing Fundamentals with Laboratory | 4 |
| NUR 110 | Nursing Clinical Experience | 1 |
| PSY 104 | Interpersonal Dynamics | 2 |
| NUR 117 | Nutrition for Nurses | 2 |
| NUR 118 | Personal and Community Health | 1 |
| | | 17 |

WINTER SEMESTER

| | | |
|---|---|---|
| NUR 125 | Medical-Surgical Nursing with Laboratory | 2 |
| NUR 120 | Medical-Surgical Nursing Practice | 3 |
| NUR 126 | Medical-Surgical Nursing with Laboratory | 2 |
| NUR 121 | Medical-Surgical Nursing Practice | 3 |
| NUR 122 | Pharmacology II | 2 |
| ENG 107 | English Elective — Communicative Skills | 3 |
| | | 15 |

SPRING AND SUMMER SEMESTER

| | | |
|---|---|---|
| NUR 135 | Parent and Child Nursing with Laboratory | 2 |
| NUR 130 | Parent and Child Nursing Practice | 4 |
| NUR 145 | Advanced Medical-Surgical Nursing with Laboratory | 2 |
| NUR 140 | Advanced Medical-Surgical Nursing Practice | 3 |
| NUR 147 | Growth and Development | 3 |
| NUR 133 | Pharmacology III | 2 |
| | | 16 |

Total Credit Hours for Program—48

SEQUENCE II

Students accepted for the **Winter semester** must take the following courses in sequence.

WINTER SEMESTER

| | | |
|---|---|---|
| BIO 111 | Anatomy and Physiology | 4 |
| BIO 112 | Anatomy and Physiology Laboratory | 1 |
| BIO 147 | Hospital Microbiology - 4 hours a week (7½ weeks) | 1 |
| NUR 100 | Nursing Fundamentals with Laboratory | 4 |
| NUR 110 | Nursing Clinical Experience | 1 |
| PSY 104 | Interpersonal Dynamics | 3 |
| NUR 117 | Nutrition for Nurses | 2 |
| NUR 118 | Personal and Community Health | 1 |
| NUR 111 | Pharmacology I | 1 |
| | | 18 |

SPRING AND SUMMER SEMESTER

| | | |
|---|---|---|
| NUR 125 | Medical-Surgical Nursing with Laboratory | 2 |
| NUR 120 | Medical-Surgical Nursing Practice | 2 |
| NUR 122 | Pharmacology II | 2 |
| NUR 135 | Parent-Child Nursing with Laboratory | 2 |
| NUR 130 | Parent-Child Nursing Practice | 4 |
| NUR 147 | Growth and Development | 3 |
| | | 16 |

FALL SEMESTER

| | | |
|---|---|---|
| NUR 126 | Medical-Surgical Nursing with Laboratory | 2 |
| NUR 121 | Medical-Surgical Nursing Practice | 2 |
| NUR 145 | Advanced Medical-Surgical Nursing with Laboratory | 2 |
| NUR 140 | Advanced Medical-Surgical Nursing Practice | 3 |
| NUR 133 | Pharmacology III | 2 |

| | | |
|---|---|---|
| ENG 107 | English Elective - Communication Skills | 3 |
| | | 15 |

Total Credit Hours for Program—49

This program has special application procedure and limited enrollment. Contact advisor for details.

A "D" in anatomy and physiology and nursing courses is considered unsatisfactory. A 2.0 average is required for graduation from the program.

## RADIATION THERAPY

| Course | Description | Hrs. |
|---|---|---|
| | FIRST SEMESTER | |
| RTT 210 | Clinical Practice | 2 |
| RTT 215 | Radiation Therapy Anatomy | 2 |
| RTT 217 | Protection and Shielding | 1 |
| RTT 219 | Radiotherapy Physics | 2 |
| RTT 218 | Elementary Pathology | 1 |
| PHY 141 | Radiologic Physics | 2 |
| *Math | Foundations of Occupation Math or Math Elective | 3 |
| | | 13 |
| | SECOND SEMESTER | |
| RTT 220 | Clinical Practicum | 2 |
| RTT 224 | Patient Care Procedures | 2 |
| RTT 225 | Radium Therapy | 2 |
| RTT 227 | Treatment Planning | 5 |
| RTT 229 | Radiology | 1 |
| | | 12 |
| | THIRD SEMESTER | |
| RTT 230 | Clinical Practicum | 4 |
| Electives | Political Science Elective (PLS 108, 150) | 3 |
| | English and/or Social Science elective | 3 |
| | | 10 |

**Applicants must be Certified Radiologic Technologists or Registered Nurses with a background in Radiation Physics.

The program is conducted jointly with the College and the University of Michigan Radiation Therapy Department.

Graduates of the program will be eligible to take the Certifying Examination for Radiation Therapist, sponsored by the American Registry of Radiologic Technologists.

## EMERGENCY MEDICAL TECHNICIAN (EMT)

| Course | Description | Hrs. |
|---|---|---|
| | FIRST SEMESTER | |
| H S 101 | Emergengy Medical Treatment Principles I | 2 |
| H S 102 | Emergency Medical Treatment Techniques II | 2 |
| | | 4 |
| | SECOND SEMESTER | |
| H S 103 | Emergency Medical Treatment Principles II | 2 |
| H S 104 | Emergency Medical Techniques II | 2 |
| | | 4 |

**The courses are designed mainly for ambulance attendants, firefighters, police officers and patient care personnel. Consult advisor for details.

Students who successfully complete the courses and the required field experience are eligible to take the examination of the National Registry of Emergency Medical Technicians.

# technical and industrial programs

## AUTO BODY SERVICE TECHNICIAN
## Code 811
**Advisors — F. Belkola, E. Cammet**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 2 | ABR 111 | Body Repair Fundamentals | 4 |
| 2 | ABR 112 | Automobile Refinishing Fundamentals | 4 |
| 1 | ABR 113 | Light Body Service | 1 |
| 1 | ABR 114 | Applied Auto Body Welding | 1 |
| 1 | W F 101 | Acetylene Welding | 2 |
| 4 | MTH 090 | Occupational Math | 3 |
| | | | 13 |
| | | SECOND TERM | |
| 3 | ABR 123 | Body Repair Applications | 4 |
| 3 | ABR 124 | Auto Reninishing Applications | 4 |
| 4 | A S 105 | Wheel Balance & Alignment | 2 |
| 4 | A S 204 | Steering & Suspensions | 2 |

| | | | |
|---|---|---|---|
| 1 | W F 102 | Arc Welding | 2 |
| | | | 14 |

SPRING-SUMMER TERM

| | | | |
|---|---|---|---|
| 5 | ABR 125 | Flat Rate Estimating | 2 |
| 5 | ABR 126 | Fundamentals Frame & Body Alignment | 2 |
| | | | 4 |

THIRD TERM

| | | | |
|---|---|---|---|
| 6 | ABR 227 | Major Repair & Alignment Procedures | 2 |
| 6 | ABR 219 | Major Repair Procedures Lab | 4 |
| 6 | ABR 220 | Enamel Refinishing | 4 |
| 7 | A S 202 | Auto Air Conditioning | 2 |
| 7 | PLS 108 | Government and Society | 3 |
| | | | 15 |

FOURTH TERM

| | | | |
|---|---|---|---|
| 8 | ABR 230 | Specialized Study | 4-8 |
| 7 | ENG 107 | Communication Skills | 3 |
| 8 | PSY 150 | Industrial Psychology | 3 |
| | | | 14 |

## AUTO BODY REPAIRMAN
## Code 812
**Advisors — F. Belkola, E. Cammet**

Part-Time Sequence / Full-Time Sequence

| Course | | Description | Hrs. |
|---|---|---|---|

FIRST TERM

| | | | |
|---|---|---|---|
| 2 | ABR 111 | Body Repair Fundamentals | 4 |
| 2 | ABR 112 | Automobile Refinishing Fundamentals | 4 |
| 1 | ABR 113 | Light Body Service | 1 |
| 1 | ABR 114 | Applied Auto Body Welding | 1 |
| 1 | W F 101 | Acetylene Welding | 2 |
| 4 | ENG 107 | Communication Skills | 3 |
| | | | 15 |

SECOND TERM

| | | | |
|---|---|---|---|
| 3 | ABR 123 | Body Repair Applications | 4 |
| 3 | PLS 108 | Government and Society | 3 |
| 4 | A S 105 | Wheel Balance & Alignment | 2 |
| 4 | A S 204 | Steering & Suspensions | 2 |
| 1 | W F 102 | Arc Welding | 2 |
| | | | 13 |

SPRING-SUMMER TERM

| | | | |
|---|---|---|---|
| 5 | ABR 125 | Flat Rate Estimating | 2 |
| 5 | ABR 126 | Fundamentals Frame & Body Alignment | 2 |
| | | | 4 |

THIRD TERM

| | | | |
|---|---|---|---|
| 6 | ABR 227 | Major Rapair & Alignment Procedures | 2 |
| 6 | ABR 219 | Major Repair Procedures Lab | 4 |
| 7 | A S 202 | Auto Air Conditioning | 2 |
| 7 | PLS 108 | Government and Society | 3 |
| | | | 11 |

FOURTH TERM

| | | | |
|---|---|---|---|
| 8 | ABR 230 | Specialized Study | 4-8 |

## AUTOMOBILE SPRAY PAINTER
## Code 813
**Advisors — F. Belkola, E. Cammet**

Part-Time Sequence / Full-Time Sequence

| Course | | Description | Hrs. |
|---|---|---|---|

FIRST TERM

| | | | |
|---|---|---|---|
| 1 | ABR 111 | Auto Body Repair Fundamentals | 4 |
| 1 | ABR 112 | Automobile Refinishing | 4 |
| 2 | ABR 113 | Light Body Service | 1 |
| 2 | ENG 107 | Communication Skills | 3 |
| | | | 12 |

SECOND TERM

| | | | |
|---|---|---|---|
| 2 | ABR 124 | Auto Refinishing | 4 |
| 3 | PLS 108 | Government & Society | 3 |
| 3 | ABR 189 | Study Problems | 3 |
| 3 | | Approved Elective | 3 |
| | | | 13 |

THIRD TERM

| | | | |
|---|---|---|---|
| 4 | ABR 220 | Enamel Refinishing | 4 |
| 4 | ABR 230 | Specialized Study | 4 |

## AUTOMOTIVE SERVICE TECHNICIAN
## Two-Year Program-Code 815
**Advisors — J. Mann, B. Welch, K. Barron**

| Course | Description | Hrs. |
|---|---|---|

FIRST TERM

| | | |
|---|---|---|
| A S 100 | Introduction to Auto Service | 1 |
| A S 101 | Automotive Electricity | 2 |
| A S 102 | Engine Operation | 2 |
| A S 103 | Basic Carburetion | 1 |
| A S 104 | Brake Systems | 2 |
| A S 150 | Light Service Repair | 2 |
| W F 101 | Acetylene Welding | 2 |
| MTH 090 | Foundations of Occ. Mathematics | 3 |
| | | 15 |

SECOND TERM

| | | |
|---|---|---|
| A S 105 | Wheel Balancing and Alignment | 2 |
| A S 106 | Cranking and Charging Systems | 2 |

| | | |
|---|---|---|
| A S 107 | Fuel Systems | 2 |
| A S 108 | Transmission and Power Trains | 2 |
| A S 207 | Steering Systems | 1 |
| A S 209 | Disc Brakes | 1 |
| PHY 090 | Automotive Physics | 3 |
| ENG 107 | Communication Skills | 3 |
| | | 16 |

SUMMER

| | | |
|---|---|---|
| A S 199 | On-the-Job Training or Approved Elective | 4 |
| | | 4 |

THIRD TERM

| | | |
|---|---|---|
| A S 201 | Automotive Tune Up & Test Equipment | 2 |
| A S 202 | Heating & Air Conditioning | 2 |
| A S 203 | Automatic Transmissions | 2 |
| A S 204 | Suspension Systems | 2 |
| A S 212 | Electrical Circuits | 1 |
| A S 222 | Auto. Sales and Service Records | 1 |
| W F 221 | Applied Automotive Welding | 1 |
| PLS 108 | Government and Society | 3 |
| | | 14 |

FOURTH TERM

| | | |
|---|---|---|
| A S 205 | Practical Field Experience | 4 |
| A S 206 | Measurement of Vehicle Performance | 2 |
| A S 208 | Automatic Transmissions Hyd. Sys. | 2 |
| A S 210 | Noise, Vibration, and Harshness | 1 |
| A S 211 | Emissions | 1 |
| A S 215 | Customer Relations | 2 |
| PSY 150 | Industrial Psychology | 3 |
| | | 15 |

Total Credit Hours For Program—64

## AUTOMOTIVE MECHANIC PROGRAM

### One-Year Program—Code 816

**Advisors — K. Barron, B. Welch**

| Course | Description | Hrs. |
|---|---|---|
| | FIRST TERM | |
| A S 100 | Introduction to Auto Service | 1 |
| A S 101 | Automotive Electricity | 2 |
| A S 102 | Engine Operation | 2 |
| A S 103 | Basic Carburetion | 1 |
| A S 104 | Brake Systems | 2 |
| A S 150 | Light Service Repair | 2 |
| A S | Approved 2 Hour Elective in A.S. | 2 |
| W F 101 | Acetylene Welding | 2 |
| | | 14 |
| | SECOND TERM | |
| A S 105 | Wheel Balancing & Alignment | 2 |
| A S 106 | Cranking and Charging Systems | 2 |
| A S 107 | Fuel Systems | 2 |
| A S 108 | Transmission and Power Trains | 2 |
| A S 201 | Automotive Tune-Up & Test Equipment | 2 |
| A S | Approved 1 Hour Elective in A.S. | 1 |
| A S 211 | Emissions | 2 |
| A S | Communication Skills I | 3 |
| | | 16 |

Total Credit Hours For Program—30

## ARCHITECTURAL DRAFTING TECHNICIAN

### Two-Year Program—Code 821

**Advisors — D. Byrd, M. Pogliano**

| Part-Time Sequence | Full-Time Sequence Course | Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | ARC 111 | Architectural Drawing | 6 |
| 4 | S O 090 | Fundamentals of Typewriting | 1 |
| 1 | ARC 117 | Construction Materials | 3 |
| 5 | MTH 169 | Intermediate Algebra | 4 |
| 6 | ENG 091 | English Fundamentals or | |
| | ENG 111 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | ARC 122 | Architectural Drawing | 6 |
| 2 | ARC 120 | Mechanical Equipment | 2 |
| 5 | ARC 150 | Presentation Drawings and Models | 4 |
| 6 | ARC 109 | Site Layout or | |
| | ARC 209 | Surveying | 3 |
| 3 | ARC 100 | Specifications | 1 |
| | | | 16 |
| | | 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 | Introductory Physics | 4 |
| 2 | ENG 100 | Technical Communications | 3 |
| | | | 17 |
| | | FOURTH TERM | |
| 4 | ARC 224 | Architectural Drawing | 6 |
| 4 | ARC 200 | Specification Preparation | 1 |
| 6 | ARC 208 | Estimating Construction Costs | 2 |
| 7 | PLS 108 | Government and Society | 3 |
| 7 | PSY 150 | Industrial Psychology | 3 |
| | | | 15 |

Total Credit Hours For Program—65

## ARCHITECTURAL DRAFTING DETAILER

### One-Year Program—Code 822

**Advisors — D. Byrd, M. Pagliano**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | ARC 111 | Architectural Drawing | 6 |
| 3 | S O 090 | Fundamentals of Typewriting | 1 |
| 2 | ARC 117 | Construction Materials | 3 |
| 4 | MTH 169 | Intermediate Algebra | 4 |
| 5 | ENG 091 | English Fundamentals or | |
| | ENG 111 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | ARC 122 | Architectural Drawing | 6 |
| 3 | ARC 120 | Mechanical Equipment | 2 |
| 6 | ARC 150 | Presentation Drawings and Models | 4 |
| 5 | ARC 109 | Site Layout or | |
| | ARC 209 | Surveying | 3 |
| 4 | ARC 100 | Specifications | 1 |
| | | | 16 |

Total Credit Hours For Program—33

## CONSTRUCTION SPECIALIST

### One-Year Program-Code 823

**Advisor — D. Byrd**

| Part-Time Sequence | Course | 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 for Construction Trades | 2 |
| 4 | G B 111 | Business Law | 3 |
| | | | 16 |
| | | SECOND TERM | |
| 3 | ARC 109 | Site Layout | 3 |
| 3 | ARC 208 | Estimating Construction Costs | 2 |
| 2 | ARC 100 | Specifications | 1 |
| 2 | BPR 110 | Blueprint Reading for Construction Trades | 2 |
| 3 | PSY 150 | Industrial Psychology | 3 |
| 4 | ENG 100 | Technical Communication | 3 |
| | | | 14 |

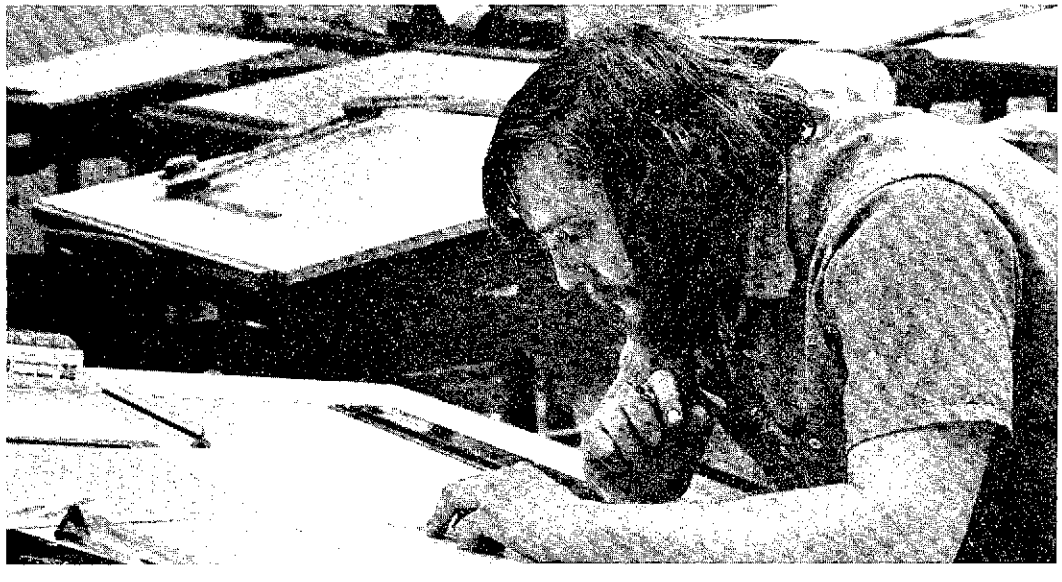
Total Credit Hours For Program—30

## INDUSTRIAL DRAFTING TECHNICIAN (TOOLING OPTION)

### Two-Year Program—Code 825

**Advisors — R. Bertoia, R. J. Packard**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | I D 111 | Industrial Drafting | 4 |
| 3 | M T 111 | Machine Shop Theory and Practice | 4 |
| 2 | I D 112 | Descriptive Geometry | 4 |



| | | | |
|---|---|---|---|
| 1 | MTH 151 | Applied Algebra | 4 |
| | | | 16 |
| | | SECOND TERM | |
| 2 | PHY 110 | Applied Physics | 4 |
| 2 | I D 114 | Industrial Drafting | 4 |
| 3 | I D 122 | Fundamentals of Jigs and Fixtures | 3 |
| 4 | MLG 101 | Industrial Materials | 2 |
| 2 | MTH 152 | Applied Geometry and Trigonometry | 4 |
| | | | 17 |
| | | THIRD TERM | |
| 3 | I D 107 | Mechanisms | 4 |
| 5 | I D 213 | Fundamentals of Die Drafting | 4 |
| 5 | TCA 100 | Perspective and Parallel Projection | 4 |
| 6 | N C 100 | Introduction to Numerical Control | 3 |
| 6 | ENG 100 | Technical Communications | 3 |
| | | | 18 |
| | | FOURTH TERM | |
| 5 | I D 206 | Fundamentals of Plant Layout | 3 |
| 5 | I D 224 | Fundamentals of Industrial Tooling | 3 |
| 7 | N C 121 | Programming For Numerical Control | 3 |
| 7 | I D 199 | On-the-Job Training* | 3 |
| 7 | PLS 108 | Government and Society | 3 |
| | | | 15 |

Total Credit Hours For Program—66

*MGL 202 Manufacturing Processes or PSY 150 Industrial Psychology may be substituted for I D 199.

PART-TIME STUDENTS: Students who can take 6-9 credit hours per term should follow the order of courses to be taken as shown to the LEFT of the course title. For example, the fifth term a student would elect all courses numbered 5. A similar election would be made for each of the other terms to complete the program.

## INDUSTRIAL DRAFTING TECHNICIAN (PRODUCT OPTION)

### Two-Year Program—Code 826

**Advisors — R. Bertoia, R. J. Packard**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | I D 111 | Industrial Drafting | 4 |
| 3 | M T 111 | Machine Shop Theory and Practice | 4 |
| 2 | I D 112 | Descriptive Geometry | 4 |
| 1 | MTH 151 | Applied Algebra | 4 |
| | | | 16 |
| | | SECOND TERM | |
| 2 | PHY 110 | Applied Physics | 4 |
| 2 | I D 114 | Industrial Drafting | 4 |
| 3 | I D 122 | Fundamentals of Jigs and Fixtures | 3 |
| 4 | MLG 101 | Industrial Materials | 2 |
| 2 | MTH 152 | Applied Geometry and Trigonometry | 4 |
| | | | 17 |
| | | THIRD TERM | |
| 3 | I D 107 | Mechanisms | 4 |
| 4 | I D 251 | Fundamentals of Electrical Drafting | 4 |
| 5 | TCA 100 | Perspective and Parallel Projection | 3 |
| 6 | ENG 100 | Technical Communications | 3 |
| | | | 15 |
| | | FOURTH TERM | |
| 5 | I D 240 | Fundamentals of Product Layout | 4 |
| 6 | I D 206 | Fundamentals of Plant Layout** | 3 |
| 7 | I D 199 | On-the-Job Training* | 4 |
| 7 | PLS 108 | Government and Society | 3 |
| 6 | ARC 120 | Mechanical Equipment | 2 |
| | | | 16 |

Total Credit Hours For Program—64

*TCA 101 Technical Illustration or PSY 150 Industrial Psychology may be substituted for I D 199 On-the-Job Training.

**I D 252 Fundamentals of Electrical Drafting may be substituted for I D 206 Fundamentals of Plant Layout.

PART-TIME STUDENTS: Students who can take 6-9 credit hours per term should follow the order of courses to be taken as shown to the LEFT of the course title. For example, the fifth term a student would elect all courses numbered 5. A similar election would be made for each of the other terms to complete the program.

## DRAFTSMAN-DETAILER

### One-Year Program—Code 827

**Advisors — R. Bertoia, R. J. Packard**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | I D 111 | Industrial Drafting | 4 |

| | | | |
|---|---|---|---|
| 2 | I D 112 | Descriptive Geometry | 4 |
| 3 | M T 111 | Machine Shop Theory and Practice | 4 |
| 4 | MTH | Mathematics Elective | 4 |
| | | | 16 |

SECOND TERM

| | | | |
|---|---|---|---|
| 3 | TCA 100 | Perspective and Parallel Projection | 4 |
| 2 | I D 114 | Industrial Drafting | 4 |
| 3 | I D 122 | Fundamentals of Jigs and Fixtures | 3 |
| 4 | MLG 101 | Industrial Materials | 2 |
| 4 | ENG | English Elective | 3 |
| | | | 16 |

Total Credit Hours For Program—32

## CONSTRUCTION TECHNICIAN
### Artisan—Wood, Plastics, Metal
### Two-Year Program—Code 828
**Advisors — D. Byrd, A. Symes**

Part-Time Sequence / Full-Time Sequence

| | Course | Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | ARC 117 | Construction Materials | 3 |
| 1 | C T 121 | Carpentry | 4 |
| 1 | ENG 100 | Technical Communications | 3 |
| 1 | MTH 151 | Applied Algebra | 3 |
| | | | 13 |
| | | SECOND TERM | |
| 2 | BPR 100 | Blueprint Reading for Construction Trades | 2 |
| 2 | C T 221 | Carpentry | 4 |
| 2 | ARC 100 | Specifications | 1 |
| 2 | MTH 169 | Intermediate Algebra | 4 |
| | | | 11 |
| | | SIX WEEKS INTERNSHIP | |
| 3 | C T 199 | On-the-Job Training—40 hr. week | 6 |
| 3 | C T 199 | On-the-Job Training—40 hr. week | 6 |
| | | | 12 |
| | | FOURTH TERM | |
| 3 | C T 242 | Crafts in Wood, Plastic, and Non-Ferrous Metals | 4 |
| 4 | BPR 110 | Blueprint Reading for Construction Trades | 2 |
| 4 | ARC 109 | Site Layout | 3 |
| 4 | ARC 207 | Estimating Construction Costs | 2 |
| 4 | PSY 150 | Industrial Psychology | 3 |
| | | | 14 |
| | | FIFTH TERM | |
| 5 | C T 262 | Building Component Fabrication | 4 |
| 5 | ARC 208 | Estimating Construction Costs | 2 |
| 5 | PLS 108 | Government & Society | 3 |
| 5 | SPH 100 | Fundamentals of Speaking | 3 |
| | | | 12 |

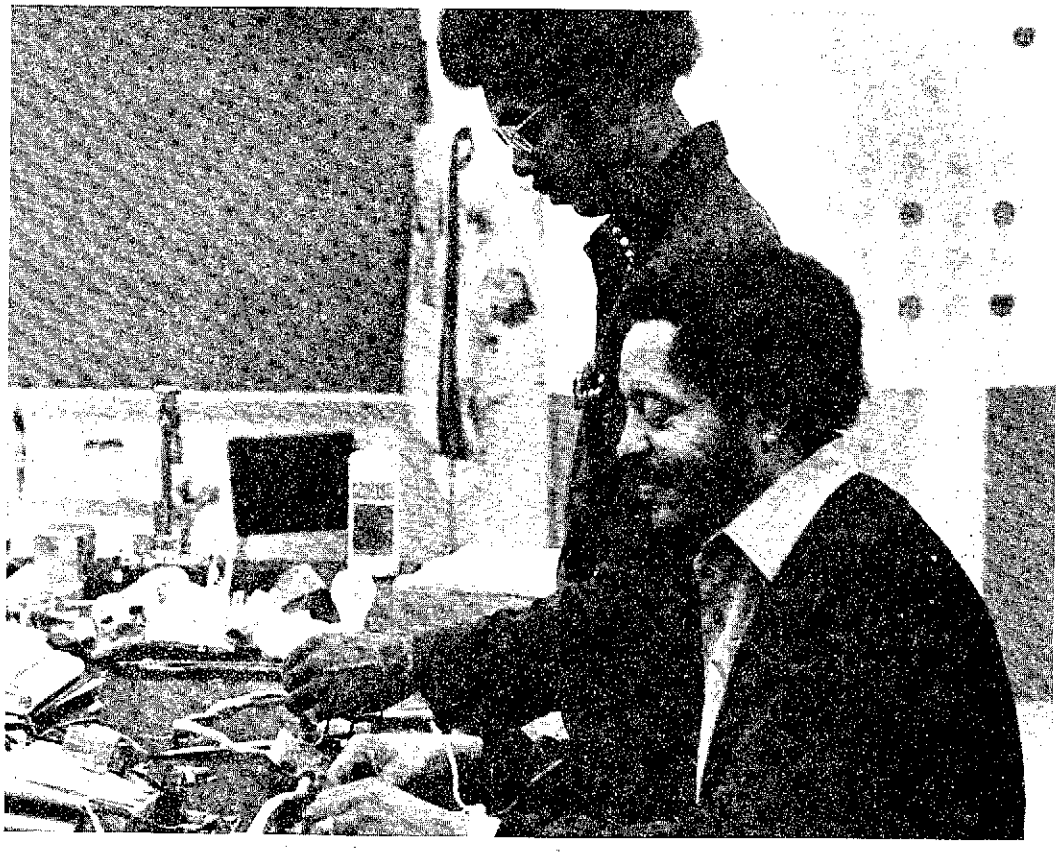
Total Credit Hours For Program-62

PART-TIME STUDENTS: Students who can take 6-9 credit hours per term should follow the order of courses to be taken as shown to the LEFT of the course title. For example, the fifth term a student would elect all courses numbered 5. A similar election would be made for each of the other terms to complete the program.

## CONSTRUCTION TECHNOLOGY
### (Architectonics)
### Lighting Specialist
### Two-Year Program-Code 829
**Advisors — D. Byrd, A. Symes**

Part-Time Sequence / Full-Time Sequence

| | Course | Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | C T 131 | Electric Power Supplying | 4 |
| 2 | BPR 100 | Blueprint Reading for Construction Trades | 2 |
| 1 | MTH 169A | Intermediate Algebra | 3 |
| 2 | E E 101 | Servicing Techniques | 4 |
| 2 | ENG 100 | Technical Communications | 3 |
| | | | 16 |
| | | SECOND TERM | |
| 3 | C T 231 | Lighting Systems | 4 |
| 1 | ARC 117 | Construction Materials | 3 |
| 3 | ARC 100 | Specifications | 1 |
| 2 | MTH 169B | Intermediate Algebra | 3 |
| 1 | E E 111 | Electrical Fundamentals | 4 |
| | | | 15 |
| | | *SIX WEEKS INTERNSHIP | |
| | C T 199 | On-the-Job Training—40 Hr. week (Between 2nd and 3rd term) | 6 |
| | | | 6 |
| | | THIRD TERM | |
| 2 | E E 122 | Electrical Fundamentals | 4 |
| 3 | BPR 110 | Blueprint Reading for Construction Trades | 2 |
| 4 | PSY 150 | Industrial Psychology | 3 |
| 3 | E E 102 | Appliance Repair | 4 |
| | | | 13 |



| | | | |
|---|---|---|---|
| | | FOURTH TERM | |
| 4 | C T 263 | Lighting Calculations and Design | 4 |
| 4 | ARC 207 | Estimating Construction Costs | 2 |
| 4 | E E 220 | Electrical Installation and Maint. Practices | 4 |
| 3 | PLS 108 | Government and Society | 3 |
| | | | 13 |

Total Credit Hours for Program—63

*Or Approved Elective

## ELECTRICAL ENGINEERING TECHNICIAN

### Two-Year Program—Code 831

**Advisors — K. Wheeler, D. Russell, J. Williams, A. Robinson**

| Part-Time Sequence | Full-Time Sequence | | |
|---|---|---|---|
| | Course | Description | Hrs. |
| | | FIRST TERM | |
| 1 | E E 110 | Electrical Applications | 4 |
| 1 | E E 111 | Electrical Fundamentals | 2 |
| 5 | I D 100 | Technical Drawing | 4 |
| 1 | MTH 169 | Intermediate Algebra or | |
| | E E 100 | Electrical Analysis | 4 |
| 8 | ENG 091 | English Fundamentals or | |
| | ENG 111 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | E E 122 | Electrical Fundamentals | 2 |
| 2 | E E 120 | Electrical Applications | 4 |
| 4 | E E 127 | Industrial Electricity | 4 |
| 2 | PSY 150 | Industrial Psychology | 3 |
| 4 | E E 211 | Basic Electronics | 4 |
| | | | 17 |
| | | THIRD TERM | |
| 3 | E E 200 | Audio and Power Transmission | 3 |
| 7 | E E 237 | Electronic Switching and Control (Logic) | 3 |
| 7 | E E 219 | Electrical Distribution Systems | 3 |
| 3 | E E 210 | Measurements and Instrumentation | 4 |
| | | Science or Technical Elective | 4 |
| | | | 17 |

| | | FOURTH TERM | |
|---|---|---|---|
| 6 | E E 220 | Electrical Installation and Maintenance Practices | 4 |
| 8 | E E 239 | Electrical Design | 3 |
| 8 | E E 240 | Practices and Standards Seminar | 2 |
| 7 | PLS 108 | Government and Society | 3 |
| | | Approved Non-Technical Elective | 3 |
| | | | 15 |

Total Credit Hours For Program—66

## ELECTRONICS ENGINEERING TECHNICIAN

### Two-Year Program—Code 832

**Advisors — A. Robinson, D. Russell, K. Wheeler, J. Williams**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | E E 110 | Electrical Applications | 2 |
| 1 | E E 111 | Electrical Fundamentals | 4 |
| 6 | I D 100 | Technical Drawing | 4 |
| 1 | MTH 169 | Intermediate Algebra or | |
| | E E 100 | Electrical Analysis | 4 |
| 7 | ENG 091 | English Fundamentals or | |
| | ENG 111 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | E E 122 | Electrical Fundamentals | 4 |
| 2 | E E 120 | Electrical Applications | 2 |
| 4 | E E 127 | Industrial Electricity | 4 |
| 2 | PSY 150 | Industrial Psychology | 3 |
| 4 | E E 211 | Basic Electronics | 4 |
| | | | 17 |
| | | THIRD TERM | |
| 3 | E E 200 | Audio and Power Transmission | 3 |
| 7 | E E 237 | Electronic Switching and Control | 3 |
| 7 | PLS 108 | Government and Society | 3 |
| 3 | E E 210 | Measurements and Instrumentation | 4 |
| 5 | | Science or Technical Elective | 4 |
| | | | 17 |
| | | FOURTH TERM | |
| 8 | E E 238 | Industrial Electronic Circuits | 4 |
| 6 | E E 222 | Pulse Circuits and Operational Amplifiers | 4 |
| 8 | E E 239 | Electrical Design | 3 |
| 8 | E E 240 | Practices and Standards Seminar | 2 |
| 6 | | Approved Non-Technical Elective | 3 |
| | | | 16 |

Total Credit Hours for Program—67

## ELECTRICAL EQUIPMENT REPAIRMAN

### One-Year Program—Code 833

**Advisors — K. Wheeler, D. Russell, J. Williams, A. Robinson**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | E E 110 | Electrical Applications | 2 |
| 1 | E E 111 | Electrical Fundamentals | 4 |
| 3 | E E 101 | Servicing Techniques | 4 |
| 1 | MTH 151 | Applied Algebra | 4 |
| 4 | ENG 100 | Technical Communications | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | E E 120 | Electrical Applications | 2 |
| 2 | E E 122 | Electrical Fundamentals | 4 |
| 4 | E E 102 | Appliance Repair | 4 |
| 3 | E E 211 | Basic Electronics | 4 |
| 2 | PSY 150 | Industrial Psychology | 3 |
| | | | 17 |

Total Credit Hours For Program—34

## ELECTRONIC SERVICE TECHNICIAN

### Two-Year Program—Code 834

**Advisors — K. Wheeler, D. Russell, J. Williams, A. Robinson**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | E E 110 | Electrical Applications | 2 |
| 1 | E E 111 | Electrical Fundamentals | 4 |
| 3 | E E 101 | Servicing Techniques | 4 |
| 1 | MTH 151 | Applied Algebra | 4 |
| 4 | ENG 101 | Technical Communications | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | E E 120 | Electrical Applications | 2 |
| 2 | E E 122 | Electrical Fundamentals | 4 |
| 4 | E E 102 | Appliance Repair | 4 |
| 3 | E E 211 | Basic Electronics | 4 |
| 2 | PSY 150 | Industrial Psychology | 3 |
| | | | 17 |

| | | | |
|---|---|---|---|
| | | THIRD TERM | |
| 5 | E E 212 | Radio and Television Circuitry | 5 |
| 7 | E E 237 | Electronic Switching and Control | 3 |
| 7 | E E 210 | Measurements and Instrumentations | 4 |
| 5 | MGT 209 | Small Business Management | 3 |
| | | | 15 |
| | | FOURTH TERM | |
| 6 | E E 223 | Color Television | 4 |
| 8 | E E 224 | Television Service Procedures and Practices | 4 |
| 6 | E E 220 | Electrical Installation and Maintenance Practices | 4 |
| 8 | PLS 150 | State and Local Government or | |
| | PLS 108 | Government and Society | 3 |
| | | | 15 |

Total Credit Hours For Program—64

## FLUID POWER TECHNICIAN
## Two-Year Program—Code 841
**Advisor — G. Agin**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | FLP 111 | Fluid Power Fundamentals | 4 |
| 1 | FLP 214 | Basic Hydraulic Circuits | 3 |
| 4 | E E 111 | Electrical Fundamentals | 4 |
| 1 | MTH 169 | Intermediate Algebra | 4 |
| | | | 15 |
| | | SECOND TERM | |
| 2 | FLP 122 | Hydraulic Generators (Pumps) | 4 |
| 2 | FLP 226 | Pneumatics | 3 |
| 3 | M T 111 | Machine Shop Theory and Practice | 4 |
| 3 | W F 100 | Fundamentals of Welding | 2 |
| 7 | SPH 100 | Fundamentals of Speaking | 3 |
| | | | 16 |
| | | THIRD TERM | |
| 3 | FLP 213 | Hydraulic Controls | 3 |
| 2 | N C 100 | Introduction to Numerical Control | 3 |
| 5 | I D 100 | Technical Drawing | 4 |
| 6 | PHY 110 | Applied Physics | 4 |
| 7 | ENG 100 | Technical Communications | 3 |
| | | | 17 |
| | | FOURTH TERM | |
| 4 | FLP 225 | Advanced Hydraulic Circuits | 3 |
| 5 | E E 127 | Industrial Electricity | 4 |
| 6 | M T 122 | Machine Tool Operation and Set-Up | 4 |
| 8 | PLS 108 | Government and Society | 3 |
| 8 | PSY 150 | Industrial Psychology | 3 |
| | | | 16 |

Total Credit Hours for Program—64

## HYDRAULIC ASSEMBLER
## One-Year Program—Code 842
**Advisor — G. Agin**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | FLP 111 | Fluid Power Fundamentals | 4 |
| 2 | FLP 214 | Basic Hydraulic Circuits | 3 |
| 3 | W F 111 | Welding and Fabrication | 4 |
| 4 | MTH 151 | Applied Algebra | 4 |
| | | | 15 |
| | | SECOND TERM | |
| 2 | FLP 122 | Hydraulic Generators (Pumps) | 4 |
| 1 | FLP 226 | Pneumatics | 3 |
| 2 | BPR 101 | Blueprint Reading | 3 |
| 4 | M T 100 | Machine Shop Theory | 3 |
| 4 | SPH 100 | Fundamentals of Speaking | 3 |
| | | | 16 |

Total Credit Hours For Program—31

## MECHANICAL-ENGINEERING TECHNICIAN
## Two-Year Program—Code 851
**Advisors — P. Wiernik, R. Mealing, D. Garrett, B. Lowe**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | M T 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 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 2 | M T 122 | Machine Tool Operation and Set-Up | 4 |
| 2 | I D 100 | Technical Drawing | 4 |
| 3 | PSY 150 | Industrial Psychology | 3 |

| | | | |
|---|---|---|---|
| 2 | MTH 152 | Applied Geometry and Trigonometry | 3 |
| | | | 14 |

THIRD TERM

| | | | |
|---|---|---|---|
| 3 | MLG 101 | Industrial Materials | 2 |
| 5 | E E 111 | Electrical Fundamentals | 4 |
| 5 | FLP 111 | Fluid Power Fundamentals | 4 |
| 3 | M T 123 | Machine Tool Operation and Set-Up | 4 |
| 5 | N C 100 | Introduction to Numerical Control | 3 |
| | | | 17 |

FOURTH TERM

| | | | |
|---|---|---|---|
| 4 | M T 201 | Machine Tool Technology | 4 |
| 4 | MLG 123 | Metallurgical Testing Procedures | 2 |
| 4 | FLP 214 | Basic Hydraulic Circuits | 3 |
| 6 | ENG 100 | Technical Communications | 3 |
| 6 | PLS 108 | Government and Society | 3 |
| | | | 15 |

Total Credit Hours For Programs—63

## TOOLROOM MACHINE OPERATOR
## One-Year Program—Code 853

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | M T 111 | Machine Shop Theory and Practice | 4 |
| 1 | BPR 101 | Blueprint Reading | 3 |
| 3 | MLG 101 | Industrial Materials | 2 |
| 1 | MTH 151 | Applied Algebra | 4 |
| 3 | ENG 100 | Technical Communication | 3 |
| | | | 16 |
| | | SECOND TERM | |
| 2 | M T 122 | Machine Tool Operation and Set-Up | 4 |
| 2 | N C 100 | Intro. to Numerical Control | 3 |
| 3 | MLG 215 | Heat Treatment Processes | 2 |
| 3 | I D 100 | Technical Drawing | 4 |
| 2 | MTH 152 | Applied Geometry and Trigonometry | 3 |
| | | | 16 |

Total Credit Hours For Program—32

## ELECTRO-MECHANICAL TECHNICIAN
## Two-Year Program—Code 854
**Advisors — R. Mealing, D. Garrett**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 3 | E E 111 | Electrical Fundamentals | 2 |
| 3 | E E 110 | Electrical Applications | 4 |
| 1 | M T 111 | Machine Shop Theory and Practice | 4 |
| 1 | MTH 169 | Intermediate Algebra | 4 |
| 6 | ENG 100 | Technical Communications or ENG 111 English Composition | 3 |
| | | | 17 |

SECOND TERM

| | | | |
|---|---|---|---|
| 4 | E E 122 | Electrical Fundamentals | 4 |
| 4 | E E 120 | Electrical Applications | 2 |
| 1 | BPR 101 | Blueprint Reading | 3 |
| 2 | M T 122 | Machine Tool Operation and Set-Up | 4 |
| 5 | MLG 215 | Heat Treatment Processes | 2 |
| | | | 15 |

THIRD TERM

| | | | |
|---|---|---|---|
| 2 | N C 100 | Introduction to Numerical Control | 3 |
| 2 | FLP 111 | Fluid Power Fundamentals | 4 |
| 4 | E E 127 | Industrial Electricity | 4 |
| 4 | M T 200 | Machine Maintenance | 3 |
| 6 | PLS 108 | Government and Society | 3 |
| | | | 17 |

FOURTH TERM

| | | | |
|---|---|---|---|
| 3 | M T 123 | Machine Tool Operation and Set-Up | 4 |
| 2 | I D 100 | Technical Drawing | 4 |
| 5 | PSY 150 | Industrial Psychology | 3 |
| 5 | W F 100 | Fundamentals of Welding | 2 |
| 5 | N C 121 | Programming for Numerical Control | 3 |
| | | | 16 |

Total Credit Hours For Program—65

## MLG METALLURGY
## Two-Year Program—Code 861
**Advisor — R. Fatur**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | MLG 100 | Intro. to Metallurgy | 1 |
| 2 | MLG 202 | Manufacturing Processes | 3 |
| 1 | MLG 215 | Heat Treatment | 2 |
| 2 | MTH 169 | Intermediate Algebra | 4 |
| 1 | ENG 111 | English Composition | 3 |
| 3 | M T 111 | Machine Shop Theory and Practice | 4 |
| | | | 17 |

| | | | |
|---|---|---|---|
| | | SECOND TERM | |
| 3 | MLG 101 | Industrial Materials | 2 |
| 4 | MLG 122 | General Metallurgy | 3 |
| 3 | MLG 103 | Technical Metrics | 1 |
| 5 | ENG 100 | Technical Communications | 3 |
| 4 | I D 100 | Technical Drawing | 4 |
| 5 | W F 100 | Fundamentals of Welding | 2 |
| | | | 15 |
| | | THIRD TERM | |
| 6 | MLG 207 | Testing Laboratory | 2 |
| 6 | MLG 217 | Mechanical Testing | 2 |
| 7 | MLG 228 | Metallography | 4 |
| 7 | CEM 111 | General Chemistry | 4 |
| 6 | PSY 150 | Industrial Psychology | 3 |
| | | | 15 |
| | | FOURTH TERM | |
| 9 | MLG 229 | Specialized Study | 5 |
| 8 | PHY 111 | General Physics | 4 |
| 9 | PLS 108 | Government and Society | 3 |
| | | Approved Elective | 4 |
| | | | 16 |

Total Credit Hours For Program—63

## NUMERICAL CONTROL TECNICIAN
### Two-Year Program—Code 871
**Advisor — D. Garrett**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | N C 100 | Introduction to Numerical Control | 3 |
| 1 | M T 111 | Machine Shop Theory and Practice | 4 |
| 3 | I D 100 | Technical Drawing or | |
| | I D 111 | Industrial Drafting | 4 |
| 1 | MTH 151 | Applied Algebra | 4 |
| | | | 14-15 |
| | | SECOND TERM | |
| 2 | N C 121 | Programming for Numerical Control | 3 |
| 2 | N C 122 | Numerical Control Machine Tool Operation | 3 |
| 4 | M T 122 | Machine Tool Operation and Set-Up | 4 |
| 4 | I D 112 | Descriptive Geometry | 4 |
| 1 | MTH 152 | Applied Geometry and Trigonometry | 4 |
| | | | 16 |
| | | THIRD TERM | |
| 3 | N C 213 | Compact II Computer Programming | 4 |
| 4 | FLP 111 | Fluid Power Fundamentals | 4 |
| 7 | PLS 108 | Government and Society | 3 |
| 6 | ENG 100 | Technical Communications | 3 |
| 8 | PSY 150 | Industrial Psychology | 3 |
| | | | 17 |
| | | FOURTH TERM | |
| 4 | N C 224 | APT III Computer Programming | 4 |
| | N C 111 | Manufacturing Processes for Numerical Control | 3 |
| 6 | MTH 187 | Scientific and Technical Programming | 3 |
| 5 | I D 121 | Theory of Jigs and Fixtures | 2 |
| | | Elective* | 3-4 |
| | | | 15-16 |

Total Credit Hours For Program—62-65

*Recommended Electives

| | |
|---|---|
| E E 111 | Electrical Fundamentals |
| W F 100 | Fundamentals of Welding |
| MTH 110 | Trigonometry |
| MTH 111 | Precalculus |
| MTH 122 | Calculus with Analytical Geometry |
| I D 122 | Fundamentals of Jigs & Fixtures |
| M T 123 | Machine Tool Operation & Set-Up |
| PHY 110 | Applied Physics |

## NUMERICAL CONTROL MACHINE OPERATOR
### One-Year Program—Code 872
**Advisor — D. Garrett**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | N C 100 | Introduction to Numerical Control | 3 |
| 1 | M T 111 | Machine Shop Theory and Practice | 4 |
| 3 | I D 100 | Technical Drawing or | |
| | I D 111 | Industrial Drafting | 4 |
| 1 | MTH 151 | Applied Algebra | 4 |
| | | | 15 |
| | | SECOND TERM | |
| 2 | N C 121 | Programming for Numerical Control | 3 |
| 2 | N C 122 | Numerical Control Machine Tool Operations | 3 |
| 3 | M T 122 | Machine Tool Operations and Set-Up | 4 |
| 4 | ENG 100 | Technical Communications | 3 |
| 4 | MTH 152 | Applied Geom. & Trig. | 4 |
| | | | 17 |

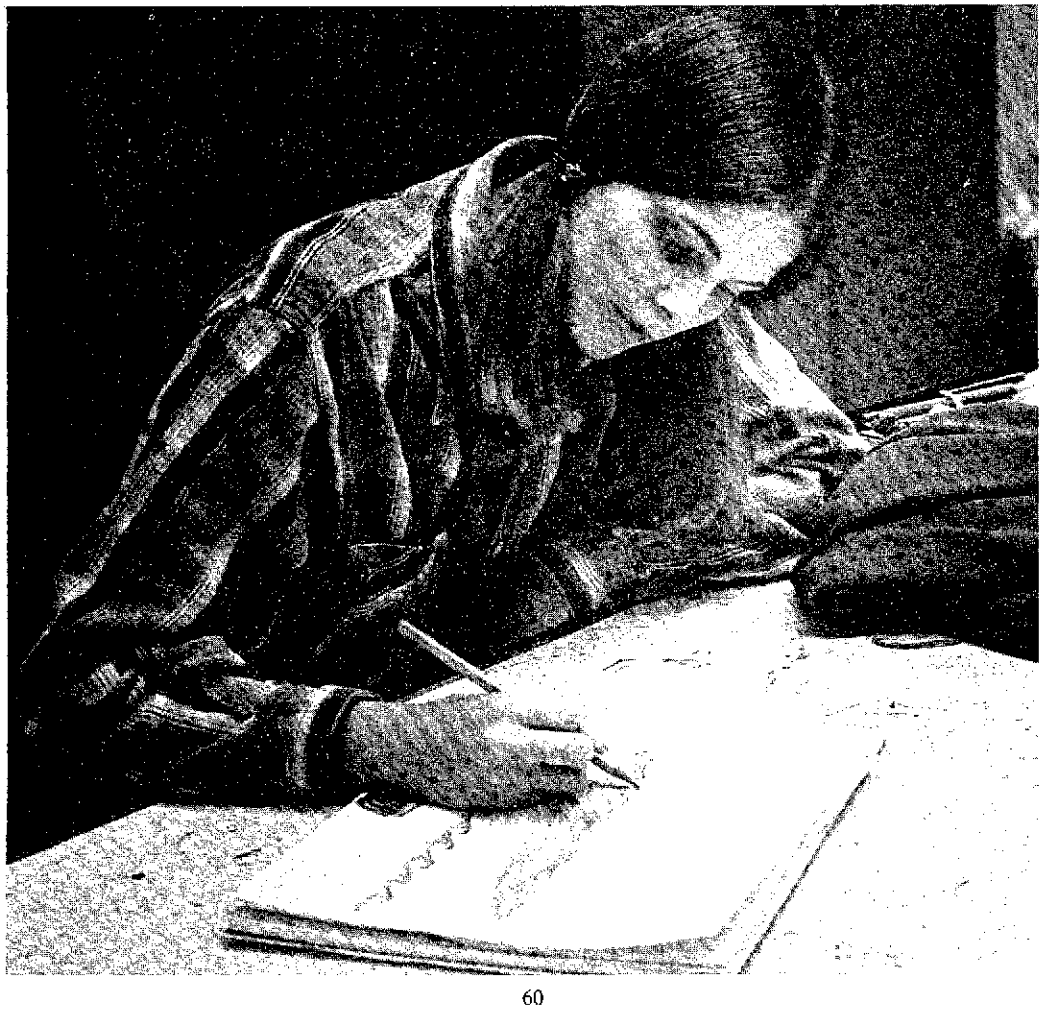
Total Credit Hours For Program—32-33

## COMMERCIAL ARTIST
## Two-Year Program—Code 882
**Advisor — J. Martin**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 2 | TCA 110 | Lettering and Layout | 4 |
| 1 | ART 111 | Basic Drawing | 3 |
| 1 | ART 112 | Basic Design | 3 |
| 1 | ENG 100 | Technical Communication or | |
| | ENG 111 | English Composition | 3 |
| 2 | MTH 090 | Foundations of Occupational Mathematics or | |
| | PHY 110 | Applied Physics | 3-4 |
| | | | 16-17 |
| | | SECOND TERM | |
| 3 | TCA 121 | Advertising Layout | 4 |
| 3 | TCA 227 | Graphic Redproduction | 4 |
| 4 | TCA 100 | Perspective and Parallel Projection | 4 |
| 4 | PHO 214 | Photography | 4 |
| | | | 16 |
| | | THIRD TERM | |
| 5 | TCA 101 | Technical Illustration | 4 |
| 5 | ART 140 | Life Drawing | 3 |
| 6 | TCA 122 | Technical Rendering | 4 |
| 6 | TCA 226 | Commercial Display | 4 |
| | | | 15 |
| | | FOURTH TERM | |
| 7 | TCA 120 | Commercial Rendering | 4 |
| 7 | TCA 228 | Airbrush Techniques | 4 |
| 8 | TCA 236 | Specialized Study* | 4 |
| 8 | PLS 108 | Government and Society | 3 |
| 8 | PSY 150 | Industrial Psychology | 3 |
| | | | 18 |

Total Credit Hours For Program—65-66

*PHO 218 may be substituted for 3 credits of TCA 236.



## TECHNICAL ILLUSTRATOR
### Two-Year Program—Code 884
**Advisor — J. Martin**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 2 | TCA 110 | Lettering and Layout | 4 |
| 1 | ART 111 | Basic Drawing | 3 |
| 2 | I D 100 | Technical Drawing or | |
| | I D 111 | Industrial Drafting | 4 |
| 1 | BPR 100 | Blueprint Reading for Construction Trades or | |
| | BPR 101 | Blueprint Reading | 2-3 |
| 1 | MTH 090 | Foundations of Occupational Mathematics or | |
| | PHY 110 | Applied Physics | 3-4 |
| | | | 16-18 |
| | | SECOND TERM | |
| 4 | TCA 100 | Perspective and Parallel Drawing | 4 |
| 3 | TCA 227 | Graphic Reproduction | 4 |
| 4 | PHO 214 | Photography | 4 |
| 3 | ENG 100 | Technical Communications or | |
| | ENG 111 | English Composition | 3 |
| | | | 15 |
| | | THIRD TERM | |
| 5 | TCA 101 | Technical Illustration | 4 |
| 5 | BPR 103 | Sheet Metal Blue Print Reading and Layout or | |
| | I D 112 | Descriptive Geometry | 3-4 |
| 6 | TCA 226 | Commercial Display | 4 |
| 6 | TCA 122 | Technical Rendering | 4 |
| | | | 15-16 |
| | | FOURTH TERM | |
| 7 | TCA 120 | Commercial Rendering | 4 |
| 7 | TCA 228 | Airbrush Techniques | 4 |
| 8 | TCA 236 | Specialized Study* | 4 |
| 8 | PLS 108 | Government and Society | 3 |
| 8 | PSY 150 | Industrial Psychology | 3 |
| | | | 18 |

Total Credit Hours For Program—64-67

*PHO 218 may be substituted for 3 credits of TCA 236

## PHOTOGRAPHIC TECHNICIAN
### Two-Year Program—Code 885
**Advisor — J. R. Steinbach**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | PHO 214 | Photography | 4 |
| 2 | ART 112 | Basic Design | 3 |
| 1 | MTH 090 | Foundations of Occupational Mathematics | 3 |
| 4 | ENG 100 | Technical Communication | 3 |
| 5 | PLS 108 | Government and Society | 3 |
| | | | 16 |
| | | SECOND TERM | |
| 3 | PHO 215 | Darkroom Techniques | 5 |
| 5 | PHO 216 | Basic Color Photography | 3 |
| 4 | TCA 227 | Graphic Reproduction | 4 |
| 3 | PHO 217 | Studio Techniques | 3 |
| 2 | PHO 218 | Photo Retouching | 2 |
| | | | 17 |
| | | THIRD TERM | |
| 6 | PHO 220 | Camera Selection and Use | 3 |
| 7 | PHO 221 | Advanced Darkroom Techniques | 2 |
| 6 | PHO 222 | Advanced Color Photography | 3 |
| 7 | PHO 223 | Photographic Occupations | 2 |
| 7 | PSY 150 | Industrial Psychology | 3 |
| | | | 13 |
| | | FOURTH TERM | |
| 8 | PHO 224 | Darkroom Operation | 2 |
| 9 | PHO 229 | Freelance Operations | 3 |
| 8 | PHO 230 | Specialized Studies in Photography | 2-4 |
| 9 | PHO 231 | Portfolio Seminar | 3 |
| 2 | MGT 209 | Small Business Management | 3 |
| | | | 15-17 |

Total Credit Hours For Program—63-65

## PHOTOGRAPHIC ASSISTANT
### One-Year Program—Code 886
**Advisor — J. R. Steinbach**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | PHO 214 | Photography | 4 |
| 3 | ART 112 | Basic Design | 3 |
| 1 | MTH 090 | Foundations of Occupational Mathematics | 3 |
| 4 | ENG 100 | Technical Communication | 3 |
| 5 | PLS 108 | Government and Society | 3 |
| | | | 16 |
| | | SECOND TERM | |
| 2 | PHO 215 | Darkroom Techniques | 5 |
| 4 | PHO 216 | Basic Color Photography | 3 |
| 4 | TCA 227 | Graphic Reproduction | 4 |

| | | | |
|---|---|---|---|
| 3 | PHO 218 | Photo Retouching | 2 |
| | | | 14 |

Total Credit Hours For Program—30

## WELDING AND FABRICATION TECHNICIAN
### Two-Year Program—Code 891
**Advisor — D. Gray**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | W F 111 | Welding and Fabrication (Basic Oxy-Acetylene) | 4 |
| 2 | W F 112 | Welding and Fabrication (Basic Arc) | 4 |
| 7 | M T 100 | Machine Shop Theory | 3 |
| 7 | BPR 101 | Blueprint Reading | 3 |
| 3 | ENG 091 | English Fundamentals or | |
| | ENG 100 | Technical Communications or | |
| | ENG 111 | English Composition | 3 |
| | | | 17 |
| | | SECOND TERM | |
| 3 | W F 123 | Welding and Fabrication (Advanced Oxy-Acety.) | 4 |
| 4 | W F 124 | Welding and Fabrication (Advanced Arc) | 4 |
| 8 | MLG 122 | General Metallurgy | 3 |
| 1 | MTH 151 | Applied Algebra | 4 |
| | | | 15 |
| | | THIRD TERM | |
| 5 | W-F 215 | Welding and Fabrication (Tig) | 3 |
| 6 | I D 100 | Technical Drawing | 4 |
| 10 | BPR 103 | Sheet Metal Blueprint Reading and Layout | 3 |
| 5 | MLG 215 | Heat Treatment Processes | 2 |
| 4 | PSY 150 | Industrial Psychology | 3 |
| | | | 15 |
| | | FOURTH TERM | |
| 6 | W F 226 | Welding and Fabrication (Specialized) | 3 |
| 9 | FLP 111 | Fluid Power Fundamentals | 4 |
| 10 | W F 200 | Layout & Theory for Welders | 2 |
| 8 | MTH 152 | Applied Geometry and Trigonometry | 4 |
| 9 | PLS 108 | Government and Society | 3 |
| | | | 17 |

Total Credit Hours For Program—63

## COMBINATION WELDER-MECHANIC
### One-Year Program—Code 892
**Advisors — D. Gray, L. Morgan**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | W F 111 | Welding and Fabrication | 4 |
| 2 | W F 112 | Welding and Fabrication | 4 |
| 1 | BPR 103 | Sheet Metal Blueprint Reading and Layout | 3 |
| 4 | ENG 091 | English Fundamentals | 3 |
| 3 | MLG 100 | Introduction to Metallurgy | 1 |
| 3 | MLG 215 | Heat Treatment Process | 2 |
| | | | 17 |
| | | SECOND TERM | |
| 3 | W F 123 | Welding and Fabrication | 4 |
| 4 | W F 124 | Welding and Fabrication | 4 |
| 2 | MLG 122 | General Metallurgy | 3 |
| 5 | MTH 151 | Applied Algebra | 4 |
| | | | 15 |

Total Credit Hours For Program—32

## REFRIGERATION/AIR CONDITIONING SERVICEMAN—Code 943
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or | |
| MTH 169 | Intermediate Algebra | 4 |
| E E 111 | Electrical Fundamentals | 4 |
| RAC 111 | Refrigeration | 5 |
| RAC 122 | Refrigeration | 5 |
| W F 104 | Soldering and Brazing | 2 |
| RAC 123 | R/AC Systems Laboratory | 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 | 5 |
| RAC 250 | Refrigeration Codes | 2 |
| | | 58 |

## INSPECTOR-QUALITY CONTROL
### One-Year Program—Code 946
**Advisor — R. L. Jackson**

| Part-Time Sequence | Course | Full-Time Sequence Description | Hrs. |
|---|---|---|---|
| | | FIRST TERM | |
| 1 | MGL 100 | Introduction to Metallurgy | 1 |
| 1 | M T 111 | Machine Shop Theory and Practice | 4 |
| 1 | BPR 101 | Blueprint Reading | 3 |

| | | | |
|---|---|---|---|
| 2 | MTH 151 | Applied Algebra | 4 |
| 2 | MLG 215 | Heat Treatment Processes | 2 |
| 3 | MLG 122 | General Metallurgy | 4 |
| | | | 18 |

SECOND TERM

| | | | |
|---|---|---|---|
| 2 | MLG 217 | Mechanical Testing | 2 |
| 4 | ENG 100 | Technical Communications | 3 |
| 4 | PLS 108 | Government and Society | 3 |
| 3 | Q C 225 | Quality Control Management | 3 |
| 3 | MTH 152 | Applied Geometry and Trigonometry | 4 |
| | | | 15 |

Total Credit Hours For Program—30

## SALES REPRESENTATIVE
## Two-Year Associate Degree Program—Code 970

**Advisor — R. Jackson**

Sales training in a specialty area may be arranged for students in any of the listed programs by contacting the advisor.

- Welding Supplies and Equipment Sales
- Data Processing Office Supplies and Equipment Sales
- Electronic Supplies and Equipment Sales
- Hydraulic Equipment and Supplies Sales
- Construction and Building Supplies Sales
- Machine Tool and Supplies Sales
- Institutional Food and Equipment Sales
- Refrigeration and Air Conditioning Equipment and Supplies Sales
- Automobile Service Supplies and Equipment
- Commercial Art Equipment and Supplies Sales

## COMBINED SPECIALIZATION ASSOCIATE DEGREE

**Advisor — R. Jackson**

Students who desire to obtain job entry competency in two or more program areas may do so by following the suggested program listed below:

Course

FIRST YEAR

| | | |
|---|---|---|
| I D 100 | Technical Drawing | 4 |
| BPR 101 | Blueprint Reading | 3 |
| M Y 111 | Machine Shop Theory and Practice | 4 |
| FLP 111 | Fluid Power Fundamentals | 4 |
| MLG 100 | Introduction to Metallurgy | 1 |
| W F 100 | Fundamentals of Welding | 2 |
| ENG 100 | Technical Communications | 3 |
| PSY 150 | Industrial Psychology | 3 |
| E E 090 | Introductory Electricity | 3 |
| N C 100 | Introduction to Numerical Control | 3 |
| | | 30 |

Total Credit Hours For Program—30

In addition, students must complete the major sequence in each area desired as well as nine hours from the General Studies to include Government & Society, Mathematics, and one additional elective course from Commercial Arts, Social Science, or Exact Science.

Minimum hours to graduate is sixty (60) term hours of credit. (Most students will accumulate 75-85 hours of credit to complete at least two major areas of competency.

Graduates will receive the Associate Degree "Mechanical Engineering Technician" with majors listed.

## APPRENTICE TRAINING AND TRADE RELATED INSTRUCTION

### 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 TRI coordinator 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, and the Michigan State Department of Education.

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

### Pre-Apprenticeship Training

Individuals who desire to enter an apprenticeship program, but who have not passed the required entrance examination are invited to contact the College counseling staff or the TRI coordinator. An individual pre-apprenticeship curriculum can be arranged which will help prepare for most industrial

apprenticeship entrance examination. Placement cannot be guaranteed in an apprenticeship program. Placement is at the mutual discretion of employers, employees, and organizations representing the skill trades involved.

**Associate Degree Program for Skilled Tradesmen**

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

## Associate Degree Program for JOURNEYMEN ENGINEERING TECHNICIAN Code 990

| | Credit Hours |
|---|---|
| Evaluation of Apprenticeship Program (Most skilled tradesmen have earned 25 to 32 credit hours completing their apprenticeship program) | 1 to 32 |

Option and additional credits needed for those concentrating on continuing university studies in ENGINEERING, EDUCATION, OR SCIENCE.

| | |
|---|---|
| SCIENCES (Selected from Mathematics, Physics or Chemistry) | 8 to 24 |
| ENGLISH | 6 |
| POLITICAL SCIENCE | 3 |

## INDUSTRIAL TECHNICIAN ASSOCIATE DEGREE

- Drafting
- Electrical
- Fluid Power
- Management
- Metallurgy
- Construction

**Options**

- Numerical Control
- Power Plant Engineering
- Quality Control
- Technical Illustration
- Welding and Fabrication
- Others — Arranged

60 credit hours minimum required including ENG 100 or 111 and PLS 108; 150 or 122.

Arrangements for completing programs other than those listed may be arranged by contacting the Coordinator of Trade Related Instruction.

Six credit hours for time spent as an indentured apprentice may be allowed if the employer's apprentice program is approved and/or meets the College's requirements (O-J-T).

## Associate Degree Program for JOURNEYMAN ASSOCIATE DEGREE MANUFACTURING ENGINEERING

**Advisor — R. Jackson**

**EXAMPLE**

| | |
|---|---|
| Evaluation of Apprenticeship Program (Most skilled tradesmen have earned 25 to 32 credit hours completing their apprenticeship program) | 1 to 32 |

Option and additional credits needed for those concentrating on continuing university studies in ENGINEERING, EDUCATION, OR SCIENCE.

SCIENCES (Selected from Mathematics, Physics or Chemistry) ..... 8 to 24
ENGLISH ..... 6
POLITICAL SCIENCE ..... 3

Option and additional credits needed for those concentrating on continuing university studies in MANAGEMENT.

SCIENCES (Selected from Mathematics, Physics or Biology) ..... 8
ENGLISH ..... 6
SPEECH ..... 3
POLITICAL SCIENCE ..... 3
ECONOMICS ..... 6
ACCOUNTING ..... 6

Arrangements for completing other two-year technical programs may be made by contacting the Trade Related Instruction Coordinator or a counselor.

EXAMPLE: NUMERICAL CONTROL OPTION
for Toolmakers, Diemakers, Machinists, etc.

| | | |
|---|---|---|
| N C 121 | Programming for Numerical Control | 3 |
| N C 223 | Computer Assisted Programming | 3 |
| FLP 111 | Electrical Fundamentals | 4 |
| E E 111 | Electrical Fundamentals | 4 |
| D P 111 | Principles of Data Processing | 5 |
| ENG 100 | Technical Communications | 3 |
| PLS 108 | Government and Society | 3 |
| | Electives (including O-J-T if desired) | 6 |
| | MINIMUM | 60 hours |

*Six credit hours for time spent as an indentured apprentice may be awarded if the employer's appretice program is approved and/or merits the College's requirements.

## TOOLMAKER APPRENTICE
### Code-902
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| M T 100 | Machine Shop Theory | 3 |
| BPR 101 | Blueprint Reading | 3 |
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| I D 100 | Technical Drawing | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| MLG 215 | Heat Treat Processes | 2 |
| MLG 100 | Introduction to Metallurgy | 1 |
| I D 121 | Theory of Jigs and Fixtures | 2 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| N C 100 | Introduction to Numerical Control | 3 |
| N C 121 | Programming for Numerical Control | 3 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

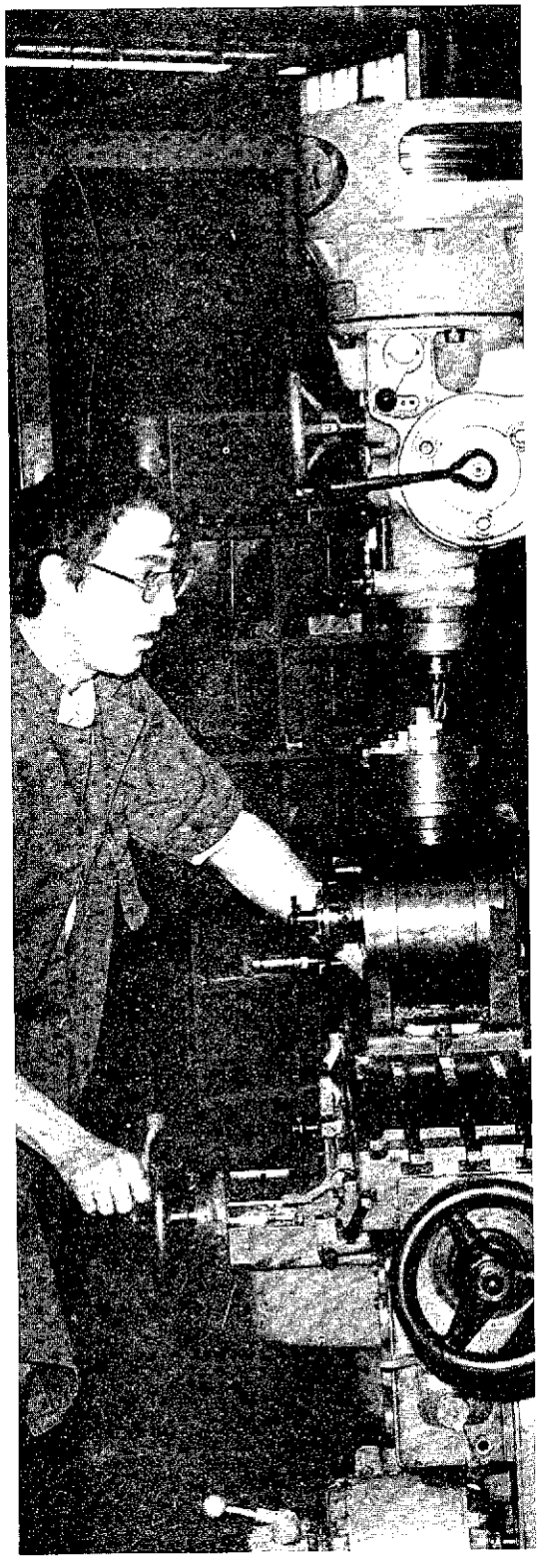
These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## DIEMAKER APPRENTICE
### Code-903
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| M T 100 | Machine Shop Theory | 3 |
| BPR 101 | Blueprint Reading | 3 |
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| I D 100 | Technical Drawing | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| MLG 100 | Introduction to Metallurgy | 1 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| I D 111 | Industrial Drafting | 4 |
| I D 212 | Theory of Dies | 2 |
| MLG 215 | Heat Treat Processes | 2 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.



## TOOL AND DIE APPRENTICE
### Code-904
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| BPR 101 | Blueprint Reading | 3 |
| M T 111 | Machine Shop Theory and Practice | 4 |
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| MLG 100 | Introduction to Metallurgy | 1 |
| MLG 215 | Heat Treat Processes | 2 |
| I D 100 | Technical Drawing | 4 |
| I D 121 | Theory of Jigs and Fixtures | 2 |
| I D 212 | Theory of Dies | 2 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## MACHINE REPAIR APPRENTICE
### Code-905
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| BPR 101 | Blueprint Reading | 3 |
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| MLG 100 | Introduction to Metallurgy | 1 |
| MLG 215 | Heat Treat Processes | 2 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| FLP 111 | Fluid Power Fundamentals | 4 |
| FLP 213 | Hydraulic Controls | 3 |
| FLP 214 | Basic Hydraulic Circuits | 3 |
| I D 100 | Technical Drawing | 4 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## MILLWRIGHT APPRENTICE
### Code-906
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| BPR 103 | Sheet Metal Layout Blueprint Reading | 3 |
| BPR 101 | Blueprint Reading | 3 |
| M T 100 | Machine Shop Theory | 3 |
| MTH 151 | Applied Algebra | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |

| | | |
|---|---|---|
| I D 100 | Technical Drawing | 4 |
| M T 240 | Plant Layout and Material Handling Systems | 4 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| W F 102 | Arc Welding | 2 |
| M T 101 | Millwright Theory | 2 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## INDUSTRIAL ELECTRICIAN APPRENTICE
### Code-907
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| FLP 111 | Fluid Power Fundamentals | 4 |
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| E E 110 | Electrical Applications | 2 |
| E E 111 | Electrical Fundamentals | 4 |
| E E 122 | Electrical Fundamentals | 4 |
| E E 127 | Industrial Electricity | 4 |
| E E 211 | Basic Electronics | 4 |
| E E 237 | Electronic Switching and Control | 3 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## QUALITY CONTROL TECHNICIAN
### Two-Year Program—Code-944
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| Q C 101 | Process Quality Control | 3 |
| Q C 122 | Sampling Quality Control | 3 |
| Q C 213 | Quality Control by Statistical Methods | 3 |
| Q C 224 | Quality Control Problem Solving | 3 |
| Q C 255 | Quality Control Management | 3 |
| Q C 266 | Introduction to Nondestructive Testing | 3 |
| | | 18 |

## ASSOCIATE DEGREE OPTIONS
### MATERIALS & TESTING OPTION
**Advisor — R. Jackson**

| | | |
|---|---|---|
| Q C | Core Courses | 18 |
| MTH 151 | Applied Algebra or | |
| MTH 169 | Intermediate Algebra | 4 |
| BPR 101 | Blueprint Reading | 3 |
| MLG 101 | Industrial Materials | 2 |
| MLG 100 | Introduction to Metallurgy | 1 |
| MLG 122 | General Metallurgy | 3 |
| MLG 217 | Mechanical Testing | 2 |
| MLG 215 | Heat Treatment Processes | 2 |
| MLG 228 | General Metallography | 4 |
| MLG 217 | Mechanical Testing | 2 |
| D P 111 | Principles of Data Process | 5 |
| ENG 111 | English Composition | 3 |
| PLS 150 | State and Local Government and Politics | 3 |
| CEM 111 | General Chemistry | 4 |
| PHY 110 | Physics or | |
| PHY 111 | Physics | 4 |
| | | 60 |

### MANAGEMENT OPTION

| | | |
|---|---|---|
| Q C | Core Courses | 18 |
| MTH 169 | Intermediate Algebra | |
| MTH 160 | Basic Statistics | 4 |
| ENG 111 | English Composition and | |
| ENG 122 | English Composition | 6 |
| E C 211 | Principles of Economics and | |
| E C 222 | Principles of Economics | 6 |
| ACC 111 | Principles of Accounting and | |
| ACC 122 | Principles of Accounting | 6 |
| D P 111 | Principles of Data Processing | 5 |
| D P 122 | Data Processing Applications | 2 |
| PLS 150 | State and Local Government and Politics | 3 |
| SPH 100 | Fundamentals of Speaking | 3 |
| | Minimum Required | 60 |

### ELECTRONICS OPTION

| | | |
|---|---|---|
| Q C | Core Courses | 18 |
| MTH 169 | Intermediate Algebra or | |
| MTH 151 | Applied Algebra | 4 |
| E E 110 | Electrical Applications | 2 |
| E E 111 | Electrical Fundamentals | 4 |
| E E 120 | Electrical Applications | 2 |
| E E 211 | Basic Electronics | 4 |
| E E 122 | Electrical Fundamentals | 4 |
| E E 200 | Audio and Power Transmission | 3 |
| E E 238 | Industrial Electronic Circuits | 4 |
| PLS 150 | State and Local Government and Politics | 3 |
| ENG 111 | English Composition and | |
| ENG 122 | English Composition | 6 |
| D P 111 | Principles of Data Processing | 5 |
| | Minimum Required | 60 |

### SCIENCE AND ENGINEERING OPTION

| | | |
|---|---|---|
| Q C | Core Courses | 18 |
| MTH 169 | Intermediate Algebra | |
| MTH 179 | Precalculus | |
| MTH 191 | Calculus-First Course | |
| MTH 192 | Calculus-Second Course | 18 |

| | | |
|---|---|---|
| PHY 111 | Introductory Physics | |
| PHY 122 | General Physics | 8 |
| CEM 111 | General Chemistry and | |
| CEM 122 | General Chemistry | 8 |
| ENG 111 | English Composition and | |
| ENG 122 | English Composition | 6 |
| PLS 150 | State and Local Government and Politics | 3 |
| | Minimum Required | 61 |

**SPECIALTY OPTION**

| | | |
|---|---|---|
| Q C | Core Courses | 18 |
| | Electives | 36 |
| | Purpose of specialty is to meet the needs of students working in diverse fields of Quality Control | |
| PLS 150 | State and Local Government and Politics | 3 |
| ENG 111 | English Composition | 3 |
| | Minimum Required | 60 |

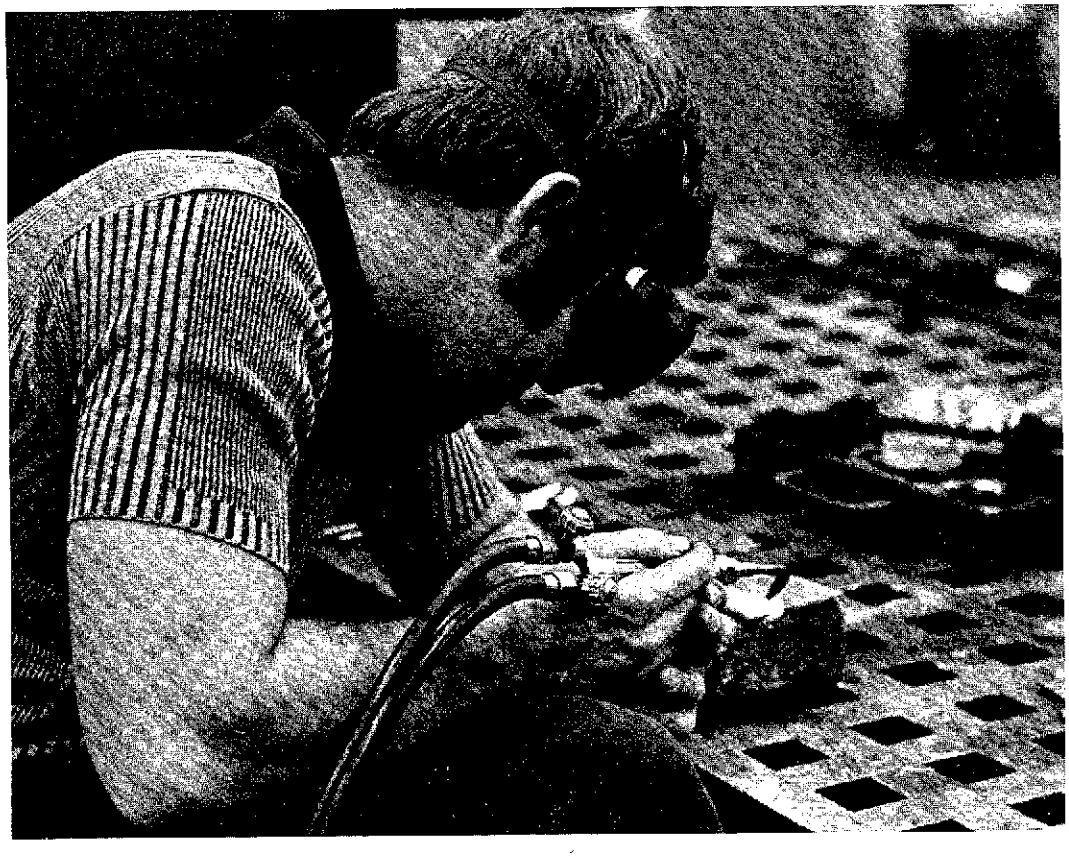
1. Appropriate work experience credit may be awarded in lieu of certain courses.
2. Certain assumptions are made as to the student's capabilities in basic algebra, blueprint reading, and shop terminology. If there are deficiencies in these subject areas, additional courses may be recommended.

## TINSMITH/SHEETMETAL APPRENTICE
## Code-913

**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| I D 100 | Technical Drawing (Layout) | 4 |
| I D 112 | Descriptive Geometry (Layout) | 4 |
| BPR 103 | Blueprint Reading Sheet Metal | 3 |
| BPR 105 | Advanced Sheet Metal | 3 |
| W F 102 | Arc Welding | 2 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| MLG 100 | Introduction to Metallurgy | 1 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job



training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## PLUMBER/PIPEFITTER APPRENTICE
## Code-909
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| MTH 152 | Applied Geometry and Trigonometry | 4 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| FLP 201 | Plumbing and Pipefitting I | 3 |
| FLP 202 | Plumbing and Pipefitting II | 4 |
| FLP 111 | Fluid Power Fundamentals | 4 |
| FLP 226 | Pheumatics | 3 |
| I D 100 | Technical Drawing | 4 |
| W F 104 | Soldering and Brazing | 2 |

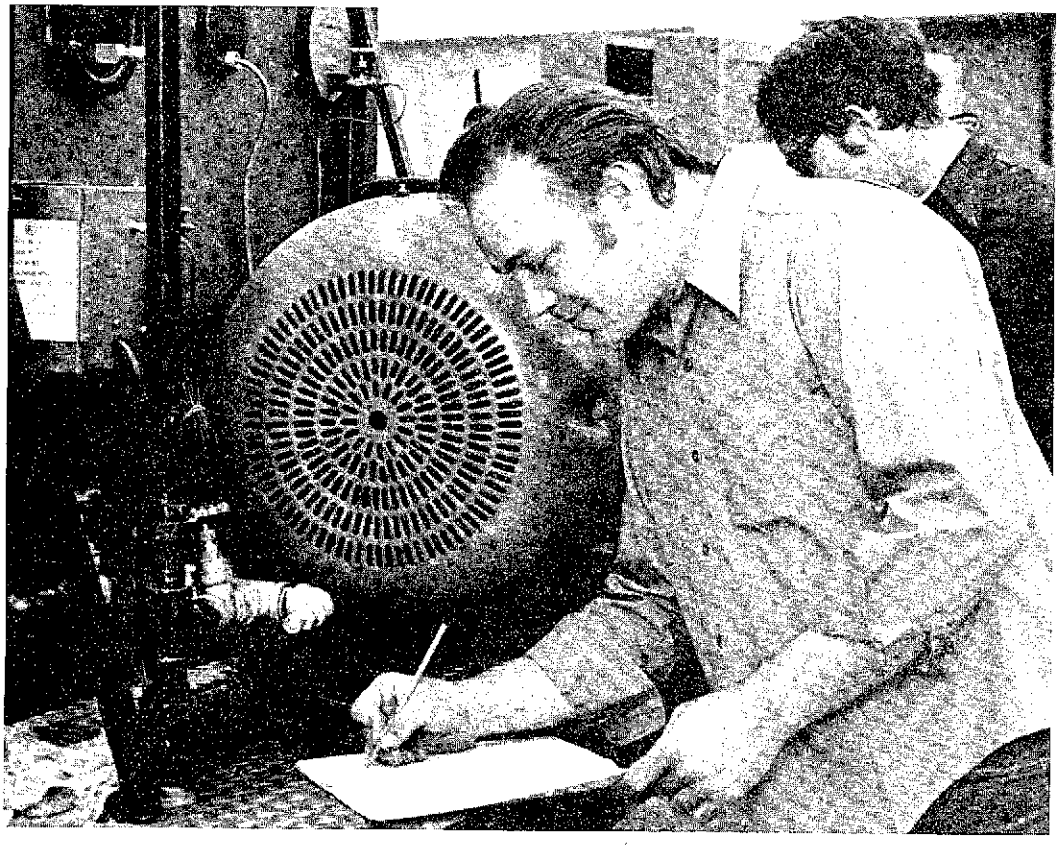
There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprentice Committees.

## HEATING AND VENTILATING SERVICE
## Code-986
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| E E 111 | Electrical Fundamentals | 4 |
| HTG 111 | Heating Fundamentals | 4 |
| HTG 122 | Heating Systems | 4 |
| HTG 213 | Heating Controls | 4 |
| HTG 214 | Heating Codes | 3 |
| BPR 103 | Sheet Metal Blueprint Reading and Layout | 3 |
| BPR 105 | Sheet Metal Blueprint Reading and Layout Advanced | 3 |

Basically this is a trade-related instruction program and 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 offered in the evening only. Membership in the Educational Society of the Refrigeration Service Engineers (RSES) is required. Initiation fee and dues are approximately $32.00. Test books for the three heating courses are expensive averaging approximately $35.00 each. Consent of advisor is required for registration.



## BOILER AND POWERPLANT ENGINEERING APPRENTICE
### Code-942
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| BPR 101 | Blueprint Reading-Mechanical | 3 |
| HTG 100 | Boiler Operations | 3 |
| HTG 101 | Boiler Accessories | 3 |
| HTG 102 | Boiler Auxiliaries | 3 |
| HTG 103 | Power Plant Engines & Turbines | 3 |
| HTG 104 | Power Plant Refrigeration | 3 |
| HTG 105 | Power Plant Air Conditioning Systems | 3 |
| HTG 106 | Power Plant Electricity | 3 |
| HTG 107 | Electrical Energy Generation | 3 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprenticeship Committees.

## REFRIGERATION MECHANIC APPRENTICE
### Code 943
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| E E 111 | Electrical Fundamentals | 4 |
| RAC 111 | Refrigeration | 5 |
| RAC 123 | Systems Laboratory | 5 |
| RAC 124 | Basic Controls | 5 |
| RAC 214 | Control Systems | 5 |
| W F 104 | Soldering and Brazing | 2 |

There is a minimum of 576 classroom hours of instruction required, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additions or deletions at the discretion of the Company and their Apprenticeship Committees.

## ELEVATOR REPAIRMAN APPRENTICE
### Code-948
**Advisor — R. Jackson**

| Course | Description | Hrs. |
|---|---|---|
| MTH 151 | Applied Algebra or Appropriate Level Math | 4 |
| PHY 110 | Applied Physics or Appropriate Level Course | 4 |
| E E 111 | Electrical Fundamentals | 4 |
| E E 127 | Industrial Electricity | 4 |
| E E 237 | Electronic Switching and Control | 3 |
| FLP 111 | Fluid Power Fundamentals | 4 |
| FLP 226 | Pneumatics | 4 |
| BPR 101 | Blueprint Reading Mechanical | 3 |

There is a minimum of 576 classroom hours of instruction require, and 8000 hours of on-the-job training.

These courses are only recommendations and are subject to additons or deletions at the discretion of the Company and their Apprenticeship Committees.

# course descriptions

**NEW COURSES:** *please note that since this issue of the College Bulletin is mainly a reprint, new and recent additions to course offerings are included in the special* **Supplement: New Courses** *section starting on page 149 of this Bulletin.*

# accounting (ACC)

**091 Fundamentals of Accounting** ..... **3 credit hours**

Prerequisite or co-requisite: Business Occupational Foundations 140 and Foundations of Occupational Mathematics 090 or divisional consent.

A beginning course in accounting which introduces the student to the theory and practice of modern double-entry accounting systems and procedures. Emphasis is placed on the development of an understanding of basic financial records and on ability to apply elementary accounting concepts to business situations. Designed for the non-Accounting student. ( 3 hours per week)

**092 Fundamentals of Accounting** ..... **3 credit hours**

Prerequisite: Fundamentals of Accounting 091 or equivalent.

Continuation of Accounting 091. Fundamentals of accounting covering financial statements, controlling accounts, types of ownership interest, and income and expense. Designed for the non-Accounting student. (3 hours per week)

**111 Principles of Accounting** ..... **3 credit hours**

Prerequisite: Business Occupational Foundations 140 and Foundations of Occupational Mathematics 090 or divisional consent.

An introductory study of accounting principles with emphasis placed on the role of accounting in developing essential information about business operations. Course coverage includes the accounting cycle, financial statements, controlling accounts, special columnar journals, and the voucher system. The first of two accounting courses required of all Business Administration transfer students. ( 3 hours per week)

**122 Principles of Accounting** ..... **3 credit hours**

Prerequisite: Principles of Accounting 111 or equivalent.

An introduction to the accounting function as it applies to the ownership, income and expense, and cost aspects of business enterprises. Accounting is perceived as an essential function in the achievement of enterprise goals. Course materials relate to the business partnership, corporation, and industrial manufacturing. This is the second of two accounting courses required of all Business Administration transfer students. ( 3 hours per week)

**200 Personal Tax Accounting** ..... **3 credit hours**

Prerequisite: Principles of Accounting 111 or equivalent.

An introductory course in federal and state personal income taxes, federal and state payroll taxes, and other general taxes. (3 hours per week)

**213 Intermediate Accounting** ..... **3 credit hours**

Prerequisite: Principles of Accounting 111 and Principles of Accounting 122 or equivalent.

A detailed study of the application of accounting theory to specialized phases of the accounting process such as the treatment of cash and temporary investments, receivables, inventories, investments, plant and equipment, and financial statements in general. (3 hours per week)

**224 Intermediate Accounting** ..... **3 credit hours**

Prerequisite: Intermediate Accounting 213 or equivalent.

Continuation of Intermediate Accounting 213—including study of techniques for review and analysis of financial statements, intangibles, deferred charges, assets and liabilities, capital stock and surplus, income and earnings, funds-flow and cash-flow, and financial ratios. (3 hours per week)

**225 Principles of Cost Accounting** ..... **3 credit hours**

Prerequisite: Principles of Accounting 122 or equivalent.

A course of study designed for students of Accounting, Business, and Management who wish to learn the principles, procedures, and managerial uses of Cost Accounting. Job order cost accounting is explored first, followed by process costing, budgeting, standard costing, non-manufacturing costs, direct costing, and the application of data processing techniques to costing procedures. ( 3 hours per week)

# anthropology (ANT)

**150 Religions of the World** ..... **3 credit hours**

A study of the religions of non-literate peoples and of the great religions of the world from an anthropological

perspective. Emphasis on the role religion plays in specific cultures. Also includes an over-view of contemporary cultist religious movements in consideration of their impact on modern societies.

**201 Introduction to Cultural Anthropology** ..... **3 credit hours**

A study of the stages of man's cultural development beginning with hunting and gathering and ending with the development of the state. Contemporary peasant societies which have lost their traditional way of life will also be studied. (3 hours per week)

**202 Introduction to Physical Anthropology** ..... **3 credit hours**

A study of primate behavior and evolution, with an emphasis on man's ecological adaptation in the past, present, and future. Particular attention will be given to recent discoveries in Africa by Jane Goodall and LSB Leakey. (3 hours per week)

**207 Sources of Indian Tradition** ..... **3 credit hours**

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

**211 Introduction to the Philosophy and Practice of Yoga** ..... **3 credit hours**

An introduction to the philosophy of experiencing knowledge. This course will deal with classical writings, the practice of yoga, and lectures on the relationship of anatomy and physiology to yoga practice.

**222 Philosophy and Practice of Yoga II** ..... **3 credit hours**

Prerequisite: 211 Intro. to the Philosophy and Practice of Yoga

A continuation of ANT 211. More time will be spent relating the knowledge gained from Indian classical literature to the knowledge gained from practicing the yoga asanas.

**223 Psycho-Physiology of Yoga** ..... **3 credit hours**

Prerequisite: 222 Philosophy and Practice of Yoga II.

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

# architronics (ARC)

**100 Specifications** ..... **1 credit hour**

Prerequisite: Construction Materials 117.

An introduction to the uniform system for filing material specifications and the organization and preparation of building specifications. (1 hour per week)

**109 Site Layout** ..... **3 credit hours**

A lecture and field course dealing with the principles of site layout of construction projects. Approved site plans, builders level transit, tape chain, and preferred equipment are demonstrated and used. (3 hours per week)

**111 Architectural Drawing** ..... **6 credit hours**

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

**117 Construction Materials** ..... **3 credit hours**

A survey of typical types of materials used in basic construction. Emphasis is placed on the properties, selection, and building techniques appropriate for a wide range of materials. Included are woods, metals, plastics, glass, and aggregate materials. (3 hours per week)

**120 Mechanical Equipment** ..... **2 credit hours**

A survey of heating, ventilating, plumbing, and electrical equipment used in building construction. Special emphasis is given to standard methods of cataloging such technical data. Students prepare mechanical specifications and drawings for the structures studied in Architectural Drawing 111. (2 hours per week)

**122 Architectural Drawing** ..... **6 credit hours**

Prerequisite: Architectural Drawing 111.

Preparing architectural drawings from diagrammatic sketches, pictures, surveys, and conference notes from an individual. The student is taught to develop preliminary studies and working drawings for an architectural project approved by the instructor. (12 hours per week)

**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, small scale models for design-development purposes, promotional presentations to seek approval of council, commissions, boards, the public, also to enhance financial and other forms of support needed to make proposal a reality. (6 hours per week)

**200 Specification Preparation** ..... **1 credit hour**

Prerequisite: Specifications 100

An in-depth study of the uniform system of communication used throughout the building industry, as required by the specification writer. Documentation of specification data related to building construction projects is researched and organized into contract specifications. (1 hour per week)

**207 Estimating Construction Costs** ..... **2 credit hours**

Prerequisite: Construction Materials 117 and Mechanical Equipment 120.

An introduction to the methods of estimating construction costs for building construction projects involving the use of quantitative survey methods of estimating materials, labor, equipment. Methods of computing overhead and profit are included. (2 hours per week)

**208 Estimating Construction Costs** ..... **2 credit hours**

Prerequisite: Estimating Construction Costs 207.

An advanced course in estimating construction cost. For larger scale construction projects including more detailed type of building construction. (2 hours per week)

**209 Surveying** ..... **3 credit hours**

Prerequisite: Applied Algebra 151.

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

**210 Structure in Architecture** ..... **2 credit hours**

An introduction to the use of structural members (steel, timber, and reinforced concrete, etc.) (2 hours per week)

**213 Architectural Drawing** ..... **6 credit hours**

Prerequisite: Architectural Drawing 122.

Major problems in architectural drawing are studied through the preparation of drawings and cost estimates for a moderate sized building such as a school or church. (12 hours per week)

**224 Architectural Drawing** ..... **6 credit hours**

Prerequisite: Architectural Drawing 213.

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

**226 Reprographics** ..... **4 credit hours**

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

# art (ART)

**035 Jewelry Making and Design** ..... **2 credit hours**

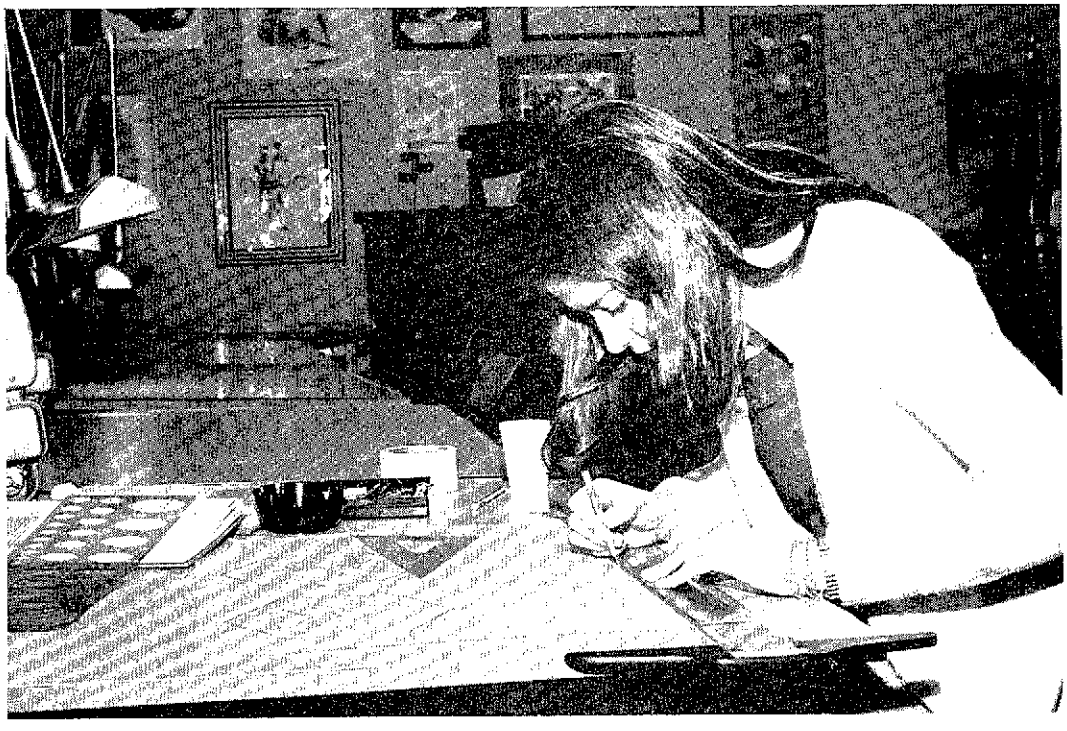
An introductory course in basic jewelry making and design techniques working with metals and other jewelry materials. For the inexperienced student. (3 hours per week)

**036 Advanced Jewelry Making and Design** ..... **2 credit hours**

A course designed to further investigate design elements for jewelry making by techniques found through soldering and casting of metals. Also includes exploring inlay metal forming and stone setting. Art 036 is for students with previous jewelry making background. (3 hours per week)

**045 Ceramics** ..... **1 credit hour**

In this introductory course to ceramics, students will be introduced to various hand-building techniques. Projects will include a flanged box, a planter (or similar form), and a sculptured object. Students will be involved in all phases of clay work including applying their own glazes, learning clay techniques, kiln loading (as possible),



and learning to evaluate their work. This is a 10 week course. (3 hours per week)

**050 Introduction to Crafts** ..... **2 credit hours**

Offering an opportunity for students to explore and manipulate a wide variety of materials in creative introductory crafts study, course work includes activity in these craft areas — copper tooling and enameling, batik and tie dye, working with clay, weaving, candle craft. (2 hours per week)

**053 Introduction to Clay** ..... **2 credit hours**

This course is a basic introductory study in clay modeling, emphasizing hand-built forms, exploring methods such as coil, slab and texture embellishment with found objects for clay tools. Students' personal interests are emphasized, and work may take the form of clay sculpture, jewelry, or other utility-oriented pieces.(2 hours per week)

**100 Creative Problems in Art** ..... **3 credit hours**

Through studio work and discussion, this course deals with general artistic development. This study aims primarily at the training of vision as well as at an understanding of the processes that go into the making of art. Course work emphasizes the conceptual and the imaginative aspects of art rather than skills and discipline. (3 hours per week)

**101 Drawing and Painting** ..... **3 credit hours**

A general introductory art composition course intended to develop individual creative expression. Instruction in the fundamentals of composition including observation with training in seeing and articulation with training in expression involving the basic use of media such as pencil, charcoal, pen and ink, and painting. Art 101 is for students with little or no experience in studio art work. Art 101 is not intended to replace the full semester courses in basic drawing (Art 111) or painting (Art 114). (3 hours per week)

**111 Basic Drawing** ..... **3 credit hours**

This beginning course in drawing explores the basic problem of observation (training the eye to see) and articulation (training the hand to express what is seen) through pencil, charcoal, pen and ink studies. (6 hours per week)

**112 Basic Design** ..... **3 credit hours**

Two-dimensional problems in design and composition. Exploration of the elements of design, such as line, form, texture, and color, using a wide variety of media. (6 hours per week)

**114 Painting** ..... **3 credit hours**

Prerequisite: Basic Design 112 or Permission.

Development of painting skills exploring a wide range of expression based on still life, landscape, and the human figure. (6 hours per week)

**122 Basic Drawing** ..... **3 credit hours**

A continuation of Basic Drawing 111, this course offers further exploration into the techniques of drawing. Several new media are introduced. (6 hours per week)

**123 Basic Design** ..... **3 credit hours**

Prerequisite: Basic Design 112.

A continuation of Basic Design 112 with the emphasis on three-dimensional design and structural composition. (6 hours per week.)

**125 Painting** ..... **3 credit hours**

Prerequisite: Painting 114 or Permission.

A continuation of Painting 114, with emphasis on developing an individual painting style. (6 hours per week)

**130 Art Appreciation** ..... **3 credit hours**

An inquiry into the ways in which art reflects, extends and shapes experience. Architecture as environment and its effect on us; contemporary art as a statement of our present condition; film as an art form; art of the past as expressing attitudes of its time. Class discussion short papers, and projects. (3 hours per week)

**140 Life Drawing** ..... **3 credit hours**

Further exploration and experimentation with drawing as a means of expression. Emphasis is on gesture drawing and contour drawing as a means towards conceptual development and graphic communication through figure drawing. (6 hours per week)

**Also see (TCA) - Technical-Commercial Art.**

# assessment administration (A A)

**111 Assessment Administration - Basic** ..... **3 credit hours**

History of Property Taxation; Basic Administration; Public and Human Relations - (3 hours). Personal Property - (3 hours). Local Government Finance - (3 hours). General Property Tax Law - (6 hours). Assessment, Equalization and Appeals - (6 hours). Valuation Concepts - (3 hours). Property Descriptions - (3 hours). Agricultural Appraisals and/or Appraising Timber Lands - (3 hours). (3 hours per week.)

**122 Assessment Administration - Intermediate** ..... **3 credit hours**

Prerequisite: Assessment Adminsitration - Basic 111, or equivalent.

Continuation of Assessment Administration - Basic 111, including Property Descriptions, Parcel Numbering and Tax Mapping - (12 hours). Assessment, Equalization and Appeals - (9 hours). Aerial Photographic Interpretation - (6 hours). Local Government Finance - (3 hours). (3 hours per week.)

**123 Assessment Administration - Advanced** ..... **3 credit hours**

Prerequisite: Asessment Administration - Intermediate 122, or equivalent.

Continuation of Assessment Administration - Intermediate 122, including Personal Property and Accounting Principles - (12 hours). Appeal Procedures - (12 hours). Assessment of Special Use Properties - (6 hours). (3 hours per week.)

**211 Appraisal - Basic** ..... **3 credit hours**

Prerequisite: Assessment Administration - Basic 111, or equivalent.

Economic Concepts of Value - (3 hours). Cost Approach to Value - (6 hours). Income Approach to Value - (3 hours). Architectural Types and Construction - (3 hours). Residential Appraisals - (9 hours). (3 hours per week).

**222 Appraisal - Intermediate** ..... **3 credit hours**

Prerequisite: Appraisal - Basic 211, or equivalent.

Continuation of Appraisal - Basic 211, including Cost Approach to Value - (3 hours). Market Data Approach to Value - (3 hours). Income Approach to Value - (6 hours). Architectural Types and Construction - (3 hours). Residential Appraisals - (3 hours). Commercial Appraisals - (6 hours). Industrial Appraisals - (6 hours). (3 hours per week.)

**223 Appraisal - Advanced** ..... **3 credit hours**

Prerequisite: Appraisal - Intermediate 222, or equivalent.

Continuation of Appraisal - Intermediate 222, including Aerial Photographic Interpretation - (3 hours). Income Approach to Value - (9 hours). Agricultural Appraisals - (3 hours). Commercial Appraisals - (6 hours). Industrial Appraisals - (6 hours). Appraising Timber Lands - (3 hours). (3 hours per week).

# auto body repair (ABR)

**STUDENT TOOL SETS**

Students enrolling in the Auto Body Repair Program 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 programs.

**111 Auto Body Repair Fundamentals** ..... **4 credit hours**

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

**112 Automobile Refinishing Fundamentals** ..... **4 credit hours**

An introductory course in methods and procedures used with automobile refinishing materials. Acrylic lacquers and enamels are 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 are stressed. (8 hours per week)

**113 Light Body Service** ..... **1 credit hour**

An introduction to the principles of alignment and servicing of body components. 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.)

**114 Applied Auto Body Welding** ..... **1 credit hour**

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

**123 Body Repair Methods** ..... **4 credit hours**

Prerequisite: Auto Body Repair Fundamentals 111 and Welding and Fabrication 111 or consent of division.

A continuation of Auto Body Repair 111. Lab work will include actual repair jobs to develop all of the basic bumping skills. Special emphasis is placed on quality and work habits. (8 hours per week)

**124 Automobile Refinishing** ..... **4 credit hours**

Prerequisite: Automobile Refinishing Fundamentals 112.

A continuation of the units begun in Refinishing Fundamentals 112. Lab assignment on live automobiles provide the student with an 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.)

**125 Flat Rate Estimating** ..... **2 credit hours**

Prerequisite: Consent of division.

An introductory course designed to expose the student to the use of flat-rate manuals to determine parts and labor prices in estimating damaged automobiles. Emphasis is placed on the procedures used to establish complete and accurate prices in preparing the estimate. (3 hours per week)

**126 Fundamentals of Frame and Body Alignment** ..... **2 credit hours**

Co-requisite: Body Repair Methods 123 or Major Repair Procedures 219.

A study of the common types of body frame damage and the equipment used to make repairs. Laboratory assignments include instruction in the use of frame gauges, diagrams, and portable body-frame straightening equipment to make a diagnosis and set up corrective hook ups. (4 hours per week)

**219 Major Repair Procedures** ..... **.8 credit hours**

Prerequisite: Consent of Division.

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 stressed to provide the student diversified experience on body trim and hardware, panel replacement and aligning various body components. (8 hours per week.)

**220 Enamel Refinishing Practices** ..... **.4 credit hours**

Prerequisite: 124 Auto Refinishing.

A study of modern acrylic and poly-urethane enamels which includes surface preparation mixing and application of solid and metallic colors. Live cars and light trucks provide the student diversified experience and skill development. (8 hours per week.)

**227 Major Repair and Alignment Procedures** ..... **.2 credit hours**

An introduction to the use of hydraulic jacking equipment to repair sheet metal damage. Lab work includes set up of typical push or pull operations and striaghtening procedures used on major collision damages. (4 hours per week.)

**230 Specialized Study** ..... **.4-8 credit hours**

An opportunity for students to utilize periods of concentrated effort on assignments in selected areas of the auto body repair field. Students work with instructor consultation to demonstrate their 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 (A S)

**STUDENT TOOL SETS**

**Students enrolling in the automotive service Technician Program 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 programs.**

**100 Introduction to Auto Service** ..... **.1 credit hour**

An introductory course designed to acquaint students with the tools and equipment used in automobile service industry. Specialized instruction in use and care of tools, safety regulations, and measuring devices is included. (3 hours per week)

**101 Automotive Electricity** ..... **.2 credit hours**

Prerequisite: Introduction to Auto Service 100.

An introduction to fundamentals of electricity, storage batteries, and battery ignition. The operation of storage batteries and battery ignition systems are covered both in theory and practical application on the cars. (4 hours per week)

**102 Engine Operation and Repair** ..... **.2 credit hours**

Prerequisite: Introduction to Auto Service 100 concurrently

The design, construction, and operating principles of modern gasoline engines are studied in detail. This course is basic to servicing gasoline engines and includes the procedures and techniques for disassembly, cleaning, inspection, repair, and assembly of the basic engine parts.

**103 Basic Carburetion** ..... **.1 credit hour**

Prerequisite: Introduction to Auto Service 100.

Theory of operation and service procedures for one and two barrel carburetors are studied both in theory and practical application on live cars. (4 hours per week) 7½ weeks.

**104 Brake Systems** ..... **.2 credit hours**

Prerequisite: Introduction to Auto Service 100.

A study of hydraulic and mechanical principles applied to automotive drum brake systems. Students perform repairs on live vehicles. (4 hours per week)

**105 Wheel Balancing and Alignment** ..... **2 credit hours**

Prerequisite: Introduction to Auto Service 100.

A detailed study of wheel alignment and balancing. Students perform wheel and steering diagnosis and repairs on live units. (4 hours per week)

**106 Cranking and Charging Systems** ..... **2 credit hours**

Prerequisite: Automotive Electricity 101.

A continuation of Automotive Electricity 101 including the operation and service of cranking systems and both A.C. and D.C. charging systems. Tests and adjustments are made on live vehicles. (4 hours per week)

**107 Fuel Systems** ..... **2 credit hours**

Prerequisite: Automotive Electricity 101 and Basic Carburetion 103.

A study of the fuel systems including the operation and service of emission controls. The use of test equipment and tune-up procedures are stressed for the efficient operation of emission-equipped automobiles. (4 hours per week)

**108 Transmission and Power Trains** ..... **2 credit hours**

Prerequisite: Introduction to Auto Service 100.

A detailed study of the construction, operation, and service techniques for conventional driveline units. Students receive practical experience on passenger cars and light trucks. (4 hours per week)

**109 Engine Rebuilding** ..... **2 credit hours**

Prerequisite: Engine Operation 102.

Specialized instruction in procedures to completely rebuild an engine. Mechanical operations such as cylinder boring, piston service, rod and cap reconditioning are stressed. Complete engine is tested for performance on dynamometer. (4 hours per week)

**150 Light Service Repair** ..... **2 credit hours**

Prerequisite: Introduction to Auto Service 100.

Course includes principles and practical application in: cooling systems, exhaust systems, tire servicing, lubrication, used car reconditioning and new car preparation. (4 hours per week)

**201 Automotive Tune Up and Test Equipment** ..... **2 credit hours**

Prerequisite: Consent of division.

The testing of automotive engines and components using the latest test equipment and procedures. The engine, cranking system, fuel system, ignition and charging systems are covered, along with the necessary equipment to make the test. The course includes instruction and actual shop experience in tune-up procedures and equipment. (4 hours per week)

**202 Heating and Air Conditioning** ..... **2 credit hours**

A study of the heating, ventilating, and air conditioning systems in current use. Diagnosis and service on live vehicles is stressed. (4 hours per week) 15 weeks.

**203 Automatic Transmissions** ..... **2 credit hours**

Prerequisite: Transmissions & Power Trains 108.

A detailed study of automatic transmissions with special emphasis placed on the principles of operation. Classroom instruction is coordinated with servicing live units, including complete transmission overhaul.

**204 Suspension Systems** ..... **2 Credit hours**

Prerequisite: Wheel Balancing and Alignment 105.

Nomenclature, theory, and service of passenger cars and light trucks is covered. Emphasis is placed on servicing live vehicles. (4 hours per week)

**205 Practical Field Experience** ..... **4 credit hours**

Prerequisite: Consent of division.

Student to be assigned duties in several dealerships to perform as line mechanics for eight hours per day with a total of 120 contact hours. Course to include a series of seminars for the purpose of comparing and analyzing field experiences.

**206 Measurement of Vehicle Performance** ..... **2 credit hours**

Prerequisite: Consent of division.

A comprehensive study of engine and vehicle performance factors and operating characteristics. Engine and chassis dynamometers are used to measure torque and horsepower in relation to exhaust emissions and fuel consumption. (4 hours per week.)

**207 Steering Systems** ..... **1 credit hour**

Study of manual and power steering systems. Emphasis placed on principles of operation, diagnosing, and servicing procedures. Students receive practical experience on passenger cars and light trucks. (4 hours per week) 7½ weeks.

**208 Automatic Transmissions Hydraulic Systems** ..... **2 credit hours**

Prerequisite: Automatic Transmissions 203.

A detailed study of automatic transmission hydraulic systems. Special emphasis is given to testing and diagnosis; classroom instruction is closely coordinated with servicing live units. (4 hours per week.)

**209 Disc Brake Systems** ..... **1 credit hour**

Prerequisite: Brake Systems 104.

Detailed instruction covering principles of operation and servicing techniques used on disc brake systems of domestic passenger cars and light trucks. (4 hours per week) 7½ weeks.

**210 Noise, Vibration and Harshness** ..... **1 credit hour**

This course defines the various types of noise, vibration, and harshness conditions associated with tires and drive trains. Procedures needed to diagnose and correct problems are included. (4 hours per week) 7½ weeks.

**211 Emission** ..... **2 credit hours**

Prerequisite: Fuel Systems 107 or consent of division.

The major emphasis of this class is the cause of emission problems and their control. Federal regulations will be discussed and individual automobile manufacturers systems of control will be covered in detail. (4 hours per week)

**212 Electrical Circuits** ..... **1 credit hour**

Prerequisite: Automotive Electricity 101.

A study of the various electrical circuits of the automobile including lights, horn, windshield wiper, power windows, and seats, including troubleshooting procedures. (4 hours per week) 7½ weeks.

**215 Customer Relations** ..... **2 credit hours**

Prerequisite: Consent of division.

This class is designed to provide the student with basic knowledge and skills to understand and deal with customers. Emphasis is placed on developing attitudes and habits necessary to fulfill these needs. (2 hours per week)

**216 Test Lane Procedures** ..... **2 credit hours**

Prerequisite: Consent of division.

A detailed study involving development of multiple personnel work procedures and testing techniques to answer field service problems. Students will apply these procedures and techniques to identify the exact cause of existing and potential vehicle problems. (4 hours per week)

**217 Federal Safety Standards** ..... **1 credit hour**

Prerequisite: Consent of division.

This class is designed to give an analysis of the current regulations and what they mean to the motorist and the service technician. (1 hour per week) 7½ weeks.

**220 Safety Features** ..... **1 credit hour**

Prerequisite: Consent of division.

A detailed study of construction, operation, and service techniques for safety-related components. Special emphasis is placed on the accurate diagnosis of these units under load and actual road conditions. Safety performance testing is applied to braking system, suspension system, wheel alignment, lighting, and various warning systems. (4 hours per week) 7½ weeks.

**221 Applied Automotive Welding** ..... **1 credit hour**

See WELDING AND FABRICATION for course description.

# biology (BIO)

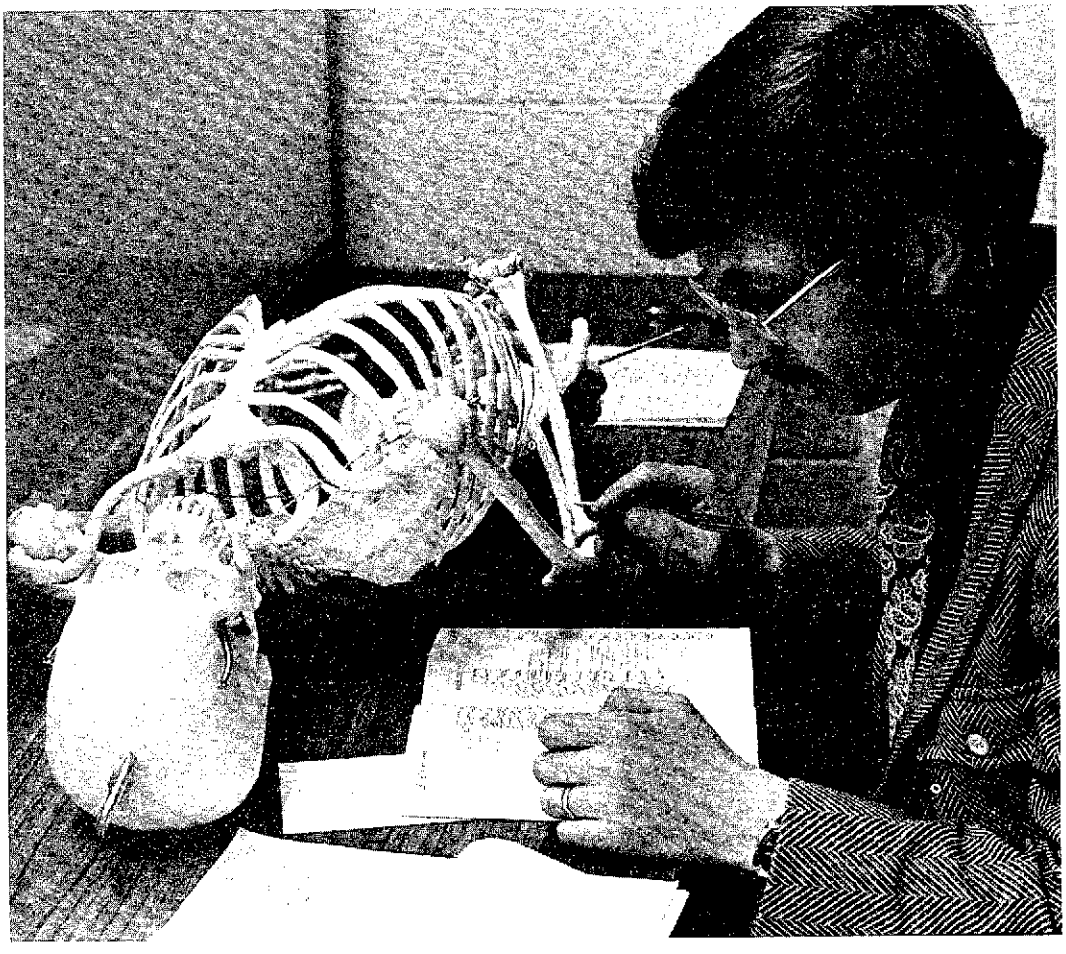
**101 Concepts of Biology** ..... **4 credit hours**

The basic principles and concepts of biology are studied in lecture and laboratory. Emphasis will be on their

practical application and their effects on the environment. Intended for the non-science student but a basic introduction for advanced biology courses. Involved are three hours of lecture and three hours of laboratory. (6 hours per week)

**102 Human Biology** ..... **4 credit hours**

The structure, function, and place of man in the biological world are studied in lecture and laboratory. Emphasis will be placed on practical application and the effect on humans and their environment. Laboratory work will include microscope, dissection, observation, and measuring techniques. Intended for the beginning student who wants an introduction to human biology. Involved are three hours of lecture and three hours of laboratory. (6 hours per week)



**105 Medical Terminology** ..... **2 credit hours**

A study designed to acquaint the student with the origin and structure of medical terms. The intent of this course is to help the student interpret and understand requests for radiographic and other examinations, and to read and to understand medical articles and reports. (2 hours per week)

**107 Field Ecology** ..... **3 credit hours**

A field study of plants and animals and their interaction and relationship to environment. The outdoor activities will stress the wooded areas, ponds, fields, and Huron River system found on the campus, supplemented by laboratory work and investigation of off-campus environmental problems.

**108 Human Ecology** ..... **3 credit hours**

An introduction to the problems of population, pollution, energy, and environmental control for the non-

science student. Basic background in evolution of environmental problems, ecological concepts, current ecological problems, and the outlook for the future will be investigated. Recent writings by researchers in these areas will be an important part of the course. (3 hours per week)

**111 Basic Anatomy and Physiology** ..... **4 credit hours**

A survey of the basic structures, functions, and disfunctions of the human body designed for students pursuing a health occupations curriculum. Coverage of the systems of the body is in a logical sequence with emphasis on practical applications to various health fields. (4 hours per week)

**112 Basic Anatomy & Physiology Laboratory** ..... **1 credit hour**

Co-requisite: Basic Anatomy & Physiology 111

Relevant applications of materials and principles introduced in Basic Anatomy and Physiology will be stressed. Intended to give the health occupations student meaningful laboratory experiences and skills. (2 hours per week)

**123 Physiology** ..... **1 credit hour**

Prerequisite or co-requisite: Human Biology 102 or Basic Anatomy and Physiology 111.

Intended for those who require a five credit course in human biology. (1 hour per week)

**127 Botany** ..... **4 credit hours**

Prerequisite: Concepts of Biology 101 or permission.

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

**128 Zoology** ..... **4 credit hours**

Prerequisite: Concepts of Biology 101 or permission.

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

**130-139 Applied Plant Science Sequence**

A series of courses designed to enable students to apply basic botannical information relating to indoor and outdoor gardening. The courses study plants of economic importance to humans for food as well as pleasure in the home and outside. Practical experience in the College's greenhouse and gardens highlight the complete program.

The courses are designed for the non-specialist with interest in plants, their propogation, growth, maintenance, harvesting and utilization. To receive the greatest benefit from the courses, students are encouraged to enroll in the sequence beginning with BIO 131 and Outdoor Garden Preparation in the Winter Semester, continuing through the Spring and Summer Semesters into the Fall Semester with BIO 132, BIO 133, and BIO 134. See individual courses below.

**131 Outdoor-Garden Preparation** ..... **3 credit hours**

The Winter Semester course will deal basically with the propogation of plants from cuttings and seeds. The maintenance and care of indoor plants will be emphasized. Most class sessions will be held in the College Greenhouse. All plants used will be identified and students will be able to increase their collection of houseplants and grow vegetable plants for transplanting in the garden when weather permits. Identification and control of insect pests will be discussed along with soil testing and proper use of fertilizers. (3 hours per week)

**132 Garden Planting** ..... **3 credit hours**

The Spring Semester will deal primarily with seed bed and planting area preparation. Further opportunities for germination of seeds indoors for transplanting in prepared planting areas are available in the early weeks of this 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 students garden area. Control of pests will be an item of concern. (3 hours per week)

**133 Garden Care** ..... **3 credit hours**

The Summer Semester will emphasize continued care and maintenance of plants being grown. Planting schedules for continuous yield will again be an integral part of this semester's activities. Irrigation practices will be discussed and utilized. Pest control practices will continue from the previous semester. Harvesting and utilization of selected plants for food and ornamental purposes will highlight this semester's varied activities. (3 hours per week)

**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. (3 hours per week)

**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. (3 hours per week)

**137 Ornamental Indoor Plants** ..... **3 credit hours**

This course is designed for the person who enjoys houseplants and desires 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 their collection of houseplants by at least fifteen different varieties. Proper care of houseplants will be stressed, relating to: soil, potting, transplanting, watering, fertilizers, insects, and control of growth and flowering. (3 hours per week)

**138 Advanced Indoor Gardening** ..... **3 credit hours**

Prerequisite: Ornamental Indoor Plants (BIO 137).

This course is designed primarily for those students who have taken the ORNAMENTAL INDOOR PLANTS course. Growth of plants from seeds and cuttings will be a concern with some of the more difficult and expensive varieties being utilized. Specialty gardening techniques for more involved indoor plantings will be discussed and demonstrated, including terraria, hanging gardens, and solarium plantings. Visitations will be conducted to demonstrate what can be accomplished with plants indoors. (3 hours per week)

**139 Ornamental Outdoor Plants/Basic Landscaping** ..... **3 credit hours**

This course is intended to familiarize students with most trees and shrubs used in this area for ornamental purposes in residential and commercial plants. Basic landscaping techniques will be discussed to provide students with enough information to properly plan and carry out a residential planting of selected trees and shrubs. There will be many on-site visits to nurseries and residences/commercial establishments to enable students to see proper and improper techniques. (3 hours per week)

**140 Applied Human Biology** ..... **3 credit hours**

A study of human physiological functions and the maintenance of normal body systems in both stressed and relaxed situations. The course is designed for any student interested in a better understanding of how the body works. Extensive use is made of the biology laboratory equipment. (3 hours per week)

**147 Hospital Microbiology** ..... **1 credit hour**

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

**148 Pharmacology for Respiratory Therapy** ..... **1 credit hour**

Prerequisite: Basic Anatomy and Physiology 111.

A survey of drugs used to treat disease, with emphasis on drugs commonly used to treat cardio-pulmonary disorders. (3 hours per week for five weeks)

**149 Pathology for Respiratory Therapy** ..... **1 credit hour**

Prerequisite: Basic Anatomy and Physiology 111.

A survey of anatomical pathology including inflammation, infection, tuberculosis, viral disease, poisons, tumors, cardiovascular disease, shock, and diabetes. (3 hours per week for five weeks)

**160 Aviation Physiology** ..... **3 credit hours**

A physiology course intended for students who contemplate the use of aircraft in their vocations. The course consists of background physiology of the nervous, endocrine, respiratory, and circulatory systems with application to the use of aircraft. Question and answer sessions, flight and safety films, and spatial disorientation devices will supplement the normal curriculum. (3 hours per week)

**189 Study Problems in Biology and Ecology** ..... **1 to 3 credit hours**

Prerequisite: Consent of biology instructor.

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

**200 Current Topics in Biology** ..... **3 credit hours**

An examination, from a biological point of view, of the state of current studies and the extent of our knowledge in such controversial fields as human genetic engineering, the biology of human behavior and human cycles, the biology of learning, the biology of sleep, and the biology of cancer. The relationship of such knowledge to future technology, and possible social and political implications, will also be discussed. (3 hours per week)

**208 Genetics** ..... **4 credit hours**

The course is designed to acquaint students with the basic principles of heredity and their application to plants and animals, including classical genetic techniques as well as modern discoveries in human genetics will be discussed. Laboratory studies using living and prepared materials will be included. (6 hours per week)

**237 Microbiology** ..... **4 credit hours**

Prerequisite: Concepts of Biology 101 or permission of instructor.

Micro-organisms and their activities conducted in lecture and laboratory. Involved are three hours of lecture and six hours of laboratory. (9 hours per week)

**240-289 Field Study Biology Sequence**

Students who enjoy outdoor activities will find the following courses to their liking. They are nature study for real and yield one credit hour. Most courses meet outdoors involving a three hour block of time for five weeks. Hit the trail with us — if you have the interest we have the course and the place. See individual courses below.

**240 Field Study of Invertebrates** ..... **1 credit hour**

Stresses field recognition of the organisms and their habits. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**247 Field Study of Insects** ..... **1 credit hour**

Recognition of insects and their habits is stressed. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**248 Field Study of Reptiles and Amphibians** ..... **1 credit hour**

Reptiles and amphibians are studied in the field with stress on recognition and habits. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**249 Field Study of Birds** ..... **1 credit hour**

Identification of birds and their songs and nesting habits. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**250 Field Study of Mammals** ..... **1 credit hour**

A study of the habits, food, behavior, life history of mammals. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**256 Field Study of Mosses and Ferns** ..... **1 credit hour**

Stress is on the identification and habitat of mosses and ferns. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**257 Field Study of Mushrooms** ..... **1 credit hour**

This course stresses identification of flowerless plants. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**258 Field Study of Trees and Shrubs** ..... **1 credit hour**

Identification and habitat study of woody plants. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**259 Field Study of Common Plants** ..... **1 credit hour**

Non woody higher plants are studied with emphasis on their identification. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**260 Spring Wild Flowers** ..... **1 credit hour**

The Spring flora is studied with stress placed on recognition. The course is primarily conducted in the field and requires a three hour block to time for five weeks.

**267 Winter Field Studies** ..... **1 credit hour**

Biological organisms are studied in their winter conditions. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**268 Aquatic Biology** ..... **1 credit hour**

Stresses field recognition of the organisms found in aquatic environments, and their interrelationships with one another and their physical environment. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**269 Conservation** ..... **1 credit hour**

General principles of conservation, illustrated by field trips to different areas. The course is primarily conducted in the field and requires a three hour block of time for five weeks.

**270 Nature Photography** ..... **1 credit hour**

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

**277 Ornamental Plants** ..... **1 credit hour**

Ornamental plants are studied in the greenhouse and field trips are taken to local areas to study plantings and propagation.

**279 Indoor Gardening** ..... **1 credit hour**

The growth of plants from seeds and cuttings is studied in the college greenhouse.

**280 Community Health** ..... **1 credit hour**

Designed to acquaint students with the health care facilities available in their community. Course consists primarily of field trips to various health agencies to gather pertinent information as to cost, quality, and availability of health care.

# black studies (BLS)

**100 Drug Education** ..... **2 credit hours**

This course is designed to study dangerous drugs and narcotics. It also deals with some factors which may be contributing to increased drug use in our culture. Particular attention is paid to the impact of drug abuse on the black community. (2 hours per week)

**100 Group Work** ..... **3 credit hours**

This course is designed to help the student acquire an understanding of social group work practice. It focuses on theory about the helping processes; group dynamics, group properties and processes and the developing of values of social work practice. (3 hours per week)

**101 Media and the Black Community** ..... **3 credit hours**

This is a multi-media course designed to teach the theories and practices of communication within the black community. There is also particular emphasis placed on attaining knowledge of the role of the Federal Communication Commission and Federal Communication Commission Regulations.

**102 Black Woman** ..... **3 credit hours**

The black woman — a course designed to look at the inner and outer mechanisms of black women throughout our history. The role of the black woman will be examined in many areas of society, the family, the church, politics, community, education, etc. All these factors will be considered in determining how black women's roles differ from those of other women. (3 hours per week.)

**107 Black Psychology** ..... **3 credit hours**

A study of the psychological dynamics of the black experience. An assessment of sociocultural factors that determine the black psyche. (3 hours per week)

**111 Swahili** ..... **3 credit hours**

This course is designed for those who are beginning, or wish to review their foreign language study. It includes a history of Swahili and the function of the language in modern Africa. (3 hours per week.)

**113 Black Drawing and Painting** ..... **3 credit hours**

The purpose of this class is to bring the drawing and painting talents of students into the arena of the Black experience. Students work with layout, composition, mural painting, water color, oil, pastel, and ink drawing. Our attempt is to correlate their art work into a Black concept. This way, we hope to help breach some of the gaps between the various communities, through this visual means. (6 hours per week)

**120 Portrait Painting and Life Drawing** ..... **3 credit hours**

An opportunity for the student to work from live models, study anatomy, techniques in drawing and painting, and visual expression. Multi-media. Clay modeling. Preferably with some art background, although not required. (6 hours per week)

**141 Art of Black Folks** ..... **3 credit hours**

The general goal of this course is to use the visual concept of art to aid in the emergence of Black people in America. We hope to teach the necessity to think, to develop, and to manifest intelligence and manhood, using art as the medium. (3 hours per week)

**149 African History and the Western World** ..... **3 credit hours**

This course is designed to study the history of the people of Africa; their various cultures and their common human bonds; the impact of the slave trade on the African people and cultural factors that were exploited to facilitate the slave trade. Included also is the reciprocal influences of Africa and the Western World (mainly Europe, North and South America). (3 hours per week)

**150 Afro-American History** ..... **3 credit hours**

Survey and analysis of the literature and some of the problems and interpretations of the history of the Afro-American from the Revolutionary War to the present. (3 hours per week)

**157 Afro-American Music** ..... **3 credit hours**

The aim of this is to acquaint the student with the development of musical events, institutions, and techniques derived from African musical heritage, and its influence on music in the Americas. (3 hours per week)

**158 Black Music Creative Improvisation** ..... **3 credit hours**

The aim of this is to help the student create music through improvisation which is an integral part of black music. Vital study skills in basic musicianship will be used depending on the student's musical proficiency. This course focuses on the development of black music from Africa to the Americas. (3 hours per week)

**159 South Indian Music** ..... **3 credit hours**

This course is a study of theory and practice of South Indian music. It deals with the sacred and secular roles of music in the Indian culture. The basic notes and their variations; definition of terms; the analysis of the basic melody; musical terms; and instruments of South India, such as the veena, flute, tamboora and table. A brief history of Indian music and short biographies of noted Indian musicians such as Purandara Dasa and Sayma Sastri and their contributions to South Indian Music is included. (3 hours per week)

**160 Group Work** ..... **3 credit hours**

A continuation of Group Work. Emphasis is on the development of practice skills in meeting human needs and problems. A study of the use of small groups as a tool for change. (3 hours per week)

**181 Black Literature** ..... **3 credit hours**

A critical analysis of black emotions in the world of literature with the goal of raising the level of black consciousness. This course is an introduction to contemporary black literature, letters, and thought. (3 hours per week)

**192 Black Drama** ..... **3 credit hours**

This course offers the student an introduction to the techniques of acting, while giving him an overview of the history of Black involvement in the American dramatic scene. Materials for the acting workshop will be drawn from the writings of Black playwrights in order to give the student a functional experience with a sampling of the black theatre literature. (3 hours per week)

**199 On-The-Job-Training** ..... **1-6 credit hours**

This experience is designed to help students apply the knowledge acquired in Black Studies and other disciplines at the College to specific jobs in the Community. Supervisory sessions are scheduled to facilitate this intergrative process.

**200 Black Economics** ..... **4 credit hours**

An introductory course to the basic principles of economics and their implications for the black community. Designed to acquaint students with the free-enterprise system of business economic activity and the impact of the consumer and government forces upon the system. Included are essentials of income date, prices, employment, distribution of wealth, role of banking systems, business fluctuations, and functioning of the American economic system and alternate economic systems. (4 hours per week)

**201 Social Casework** ..... **3 credit hours**

This course is designed to teach the student general knowledge of the field of social work and to help students

gain a theoretical and practical knowledge of helping people through the Social Casework method. (3 hours per week)

**202 Social and Religious Heritage of Africa** ..... **3 credit hours**

This course examines the contributions of American Civilizations to the world in Social and Religious terms, with attention also paid to achievements in philosophy of life and basic technology. Attention is paid both topically and chronologically to prehistoric and early historic circumstances, including the inception of hominid life. (3 hours per week)

**203 Pan Africanism** ..... **3 credit hours**

This course deals with a contemporary analysis of the Pan-African movement from its earliest forerunners through today's activists. Emphasis is place don the translation of Pan-Africanist theory into practical organization. (3 hours per week.)

**210 Blacks In the City** ..... **3 credit hours**

The purpose of this course is to examine the social forces that played a role in developing the urban setting, with particular emphasis on the role of the Afro-American. This course will focus on the migration movement as the first stage in the development of urban and racial crises as factors in the urbanization of blacks. Throughout the course 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 Ghettoes. The organizing conceptual framework will be black urban history as a protracted struggle. Emphasis will be placed upon black ideological and institutional development.

# blue print reading (BPR)

**100 Blueprint Reading for Construction Trades** ..... **2 credit hours**

Elementary blueprint reading for the construction trades. Emphasis is on the development of visualization skills and the study of practices and symbols for interpretating construction prints. Smaller scale construction projects are studied. (2 hours per week)

**101 Blueprint Reading** ..... **3 credit hours**

Fundamentals of blueprint reading as applied to the manufacturing industry. Basic drafting principles are studied as applied to specific problems. This course is designed for: pre-engineers, draftsmen, machine operators, machine repairmen, electronic technicians, inspectors, welders, and supervisors. (3 hours per week)

**103 Sheet Metal Blueprint Reading and Layout** ..... **3 credit hours**

Elementary sheet metal layout. Special emphasis is placed on developing sheet metal patterns by standard short cut methods. Hands on 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)

**105 Sheet Metal Blueprint Reading and Layout — Advanced** ..... **3 credit hours**

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

**110 Blueprint Reading for Construction Trades** ..... **2 credit hours**

Advanced blueprint reading for persons in the construction trades. Emphasis is placed on the application of blueprint reading, principles, and fundamentals to the construction process. Large scale construction projects are the base of instruction. (2 hours per week)

# broadcasting (BRC)

**103 Copywriting, Features and Commercials; Film and TV Documentary** ..... **3 credit hours**

The writer as the basic program source. Program formats, continuity books, rewriting. Writing for the ear not the eye. Includes the one minute commercial form, dialoguing, characterization, and voiceovers. Also, study of the larger form of the documentary, its history and current status. (3 hours per week)

**105 Advertising: The Agency and the Multi-Media Campaign** ..... **3 credit hours**

A course stressing that even a small local agency today must be equipped to provide service for a client in radio and television as well as the print media. Study emphasizes station personnel must also recognize that broadcast materials from the sponsor's viewpoint are only part of a larger picture. This class is designed to provide broadcast personnel with experience with other advertising media, newspapers, magazines, billboards, direct mail, display, etc. A practical and functional focus on advertising. (3 hours per week)

**107 Broadcast Journalism** ..... **3 credit hours**

Course includes organizing the newscast from the news wire, network news, the actuality wire and the beeper phone. Also, local news reporting, features, special events and sports. And study of Journalistic ethics, news and the FCC, the Fairness Doctrine. (3 hours per week)

**203 Station Management** ..... **3 credit hours**

Non-production and non-broadcast functions in the station. A brief history of broadcasting as a guide to its legal responsibilities under the Rules and Regulations of the Federal Communications Commission, the development of business structure including contracting for services such as news, music and film. Also, the sale of time under the conditions of the "rate-card", sales and station promotion, budgeting, "logging" and the preparation of all necessary reports. (3 hours per week)

**Also see (FLM) Film and (RAD) Radio.**

# chemistry (CEM)

**057 Introductory Chemistry** ..... **3 credit hours**

A preparatory course for the student who has no background in high school science or algebra. This course may be taken by the student wishing to improve his background before taking General Chemistry 111, or by the student desiring a terminal exposure to chemistry. Credit for Introductory Chemistry 057 is contingent on the successful completion of introductory Chemistry Laboratory 058. (3 hours per week)

**058 Introductory Chemistry Laboratory** ..... **1 credit hour**

Co-requisite or prerequisite: Introductory Chemistry 057.

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

**097 Chemistry of Combustibles** ..... **3 credit hours**

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

**106 Chemistry for Respiratory Therapy** ..... **3 credit hours**

Prerequisite: Introductory Chemistry 057 and 058.

Intended primarily for students in the respiratory therapy program. A study of the chemical and physiochemical behavior of gases, solutions, acids, bases, pH, and electrolytes. Encompasses topics in organic chemistry and biochemistry related to metabolism and respiration. (3 hours per week)

**111 General Chemistry** ..... **4 credit hours**

Prerequisite: High school chemistry, 1 year high school algebra.

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. General Chemistry 111 has three 1-hour lectures and one 3-hour laboratory per week. (6 hours per week) Normally offered Fall and Winter semesters only.

**122 General Chemistry** ..... **4 credit hours**

Prerequisite: General Chemistry 111.

A continuation of General Chemistry 111, including ionic equilibria and qualitative analysis. The accompanying laboratory will include the qualitative identification of unknown substances, and the quantitative determination of unknown substances using elementary instrumental techniques. (8 hours per week)

**127 Nutritional Chemistry** ..... **3 credit hours**

Designed for students in the Dietetic Technician Program. The course includes principles and concepts of functions, structure, synthesis, and metabolism of proteins, aminoacids, carbohydrates, fats and other nutrients with emphasis on those pertinent to the human physiology. (3 hours per week)

**140 Organic Biochemistry** ..... **4 credit hours**

Prerequisite: General Chemistry 111.

A comprehensive one semester course stressing organic chemistry and biochemistry. Intended for those going into nursing and the health sciences. This is a terminal course Organic Biochemistry 140 has three 1-hour lectures and one 3-hour laboratory sessions per week. (6 hours per week)

**211 Organic Chemistry** ..... **3 credit hours**

Prerequisite: General Chemistry 111.

A lecture course dealing with nomenclature, stereo-chemistry, and reactions of aliphatic and aromatic compounds. (3 hours per week) Normally offered Fall semester only.

**218 Analytical and Instrumental Chemistry** ..... **4 credit hours**

Prerequisite: General Chemistry 122.

The study of quanitative and qualitative analysis in the modern chemistry laboratory through the use of gravimetric, volumetric, optical, electrometric, gas chromatographic and spectroscopic instrumental methods of analysis. Instrument design and principles will be included.

Designed for the chemical technician or as a refresher course for those already working in the field of chemistry. Analytical and Instrumental Chemistry 218 has two 1-hour lectures, and two 3-hour laboratory sessions per week. (8 hours per week)

# child care worker (CCW)

**100 Exceptional Preschool Child** ..... **3 credit hours**

Study of handicapped and gifted children within the regular child care setting. Emphasis on the identification, programs for, and needs of exceptional children. Explores community resources.

**101 Child Development** ..... **3 credit hours**

Psychological, emotional and physical growth processes of infancy through adolescence with an emphasis on ages 2-5. Relationship and effect of learning experiences on personality development. Basic Ericson model with modifications and adjustments for cultural differences. Covers theory and practical application of principles which enhance positive development.

**103 Alternative Programs in Child Care** ..... **3 credit hours**

Combination practicum and seminar course. Assignment will include purposeful observation at various child care centers combined with seminar evaluation of program.

Philosophy and theory of various alternative programs in child care. Will cover traditional and open, innovative programs. Special emphasis and evaluation of the cognitive curriculum, language training curriculum, Montessori and Free Schools.

**105 Practicum I** ..... **3 credit hours**

Supervised teaching at the WCC Children's Center. (Credit may be arranged for students already working with young children in other settings.)

Students work in the classroom for 7½ hours per week, supervised by a qualified teacher at the center. Two additional hours per week are spent in meetings with staff and a practicum seminar.

Given concurrently with CCW 108, assignments from the curriculum class are carried out in the Practicum placement.

**106 Practicum II** ..... **3 credit hours**

Supervised teaching at the WCC Children's Center. (Credit may be arranged for students already working with young children in other settings.)

Students work in the classroom for 7½ hours per week, supervised by a qualified teacher at the center. Two additional hours per wek are spent in meetings with staff and a practicum seminar.

Given concurrently with CCW 107, assignments from the curriculim class are carried out in the Practicum placement.

**107 Educational Experiences in Science and Math** ..... **3 credit hours**

Integrated curriculum workships will cover such topics as nature study, the human body, block building, cooking, and water play. Emphasis will be placed on learning to observe and teach about the science and math around us every day.

Concepts such as matching and measuring, growth and death, will be considered as they apply.

Basic materials, such as Cuisenaire rods and magnets, will be explored. Making materials and using community resources will also be discussed.

**108 Educational Experiences in the Expressive Arts** ..... **3 credit hours**

Integrated curriculum workshops will cover a wide range of the arts, especially art, music, creative movement and drama. Emphasis will be placed on how to facilitate creativity and self-expression.

Physical development will also be covered. Basic materials, techniques and activities will be introduced in class and then used with young children.

**109 Language and Communication** ..... **3 credit hours**

Explores theories of language development. Consideration is given to non-verbal communication and cultural differences. Basic methods, activities and materials in communication skills will be developed and experienced.

**110 Social/Emotional Development** ..... **3 credit hours**

A comprehensive study of the personality development during the first five years of life. Exploration of the typical problems that emerge with each developmental stage with emphasis on methods and suggestions for handling.

Techniques and skills developed in learning how to observe and record the behavior of the young child. Discussions of principles of child-rearing and expectations of our culture in the light of current thinking and research.

**111 Day Care Administration** ..... **1 credit hour**

Concurrent with CCW 114.

Politics of day care. Explores budgetary and administrative needs and procedures. Practical experience in area will be arranged.

**114 Practicum III** ..... **3 credit hours**

Supervised teaching at the WCC Children's Center. (Credit may be arranged for students already working with young children in other settings.)

Students work in the classroom for 7½ hours per week, supervised by a qualified teacher at the center. Two additional hours per week are spent in meetings with staff and a practicum seminar.

Given concurrently with CCW 111, 115 or 116. Students will either study and develop administrative projects, develop and execute research projects or work with infants depending upon enrollment in 111, 115 or 116.

**115 Research in Child Care** ..... **1 credit hour**

Concurrent with CCW 114.

Supervised experience in design and completion of research project. Includes project design, data collection and analysis.

**116 Seminar in Infant Care** ..... **1 credit hour**

Concurrent with CCW 114.

Needs of infants in group or individual setting. Also explores maternal care needs and facilities. Supervised placement in infant care setting.

**120 Educational Psychology** ..... **3 credit hours**

Deals with the psychological principles involved in teaching. Includes goals of education, developmental theory, learning theory, media and methods, group dynamics, research and testing issues, alternatives in education.

**189 Study Problems** ..... **2-6 credit hours**

Prerequisite: Consent of division.

Directed activities in a major occupational area; 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 development of understanding and skill development within the selected occupation.

Applicable to occupational divisions in the College.

**199 On-The-Job-Training** ..... **2-6 credit hours**

The College offers cooperative occupational-experience programs to interested and qualified students in both the Occupational and General Studies areas. These programs are designed to produce a learning situation (training station) which would be impossible or undesirable to reproduce in a campus environment.

The student may be placed in a training station in business and industrial firms as well as educational 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 occupational experience program.

Students planning to enroll for credit must first review their plans with their advisor and the Coordinator of Cooperative Occupational Education to obtain their approval.

No more than six credits may be applied to a certificate of achievement and no more tha twelve credits may be applied to Associate Degree requirements.

**200 Staff/Parent Interpersonal Relations** ..... **3 credit hours**

A course designed to explore the many facets of parent and staff involvement in the child care setting.

Careful examination is given to the various forms of parent involvement, strategies for parent participation, contacts between parents and staff, and planning parent education programs.

Special emphasis is given to the individual parent teacher conference: preparation, mechanics and techniques.

# communication arts (C A)

**031 Tae Kwon Do: Karate** ..... **1 credit hour**

A 10 week course in the fundamentals of Karate for the novice or person with limited knowledge. A how-to-do-it class using demonstrations and practice. Understanding of the art and philosophy of Tae Kwon Do is also considered. (2½ hours per week)

**032 Advanced Tae Kwon Do: Karate** ..... **1 credit hour**

For the advanced student, a 10 week course providing continuing study of Karate, teaching skills beyond those in the first semester course. (2½ hours per week)

**040 Tap Dancing** ..... **1 credit hour**

Stresses rhythmic sophistication and simplicity of style. Helps develop intricate rhythmic skills. (1.5 hours per week.)

**043 Jazz Dance** ..... **2 credit hours**

Warm-up exercises, movement combinations and full production routines to familiarize students with a range of jazz techniques. Varied musical accompaniments from progressive jazz through hard rock. (2.5 hours per week.)

**046 Modern Dance** ..... **2 credit hours**

Brings a heightened awareness of form, space, and dynamics, as well as the satisfaction of increased strength, flexibility and coordination. Builds the freedom of movement that comes from proper body placement. (2.5 hours per week.)

**090 Dance Theater Workshop** ..... **1 credit hour**

A 7 week workshop designed for students interested in dance technique, writing for dance theater or costume and set design. Focus of the class will be concern with dance theater concepts (motion, time, space) and modern dance technique including improvisation. A course for the beginner or the more experienced dance student. (2½ hours per week)

**120 Transactional Analysis** ..... **2 credit hours**

An introductory course designed to acquaint students with the basic ideas and concepts of Transactional Analysis. A study of both the theory and practice of TA — an approach to human behavior understanding and treatment. (2 hours per week)

**121 Transactional Analysis II** ..... **2 credit hours**

A continuation of the introductory course. Explores principles of transactional analysis, including structural, game, and script analysis. Awareness exercises accompany treatment of theoretical concepts. (2 hours per week.)

# computer science (CPS)

**100 Desk Computers** ..... **1 credit hour**

Designed to enable a student to perform basic arithmetic operations utilizing desk computers, and to write simple programs for programmable computers. Serves as a useful bridge between hand calculators and full sized computers. (1-4 hours per week until completed.)

**101 How to Use A Computer Terminal** ..... **1 credit hour**

This course will teach a student who has never used a teletype, a graphics terminal, or a keypunch what he needs to know to operate these devices. Topics covered include the use of drum cards, MTS codes, and access to college computer facilities. (1-4 hours per week until completed.)

**102 Computer Programming - Basic** ..... **3 credit hours**

A course in BASIC programming for the student who wants an introduction to the foundations of computer

science. The student is afforded an opportunity to write and execute programs in the BASIC computer language. The emphasis of the course is on exploring th features of BASIC and on giving the student a background for using the computer as tool in problem solving. Examples will involve a minimum of mathematics; nothing above Math 039 (arithmetic). (4 hours per week.)

**110 Pocket Electronic Calculator** ..... **2 credit hours**

This is a lab-type course that provides instruction in the use of your pocket electronic calculator. Includes basic arithmetic operations, powers and roots, functions, and chain operations. It applies this powerful new tool to your everyday problems as well as those in business and science. (2 hours per week.)

**148 Computer Games** ..... **1 credit hour**

This course begins with instruction in the use of a computer terminal. Students are taught to play games such as Star Trek, 3 dimensional Tic-Tac-Toe and checkers with the Washtenaw Intermediate School District computer via computer terminals. Includes some elementary computer programming and game theory. Instruction in some non-computerized games is available. Creative and recreational mathematical pursuits are encouraged. (1-4 hours per week until completed.)

**187 FORTRAN Programming** ..... **3 credit hours**

Prerequisites: Intermediate Algebra (Math 169) or four terms of high school algebra.

A course in FORTRAN Programming intended for the science or vocational student who will need to use the

computer as a tool to perform complex and/or repetitve calculations, to evaluate models through simulation, or to manipulate large quantities of data. The emphasis of the course is on learning and using most of the features of the FORTRAN language. The student is afforded an opportunity to develop algorithms, and to write and execute selected programs. Both lecture and laboratory time are involved. (4 hours per week.)

**188 Computer Programming - Algol .....3 credit hours**

Prerequisites: Intermediate Algebra (Math 169) or four terms of high school algebra.

A course in constructing algorithms within the Algol W programming language. The course is intended for students considering future work in computer science and for students interested in problem solving and algorithm development. Discussions, lectures, and assignments do not involve high-level (Calculua and above) mathematics. The student is afforded an opportunity to develop and test slgorithms by writing and executing Algol W programs. Both lecture and lab time are involved. (4 hours per week.)

**250 Computer Programming Classroom Applications .....2 credit hours**

No prior computer experience is required for this introductory course which is designed to be of particular help to teachers in Washtenaw County (all of whom have access to the Hewlitt-Packard 2000P at the Intermediate School District). Topics covered include "Canned" Programs, BASIC Language, games, drill and practice for school students, and keeping records.

**299 Interactive Computer Graphics .....3 credit hours**

Prerequisite: Fortran Programming 187.

Principles of interactive computer programming using graphical input-output devices. Course covers such topics as Graphical devices, interactive methods, dynamic array management, data structures, error recovery, file manipulation, graphical techniques, dynamic compilation-loading-execution of program segments. Emphasis will be placed on production programming incorporating the above topics. Student projects will be developed and executed using the M.T.S. Level G and H Fortran Compiler and Integrated Graphics Package. (3 hours per week.)

# construction technology (C T)

**STUDENT TOOL SETS**

Students enrolling in the Construction Trades will be required to furnish basic tool sets. Tools are necessary for laboratory practice. Students should accumulate tools during training to be equipped for employment upon completion of their program.

**050 Cabin Construction .....2 credit hours**

A practical informative course on how light frame structures are built. A small cabin at full size if built. Hand tools are furnished by the student. (3 contact hours.)

**111 Fundamentals of Painting and Decorating .....4 credit hours**

In addition to the basics of vocabulary, tools and materials, an introduction to: paints, varnishes, solvents, wallpaper, natural wood finishes, preparations for painting walls and floors, interior and exterior surfaces. Discussion of fire retardant materials, antiquing techniques demonstrated. (6 hours per week.)

**121 Carpentry .....4 credit hours**

A practical course in the use of woodworking hand tools in the construction of buildings. The development of basic skills in Light Frame Construction is emphasized. Included are the framing of floors and walls, the use of framing square, line, plumb bob, and builder's level. (6 hours per week)

**122 Commercial Painting and Decorating .....4 credit hours**

Prerequisite: C T 111.

Technical details, specifications of materials and techniques of preparing surfaces, finishing and refinishing of construction materials and structures. The profit and loss aspect of "contract work" are presented as well as the utilization of scaffolding, swing staging and other equipment identified with the commercial painting industry. Safety and safe working practices are stressed. (6 hours per week.)

**131 Electric Power Supplying .....4 credit hours**

A practical course in the use of tools and materials for power supply installation, lighting, and electrically operated domestic equipment. In light frame residential construction the National Electric Code is used as a guide for all practical trade operations. (6 hours per week)

**171 Cabinet Making** ..... **4 credit hours**

Lecture and laboratory course in woodworking as it relates to furniture and cabinetry. Knowledge and skills necessary for working with hand and machine tools are developed. Projects are worked on and completed during class time. Hand tools and materials are furnished by the student. (6 contact hours.)

**213 Commercial and Industrial Painting** ..... **4 credit hours**

Prerequisite: C T 122.

An advanced study of the materials and procedural specifications of finishing and maintaining structural steel, water and radio type towers. Applications of various cleaning methods, i.e., steam, water and sand blasting are included. OSHA Standards, color codes and materials for piping, and electrical conduit are emphasized. Shipyard maintenance; ships, drydocks, and dredging equipment as well as the maintenance techniques for hospitals, nursing homes, restaurants, and similar institutions are stressed. Sound business practices for organizing contract jobs re quality and profit. (6 hours per week.)

**221 Carpentry** ..... **4 credit hours**

Prerequisite: Carpentry 121

A practical course in the use of machines and hand tools in the process of work necessary in light wood frame construction, alterations, and maintenance. The scope of the work shall include underpinning of construction. The repair and replacement of major structural elements. Methods of aligning floors, walls, and ceiling. The restoration of architectural woodwork and component parts. Insulating and fire protecting old construction. (6 hours per week)

**231 Lighting Systems** ..... **4 credit hours**

Prerequisite: Electric Power Supplying 131.

A practical course in wiring and installing components used in building construction to provide light and power including creative effects with lights, installation of conduits and raceways. (6 hours per week)

**242 Crafts in Wood, Plastics, and Non-Ferrous Metals** ..... **4 credit hours**

Prerequisite: Carpentry 221.

A practical course in working materials used in the manufacturing and fabrication of building components. (6 hours per week)

**262 Building Component Fabrication** ..... **4 credit hours**

Prerequisite: Crafts in Wood 242.

A practical course in the fabrication of cabinets and building components using wood, plastics, and non-ferrous metals. Furniture making and design. (6 hours per week)

**263 Lighting Calculations and Design** ..... **4 credit hours**

Prerequisite: Lighting Systems 231.

A practical course in designing and installing illumination for various situations: residential, commercial, ecclesiastical, etc., and extensive practice to qualify for Journeyman's examination as an electrician. (6 hours per week)

**271 Cabinet Making** ..... **4 credit hours**

Prerequisite: Cabinet Making 171.

More advanced and complex projects are designed and developed. Student skills and knowledge of materials and techniques are improved. (6 contact hours.)

# criminal justice(C J)

**100 Introduction to Law Enforcement and Criminal Justice** ..... **3 credit hours**

A detailed analysis of the nature, purpose and functions of major law enforcement operations to include patrol, investigation, traffic, research, and juvenile divisions. (3 hours per week)

**111 Police and Community Relations** ..... **3 credit hours**

Role of the individual officer and the department in achieving and maintaining public support. Customs, culture, and problems of ethnic and minority groups. Public information services. Techniques for the alleviation of community tensions. (3 hours per week)

**205 Applied Psychology for Policemen** ..... **3 credit hours**

Principles of psychology, relevant to specific applications in law enforcement, major psychological theories viewed from perspective of their application to law enforcement practices. (3 hours per week)

**208 Criminal Evidence and Procedure** ..... **3 credit hours**

Adjectival law, the law of evidence; role of the police, prosecutor, defense counsel, judge and jury; the judicial process; criminal procedure in various courts; law of arrest and search and seizure; and constitutional restraints. Principles of constitutional, federal, and state laws as applied to law enforcement. (3 hours per week)

**209 Criminal Law** ..... **3 credit hours**

For either lawyer or layman; designed to broaden the understanding of the student concerning the various agencies involved in the administration of criminal law. Emphasis is placed upon the more important law enforcement functions from arrest to executive pardon. (3 hours per week)

**220 Administration of Criminal Law** ..... **3 credit hours**

Major provisions of the constitution of the United States that safeguard personal liberties. Judicial processes are examined in the light of historical experience, and social change. (3 hours per week)

**224 Criminal Investigation** ..... **3 credit hours**

Investigative techniques; criminalistics; case studies; including discussion on quantum of proof in criminal investigations and probative value of physical evidence. (3 hours per week)

**122 The Correctional System** ..... **3 credit hours**

This course is designed to develop a practical, factual knowledge of the correctional system as it exists today. Weekly class sessions will be varied to include lectures, group discussions, and guest lecturers.

**225 Seminar in Criminal Justice** ..... **3 credit hours**

A unifying experience and evaluation of criminal justice policies and practices. Preparation of a concluding research paper. (3 hours per week)

**250 Law Enforcement Problem Seminar** ..... **4 credit hours**

Prerequisite: 15 hours completed in the Criminal Justice Program or permission of the instructor.

# culinary arts (CUL)

**100 Introduction to Restaurant Management** ..... **3 credit hours**

A course of orientation designed to give the history, organization, problems, and opportunities in the restaurant industry. A study of restaurant functions; promotional and personnel functions of management; trends and developments in the industry today. (3 hours per week)

**110 Sanitation and Hygiene** ..... **3 credit hours**

Importance of sanitation to the food service; layman's bacteriology, communicable diseases; food poisoning; pest control; cleaning and sanitizing; personal hygiene. (3 hours per week)

**111 Elementary Food Preparation** ..... **6 credit hours**

Production and the use of food and materials, development of standards of food preparations; the effect of these factors upon economic, nutritive value and aesthetic appeal of food materials. (2 hours lecture, 8 hours lab per week)

**118 Principles of Nutrition** ..... **3 credit hours**

General principles of nutrition as it pertains to selection of foods; nutritional needs of all age groups; the meaning of food to people; the relation of food and nutrition to health-menu planning. (3 hours per week)

**120 Organization and Management of Food Systems** ..... **3 credit hours**

Types of organization, functions of management; tools of management; recruitment, selection, training and evaluation; labor policies and collective bargaining; human relation techniques in personnel management. (3 hours per week)

**122 Quantity Food Production** ..... **6 credit hours**

Application of principles of food preparation and planning to quantity production and service use of institutional equipment. Students in the laboratory will assume various positions of responsibility on a rotation basis. (2 hours lecture and 8 hours lab per week)

**189 Independent Directed Study** ..... **3 credit hours**

Students pursue specific problems in nutrition care of food service systems. Weekly seminar with instructor and a written term paper describing the students' experiences and proposed solutions to problems.

**224 Economics of Volume Feeding** ..... **4 credit hours**

Selection and purchasing of foods and materials used in food institutions. Quality and cost control of foods and other expenses involved in the production and service of food. (2 hours lecture, 6 hours lab per week) Field trips.

**227 Advanced Culinary Techniques** ..... **6 credit hours**

A culminating experience for the advanced student in Culinary Arts. Hors d'oeuvre, Chaud-froid, Pot-au-feu, Ballotine, and Souffle, will all become familiar to the student. Cake decorating, molding, ice and wax work will also be an integral part of the course. (10 hours per week)

# data processing (D P)

**111A Data Processing/Computer Concepts** ..... **3 credit hours**

An introductory course in electronic data processing. Students will learn the basic terminology and concepts of data processing applications, systems design, punch card processing, and computer concepts including card, tape and disk processing. No computer programming is required. (3 hours per week.)

**111B Data Processing/Computer Functions** ..... **3 credit hours**

Prerequisite: D P 111A.

A continuation of DP 111A. Students will learn the principles of computer programming including experiences in program flowcharting, program documentation, and an overview of programming languages including COBOL, RPG, FORTRAN and B.A.S.I.C. Students will also learn the principles of Operating Systems and Data Communications. There will also be discussions of job classifications in data processing and the computer's social implications. Several simple programs are required in one of the languages discussed. (3 hours per week.)

**111C Data processing Programming/Business Fortran IV** ..... **3 credit hours**

Prerequisite: D P 111A.

An independent course in principles of the FORTRAN language. Students will write numerous programs to learn the statements and basic logic patterns of the language. Primary emphasis will be in input/output considerations including formats and designs. Programming applications will be in the business area. (3 hours per week.)

**111D Data Processing Programming/B.A.S.I.C.** ..... **3 credit hours**

Prerequisite: D P 111A.

An introduction to programming in the B.A.S.I.C. language using time-sharing terminals. Programming topics include entry and retrieval of data, mathematical operations, compare and control statements, plus subscript and function options. Students will learn all aspects of computer terminal control and operations. Students will write six to eight B.A.S.I.C. programs, then enter and run them on a computer terminal. (3 hours per week.)

**111E Data Processing Programming/Assembler** ..... **3 credit hours**

Prerequisite: D P 111A.

A brief course in the fundamentals of Assembler language as designed for the Univac computer system. The information learned will be useful on many small and medium sized computers. Students will learn the basic Input/Output and calculation operations. Programming programs will involve business applications with card and disk input. (3 hours per week.)

**122A Data Processing/Computer Flowcharting Techniques** ..... **3 credit hours**

Prerequisite: D P 111A and D P 111B.

A modularized course in Computer Program Flowcharting Techniques. Students will learn methods of developing logical solutions to business computer problems using flowcharting methods and ANSI symbols. While no actual computer programming is required in this course, some time will be made available if desired by students. (3 hours per week.)

**122B Data Processing Programming/RPG I & II** ..... **3 credit hours**

Prerequisite: D P 122A.

A modularized course in Report Program Generator language. Students will learn the basic calculation statements including multiple level breaks and table handling techniques. Students will write 10 programs involving sequential card and disk files. (3 hours per week.)

**122C Data Processing/Computer Disk Techniques** ..... **3 credit hours**

Prerequisite: D P 122B.

An advanced RPG I & II course dealing with disk-file techniques. Topics will include more experience with ISAM, random processing, chaining, indexing and subscripting. (3 hours per week.)

**213A Computer Programming/Introductory COBOL** ..... **3 credit hours**

Prerequiaite: D P 122B.

A modularized study of the basic input and output procedures of the COBOL language. Students will learn basic mathematical statements, final totals, and the comparing function. Additional topics will be covered by the instructor which are not part of the text, but are related to the subject. The student will write as least 5 basic programs with input data supplied. Some programs require full documentation packages. (3 hours per week.)

**213B Computer Programming/Intermediate COBOL** ..... **3 credit hours**

Prerequisite: D P 213A.

A modularized study of additional COBOL language features including additional input and output forms. Students will learn conditional names, go to options, heading, print overflow, major-intermediate-minor totals, table look up, and an introduction to the sort verb. The students will write at least 7 COBOL programs, some of which will utilize multiple input and output forms. Full documentation packages will be required for some program assignments. (3 hours per week.)

**213C Computer Programming/Advanced COBOL** ..... **3 credit hours**

Prerequisite: D B 213B.

This modularized course covers the advanced topics in the COBOL language. The student will learn the use of alternate input and output devices including magnetic tape (simulation), access methods for sequential and indexed files and will be introduced to the REPORT WRITER feature and internally initiated sorting. Additional emphasis will be placed on program design including implementation and documentation. The student will be requried to write form 3 to 5 programs concerning the topics listed above. (3 hours per week.)

**213D Computer Programming/Advanced Business Fortran IV** ..... **3 credit hours**

Prerequisite: D P 111A AND D P 111C.

A continuation of 111C. Students will learn additional FORTRAN language features, including additional input and output forms. Students will write several advanced program designs to expand their knowledge in the area of statements and fundamental logic patterns of the FORTRAN language; as well as input/output formats and design factors as they relate to Programming. Applications in Business-Related Areas. (3 hours per week.)

**224A Data Processing/Computer File Design Concepts** ..... **3 credit hours**

Prerequisite: D P 213B.

Students will learn basic data types and the structuring of files and associated core tables to optimize systems in terms of efficiency. Methods of coding data and locating entries will be covered. Students enrolled in this course should be proficient in at least one programming language. (3 hours per week.)

**224B Data Processing/Computer Systems Design Concepts** ..... **3 credit hours**

Prerequisite: D P 224A.

An introduction to the concepts of systems analysis and design. Students will learn techniques of problem definition, I/O design, systems flowcharting and general documentation techniques. Students will demonstrate abilities in the presentation of the design to users and techniques of follow-up to assure goals are met. The primary goal will be to view the job of systems design through the eyes of the programmer in order that the programmer may contribute significantly to the overall project.

# dental assisting (D A)

**110 Introduction to Dental Assisting** ..... **4 credit hours**

Prerequisite: Admission to the Dental Assisting Program.

An orientation to dentistry. This is a study of the history of dentistry, its professional organizations, ethics, and the role of the modern dental health team. The student will be introduced to the dental operatory, equipment and instruments as they relate to his role as a chairside assistant. (4 hours per week)

**120 Oral Diagnosis Technique** ..... **1 credit hour**

A clinical course designed to actively involve the student in applying his knowledge of collecting diagnostic data and the formulation of treatment plans for dental patients. Case summaries and presentations will be written on actual clinical cases being treated in the College Dental Clinic. (1 hour per week)

**121 Introduction to Clinical Procedures** ..... **5 credit hours**

As a pre-clinical course the student will be exposed to the dental assistant's role in assisting the doctor in

operating techniques. The student will gain experience in manipulation of dental materials, their chemical and physical properties, instrumentation in each operative procedure in the dental operatory and gain experience in chairside clinical application of these procedures. (6 hours per week)

**122 Advanced Dental Science** ..... **4 credit hours**

Prerequisite: Dental Science 111.

Continuation of Dental Science 111. A study of the relationship of systemic health to oral health, oral pathology, diet and nutrition. The principles of oral hygiene, operative dentistry, oral surgery, anesthesia, and dental prosthetics are emphasized. Detailed presentations are given in medical emergencies and the use of therapeutics in dentistry. (4 hours per week)

**200 Dental Assistant Clinical Practice** ..... **5 credit hours**

Prerequisite: A 2.0 G.P.A. in all dental courses

The student is required to matriculate through a sequence of clinical experience. This sequence utilizes the facilities of the College Dental Clinic and the University of Michigan School of Dentistry. The student will be assigned the required hours by the instructor. (20 hours per week)

**210 Principles of Dental Laboratory Procedures** ..... **4 credit hours**

A demonstration and laboratory course in which the student constructs various dental devices used in diagnoses and treatment of dental conditions. Fabrication of diagnostic models, temporary restorations, and custom impression trays are emphasized. (4 hours per week)

**212 Dental Office Systems and Practice Management** ..... **5 credit hours**

Prerequisite: 1 year of high school typing or Typewriting 110A.

Emphasis is placed on filing, dental record systems, oral and written communication, and utilization of office equipment. Problem-oriented sessions and projects enable the student to develop practical knowledge of the dental assistant's role in business and Industrial Management and Dental Assisting. (5 hours per week)

**213 Dental Roentgenology** ..... **2 credit hours**

Principles, techniques, and precautions in the operation of dental X-ray equipment are studied. Film processing methods are covered in detail. Credit will be given only after satisfactory completion of Dental Roentgenology 214. (2 hours per week)

**214 Dental Roentgenology** ..... **2 credit hours**

Prerequisite: Dental Roentgenology 213.

A clinical course in making X-ray exposures on patients participating in the College Dental Clinic. Emphasis is placed on safety and X-ray techniques. Credit for Dental Roentgenology 213 and 214 will be given when this course has been satisfactorily completed. (2 hours per week)

**222 Dental Assistant Clinical Practice** ..... **5 credit hours**

Prerequisite: A 2.0 G.P.A. in all dental courses.

Advanced techniques in clinical procedures are offered through continued experience at the College Dental Clinic and the University of Michigan School of Dentistry. The student will progress through a sequence of private dental offices within the community and actively participate in both general and specialty practices. (20 hours per week)

# dietetic technology (D T)

**101 Introduction to Allied Health** ..... **3 credit hours**

An orientation into the Allied Health field; agencies involved; community structure; health care delivery systems. (Lecture, 1 hour; field experience, 3 hours per week)

**113 Anatomy and Physiology** ..... **3 credit hours**

Designed primarily for students in the Dietetic Technician Program. A basic study of the gross anatomical structure of the human body and the function to structure relationship. (3 hours per week)

**117 Supervised Field Experience** ..... **3 credit hours**

A minimum of 75 hours of supervised field experience coordinated with classroom learning in food preparation and management systems.

**127 Nutritional Chemistry** ..... **3 credit hours**

Principles and concepts of functions, structure, synthesis, and metabolism of proteins, aminoacids, carbohydrates, fats, and other nutrients with emphasis on those pertinent to the human physiology. (3 hours per week)

**189 Independent Directed Study** ..... **3 credit hours**

Prerequisite: Sophomore standing.

Directed activities in a major occupational area; 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 development of understanding and skill development within the selected occupation. (3 hours per week)

**209 Food Systems Seminar** ..... **2 credit hours**

Prerequisite: Sophomore standing.

Group discussions of topics in the dietetic field. Use of resource and illustrative materials. (2 hours per week)

**217 Supervised Field Experience** ..... **3 credit hours**

A minimum of 75 hours of supervised field experience coordinated with classroom learning in clinical nutrition.

**219 Clinical Nutrition** ..... **6 credit hours**

Prerequisite: Sophomore standing.

Nutrition care of individuals on diabetic, bland, sodium restricted, fat regulated, and calories controlled diets. Application of nutrition to critical periods throughout the life cycle; pregnancy and lactation, infancy and early childhood, children and youth and geriatric nutrition. (Lecture, 3 hours; clinical experience, 9 hours per week)

**223 Practicum in Organization and Management** ..... **3 credit hours**

A practical approach to personnel management. Particular emphasis is placed on leadership effectiveness, human relation aspects of management responsibility as it affects attitudes, morale, and productivity. Major emphasis is placed on problem-oriented sessions as it relates to the course materials. (3 hours per week)

**229 Quality Control of Food Systems** ..... **2 credit hours**

Emphasis is placed on quality, eye appeal, service standards, and techniques in the presentation of foods. (Lecture and lab, 2 hours per week) Field trips.

# economics (E C)

**111 Consumer Economics** ..... **3 credit hours**

A general education course in economics relating to the consumer, production, national income and growth, banking and credit, markets and prices. For those not majoring in business administration or social sciences. (3 hours per week)

**211 Principles of Economics** ..... **3 credit hours**

Study of the American economic system including the nature of economics, resources, business organization in the United States, pricing and allocation of resources, distribution of income. Required of all business administration transfer students. (3 hours per week)

**222 Principles of Economics** ..... **3 credit hours**

Prerequisite: Successful completion of Principles of Economics 211.

Continuation of principles including money, banking, price levels, volume of economic activity, public finance, international economics, and economic growth. Required of all business administration transfer students. (3 hours per week)

# electricity/electronics (E E)

**090 Introductory Electricity** ..... **3 credit hours**

Introductory course for student who has had no previous instruction in electricity-electronics. An introduction to electron theory, magnetism, electromagnetism, sources of electricity, electrical units, alternating current generation, inductance, and reactance. Included are fundamentals of house wiring, automobile electrical systems, and other common applications of basic electricity. (4 hours per week)

**100 Electrical Analysis** ..... **4 credit hours**

Prerequisite: One year of high school algebra, preceded or accompanied by E E 111 Fundamentals.

The analysis of D.C. and A.C. circuits; the use of determinants to systematize the use of Kirchoff's Laws; the application of phasors in the analysis of RLC circuits. The computation of power gain and losses using decibels, and the analysis of simple wave-forms. (4 hours per week)

**101 Servicing Techniques** ..... **4 credit hours**

Instruction and development in those techniques necessary for service and maintenance of electrical/electronic systems. Use and care of tools and measuring instruments. Instruction in splicing, soldering, simple printed circuit layout and fabrication along with maintenance and repair procedures for small electric motors is emphasized. The study of and working with the materials and circuits found in the residential wiring system is included. (6 hours per week)

**102 Appliance Repair** ..... **4 credit hours**

Prerequisite or co-requisite: Electrical Fundamentals 111.

Specialized study of the electrical circuits and basic mechanisms of household electrical appliances. Application of Ohm's Law, electrical measurements and interpretation of circuits and diagrams are emphasized. Skills are developed in the use of hand tools, electrical instruments, and in special servicing techniques which are employed in the servicing of large and small electrical and electro-mechanical appliances. (6 hours per week)

**110 Electrical Applications** ..... **2 credit hours**

Co-requisite: Electrical Fundamentals 111.

The subject matter in this class closely parallels that taught in Electrical Fundamentals 111 but from a more mathematical standpoint. Considerable time is spent learning to use computation aids for electrical calculations. Required of those students in the Electronic and Electrical Engineering Technician Programs. (3 hours per week)

**111 Electrical Fundamentals** ..... **4 credit hours**

Prerequisite: One year of high school algebra or math proficiency test. Electronic and Electrical Engineering Technicians and Electronic Service Technicians must be simultaneously enrolled in Electrical Applications 110.

A first course in basic electrical theory designed to serve as a foundation course for the beginning technician who needs an electrical background for further study. Resistive, inductive, and capacitive components are studied along with the effects of constant and varying voltages applied to series, parallel, and compound circuits. (6 hours per week)

**120 Electrical Applications** ..... **2 credit hours**

Prerequisite: Electrical Fundamentals 111.

Co-requisite: Electrical Fundamentals 122.

The analysis of A.C. circuits using the "j" operator and basic network theorems. The course work will parallel that of Electrical Fundamentals 122. Required of those students in the Electronic and Electrical Engineering Technician programs. (3 hours per week)

**122 Electrical Fundamentals** ..... **4 credit hours**

Prerequisite: Electrical Fundamentals 111, Applied Algebra 151, or Intermediate Algebra 169 or Electrical Analysis 100. Electronic and Electrical Engineering Technicians and Electronic Service Technicians must be simultaneously enrolled in Electrical Applications 120.

Exercises solving complex circuit problems, alternating current generation, commutation, and rectification. Fundamentals of D.C. and A.C. motors and generators and their equivalent circuits; magnetics and transformers. An introduction to Delta, Wye, and three-phase transformation. (6 hours per week)

**127 Industrial Electricity** ..... **4 credit hours**

Prerequisite: Electrical Fundamentals 111, preceded or accompanied by Electrical Fundamentals 122.

Electrical wiring diagrams, series, shunt, and compound direct-current generator and motor principles including: torque, and speed calculations. Single and three phase transformers and their equivalent circuits. Impedance and voltage transformation. A.C. motors (shaded pole, synchronous, capacitor start, squirrel cage, induction-repulsion), programmable motor controls. (6 hours per week)

**200 Audio and Power Transmission** ..... **3 credit hours**

Prerequisite: Electrical Fundamentals 122 and Electrical Applications 120.

Electro-magnetism and magnetic circuits; network theorems; series and parallel resonant circuits; impedance transformation and matching; AC and DC coupling methods. The "j" operator is used extensively. (3 hours per week)

**210 Measurements and Instrumentation** ..... **4 credit hours**

Prerequisite: Basic Electronics 211.

This course presents the theoretical and practical aspects of precision electrical and mechanical measurements. Included are: measuring standards, mathematical evaluation of errors, systems and units of measurement, basic standards, mechanical-electrical and magnetic test equipment. Laboratory exercises provide knowledge of the principles involved in the calibration of laboratory instruments. (6 hours per week)

**211 Basic Electronics** ..... **4 credit hours**

Prerequisite: Electrical Fundamentals 111, preceded or accompanied by Electrical Fundamentals 122.

Transistor and vacuum tube theory and equivalent circuits; (common base-grid, common Emitter-Kathode, Common Collector-Anode); characteristic curves and load lines; one and two stage amplifier circuits and applications; familiarization with various electronic components and instruments; introduction to oscillators. (6 hours per week)

**212 Radio and Television Circuitry** ..... **5 credit hours**

Prerequisite: Basic Electronics 211.

The analysis of the basic circuits used in Radios and Black and White Televisions. Circuit tracing, trouble shooting. Repair and alignment are covered. Specialized transmitter circuitry and C.R.T. displays are included. (9 hours per week)

**219 Electrical Distribution Systems** ..... **3 credit hours**

Prerequisite or co-requisite: Electrical Fundamentals 122.

A study of the generation, transmission, distribution, and utilization of electrical energy. Field trips are scheduled to inspect power generating stations, electrical power substations, and industrial load centers. (3 hours per week)

**220 Electrical Installation and Maintenance Practices** ..... **4 credit hours**

Prerequisite: Electrical Fundamentals 122.

A study of safety in the use of typical electrical equipment, tools, and hardware. The course includes remote controls, industrial and commercial lighting, principles of illumination, electrical conductors, materials, installation and maintenance of equipment, power factor correction, trouble-shooting procedures, and other subjects appropriate for the electrical maintenance technician. (6 hours per week)

**222 Pulse Circuits and Operational Amplifiers** ..... **4 credit hours**

Prerequisite: Basic Electronics 211 and Audio and Power Transmission 200, and Switching and control 237

The theory, analysis and applications of semi conductor pulse circuits. The analysis and application of IC OP AMPS in linear and non-linear circuits. (6 hours per week)

**223 Color Television** ..... **4 credit hours**

Prerequisite: Radio and Television Circuitry 212.

This course is designed to train the student in the principles of color television circuits, analysis of the content and processing of the composite color television signal and trouble-shooting of color T.V. circuitry. (6 hours per week)

**224 Television Service Procedures and Practices** ..... **4 credit hours**

Prerequisite or co-requisite: Color Television 223.

Circuit analysis of television receivers. Troubles that occur most frequently in circuits and components are discussed together with recommended diagnostic and repair techniques. Students are given practical training on inoperable equipment supplied by instructors and other students. Students are also instructed in the importance of customer relations in describing receiver failures and servicing. (6 hours per week)

**230 Communications Electronics** ..... **4 credit hours**

Prerequisite: Basic Electronics 211 and Audio and Power Transmission 200.

Analysis and construction of communications special circuits associated with AM, FM and SSB communications equipment. The course content and organization closely parallels the technical requirements (Element 3) of the FCC 2nd Class license. (6 hours per week)

**237 Electronic Switching and Control (Logic)** ..... **3 credit hours**

Prerequisite or co-requisite: Electrical Fundamentals 111, or consent of division.

A presentation of the theory of electronic logic accompanied by problems using "AND" gates, "OR" gates, shift registers, time delays and counters, M.I.L. and machine-printed logic symbols. The binary number system and Boolean Algebra are applied. The Veitch diagram and Karnaugh maps are used to generate the pulse and

levels wiring required to program J-K flip/flops. Electro-magnetic relay analogy and circuitry is presented simultaneously. (4 hours per week)

**238 Industrial Electronic Circuits ..... 4 credit hours**

Prerequisite: Basic Electronics 211 and Audio and Power Transmission 200.

The study and use of solid state devices, vacuum and gas filled tube circuits. Industrial applications of electronics to such problems as precision timing, light and heat control, and control of industrial machinery. (6 hours per week)

**239 Electrical Design ..... 3 credit hours**

Prerequisite: For graduation candidates only.

Directed activity in electricity or electronics. In consultation with the instructor, the student will select and construct a project. He will prepare the layout drawings, procure the components, construct, test, and debug the finished product. A final report concerning the project is also required. Professional ethics and hiring practices are studied. (3 hours per week)

**240 Practices and Standards Seminar ..... 2 credit hours**

Prerequisite: For graduation candidates only.

Group study of current electrical practices and standards. The course will include: ANSI standards; M.I.L. Standards and NEC rules and regulations; manufacturing techniques; familiarization with catalogs, products, and vendors; specification writing; professional ethics and hiring practices. Students learn the major sources of commercial design standards, device standards, and component standards. (2 hours per week.)

# english (ENG)

**030 Writing Workshop ..... 3 credit hours**

English 030 (Writing Workshop) is a Laboratory course for those students who feel they are not prepared for the regular English composition classes. Students work at their own speed on materials appropriate to their writing capabilities. In English 030 primary emphasis is placed on the basic writing skills. Students are given individual instruction in the Workshop. They may advance during the semester and receive appropriate credit for either English 091, 111 or 122. Students can be referred for help from any course or program throughout the College. (3 hours per week)

**050 English for the Foreign Born ..... 2 credit hours**

Individualized instruction especially for foreign born residents who wish to feel more comfortable and confident in their English skills, with special application to personal, social and business situations. Offers intensive practice in understanding, speaking, pronouncing and writing basic American English. Special attention to spelling and slang usages. (3 hours per week)

**051 English for the Foreign Born ..... 2 credit hours**

A continuation of all of the aspects covered in English 050. (3 hours per week)

**090 Parents: Children's Reading ..... 2 credit hours**

This course is designed for parents who are concerned about their children's reading. Special attention will be given to methods for preparing preschoolers for reading, using the home as a learning environment. We will also focus on reading related home and school problems. (3 hours per week)

**091 English Fundamentals ..... 3 credit hours**

This course is designed to provide the occupational student with an adequate and practical background in kinds of writing necessary in his chosen field. The course is tailored to the specific needs of each student. English Fundamentals 091 is in no way remedial for English Composition 111. (3 hours per week)

**100 Technical Communications ..... 3 credit hours**

This course provides the student with the skills to communicate by means of writing, speaking, and demonstration, and is designed primarily for those studying to be technicians in industry, the health occupations, and business.

In addition to improving writing and speaking skills of a technical nature, the student will learn the methods of reporting factual information through the analysis of problems and events related to his technical specialty. The uses of audio-visual equipment, the creating of graphic presentations, and the development of an appreciation of precise reporting through the use of elementary statistics are all parts of this course. (3 hours per week)

**107 Communication Skills ..... 3 credit hours**

Spelling, vocabulary, sentence structure, organization of oral communications, business correspondence and

forms, writing of technical reports. Analysis of written material for tone, style, and clarity with individual speech analysis, business and social conversations, information talks, explanations and demonstrations. Supplementary reading assignments include suitable models for the student in his writing. (3 hours per week)

**111 English Composition** ..... **3 credit hours**

English 111 is designed to assist students in 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 are stressed. The student will write both in-class and outside themes frequently. Reading materials serve as basis for papers and for classroom discussions. (3 hours per week)

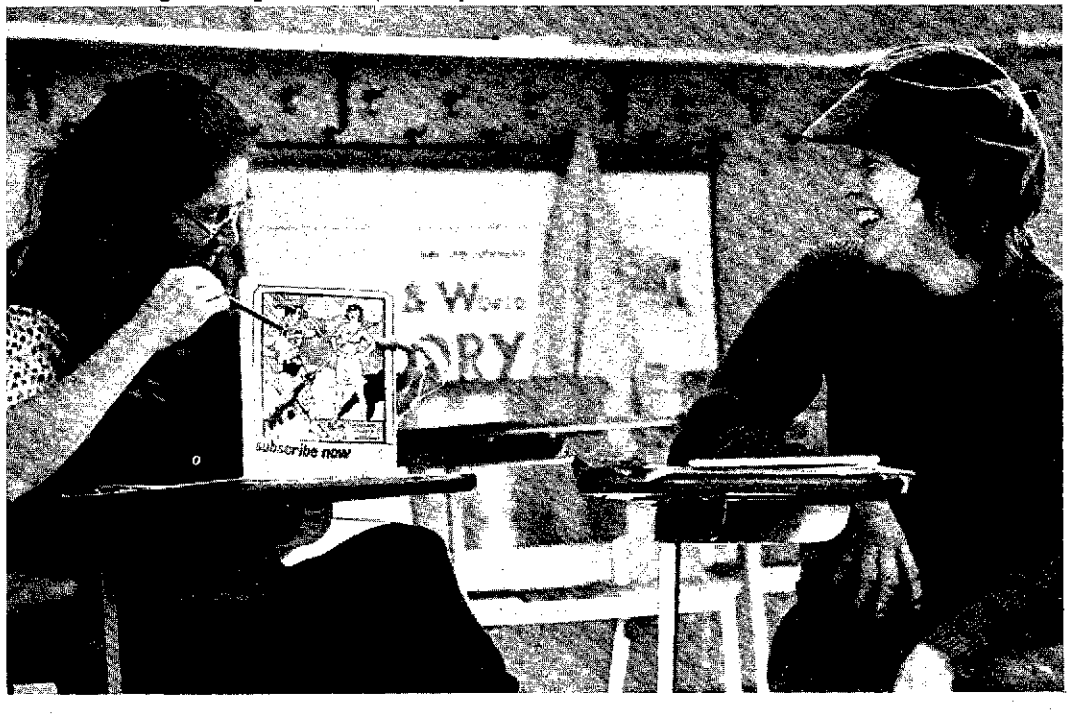
**122 English Composition** ..... **3 credit hours**

Prerequisite: English Composition 111 or Equivalent.

A continuation of first semester composition (English 111) with emphasis on research and critical literary papers along with narrative and persuasive writing. Specially designated sections of 122 may emphasize critical thinking, myth, poetry in song, popular culture, or mass media. (3 hours per week)

**140 Science Fiction** ..... **3 credit hours**

Considers the relevancy of science fiction as prophecy and as a guide to shaping future societies. This course centers around a series of short stories while also permitting each student to select and read several novel length books independently. Included are science fiction films and guest lecturers though most of the class activity consists of dialogue among members. (3 hours per week)




**160 Introduction to Literature: Poetry and Drama** ..... **3 credit hours**

An introduction to the study of poetic and dramatic literature, this course is designed to give an understanding of literature through close reading and discussion of selected works of poetry and drama. In both 160 and 170 encouragement will be given students to evolve criteria for assessing the value of literary works. Specially designated sections of 160 may emphasize poetry in songs. (3 hours per week)

**170 Introduction to Literature: Short Story and Novel** ..... **3 credit hours**

By means of readings and discussion of short stories and novels students explore literature as it provides blueprints for living, self-discovery, escape and recreation. Each student is helped in strengthening his reading and writing skills.

Specially designated sections of 170 may emphasize popular literature — science fiction, biography, mystery, westerns, or images of women in literature. Readings and discussion will consider the cultural relevance of these writings, the structural design and the effects upon the reader. (3 hours per week)

**200 Shakespeare** ..... **3 credit hours**

In this introductory course the student will have the opportunity to read and discuss each of the varieties of Shakespeare's plays: comedy, history, tragedy, and dramatic romance. All periods of Shakespeare's work will be represented. Wherever possible, the opportunity to witness performances, either live or on film, will be made available. (3 hours per week)

**207 Literature of the Bible** ..... **3 credit hours**

A study of the content and literary forms of the Old and New Testaments, and their influence on the literatures of the world to the present day. (3 hours per week.)

**210 Children's Literature** ..... **3 credit hours**

A general survey of the prose, poetry and illustrated books suitable for the elementary grades and for children through the early adolescent years. Required by most institutions of students entering elementary education. Also for those in library studies or work, teacher aide programs, nursery and day care work, and as general education for parents. (3 hours per week.)

**211 American Literature** ..... **3 credit hours**

A study of our nation's literature from the beginnings to the Civil War, stressing the major authors of the period. There will be an effort to relate the trends of the period to contemporary problems and readings. (3 hours per week)

**212 English Literature** ..... **3 credit hours**

A study of English literature from the Anglo-Saxon period through the eighteenth century. Readings stress the major authors from Chaucer to Johnson. (3 hours per week)

**213 World Literature** ..... **3 credit hours**

World Literature 213 and 224 is a sequence which attempts an approach to the eternal values of man through literary masterpieces written from the time of ancient Greece to the present. (3 hours per week)

**222 American Literature** ..... **3 credit hours**

A continuation of American Literature 211, covering the period from the Civil War to the present. There will be an effort to relate the trends of the period to problems and readings occurring before the Civil War. (3 hours per week)

**223 English Literature** ..... **3 credit hours**

English literature continued. A study of representative writers of the Romantic, Victorian, and Modern periods. (3 hours per week)

**224 World Literature** ..... **3 credit hours**

A continuation of World Literature 213, the second part of this sequence offers a detailed study of some of the great literary experiences since the Renaissance and attempts to show how they have contributed to our present cultural heritage. (3 hours per week)

**230 Nature of English Language** ..... **3 credit hours**

Study of the nature and development of the English language. Consideration of English from its beginning to the present. The language is examined in its social context and also in terms of dialects, speech and formal structure. (3 hours per week)

**270 Creative Writing** ..... **3 credit hours**

A course in the fundamentals of creative writing through the analysis of various forms of writing and frequent written exercises in poetry, fiction, basic playwriting, and non-fiction. Students are encouraged to develop writing skills according to personal interests and abilities. A course assumption is that understanding of the skills involved in creative writing promotes better reading of literature. This course is also designed for persons seeking an avocation in creative writing with interest in learning the fundamentals of the craft. An annual summer workshop is offered. (3 hours per week)

**275 Teaching Children Poetry Writing** ..... **1 credit hour**

A one-week summer workshop for teachers, parents, writers, school administrators, librarians, community workers, and others, this course is a demonstration experience in which methods of teaching children to write poetry are explored and used by workshop members. Based on techniques and materials used in several "Writers in the Classroom: Poetry in the Schools" projects and suggestions of writers, teachers and children in projects. Films, music, great poems, songs, and children's poems are used by poets and teachers to illustrate possibilities for children. Workshop students learn the how-to-do-it of working with children to improve writing development, awaken natural poetic expressiveness, and increase appreciation of poetry as real-life expression and poetry as self-expression.

# film (FLM)

**101 Introduction to the Super 8MM Movie Camera** ..... **3 credit hours**

An introductory course, thus no prior experience in still photography or motion pictures is required by the student to take this class. The Super 8MM Camera today is a highly sophisticated cinemagraphic tool more and more widely used in television and industry. While limited to small screen projection by its frame size, this factor is of little concern in TV and less concern in education where its lesser investment and lower operating costs for comparable filmic expression are most important. (3 hours per week)

**103 Super 8 MM Sound Recording and Picture and Sound Editing** ..... **3 credit hours**

A course in recording and editing. Single and double system sound recording is now available in Super 8 plus voice-overs with sound, music and effects tracks added in the projector. Several laboratories now offer complete lab services for Super 8, workprint, edgenumbering, interneg and opticals. It is now possible to duplicate in Super 8 the professional processes of sound recording and editing previously only available in 16 MM. (3 hours per week)

**130 Special Production Projects** ..... **3 credit hours**

To be offered exclusively in Spring session. Essentially a practicum, allowing students, who have completed a year of study (Film 101 and 103 or equivalents), intensive work in the operation of film and editing equipment. The problem to be undertaken by the class will be chosen from a work in production. (3 hours per week)

**201 Film Production for Television** ..... **3 credit hours**

Course is concerned with non-dramatic film production for TV. Covers news inserts, features and documentaries. Also, a brief history of documentary film over the past fifty years with examples shown in class. The student will put to use, in actual production of TV footage, the technical skills learned in 101 and 103. (3 hours per week)

**203 The Creative Camera: Advanced Production Techniques and Special Effects** ..... **3 credit hours**

Prerequisites: Film 101 and 103

An advanced production class concerned with creating with the camera. Course covers the matt-box, special lenses, macrophotography, slow motion and time lapse, photomicrography, superimpositions and double printing, film style. (3 hours per week)

**205 Film Visuals, Titles and Animation Techniques** ..... **3 credit hours**

Prerequisites: Film 101 and 103

Essentially the use of the animation stand and creating a film frame by frame. (3 hours per week)

# finance (FIN)

**100 Personal and Consumer Finance** ..... **3 credit hours**

A basic finance course concerning the role of the individual as consumer; cost of establishing and maintaining a household; problems of personal-consumer credit, installment buying; taxes; basic finance concepts; insurance; investments; health services; governmental influence and protection; personal-consumer savings; banking. (3 hours per week)

**220 Principles of Finance** ..... **3 credit hours**

Prerequisite: Principles of Accounting 122 or equivalent.

This course is a survey of the whole field of finance, both private and public. Emphasis is placed 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 and money markets, and financing state and federal governments. (3 hours per week)

# fire protection (F P)

**097 Labor Relations In The Public Sector** ..... **3 credit hours**

Labor Relations as it applies to the public employee. Labor laws that apply to the public sector, simulated

collective bargaining procedures, and case studies will be discussed. This requires one field study report. (3 hours per week)

**100 Introduction to Fire Protection** ..... **3 credit hours**

A course in 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 a discussion of the problems and possible solutions for current and future fire protection. (3 hours per week)

**101 Hydrostatics I** ..... **3 credit hours**

Basic skills relevant to Fire Service Hydrostatic operations. (3 credit hours per week)

**109 Fire Operations Strategy** ..... **3 credit hours**

Prerequisite: Hydrostatics I.

The aspects of tactics and strategy in extinguishing fires; pre-fire plans; organization of the fireground, including techniques of using available equipment and manpower; a study of conflagrations and the techniques of predicting fire severity. Emphasis will be placed on the development of thinking skills in relation to crisis. (3 hours per week)

**111 Hydrostatics II** ..... **3 credit hours**

Prerequisite: Hydrostatics I.

Experience with a variety of different types and styles of pumps including piston, vane, gear, and combination pumps. Construction, testing, and maintenance procedures provide the laboratory experiences. (3 hours per week)

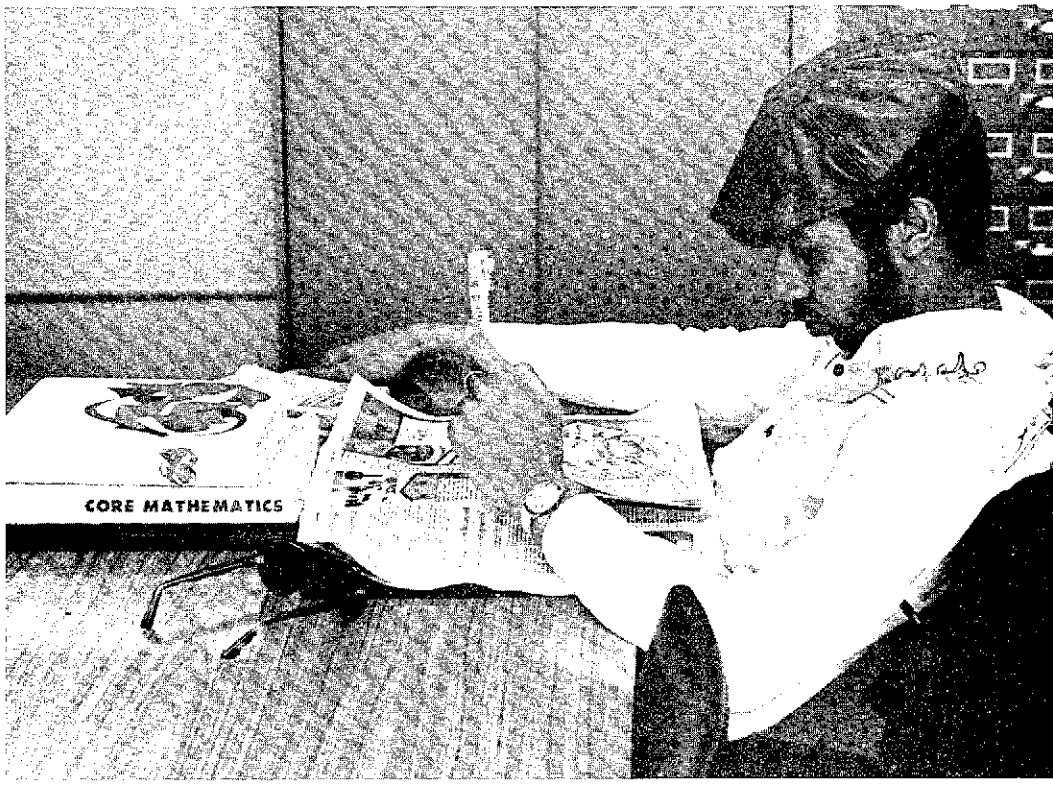
**122 Fire Prevention Theory and Application** ..... **3 credit hours**

Prerequisite: Introduction to Fire Protection 100

The development of fire prevention laws and ordinances for elimination of fire hazards; inspection organization, practices, and procedures; theory and application of laws and ordinances in modern concepts of fire prevention. (3 hours per week)

**189 Study Problems** ..... **3-6 credit hours**

Prerequisite: Consent of division



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

**210 Introduction to Fire Administration** ..... **3 credit hours**

A course in the practical application of records, reports, and training; the municipal fire problem, organization for fire protection to include manpower, equipment, and facilities; principles of organization; methods of supervision and discipline; relations with the public and other City departments; the budget and purchasing practices; a study of rating and systems and their application to the fire service; and discussion of the proper ways to handle personnel problems, grievances, and employee suggestions. (3 hours per week)

**213 Fire Investigation and Arson** ..... **3 credit hours**

The fire fighter's role in arson investigations; the method and mechanics of protecting, seraching, and controlling the fire scene; determining the point of origin, path of fire travel and fire causes; interviews and interrogations; recognizing and preserving evidence; Michigan arson laws; alibis, motives, and proving the corpus delicti; preparation of the case, court testimony, and reports and records; juvenile fire setters. (3 hours per week)

**224 Protection Systems in Industry** ..... **3 credit hours**

Attitudes prevalent in industry toward fire protection; development of fire and safety organizations in industry; relationships between private and public fire protection organizations; industrial obligations to communities in regard to fire and safety; current trends, deficiencies, and possible solutions for fire protection problems facing industry today. (3 hours per week)

**209 Advanced Strategy** ..... **3 credit hours**

Covers fireground operations, strategy and judgements involving questions, such as; when to call for additional equipment, why buildings collapse, when to retreat, when or when not to ventilate, how to best augment systems which are installed in the building, and generally discussions on factors or conditions which affect and determine a department's operations.

# fluid power (FLP)

**111 Fluid Power Fundamentals** ..... **4 credit hours**

Basic components of hydraulic and pneumatic systems as well as a general understanding of the basic laws and formulas. Pumps control values, actuators, ANSI symbols are used for circuit construction and print reading. Laboratory experiences include assembly and disassembly of components and construction of hydraulic circuits. (5 hours per week)

**122 Hydraulic Generators (Pumps)** ..... **4 credit hours**

Prerequisite: Fluid Power Fundamentals 111 or consent of division.

Experience with a variety of different types and styles of pumps including piston, vane, gear, and combination pumps. Construction, testing, and maintenance procedures provide the laboratory experiences. (5 hours per week)

**201 Plumbing and Pipefitting** ..... **3 credit hours**

A practical study of plumbing and pipefitting fundamentals as well as the classifications and functions of boilers, steam and hot water heating systems. Heating code is also included. (3 hours per week)

**202 Plumbing and Pipefitting** ..... **4 credit hours**

A continuation of Plumbing and Pipefitting 201 involving the study of water supply, waste disposal, drainage, venting, unit sanitation equipment, and plumbing codes. (4 hours per week)

**213 Hydraulic Controls** ..... **3 credit hours**

Components used in the control of hydraulic fluids are studied. Emphasis is placed on pressure, direction, and volume control assemblies. Manual, electrical, pneumatic, mechanical, and hydraulically operated valves are studied and demonstrated in typical circuits. (4 hours per week)

**214 Basic Hydraulic Circuits** ..... **3 credit hours**

Prerequisite: Fluid Power Fundamentals 111 or consent of division.

The fundamentals, review of components, and necessary computations for basic hydraulic circuits. Troubleshooting techniques in the hydraulic circuit, including line component malfunctions are stressed. (4 hours per week)

**225 Advanced Hydraulic Circuits** ..... **3 credit hours**

Prerequisite: Basic Hydraulic Circuits 214 or consent of division.

The operations, applications, and maintenance of hydraulic circuits to typical machines such as: lathe, broach, mill and die-cast machines. Circuit design and component sizing is stressed. Applications for fluidies are introduced. (4 hours per week)

**226 Pneumatics** ..... **3 credit hours**

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

# french (FRN)

**111 First Year French** ..... **3 credit hours**

This course is designed for those who are beginning, or who wish to review their foreign language study. Emphasis is on the oral-aural approach. (4 hours per week)

**120 Conversational French** ..... **2 credit hours**

This basic French course is mainly conversational in approach, assumes no previous knowledge of the language, and is geared chiefly for persons interested in adding to their enjoyment of foreign travel through a basic knowledge of spoken and written French, as well as an appreciation and awareness of contemporary French culture. French 120 may also be taken as a preview for students entering the First Year College French studies or students already enrolled in first year course. (2 hours per week)

**122 First Year French** ..... **3 credit hours**

Prerequisite: French 111 or permission of instructor.

A continuation of French 111. Class conversation, elementary readings, and language laboratory practice stress the spoken language and help develop a basis for further study. (4 hours per week)

**213 Second Year French** ..... **3 credit hours**

Prerequisite: French 122 or permission of instructor.

Advanced conversations and readings emphasize several cultural aspects of the language and continue the work done in French 111 and 122. Students with good high school backgrounds in French may be eligible for admission to this course without having taken French 111 and 122. (3 hours per week)

**224 Second Year French** ..... **3 credit hours**

Prerequisite: French 213 or permission of instructor.

This is a continuation of French 213. Short-wave broadcasts and language laboratory practice augment the oral-aural method. (3 hours per week)

# general business (G B)

**111 Business Law** ..... **3 credit hours**

Text and case study of the general laws applicable to business covering the nature of law, courts and court procedures, crimes and taxes, contracts, agency, labor relations, and partnerships. (3 hours per week)

**122 Business Law** ..... **3 credit hours**

Prerequisite: Business Law 111.

The study of corporations, property, sales, negotiable instruments, insurance, and bankruptcy. (3 hours per week)

**140 Business Occupational Foundations** ..... **3 credit hours**

An introductory study of the functions, objectives, problems, organization, and management of modern business. Designed to acquaint the student with the free-enterprise system of business-economic activity and the impact of the consumer and governmental forces upon the system. Develops an insight into the vital role of the administrative function in our economy as a whole and in the operation of a single business unit. Provides a practical orientation in the career opportunities available in business and industry. (3 hours per week)

**200 Independent Directed Study** ..... **2-8 credit hours**

Prerequisite: Divisional consent.

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

**207 Business Communication** ..... **3 credit hours**

Prerequisite: Second year standing or divisional consent.

A course to develop the student's oral and written communication skills as they relate to business enterprise. Emphasis is placed upon the social and psychological aspects and the public relations function of business communication. Develops an awareness of the importance of clarity, conciseness, accuracy and appropriateness of tone in all types of business communication. Includes business correspondence and reports, and the gathering, preparation, organization, and presentation of data. (3 hours per week)

# general studies (G S)

**101 Legal Rights** ..... **3 credit hours**

A course on everyday legal questions and matters which covers the basic rights and protection of an individual. Such items as liability, contractual arrangements, wills, income tax, small claims court, consumer agencies, and means of legal recourse and remedy are included. A practical course for the layman. (3 hours per week)

**103 Consumer Rights** ..... **3 credit hours**

Concerned with consumer legal rights and remedies, this course covers: consumer contracts; product warranties; debtor and creditor understandings; real property, purchase, sale and taxation; tenants' rights; state and federal income taxation; and insurance. A class designed to help consumers, it is in part shaped by the interests and needs of the students. (3 hours per week)

**110 Art of Parenting** ..... **1 credit hour**

A course dealing with the relationship between parent and child, this class is designed to detail for parents their situation as parents. For parents, future parents and others, areas covered in this 10 week study include — continuing growth as parents, communication within the family, children's play and discipline, sex education and dynamics in the home. (2 hours per week)

**120 Philosophy of Aging** ..... **1 credit hour**

An 8 week course dealing with the situations, institutions — both social-cultural and service, and day-to-day human relationships involved in the aging process. Class is keyed to meet interests and needs of students. (2 hours per week)

# geography (GEO)

**100 Geography and the Environment** ..... **3 credit hours**

Geographic principles underlying the patterns of man's activities on the earth's surface. Includes problem-solving in land use, air and water standards, population control, and leisure in conservation. (3 hours per week)

**200 Michigan: Geography and History** ..... **3 credit hours**

A comprehensive survey of the various types of natural resources and regions within the state and of the cultural adjustment man has made to natural conditions. Special emphasis will be placed on points of history with geographic interest. The economic, social, and political development of the territory is shown as a part of the history of the Great Lakes area. (3 hours per week)

# geology (GLG)

**100 Introduction to the Earth Sciences** ..... **4 credit hours**

A course designed primarily for students who desire to obtain a broad perspective of the science. Practical training in earth science, including work with minerals, rocks, fossils, maps, meteorology, astronomy, and

oceanography, and a field trip to points of geologic interest is included in the three weekly laboratory hours. (5 hours per week)

**103 Field Geology** ..... **3 credit hours**

The course is an introduction to geology taught in the field. The study of the processes and material that have formed or are forming the landscape in the Ann Arbor area will be carried out on two weekly afternoon field trips for a six-week period. Instruction, laboratory work, and special work technique are all given outdoors.

**109 Common Rocks and Minerals** ..... **3 credit hours**

Involved is the identification of rocks and minerals; the study of an area is revealed in rocks and minerals. Especially useful for prospective elementary school teachers. (3 hours per week)

**114 Physical Geology** ..... **4 credit hours**

Physical features of the earth with special reference to their origin and significance along with interpretation of topographic maps and the study of common rocks and minerals. A field trip is involved in the two hours of lecture and three hours of laboratory. (5 hours per week)

**125 Historical Geology** ..... **4 credit hours**

Prerequisite: Physical Geology 114.

A study of the development of North America as a typical continent, covering the formation of mountains, plains, and evolution of life on land and water, and the identification of fossils and interpretation of geologic maps. Field trips are involved. (5 hours per week)

# health science (H S)

**097 Emergengy Medical Review** ..... **2 credit hours**

Designed to refresh and update the skills of practicing EMTs in areas of Cardiopulmonary Resuscitation, Splinting, and Auto Extrication. The course also fulfills the requirements of the National Registry of Emergency Medical Technicians for a 60 point refresher course (Continuing Education).

**101 Emergency Medical Treatment Principles I** ..... **2 credit hours**

Theoretical aspects fo Basic Life Support including C.P.R., Cardiac Care and Adjuncture devices used in field EMT practice. Diagnostic skills, medical emergencies and environmental emergencies are discussed by experts in the field. Concepts of water safety, practical aspects of auto extrication among other basic principles are included in lecture sessions.

**102 Emergency Medical Treatment Techniques I** ..... **2 credit hours**

Through laboratory and field exercises the student learns the correct procedures of emergency medical intervention. Emphasis is placed on techniques such as cardio-pulmonary resuscitation, treatment of soft tissue, injuries, burns, spinal and head injuries, shock, fractures, emergency childbirth, automobile extrication, back-boarding and water safety. The labs are conducted by experienced and registered EMTs.

**103 Emergency Medical Treatment Principles II** ..... **2 credit hours**

A continuation of EMT Principles I. Medical experts lecture on other concepts of Medical emergencies.

**104 Emergency Medical Treatment Techniques II** ..... **2 credit hours**

A continuation of EMT Techniques I. The student learns new techniques and further develops skills acquired in the first semester. Orientation to hospital clinical emergencies is provided.

**105 Medical Terminology** ..... **3 credit hours**

This course provides a basis for communication among health care workers. The student learns the basic tools for building a medical vocabulary and learns terms and concepts pertaining to anatomy, physiology and disease.

**113 Introduction to Medical Sciences** ..... **2 credit hours**

This course provides an overview of how and why diseases occur. The range of concepts discussed include cells, organs, body, systems and clinical manifestations of disease.

**131 Cardio-pulmonary Resuscitation** ..... **1 credit hour**

The student learns to ventilate the lungs and restore the blood circulation of patients with cardiac arrest.

**132 Cardio-pulmonary Resuscitation Instructor** ..... **1 credit hour**

Students who have completed H S131 learn how to be effective instructors of cardio-pulmonary resuscitation. Participants will be certified by the Michigan Heart Association as CPR Instructors. The course is offered only when there is sufficient demand.

# heating (HTG)

The following list of heating courses are offered primarily as trade related instruction. Their purpose is to train and up-grade individuals currently employed in licensed occupations; i.e., heating/air conditioning or as boiler operators in power plants. These courses are theory presentations with little or no laboratory. However, students who desire to enter these occupations are welcome providing they understand the nature of the courses. Please consult the program advisor as to licensing requirements and qualifications.

**100 Boiler Operations** ..... **3 credit hours**

Prerequisite: Employment with Boilers or consent.

The first in a series of boiler courses to aid the student in passing examinations to obtain low pressure and high pressure operator's license. Boiler Operations covers: boiler terminology, construction and function, as well as the fundamental application of physics; heat, steam, water, pressures, etc. Safety is included, along with basic codes governing the operation of boilers. (3 hours per week)

**101 Boiler Accessories** ..... **3 credit hours**

Prerequisite: HTG 100 or consent.

Devoted to boiler settings, combustion equipment, fuels, heating surfaces, stokers, pumps, safety valves, steam traps, separators, and other accessories. Keeping of records, logs, and inspection preparation are included. (3 hours per week)

**102 Boiler Auxiliaries** ..... **3 credit hours**

Prerequisite: HTG 101 or consent.

Continuing the study of accessories and auxiliaries covering injectors, feedwater heaters, deaerators and evaporators, economizers, air preheaters, cooling towers, etc. (3 hours per week)

**103 Power Plant Engines and Turbines** ..... **3 credit hours**

Prerequisite: HTG 102 or consent.

Principles of operation and maintenance practices of steam engines and turbines are presented. Studying construction, mechanisms, engine indicators, governors, engine rating and efficiency. (3 hours per week)

**104 Power Plant Refrigeration** ..... **3 credit hours**

Prerequisite: None.

A basic refrigeration course for Boiler Operators and Power Plant Engineers providing them with the fundamentals of refrigeration including: terminology, cycle, mechanics of compression, fundamentals of energy, elementary thermo-dynamics, refrigerants and lubricating oils, (3 hours per week)

**105 Power Plant Air Conditioning Systems** ..... **3 credit hours**

Prerequisite: HTG 104.

The continuation of 104 devoted to Power Plant cooling systems covering subjects such as: centrifugal, reciprocating cascade and absorption systems, evaporators, controls and metering devices, cooling towers, water problems and treatment. (3 hours per week)

**106 Power Plant Electricity** ..... **3 credit hours**

Prerequisite: Employed Operating Boilers or consent.

Introducing the boiler operator 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. (3 hours each week)

**107 Electrical Energy Generation** ..... **3 credit hours**

Prerequisite: HTG 106 or consent.

A study of the various types of motors and generators employed in Power Plants to generate electricity. Included in the study are application and maintenance of motors, induction, synchronous, single and 3 phase. Power transmission, transformers lines, breakers, start and run capacitors, and control of plant power factors are included. Safety and appropriate codes are also discussed. (3 hours each week)

**111 Heating Fundamentals** ..... **4 credit hours**

Prerequisite: RSES Membership Required.

The first in a series of courses introducing heating and air conditioning service personnel to the fundamentals of heating fuels, heating equipment and systems. (4 hours per week)

**122 Heating Systems** ..... **4 credit hours**

Prerequisites: HTG 111 and RSES or consent.

Building upon the first course, Heating Systems covers applications, installation and start-up of heating equipment, oil, gas, electric warm air and hydronic. (4 hours per week)

**213 Heating Controls** ..... **4 credit hours**

Prerequisites: RSES Membership and HTG 122

The third course in the "spiraling" series focuses on controls and troubleshooting heating equipment and systems. (4 hours per week)

**214 Heating Codes** ..... **3 credit hours**

Prerequisites: 2 years experience or HTG 213.

National and local codes are discussed and interpreted, covering materials, installation and operation of heating equipment and systems. (3 hours per week)

# history (HST)

**101 Western Civilization to 1600** ..... **3 credit hours**

A survey of the development of the cultures and institutions of the ancient Near East and Classical, Medieval, and Renaissance civilizations. (3 hours per week)

**102 Western Civilization from 1600 to the Present** ..... **3 credit hours**

A study of cultural developments and the growth of institutions from the late Renaissance to the present. Emphasis is placed on the expansion of European civilization. No prerequisite is necessary. (3 hours per week)

**103 History of Near East and India 1500-1960** ..... **3 credit hours**

Study of Islam and Hinduism, the rise and fall of the Moghul, Safavid and Ottoman Empires and the response of each to western emperialism. Emphasis will be placed on the emergence of nationalisms in both areas and on the problems currently facing India and the states of the Middle East.

**149 African History and the Western World** ..... **3 credit hours**

See (bls) black studies for course description.

**150 Afro-American History** ..... **3 credit hours**

See (bls) black studies for course description.

**201 United States, 1500 to 1865** ..... **3 credit hours**

A study of the American peoples and their growth from early colonization to the close of the Civil War. Emphasis on reexamining both the dominant themes in American life as well as the conflicts oppressed minorities faced in seeking their needs and ambitions in America. (3 hours per week)

**202 United States, 1865 to Present** ..... **3 credit hours**

A survey of American society and politics since the Civil War. Special examination given to the social and cultural unrest of growing America in order to better understand and to deal with the stresses of the present. A continuation of U.S. 1500-1865 201 but no prerequisite needed. (3 hours per week)

**203 Growth of American Labor** ..... **3 credit hours**

An examination of the present concerns of labor by placing them in historical perspective. Three major themes emphasized are history of American labor, how the historical origins of labor affect all industrial relations, and special contemporary concerns of labor men and women today.

# hotel motel management (HMT)

**102 Introduction to Service Industries** ..... **3 credit hours**

Management careers and opportunities in hotel, motel, food service, health facilities, club, recreational centers, tourism and other public hospitality business. Includes front office practice. Local field trips required.

**104 Service Industry Equipment & Utilities** ..... **5 credit hours**

Engineering in food and lodging industry, emphasizing utilities, machinery characteristics and environment.

**120 Practicum in Organization and Management** ..... **3 credit hours**

Six hundred hours of actual experience in a hospitality or tourism related organization. Application of theoret-

ical concepts to practical supervisory of managerial situations.

May be taken in one semester (40 hours per week for 15 weeks) or may be taken in sequences of three hundred (300) hours per semester. Permission required.

**211 Food Production Systems** ..... **6 credit hours**

Recognition and achievement of quality in development of systematic relationships between items, time, labor, equipment and costs in quantity food production. Quality procurement policies for food, beverages and related items. Field trip required.

**222 Lodging Management** ..... **3 credit hours**

Functions of organization, supervision and activation in organizations providing overnight accommodations. Consideration of ethics, policies, trade associations, collective bargaining, employee training and emphasis on human relationship.

**223 Practicum in Organization and Management** ..... **3 credit hours**

**224 Service Industry Accounting** ..... **3 credit hours**

Principles of accounting applied to service industries. Financial statement analysis and cash flow concepts. Managerial accounting emphasized.

**230 Hotel Law** ..... **4 credit hours**

Contract Law as a foundation for anticipating legal difficulties and making the best use of legal advice. Functional hotel problems, policy problems, and the legal resolution of a controversy. The origin and development of common, statutory, and constitutional law and of the functioning of the judicial system.

# humanities (HUM)

**101 Introduction to Humanities** ..... **3 credit hours**

An introductory exploration of the humanities considering the creative nature of man with its focus on art, literature, music, philosophy, human thought, and man's relationship to his culture. This interdisciplinary study is a humanistic approach to the humanities. (3 hours per week)

**103 Humanities Workshop** ..... **3 credit hours**

A workshop study of the humanities and man's life relationships, this course draws on various humanistic

fields in examining man's beliefs and values and the creative insights and forms of expression through which he tries to understand himself and his relation to the world and his fellow-man. Individualized projects and guest speakers. (3 hours per week)

**105 Survival of Man** ..... **3 credit hours**

This course is undertaken with a bias which centers upon the proposition that the human is and ought to remain the highest value. An attempt to focus on those issues which support the continuity and growth of the human as the highest value. These issues will include loneliness, freedom and self-transcendence. (3 hours per week)

**135 Life: Work and Leisure** ..... **3 credit hours**

Exposes the student to different ways of thinking about life, work and leisure through readings and classroom discussions. Student experience and aspirations will be considered and serve as a basis for statements about our ways of living. (3 hours per week)

**137 Love: Variations on a Theme** ..... **3 credit hours**

Examination of the various approaches and conceptions, both traditional and contemporary, included under the word "love" — as for example, the distinction between sacred and profane love, etc. (3 hours per week)

**139 Moral Issues: Peace and War** ..... **3 credit hours**

This study exposes the student to a wide range of thought, both classical and modern, dealing with moral decisions related to differences among peoples. The purpose of this course is to present a brief but relatively comprehensive insight into the historical nature of viewpoints on these critical issues. (3 hours per week)

**150 International Cinema** ..... **3 credit hours**

A study of the classic and significant international (European and Asian) films and filmmakers. The course will emphasize the development of the art of seeing — the heightening of students' awareness of the nature and potential of the film medium. (3 hours per week)

**160 American Film** ..... **3 credit hours**

A survey of the development of American cinema. The films, viewed in class, will be discussed both in terms of content and in terms of the development of cinematic technique. Efforts will be made to relate American cinema to trends in American culture. (3 hours per week)

# industrial drafting (I D)

**100 Perspective and Parallel Line Projection** ..... **4 credit hours**

See (tca) technical-commercial art for course description.

**100 Technical Drawing** ..... **4 credit hours**

The graphic language, free-hand sketching, lettering, pictorial drawing, orthographic drawing techniques, geometry of technical drawing, auxiliaries, and related technical terms. (6 hours per week)

**107 Mechanisms** ..... **4 credit hours**

The principles of linkage, cams, centros, displacements, motions, velocities, mechanisms, and vectors are studied and their applications presented graphically. (4 hours per week)

**111 Industrial Drafting** ..... **4 credit hours**

Prerequisite: Technical Drawing 100 or consent of industrial drafting instructor.

Standard drafting practices and procedures are studied in the areas of auxiliary views, sectioning, screw threads and fasteners, hydraulic and electrical symbols, advanced dimensioning and tolerancing and the use of drafting materials in the preparation of drawings, charts, and graphs. (6 hours per week)

**112 Descriptive Geometry** ..... **4 credit hours**

Prerequisite: Technical Drawing 100 or consent of division.

The study of points, lines, and planes and their relationships in space. Emphasis is given to the practical application of principles to actual problems as they occur in industry. (6 hours per week)

**114 Industrial Drafting** ..... **4 credit hours**

Prerequisite: Industrial Drafting 111.

Advanced drafting practices and procedures in the preparation of working drawings and tests of material. The student will study material specifications, drawing numbering systems, preparation of tabulated drawings, preparation of a tolerance study, and use of commercial standards. (6 hours per week)

**121 Theory of Jigs and Fixtures** ..... **.2 credit hours**

Prerequisite: For apprentices in Tool & Die Making.

The basic types of jigs and fixtures and their combined use are studied. Development of skills in the proper location of a part, in detailing and preparation of assembly drawings are stressed. The use of standard parts catalogs in researching is continually emphasized. (3 hours per week)

**122 Fundamentals of Jigs and Fixtures** ..... **.3 credit hours**

Prerequisite: Industrial Drafting 111 and Descriptive Geometry 112.

The basic types of jigs and fixtures and their combined use are studied. Development of skills in the proper location of a part, in detailing and preparation of assembly drawings are stressed. The use of standard parts catalogs in researching is continually emphasized. (6 hours per week)

**206 Fundamentals of Plant Layout** ..... **.3 credit hours**

Prerequisite: Industrial Drafting 111 or consent of division.

The nomenclature and basic approaches to power distribution, environmental and mechanical services, product flow, equipment utilization and building layout are studied. The basic principles of material handling and the various types of material-handling equipment are investigated. (3 hours per week)

**212 Theory of Dies** ..... **.2 credit hours**

Prerequisite: For apprentices in Tool & Die Making.

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

**213 Fundamentals of Die Drafting** ..... **.4 credit hours**

Prerequisite: Fundamentals of Jigs and Fixtures 122 or concurrent registration.

The nomenclature and the basic types, principles, and standards used in the design of dies is studied. Special attention is given to the use of standard parts catalogs and the standard die detailing and assembly drawing practices. (6 hours per week)

**224 Fundamentals of Industrial Tooling** ..... **.3 credit hours**

Prerequisite: Fundamentals of Jigs and Fixtures 122.

The nomenclature and the basic principles of industrial tool design, including preparing tooling specifications, cost analysis, practice production scheduling, and basic drafting standards for numerical controlled machining. (6 hours per week)

**240 Fundamentals of Product Layout** ..... **.4 credit hours**

Prerequisite: Industrial Drafting 111 or consent of division.

The study of the development of a product from the layout stage to the preparation of working drawings. Emphasis will be placed on the preparation of a layout drawing with maximum use of standard, components, fastening techniques, product serviceability, and the proper material and finish specifications. (4 hours per week)

**251 Fundamentals of Electrical Drafting** ..... **.4 credit hours**

Prerequisite: Technical Drawing 100 or consent of division.

Principles and practices of basic electronic drafting including the use of block diagrams, electronic symbols, schematic drawings, logic diagrams, electronic component and hardware identification. Basic materials, finishes, and component board layouts and assemblies are studied. (4 hours per week)

**252 Fundamentals of Electrical Drafting** ..... **.4 credit hours**

Prerequisite: Fundamentals of Electrical Drafting 251 or consent of division.

Principles of laying out and preparing tape masters for single and double sided printed circuit boards, preparing printed circuit assemblies, preparation of wire lists and cable harness drawings for electronic unit interfacing and studying the basic principles and techniques for laying out control panels. (4 hours per week)

# internship-externship (I E)

**200 Internship-Externship** ..... **.2-6 credit hours**

Prerequisites: (Internship) Student in a two-year program must have completed a minimum of one year of college, or equivalent. Student in a one-year program must have completed one semester of college, or equivalent. Students must have been enrolled full-time — 12 credit hours or more — in the immediately preceding semester. (Externship) Student must have satisfactorily completed minimum of 6 credit hours in the immediately

preceding semester.

Internship-Externship opportunities are available to interested and qualified students of Business and Industrial Management and Allied Programs. *Internships* are programs of study designed to enable full-time students to gain simultaneous occupational career experience, which is integrated with their academic studies. *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 adviser and the Internship-Externship Program Coordinator to ensure proper program planning and to secure the appropriate divisional director's permission. Normally 12 credit hours of supervised, integrative occupational experience through the Internship-Externship Programs may be applied toward the Associate Degree, and 6 credit hours toward a one-year Certificate of Achievement. (1-hour weekly seminar plus directed field projects.)

# journalism (JRN)

**101 Writing for Mass Media .....3 credit hours**

Emphasis on developing news gathering and news writing skills. Ethics and responsibilities of the reporter are discussed. Students work as staff reporters/writers on the college news publications. (3 hours per week)

**102 Writing for Mass Media .....3 credit hours**

Prerequisite: Journalism 101 or equivalent.

A continuation of the first semester news writing course. After a review of newsgathering and news writing fundamentals, students are given individual help in developing their writing of interpretative stories. Students work as staff reporters/writers on the college news publications. (3 hours per week)

**118 Women and the Mass Media .....3 credit hours**

This course examines the socializing effect of the media on women in our society. Includes consideration of media stereotypes of women as well as media manipulation of women as consumers. Concern with focus of print and electronic media, advertising, and films. (3 hours per week)

**121 Applied Journalism .....3 credit hours**

Students edit the college news publications. Instruction in rewriting, editing, headline writing, layout, makeup and design. Students are copy readers/editors on the college news publications. (3 hours per week)

**122 Applied Journalism .....3 credit hours**

Prerequisite: Journalism 121 or equivalent.

A continuation of the first semester editing course. A particular focus will be given to layout and design. Students are copy readers/editors on the college news publications. (3 hours per week)

**115 Introduction to Mass Media .....3 credit hours**

A survey of the structure and processes of mass media, print and electronic, and their effect on today's society. (3 hours per week)

# legal assistant (L A)

**100 Foundations of Law .....3 credit hours**

Organization of Michigan court systems. Introduction to law, including legal terminology, court procedures, property, contracts, torts, crime, business organization, and family law. (3 hours per week.)

**111 Legal Assistant Practicum .....3 credit hours**

A 15-week practically-oriented course designed to sharpen the basic skills and increase the productivity of non-lawyer personnel. It will provide the basis for training the employee to be a full or part-time legal assistant. The course is non-secretarial, and will teach the student to perform many of the functions now performed by lawyers.

**122 Legal Research .....3 credit hours**

Prerequisite: L A 100 and/or L A 111.

Introduction to legal research methodology and source material; designed for the legal assistant, with emphasis on practical problems rather than legal theory. (3 hours per week.)

**127 Domestic Relations .....3 credit hours**

Prerequisite: L A 100 and/or L A 111.

An in-depth coverage designed to develop essential legal assistant knowledge and skills in various aspects of domestic relations including information gathering; client interviews; client contact; pleading preparation; file organization; preliminary document preparation, filing and service; formal discovery, motion practice, settlement; also introduction to Circuit Court; Friend of the Court prodecures, pre-trial, final hearing and post-judgment matters; and Marriage Counselor procedures. (3 hours per week.)

**200 Income Tax Law** ..... **3 credit hours**

Prerequisite: L A 100 and/or L A 111.

Income tax law, preparation of income tax returns, and introduction to tax problems. (3 hours per week.)

**201 Real Estate and Probate Law I** ..... **3 credit hours**

Prerequisite: L A 100 and/or L A 111.

A course designed to teach a legal assistant how to handle a single family residential closing from beginning to end, from point of view of buyer or seller, including proration of taxes, preparation of closing statements, property description, and fundamental real estate terminology. Also the role of the legal assistant in preparation of documents relating to estates and the handling thereof. (3 hours per week.)

**202 Real Estate and Probate Law II** ..... **3 credit hours**

Prerequisite: L A 201.

Trust administration, advanced real estate, including leases, summary proceedings, financing real estate and appraisals. Also federal estate tax. (3 hours per week.)

**210 Business Organization** ..... **3 credit hours**

Prerequisite: L A 100 and/or L A 111.

This course is designed to cover law relating to the organization of proprietorships, partnerships, and corporations. The emphasis is on the preparation of the necessary forms and documents required, including articles of incorporation, bylaws and stock structure. (3 hours per week.)

**211 Litigation I (Civil, Divorce, Criminal)** ..... **3 credits**

Prerequisite: L A 100 and/or L A 111.

Overview of procedures in trial practice in criminal, divorce, and civil cases, with emphasis on divorce and criminal cases. (3 hours per week.)

**222 Litigation II (Civil)** ..... **3 credit hours**

Prerequisite: L A 211.

Civil litigation, including in-depth coverage of the following areas: initial interview, file organization, information gathering, investigation, evaluation, negotiations, suit preparation, discovery, pre-trial, trial preparation, trial and post trial. (3 hours per week.)

# management and marketing (MGT)

**150 Labor-Management Relations** ..... **3 credit hours**

A study of the fundamental forces affecting the labor-management relationship. Development of insights into the growth, objectives, and methods of organized labor; and the significant managerial problems involved in dealing with labor. Analysis of the legal and institutional framework for collective bargaining; and the nature, content, and problem areas of the collective bargaining process. (3 hours per week)

**160 Principles of Salesmanship** ..... **3 credit hours**

Prerequisite: Business Occupational Foundations 140 or divisional consent.

A study of the basic principles and concepts of the sales function in modern business-industrial enterprise in the marketing of goods and services. Included is an analysis of sales techniques, the sales "cycle", sales demonstrations, as well as personal career salesmanship. Emphasis is given to 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. (3 hours per week)

**200 Human Relations in Business and Industry** ..... **3 credit hours**

Prerequisite: Second year standing or divisional consent.

A practical study of the modern concepts of administrative principles and practices with special 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. (3 hours per week)

**208 Principles of Management** ..... **3 credit hours**

Prerequisite or co-requisite: Principles of Economics 211 and second year standing or equivalent.

A study of the basic principles of management at the administrative, staff, and operational levels of modern business enterprise. The student develops an understanding of the universality of management functions and principles, and insights into the historical development of management concepts, and their evolution into a modern management philosophy. (3 hours per week)

**209 Small Business Management** ..... **3 credit hours**

The application of the principles of management to the planning, organization, and control of the small business enterprise. An examination of the practices and procedures pertaining to the establishment and operation of the small business firm. A practical study of factors influencing small business management . . . the small business environment; small business initiation; small business administrative and fiscal control; small business marketing programs and policies; small business operations management; small business legal and governmental relations. (3 hours per week.)

**230 Office Management** ..... **3 credit hours**

The application of the principles of management to the planning, organization, and control of office work. The direction and control of services and performance, simplification of procedures and methods, and the establishment of standards and planning of physical facilities and business forms are also included. (3 hours per week)

**240 Personnel Management** ..... **3 credit hours**

Prerequisite: Business Occupational Foundations 140 and Principles of Management 208 or equivalent.

An exposition of the fields of activity covered in modern personnel work. Topics covered are employment techniques, wages and hours, job evaluation, training, employer ratings, collective bargaining, employment counseling, and collateral benefits such as pensions and fringe benefits. (3 hours per week)

**250 Principles of Marketing** ..... **3 credit hours**

Prerequisite or co-requisite: Principles of Economics 211 and second year standing or equivalent.

A study of 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. (3 hours per week)

**260 Sales Management** ..... **3 credit hours**

Prerequisite: Business Occupational Foundations 140 and Principles of Salesmanship 160 or equivalent.

A study of the managerial functions of planning, organization, and direction of sales effort; the management of sales and services. Personnel and control of sales operations are emphasized. (3 hours per week)

**270 Advertising Principles** ..... **3 credit hours**

Prerequisite or co-requisite: Principles of Marketing 250 or equivalent or divisional consent.

A practical managerial approach to the study of the basic principles and concepts which underlie advertising practice and procedure in the marketing-promotional and distribution aspects of modern business-industrial enterprise operations. Includes the role of advertising in the individual firm and the total economy; also advertising objectives, methods, techniques, preparation, research, surveys, copywriting, layout, media selection, and testing advertising effectiveness, as well as advertising rates and budgetary factors. (3 hours per week)

# mathematics (MTH)

**037 Independent Study** ..... **1, 2, or 3 credit hours**

Prerequisite: Approval of instructor.

Provides an opportunity to work on a specific mathematical project or weakness under the direction of a member of the mathematics staff. Each student receives an individual program designed to lead to the attainment of his particular goal. (1-3 hours per week until completed)

**039 Basic Mathematics** ..... **3 credit hours**

A review of basic arithmetic comprising whole numbers, fractions, decimals, and percents. Diagnostic tests are utilized to determine appropriate areas of concentration for each student. If completed before the end of the term, student may study additional materials preparatory to the study of Introductory Algebra 097 or commence the study of Foundations of Occupational Mathematics 090. Taught with programmed text materials in the Mathematics Laboratory. (3 hours per week)

**089 Mathematics for Fire Service** ..... **3 credit hours**

Basic mathematics relevant to Fire Service operations. Topics include signed numbers, fractions, ratio, and geometry. (3 hours per week)

**090 Foundations of Occupational Mathematics** ..... **3 credit hours**

Prerequisite: Basic Mathematics 039 or proficiency examination.

Intended for the business, vocational, or health science student. Primarily concerned with concepts and practical computational skills that are commonly encountered in the occupational world. Includes units in directed numbers, practical algebra, percent application, ratio and proportion, graphing, statistics, metric system, geometry, and numeration. Each student receives an individualized program depending on his occupational interest. Conducted in the Mathematics Laboratory using programmed text materials. (3 hours per week until completed)

**097 Introductory Algebra** ..... **4 credit hours**

Prerequisite: Basic Mathematics 039 or proficiency examination.

Intended for the student who has not had algebra or for one who desires a review. Includes properties of real numbers, polynomials, first-degree sentences, rational algebraic expressions, graphing, relations and functions, radicals, second-degree sentences, and solution of systems of equations. (5 hours per week)

**097A Introductory Algebra** ..... **3 credit hours**

Prerequisite: Basic Mathematics 039 or proficiency examination.

The first half of Introductory Algebra 097. Intended for the student who requires a course in beginning algebra that progresses at a slow pace. Includes properties of real numbers, polynomials, first-degree sentences, rational algebraic expressions, and graphing. (3 hours per week)

**097B Introductory Algebra** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097A or permission of instructor.

The second half of Introductory Algebra 097. Includes relations and functions, radicals, second-degree sentences, and solution of systems of equations. (3 hours per week)

**100 Desk Computers** ..... **1 credit hour**

Designed to enable a student to perform basic arithmetic operations utilizing desk computers, and to write simple programs for programmable computers. Serves as a useful bridge between hand calculators and full sized computers. (1-4 hours per week until completed)

**101 How to Use a Computer Terminal** ..... **1 credit hour**

This course will teach a student who has never used a teletype, a graphics terminal, or a keypunch what he needs to know to operate these devices. Topics covered include the use of drum cards, MTS codes, and access to college computer facilities. (1-4 hours per week until completed)

**102 Computer Programming - BASIC** ..... **3 credit hours**

A course in BASIC programming for the student who wants an introduction to the foundations of computer sciene. The student is afforded an opportunity to write and execute programs in the BASIC computer language. The emphasis of the course is on exploring the features of BASIC and on giving the student a background for using the computer as a tool in problem solving. Examples will involve a minimum of mathematics; nothing above Math 039 (arithmetic). (4 hours per week.)

**106 Solving Equations** ..... **1 credit hour**

Prerequisite: Introductory Algebra 097 or 097A or two terms of high school algebra.

Intended for the student who wishes to review various methods of solving equations and systems of equations. Includes first-degree equations, formulas, second-degree equations, linear systems, and applications. (1-4 hours per week until completed)

**108 Slide Rule** ..... **1 credit hour**

Intended for the student in an area (technical, physics, chemistry, etc.) where calculating by slide rule is advantageous. Use of the Mannheim slide rule is emphasized. Includes scientific notation, multiplication and division, squares and square roots, cubes and cube roots, common and natural logarithms, and trigonometric functions. (1-4 hours per week until completed)

**110 Pocket Electronic Calculator** ..... **2 credit hours**

This is a lab-type course that provides instruction in the use of your pocket electronic calculator. Includes basic arithmetic operations, powers and roots, functions, and chain operations. Applies this powerful tool to your everyday problems as well as those in business and science. (2 hours per week.)

**136 Triangle Trigonometry** ..... **2 credit hours**

Designed to quickly enable the student to use trigonometry functions to solve practical problems of triangulation. Includes the pythagorean theorem, basic trigonometric functions and identities, law of sines and law of cosines, solution of right and oblique triangles, and applications. Pocket calculators are encouraged. (2 hours per week until completed)

**137 Boolean Algebra** ..... **1 credit hour**

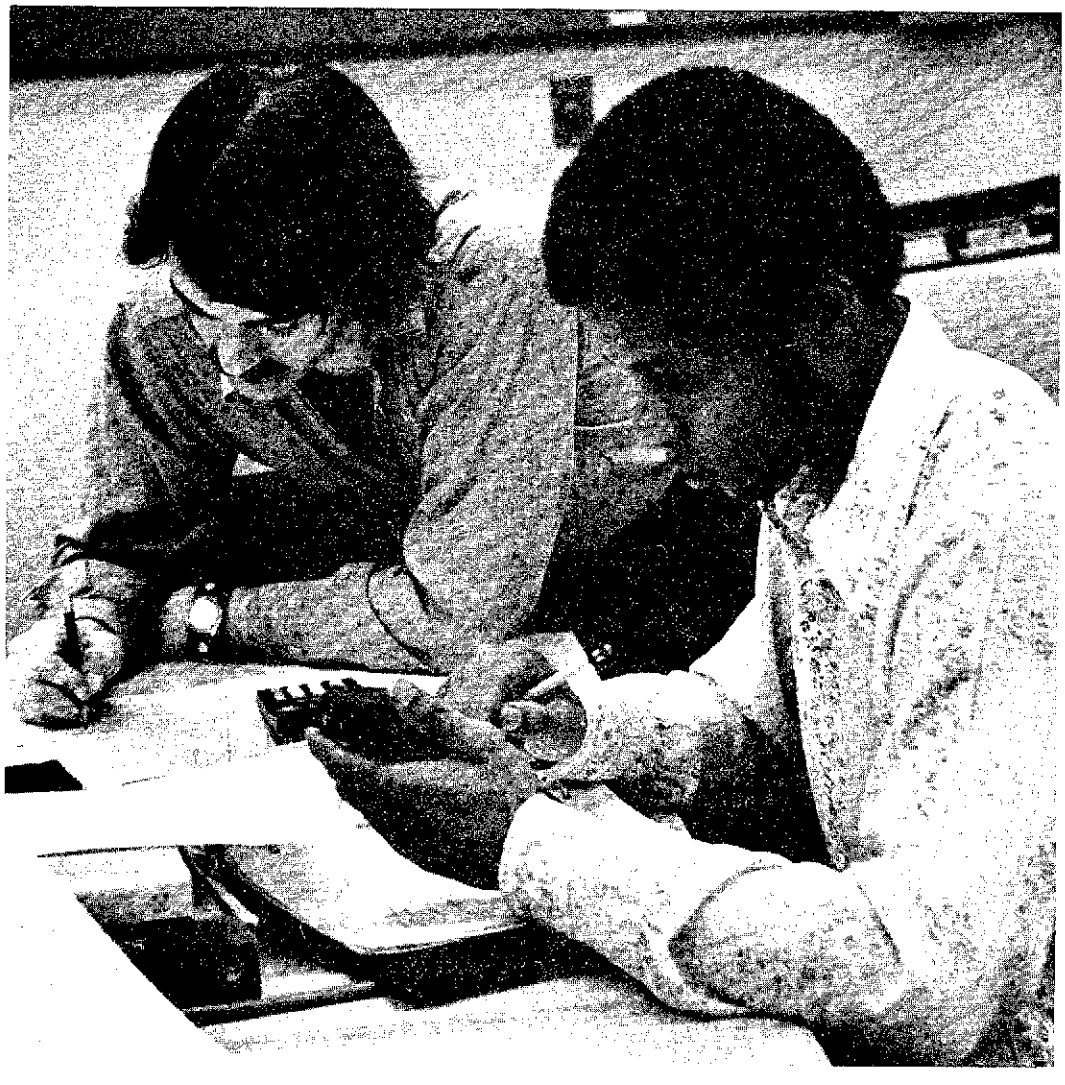
Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

Planned to develop the structure of Boolean algebra in terms of definitions, assumptions and theorems. Includes simplification of Boolean expressions, verification of equivalence by truth tables and Veitch diagrams, and circuitry applications. (1-4 hours per week until completed)

**139 Matrices** ..... **1 credit hour**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

Intended for students specializing in mathematics, science, or engineering. Includes basic properties of matrices, operations with matrices, solving linear systems, determinants, solving homogeneous systems, and applications. (1-4 hours per week until completed)



**147 Creative Mathematics** ..... **1 credit hour**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

This course allows students to perform individual or group experiments in the areas of elementary computer programming, game theory, and probability. The student may choose from a number of prepared experiments or he may pursue other experiments of his interest. (1-4 hours per week until completed)

**148 Computer Games** ..... **1 credit hour**

This course begins with instruction in the use of a computer terminal. Students are taught to play games such as Star Trek, 3 dimensional Tic-Tac-Toe and checkers with the Washtenaw Intermediate School District computer via computer terminals. Includes some elementary computer programming and game theory. Instruction in some non-computerized games is available. Creative and recreational mathematical pursuits are encouraged. (1-4 hours per week until completed)

**151 Applied Algebra** ..... **4 credit hours**

Prerequisite: Basic mathematics 039 or equivalent.

The first course of a two-course sequence designed to meet the mathematical needs of the technical student. Major topics included are basic arithmetic, percents, ratio and proportion, operations with algebraic expressions, solution of simple equations, logarithms, solving quadratic equations, graphing, and trigonometric functions. (5 hours per week)

**152 Applied Geometry and Trigonometry** ..... **4 credit hours**

Prerequisite: Applied Algebra 151 or permission of instructor.

The second course of a two-course sequence in technical mathematics. The first part of the course deals with development of basic geometry necessary for solving practical problems while the second part is devoted to applications of trigonometry to the solution of technical problems and triangulation. Includes basic theorems of geometry, formulas for areas and volumes, trigonometric functions, solution of right triangles, law of sines and law of cosines, and solution of oblique triangles. (4 hours per week)

**158 Mathematics for Elementary School Teachers** ..... **3 credit hours**

An introductory course designed for the student in education and the elementary school teacher. Topics include sets, whole numbers, integers and rational numbers, number systems, plane geometry, and functions. The approach is intuitive. Laboratory applications are used to develop concepts and understanding. (2 hours lecture, 2 hours laboratory per week)

**160 Basic Statistics** ..... **4 credit hours**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

An introduction to statistics for the student in business administration, education, psychology, social science, engineering or any other field in which measurements and predictions are used. Includes tabulation of data, graphic representation, measures of central tendency and dispersion, probability, distribution, sampling, hypothesis testing, and correlation. (4 hours per week)

**167 Finite Mathematics** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

A basic mathematics course for the business student Topics include sets, logic, probability, matrix algebra, and linear programming. Business applications are emphasized. (3 hours per week)

**169 Intermediate Algebra** ..... **4 credit hours**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

Designed to satisfy the background mathematical needs for science courses and some technical fields. Also serves as a lead to more advanced work in mathematics. Includes properties of real numbers, relations and functions, solution and graphing of first-degree equations and inequalities, first-degree systems, sequences and series, polynomials, radicals, complex numbers, quadratic equations and functions, logarithms, and determinants. (4 hours per week)

**169A Intermediate Algebra** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

The first half of Introductory Algebra 169. Intended for the student who requires an intermediate algebra course that progresses at a slow pace. Includes properties of real numbers, relations and functions, solution and graphing of first-degree equations and inequalities, first-degree systems, sequences and series, and polynomials (3 hours per week)

**169B Intermediate Algebra** ..... **3 credit hours**

Prerequisite: Intermediate Algebra 169A or permission of instructor.

The second half of Intermediate Algebra 169. Includes radicals, complex numbers, quadratic equations and functions, logarithms, and determinants. (3 hours per week)

**177 Trigonometry** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

A course in general trigonometry. Major topics are trigonometric functions of angles, law of sines and law of cosines, inverse trigonometric functions, graphs of trigonometric functions, trigonometric identities, and

trigonometric equations. (3 hours per week)

**179 Precalculus** ..... **4 credit hours**

Prerequisite: Intermediate Algebra 169 or four terms of high school algebra.

A college-level algebra and trigonometry course designed to provide the background for a solid study of calculus and analytic geometry. Includes relations and functions, polynomial functions and equations, exponential and logarithmic functions, circular and trigonometric functions, vectors, and complex numbers. (4 hours per week)

**179A Precalculus** ..... **3 credit hours**

Prerequisite: Intermediate Algebra 169 or four terms of high school algebra.

The first half of Precalculus 179. Intended for the student who requires a precalculus course that progresses at a slow pace. Includes relations and functions, polynomial functions and equations, exponential functions, and logarithmic functions. (3 hours per week)

**179B Precalculus** ..... **3 credit hours**

Prerequisite: Precalculus 179A or permission of instructor.

The second half of Precalculus 179. Includes circular and trigonometric functions, vectors, and complex numbers. (3 hours per week)

**187 Fortran Programming** ..... **3 credit hours**

Prerequisite: Intermediate Algebra 169 or four terms of high school algebra.

A course in Fortran programming intended for the science or vocational student who will need to use the computer as a tool to perform complex and/or repetitive calculations, to evaluate models through simulation, of to manipulate large quantities of data. The emphasis of the course is on learning and using most of the features of the FORTRAN language. The student is afforded an opportunity to develop algorithms, and write and execute selected programs. Both lecture and laboratory time are involved. (4 hours per week)

**188 Computer Programming - Algol** ..... **3 credit hours**

Prerequisite: Intermediate Algebra (Math 169) or four terms of high school algebra.

A course in constructing algorithms within the Algol W programming language. The course is intended for students considering future work in computer science and for students interested in problem solving and algorithm development. Discussions, lectures, and assignments do not involve high-level (Calculus and above) mathematics. The student is afforded an opportunity to develop and test algorithms by writing and executing Algol W programs. Both lecture and lab time are involved. (4 hours per week)

**191 Calculus-First Course** ..... **5 credit hours**

Prerequisite: Precalculus 179 or permission of instructor.

The first course of a four-course sequence in elementary calculus. Intended for the transfer student who plans to major in mathematics, science or engineering. Also suitable as a terminal calculus course fulfilling the general education needs of certain students. Includes limits, continuity, the derivative, the definite integral, and applications. It is advisable to elect MTH 196, Computerized Calculus Adjunct the same semester as MTH 191. (5 hours per week)

**192 Calculus-Second Course** ..... **4 credit hours**

Prerequisite: Calculus-First Course 191 or permission of instructor.

The second course of the four-course sequence in elementary calculus. Major topics are: applications of the definite integral; differentiation and integration of exponential, trigonometric and hyperbolic functions; and techniques of integration. (4 hours per week)

**196 Computerized Calculus Adjunct** ..... **2 credit hours**

Prerequisite: Concurrent enrollment in Calculus I (Math 191).

A course in BASIC programming with almost all examples and assignments being taken from topics under discussion in the Calculus I course. The course is intended to provide a laboratory experience for students taking Math 191. No previous experience in programming is required. (2 hours per week)

**197 Linear Algebra** ..... **3 credit hours**

Prerequisite: Calculus-First Course 191 or permission of instructor.

An introductory course planned for students who have had at least one course in elementary calculus. Includes vector spaces, linear transformations, matrices, determinants, orthogonality, characteristics and minimum polynomials, eigenvalues, and applications. May be taken concurrently with Calculus-Second Course 192 or Calculus-Third Course 293. (3 hours per week)

**243 Introductory Numberical Analysis** ..... **3 credit hours**

Prerequisite: Calculus-Second Course 192 and Scientific and Technical Programming 187 or permission of instructor.

An introduction to various mathematical methods of numerical approximation that are applicable to the digital computer. Includes finite differences, numerical integration and differentiation, solution of linear and non-linear equations, and solution of ordinary differential equations with initial conditions. Student is required to write and execute programs. (3 hours per week)

**250 Computer Programming Classroom Applications** ..... **2 credit hours**

No prior computer experience is required for this introductory course which is designed to be of particular help to teachers in Washtenaw County (all of whom have access to the Hewlitt-Packard 2000P at the Intermediate School District). Topics covered include "Canned" Programs, BASIC language, games, drill and practice for school students, and keeping records.

**293 Calculus-Third Course** ..... **4 credit hours**

Prerequisite: Calculus-Second Course 192 or permission of instructor.

The third course of the four-course sequence in elementary calculus. Includes polar coordinates, conic sections, indeterminate forms, improper integrals, Taylor's formula, and vector calculus. (4 hours per week)

**294 Calculus-Fourth Course** ..... **4 credit hours**

Prerequisite: Calculus-Third Course 293 or permission of instructor.

The fourth course of the four-course sequence in elementary calculus. Major topics are infinite series, differential calculus of several variables, multiple integration, and applications. (4 hours per week)

# mechanical technology (M T)

**100 Machine Shop Theory** ..... **3 credit hours**

Precision and semi-precision instruments and their applications are studied and used. Included also are basic principles of machine tool operations. Selected films are used to supplement the laboratory experiences. (3 hours per week)

**101 Millwright Theory** ..... **2 credit hours**

A comprehensive study of millwright practices encompassing major units such as: millwright fundamentals, fibre 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. The maintenance of bearings, belts, chain drives, and conveyors included. (2 hours per week)

**111 Machine Shop Theory and Practice** ..... **4 credit hours**

Precision and semi-precision instruments and their applications are studied and used. Included also are basic principles of machine tool operations. Selected films are used to supplement the laboratory experiences. Practical experience is provided on the lathe, mill, O.D. and I.D. grinders. (6 hours per week)

**111-A Machine Operation** ..... **2 credit hours**

Laboratory experiences for those students who have some background in Machine Shop Theory but lack experience on individual machines. Included are basic skills on the Lathe, Mill, Shaper, Surface Grinder, Drill Press, and other common tool room machines. Strong emphasis is placed on safe work habits and common industrial practices. (3 hours per week)

**122 Machine Tool Operation and Set-up** ..... **4 credit hours**

Prerequisite: Machine Shop Theory and Practice 111 or consent of the instructor.

Designed to improve the student skills to increase his speed in the operating of the basic tool room machines (lathe, vertical mill, O.D. grinder, I.D. grinder, jig bore, drill press). (6 hours per week)

**123 Machine Tool Operations and Set-Up** ..... **4 credit hours**

(A continuation of 122) Emphasis is placed on the student's ability to complete an assigned project. The student will have to do all the planning, scheduling, machining, and fabricating that is necessary to complete his assigned project. (6 hours per week)

**200 Machine Maintenance** ..... **2-6 credit hours**

Basic industrial machines are disassembled, inspected, and tested for part replacement or repair. Manufacturing specifications and tolerances are used as the basis for determining machine condition. (4 to 8 hours per week) (Students may elect up to 4 credit hours per semester)

**201 Machine Tool Technology** ..... **4 credit hours**

Prerequisite: Machine Tool Operation and Set Up 122.

Advanced methods of adjusting and using common machine tools. Typical industrial applications to demonstrate measuring instruments, gauges, thread cutting, gear cutting, speeds and feeds, tolerances, tool grinding, indexing and gearing. (6 hours per week)

**205 Diecast Die and Mold Design Fundamentals** ..... **3 credit hours**

This course presents to the mold maker the basic fundamentals of mold construction. 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 discussed. (3 hours per week)

**240 Plant Layout and Material Handling Systems** ..... **4 credit hours**

Prerequisite: Technical Drawing (ID 100) - for Millwrights

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. (4 hours per week)

# metallurgy (MLG)

**100 Introduction to Metallurgy** ..... **1 credit hour**

Introduction to the basic terms, processes and structures of metals and how they behave during simple deformation. Hardness testing, classification systems, and demonstrations of metallurgical equipment are also included. (2 hours per week - 7½ weeks)

**101 Industrial Materials** ..... **2 credit hours**

Study of modern materials including metals, alloys, plastics, wood, concrete, adhesives, and lubricants. Test methods are discussed as they apply to selecting materials by their properties. Standard systems of labeling and classifying as well as comparisons and usage are covered. (3 hours per week)

**103 Technical Metrics** ..... **1 credit hour**

An introduction to the metric system as it applies to industrial measurement. A brief history of metrics will be followed by technical instruction in the areas of drafting, machine tools and tooling, scale reading, dual dimensioning, the use of dual reading instruments, and converting between systems. (1 hour per week)

**104 Non-Technical Metrics** ..... **1 credit hour**

An introduction to the metric system explaining its origin and comparing it to the English system. Included are common measurements of length, distance, speed, temperature, volume and weight and the proper conversions between systems. (1 hour per week)

**122 General Metallurgy** ..... **3 credit hours**

A survey of the field including general heat treatment, alloys and alloysystems, effects of welding, weld testing, and instrumentation used in laboratory practice. The laboratory experience will consist of preparation of samples for microscopic analysis, testing of metallic samples including weldments and simple heat treatments. (4 hours per week)

**202 Manufacturing Processes** ..... **3 credit hours**

An introduction to modern industrial processes and how metallic materials behave when subjected to them. Forging, casting, extrostion, stamping, machining, rolling, plating, testing, heat treatment, powder pressing, and sintering are covered as are the specific properties of metals which make these processes unique or competitive with each other. Specific areas of coverage are machinability, expansion contraction, torque-tension relationships, hot and cold deformation, siezure, galling, and fatigue. (4 hours per week)

**207 Testing Laboratory** ..... **2 credit hours**

Co-requisite: MLG 217 Mechanical Testing.

For Metallurgy Majors, additional laboratory meetings provide skill development in testing and design of tests as directed in MLG 217. Included are torsion, tension, compression, fatigue, impact, hardness, non-destructive techniques and specialized testing. (3 hours per week)

**215 Heat Treatment Processes** ..... **2 credit hours**

Prerequisite or Co-requisite: Introduction to Metallurgy 100 or consent of division.

An application of the principles of heat treatment of steel and certain non-ferrous alloys. Includes hardening, tempering, annealing, normalizing, sphereoidizing, surface hardening processes, hardenability, and age hardening. Demonstration and lecture serve to relate theory and practice. (4 hours per week - 7½ weeks)

**217 Mechanical Testing** ..... **2 credit hours**

Co-requisite: Testing Laboratory 207 for majors.

An introduction to laboratory procedures in testing and data taking. Specific emphasis is placed on correct procedures, errors in method, reliability, handling of data and interpretation of results. (3 hours per week)

**228 Metallography** ..... **4 credit hours**

Prerequisite: General Metallurgy 122.

Units of study include sample preparation for microscopic examination and photo microsgraphy. Wet and dry photographic techniques used to record structures and to relate them to properties observed in the lab. Further units-micro-hardness testing, microscopic measurements and instrument calibration. (4 hours per week)

**229 Specialized Study** ..... **5 credit hours**

Prerequisite: Metallography 228 or consent of division.

This final class in Metallurgical Technology will serve to give the student exposure to the advanced techniques in his chosen area of employment. He will independently work on an advanced project showing his proficiency in the field while developing some aspect of his particular career choice. (6 hours per week)

**230 Heat Treatment Laboratory** ..... **1 credit hour**

Co-requisite: Heat Treatment Processes 215.

Elective credit for majors provides application of the principles of heat treatment including set-up and operation of furnaces and equipment, material preparation, tempering, carburizing, hardness testing, and hardenability determinations. (3 hours per week)

# music (MUS)

**090 Moog Synthesizer** ..... **1 credit hour**

A course designed to master the many varieties and combinations of sounds and noises and their possible musical application in electronic music using the moog synthesizer. A 7 week course. (2 hours per week)

**110 Music Theory** ..... **3 credit hours**

An in-depth study of melodic, harmonic and rhythmic aspects of tonal music related to various styles — European, rock, jazz, ballads, and the Blues. The aim of this course is to equip the student with a theoretical knowledge in order to extend and cultivate musical understanding and creativity while giving primary emphasis to the harmonic aspects of music. (3 hours per week)

**125 Band** ..... **1 credit hour**

This course in performance is 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)

**130 Stage Band: Ensemble** ..... **1 credit hour**

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

**140 Chorus** ..... **1 credit hour**

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

**150 Basic Musicianship** ..... **3 credit hours**

This course 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. (3 hours per week)

**157 Music of the African-American Culture** ..... **3 credit hours**

An ethnomusicology approach to African-American music. The aim is to combine the resources of history, anthropology, human characteristics, and musicology to examine the music and its meaning within Black culture. The mode of presentation deals with the socio-cultural aspects of the Black man's life style, traditions and mores as the motivation for Black expression in the arts. (3 hours per week)

**160 Music Appreciation** ..... **3 credit hours**

An introduction to music, using innovative techniques on how to listen to music after becoming acquainted with the socio-cultural values of the people who produced the many kinds of music in our world. All styles of music will be covered. Presentations will deal with the growth and development of musical forms and different styles through recordings and demonstrations. (3 hours per week)

**161 Creative Improvisation: Song Writing** ..... **3 credit hours**

This course is for the prospective song writer; it deals with lyric writing and musical accompaniment. Students will collaborate using their talents to produce songs. They will 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. (3 hours per week)

### Applied Music

Applied music instruction is designed to satisfy the creative needs of students' musical abilities and interests. These courses are specifically suited to meet the needs of beginning students rather than being geared for only music students or music majors. The course of study deals with the basic skills in musicianship, sight reading, and other techniques that will enable a student to perform adequately on his instrument. (Transfer credit depends on the transfer institution but it also depends in part on the advice and recommendation of W.C.C.'s music faculty.)

**170 Functional Piano** ..... **2 credit hours**

A piano class which aims 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. (2 hours per week)

**192 Folk Guitar** ..... **2 credit hours**

Learning of techniques necessary to play folk music and folk songs. Course is for those with some experience in guitar playing. Class is keyed to students' interests and needs. (2 hours per week)

**193 Beginning Guitar** ..... **2 credit hours**

Designed for those with no, or limited experience playing the guitar. Students will be learning basic chords and techniques as well as learning to play folk and blues songs. Class will be keyed to students' interests and needs. (2 hours per week)

**194 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 students' interests and needs. (2 hours per week)

**196 Beginning Banjo** ..... **2 credit hours**

Group instruction for beginners in banjo to provide the necessary basic skills for performing elementary banjo music. (2 hours per week)

# numerical control (N C)

**100 Introduction to Numerical Control** ..... **3 credit hours**

The principles, history, and applications of Numerical Control with special emphasis on tape formats and programming techniques. Point to point and continuous path programs are written, studied, and demonstrated. (3 hours per week)

**111 Manufacturing Processes for Numerical Control** ..... **3 credit hours**

N/C part hold techniques, feed and speeds for N/C Machining, cutting tools used for N/C, stock removal techniques and comparisons of manual vs. computer programming. Special emphasis will be placed on part processing including per unit cost analysis.

**121 Programming for Numerical Control** ..... **3 credit hours**

Manual programming for N/C machines including tab sequential, word address and fixed sequential formats. An introduction to computer programming including Compact, and APT. Special emphasis is placed on part holding for N/C machining. (4 hours per week)

**122 Numerical Control Machine Tool Operations** ..... **3 credit hours**

Precision set-up and operation of N/C machine tools. Special emphasis is placed on the time-saving techniques used in profitable N/C machine tool operation. (4 hours per week)

**213 Compact II Computer Programming** ..... **4 credit hours**

The Compact II language is studied and demonstrated. Special emphasis is placed on the use of the terminal

and plotter to solve N/C problems with the aid of Compact II. Computer tape preparation and verification techniques are practiced. (4 hours per week)

**224 APT III Computer Programming** ..... **4 credit hours**

Advanced computer programming techniques. The APT language is sutdied and each student writes computer programs using each of the various APT language capabilities. Problems are solved with the aid of a terminal and plotter. The students will use various computers to solve N/C problems verified on the plotter, terminal and N/C machine tools. (4 hours per week)

# nursing - practical (NUR)

Courses must be taken in the sequence outlined in the curriculum unless consent is obtained from the nursing division after review of previous transcript record of challenge exams.

**100 Nursing Fundamentals** ..... **3 credit hours**

Presents principles of nursing with emphasis on social, psychological, and physical needs of the patient. Includes units on first aid, introduction to drug administration and pharmacology, geriatric nursing, nursing history and organizations.

**110 Nursing Clinical Experience** ..... **1 credit hour**

Supervised clinical experience in a longterm health care facility applying basic nursing skills in simple nursing situations.

**111 Pharmacology I** ..... **1 credit hour**

Study of metric and apothecary systems, drug classification and legislation. Provides for practice in solving drug dosage problems. Introduces principles of safe drug administration.

**117 Nutrition for Nurses** ..... **2 credit hours**

Presents normal nutrition and its relation to health. Includes nutritional needs for various age groups and introduces therapeutic nutrition. Emphasis is on the importance of nutrition in the growth and functioning of the human body.

**118 Personal and Community Health** ..... **1 credit hour**

Presents concepts of personal health and hygiene. Survey of resources available in the community for the promotion of health. Includes survey of current public health problems.

**122 Pharmacology II** ..... **2 credit hours**

Prerequisite: NUR 111.

Study of drug action, uses, and effects in the administration of drug therapy. Includes a unit on drug abuse.

**120 Medical - Surgical Practice** ..... **6 credit hours**

Concurrent with NUR 125.

Clinical experience in caring for adult patients with medical-surgical problems. Includes experience in the operating room, recovery room, and emergency room, and outpatient department.

**125 Medical-Surgical Nursing with Laboratory** ..... **6 credit hours**

Prerequisite: First semester courses.

Study of the adult patient with common medical-surgical problems. Includes principles and skills that assist the student in meeting the needs of the patient in the clinical situation. Pharmacology and diet therapy are inter-related with the study of disease conditions.

**130 Maternal and Child Nursing Practice** ..... **4 credit hours**

Concurrent with NUR 135.

Clinical experience in obstetrics and pediatric units of the hospital and outpatient clinic to develop skills in caring for mother and children.

**133 Pharmacology III** ..... **2 credit hours**

Prerequisite: NUR 111 and NUR 122.

Provides opportunity for clinical practice in preparing and administering medicines to patients with varying health problems.

**135 Maternal and Child Nursing with Laboratory** ..... **3 credit hours**

Prerequisite: NUR 125.

Study of the nursing care of mothers during the reproductive cycle, the care of the newborn, and the care of the ill children. Includes laboratory demonstration and practice.

**140 Advanced Medical - Surgical Nursing Practice** ..... **3 credit hours**

Concurrent with NUR 145.

Provides for the practice of nursing skills including the administration of medications and assisting in the teaching of patients preparing for discharge from the health care agency.

**145 Advanced Medical - Surgical Nursing** ..... **3 credit hours**

Prerequisite: NUR 125.

Study of medical-surgical problems in the specialty areas. Prepares the student for the role of the practical nurse, including legal and ethical implications.

**147 Growth and Development** ..... **3 credit hours**

Concurrent with NUR 135 or consent of faculty.

Study of the physical, psychological and social growth of the individual from birth to maturity. Includes the study of the family in society.

# philosophy (PHL)

**101 Introduction to Philosophy** ..... **3 credit hours**

Introduction to basic philosophical principles, methods, and problems by a close study of representative philosophers. Emphasis on analytical and speculative functions. (3 hours per week)

**205 Values: Ethics and Aesthetics** ..... **3 credit hours**

An introduction to the analysis of valuing behaviors. This course will deal with social values and aesthetic values. Some writing will be required in which the student will give evidence of his increased capacity to make distinctions in these areas. (3 hours per week)

**250 Logic** ..... **3 credit hours**

Emphasis on modern methods of deductive proof and the theory of communications with applications for industry, business, and government trainees. (3 hours per week)

# photography (PHO)

**214 Photography** ..... **4 credit hours**

Principles, practices, and the basic application and limitations of photography as a communication form used in business and industry. Assigned field practices in the use of the still camera, composing, lighting exposure, and photo darkroom processing. (6 hours per week)

**215 Darkroom Techniques** ..... **5 credit hours**

Prerequisite: Photography 214, photography 217 Co-requisite.

Development of skills needed by technicians in commercial X-ray, dental, 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. (9 hours per week)

**216 Basic Color Photography** ..... **3 credit hours**

Prerequisite: Photography 214.

An introduction to the various color photography processes in common use today. Emphasis is placed on the production of color transparencies, color negatives, and color prints. Color correction for basic problem situations is included. (4 hours per week)

**217 Studio Techniques** ..... **3 credit hours**

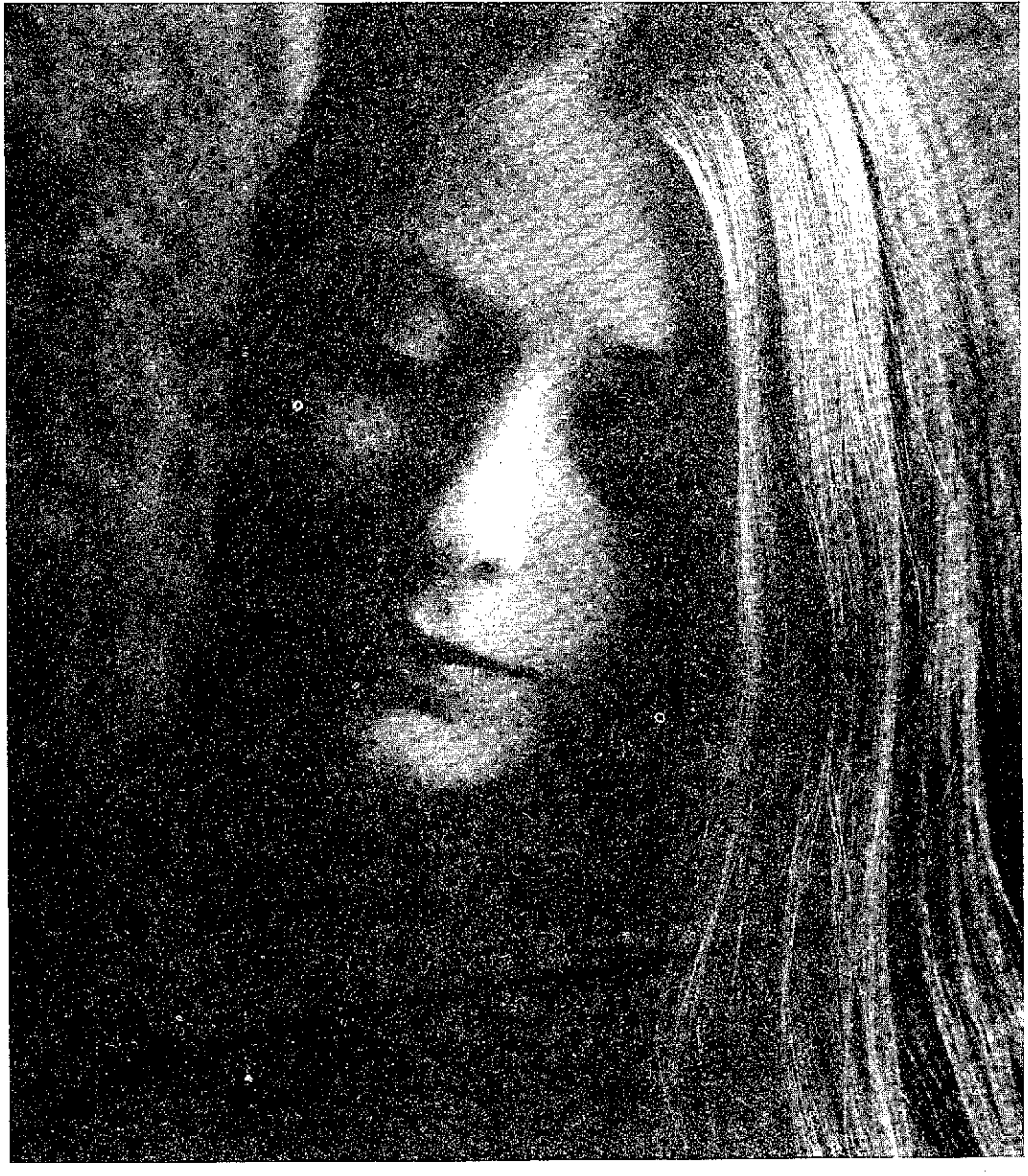
Co-requisite: Darkroom Techniques 215.

Specialized instruction in photography under controlled lighting situations. The use of various types of light is emphasized along with lighting for various situations. (4 hours per week)

**218 Photo Retouching** ..... **2 credit hours**

Prerequisite: Darkroom Techniques 215.

Airbrush, manual, and spotting techniques and associated materials as applied to the retouching and processing of photographic copy. (3 hours per week)



**220 Camera Selection and Use** ..... **3 credit hours**

Prerequisite: Studio Techniques 217, Co-requisite: Photography 221.

A detailed study of the various types of cameras and their uses. Roll and sheet film cameras will be emphasized as well as the more unusual applications of the 35 mm camera. (4 hours per week)

**221 Advanced Darkroom Techniques** ..... **2 credit hours**

Prerequisite: Darkroom Techniques 215; Co-requisite: Photography 220.

Specialized instruction in the problems faced by the darkroom technician. How to produce acceptable results under difficult situations is the major emphasis. (4 hours per week)

**222 Advanced Color Photography** ..... **3 credit hours**

Prerequisite: Basic Color Photography 216.

A continuation of the studies begun in Basic Color Photography 216. Emphasis is placed on color correction from unusual situations and color distortion to achieve special effects. (6 hours per week)

**223 Photographic Occupations** ..... **2 credit hours**

Prerequisite: Studio Techniques 217.

A survey of photographic occupations. The unique problems encountered in photo journalism, retail sales of photographic materials and supplies, and the development of audio-visual materials will be examined. (3 hours per week)

**224 Darkroom Operation** ..... **2 credit hours**

Prerequisite: Advanced Darkroom Techniques 221.

An analysis of the physical requirements and activities necessary to make a functional darkroom. Layout supply control, and work flow are some of the items that are examined. (3 hours per week)

**229 Freelance Operations** ..... **3 credit hours**

Prerequisite: Camera Selection and Use 220.

A survey of the types of photography that the freelance photographer could become involved in as a one-man operation. Outside speakers and visits to various types of freelance studios will be included as well as an in-depth study of the problems involved in operating a free-lance photographic business. (4 hours per week)

**230 Specialized Studies in Photography** ..... **2-4 credit hours**

Prerequisite: Advanced Darkroom Techniques 221.

An opportunity for students to work independently with faculty consultation in major areas of photography. Major study areas may include: studio, commercial, architectural, or industrial photography. (2-4 hours per week)

**231 Portfolio Seminar** ..... **3 credit hours**

Prerequisite: Advisor Approval only.

Development of materials and samples to be presented for employment. Professional critiques will be conducted and evaluations made. (4 hours per week scheduled - 3 hours per week arranged)

# physical education (P E)

**110 Principles of Safety** ..... **2 credit hours**

Stress is placed on the scope of safety problems in school, home, and industry, along with securing and evaluating up-to-date information on the safety needs of individuals. (2 hours per week)

**120 Heathful Living** ..... **3 credit hours**

A look at man in relation to his environment: a view of how the body functions and what can be done to keep it functioning toward an effective life. Provides information to help the student make intelligent decisions regarding his health and the health of those affected by him. The course is designed to provide the student with an awareness and understanding of the functions of his own body and to direct him toward an intelligent concern for the health and welfare of those around him. (3 hours per week)

**121 Seminar in the Smoking Controversy** ..... **1 credit hour**

The course will be geared to give the student understanding and knowledge of the many aspects that contribute to the smoking controversy. Through active participation in the weekly meetings and projects, it is hoped that this class will not only affect those who attend, but others who may be indirectly affected by the seminar participatnts. (1 hours per week)

**122 Seminar in Weight Control** ..... **1 credit hour**

Objectives are to make available information about weight control and to explain practical application of this information to an individual's life. Informal discussion and projects are essential in meeting these objectives. (1 hour per week)

**130 Standard American Red Cross First Aid** ..... **2 credit hours**

Outlined by the American Red Cross, this course consists of lectures, textbooks, and practice work in first aid. A certificate is awarded to each student completing the course. (2 hours per week)

**137 Techniques of Officiating — (men)** ..... **2 credit hours**

The course consists of a study of the rules and techniques involved in officiating various interscholastic sports. The official's duties, personal characteristics, relationships with coaches and school administrators will be emphasized. The course will consist of classroom and laboratory experiences. Practical experience will be gained by officiating in intramural games, intercollegiate meets, and scrimmages. (2 hours per week)

# physical science (PHS)

**120 The Metric System** ..... **1 credit hour**

A short course devoted to hands-on experience with metric measurements of length, volume, mass, and temperature.

**142 Environmental Science** ..... **4 credit hours**

A one-semester introductory course which surveys the sciences dealing with the origin and physical nature of the earth. Designed for students with little or not science background. The basic principles of astronomy, geology, chemistry, and physics are related to applications in earth science. Problems of man's use and misuse of his physical environment are discussed. A two-hour laboratory is designed to give students first-hand experience with the tools and methods used by scientists. (5 hours per week)

**150 Astronomy** ..... **1 credit hour**

A course based on direct observation of the stars, moon, and planets both by telescope and through planetarium visits. It is intended for any interested person and no prior knowledge is needed. (Hours to be arranged)

**165 Science History - The Capernican Revolution** ..... **1 credit hour**

An examination of mankind's view of the world before and during the change from an Earth-centered universe to a Sun-centered universe. Emphasis is on understanding the astronomical evidence and the different ways of interpreting this evidence.

# physics (PHY)

**090 Automotive Physics** ..... **3 credit hours**

A specialized study of certain basic principles of physics selected for their usefulness in automotive technology. Included among the topics covered are fluids, heat, properties of matter, work, power, and energy. Instruction takes place in the laboratory through the solution of practical problems. (4 hours per week)

**105 Introductory Physics** ..... **4 credit hours**

Prerequisite: Mathematics 090 or equivalent

Corequisite: Introductory Algebra 097 or equivalent

Designed for both transfer and vocational students who have had no previous physics. The course surveys the major topics of physics: motion, heat, waves, electricity, magnetism, light, and atomic theory. A graphic approach with a minimum amount of mathematics is used to obtain a working knowledge of the principles of physics. Will transfer as a general science or vocational credit. Three hours of lecture and recitation and three hours of laboratory per week. (6 hours per week)

**110 Applied Physics** ..... **4 credit hours**

Prerequisite: Mathematics 090 or equivalent

An introductory course for technical-vocational students with no previous physics course. The course surveys the major topics in physics: matter and measurement, mechanics, magnetism and electricity, heat, light, sound and lay presentation of atomic theory. The important ideas of physics are presented through laboratory experimentation supplemented by lectures and films. Technical vocabulary is translated to understandable English with everyday work applications of the basic ideas of physics and how they affect our life and work. (6 hours per week)

**111 General Physics** ..... **4 credit hours**

Prerequisite: Introductory Algebra 097

Corequisite: Math 136 and Intermediate Algebra 169

For both pre-professional transfer students and liberal arts students. No previous physics is necessary. The course surveys the topics of mechanics, heat, and wave motion. A three-hour laboratory each week enables students to learn the use of basic scientific instruments and the techniques used in the science laboratory. (6 hours per week)

**122 General Physics** ..... **4 credit hours**

Prerequisite: Intermediate Algebra 169 and General Physics 111

Desk computers 100 is recommended

A continuation of General Physics 111 with the topics including electricity, light, and atomic theory. Three hours of lecture and recitation and three hours of laboratory. (6 hours per week)

**131 Physics for Respiratory Therapy** ..... **3 credit hours**

Prerequisite: Foundations of Occupational Mathematics 090

A one-semester course in basic physics, designed primarily for students in the respiratory therapy program. No previous knowledge of physics is assumed, but an introductory course in chemistry is desirable. Topics discussed are the use of energy in body processes, the mechanics of fluids, electrical devices used in the hospital, and the effects of radiation on living matter. The class meets for two hours of discussion and two hours of laboratory work. (4 hours per week.)

**Radiologic Physics** ..... **3 credit hours**

Prerequisite: Foundations of Occupational Mathematics 090

The physical principles underlying the operation of an X-ray machine are discussed and illustrated in laboratory exercises. Basic concepts of mechanics, energy and electric circuitry are the topics covered the first semester, to be followed by Science 118. Two hours of discussion and a two-hour laboratory session (4 hours per week)

**142 Radiologic Physics** ..... **3 credit hour**

Prerequisite: Radiologic Physics 117.

The production and properties of X-rays and their effects on tissue are discussed. The nature and uses of radioactivity will also be studied. Short-lived radioisotopes will be used in simple tracer experiments in the laboratory. Two hours of discussion and a two-hour laboratory session (4 hours per week.)

**185 Physics of Music** ..... **3 credit hours**

Planned for students with musical interest but no science background. Major topics are: how musical sounds are produced, how they are recorded and reproduced, and their interpretation by the human ear. Practical applications include the selection of hi-fi equipment, room acoustics, and the design of musical instruments. Each class session includes a demonstration or individual experiment. (3 hours per week)

**211 Analytical Physics** ..... **5 credit hours**

Prerequisite: Physics 105 and Calculus 191 (corequisite with instructor's permission)

For students intending to major in science and engineering. Also, for those liberal arts students with calculus backgrounds. This course uses calculus to develop concepts in mechanics, heat, and wave motion. Scientific and Technical Programming 187 is recommended. Three-hour laboratory emphasizes precision and error analysis. Four-hours of lecture and recitation. (7 hours per week)

**222 Analytical Physics** ..... **5 credit hours**

Prerequisite: Analytical Physics 211

Continues to develop mathematical methods for understanding physical phenomena in the areas of electromagnetism, light, and modern physics. Three hour laboratory plus four hours of lecture and recitation. (7 hours per week)

# political science (PLS)

**108 Government and Society** ..... **3 credit hours**

Particular emphasis is placed on the nature and operation of American national government. Techniques, processes, and machinery of popular control (public opinion, interest groups, parties and elections); executive, legislative, and judicial functions. (A course in understanding the power applications of public issues that affect one's life.) MEETS THE MINIMUM REQUIREMENTS OF MICHIGAN LAW FOR THE ASSOCIATE DEGREE. (3 hours per week)

**112 Introduction to American Government** ..... **3 credit hours**

The forms and functions of American government with emphasis on national government. Decision-making process in the Congress, the presidencyand the federal court system studied. Relationship of political parties and public opinion to the electoral process. MEETS THE MINIMUM REQUIREMENTS OF MICHIGAN LAW FOR THE ASSOCIATE DEGREE. (3 hours per week).

**150 State and Local Government and Politics** ..... **3 credit hours**

Forms and functions of state and local governments in the United States. Relationship of development of the urban community to the politics of metropolitan areas analyzed. Theories of studying community decision-making evaluated. MEETS THE MINIMUM REQUIREMENTS OF MICHIGAN LAW FOR THE ASSOCIATE DEGREE. (3 hours per week)

**200 Introduction to International Politics** ..... **3 credit hours**

Prerequisite — Introductory Political Science course or permission of instructor.

The instruments of world politics from the perspective of current international issues with emphasis on major power relations and attempts at international organization.

**211 Introduction to Comparative Government** ..... **3 credit hours**

Prerequisite: An introductory Political Science course or permission of instructor.

A survey of the political systems of Great Britain, France, Italy, Germany and the Soviet Union.

**230 Political Parties and Pressure Groups** ..... **3 credit hours**

Prerequisite — Introductory Political Science course or permission of instructor.

An analysis of American political parties and pressure groups; emphasizes their origins, functions, organization, methods, and the relationship between party politics and public opinion. (3 hours per week)

# psychology (PSY)

**100 Introductory Psychology** ..... **3 credit hours**

An introduction to the scientific study and interpretation of human behavior, surveying such topics as psychological development, learning, thinking, motivation, emotions, perception, intelligence, aptitudes, and personality. Basic principles and their practical application are discussed. (3 hours per week)

**107 Black Psychology** ..... **3 credit hours**

See (bls) black studies for course description.

**108 Dynamics of Behavior** ..... **3 credit hours**

Systematic presentation of issues, concepts, principles, and theories in the study of human adjustment. Includes analysis of adjustment, motivation, frustration and conflict, learning, defense and escape mechanisms, fear and repression, psychoneurosis, anxiety reactions, personality measurement, psychoanalysis and psychotherapy. (3 hours per week)

**130 Basic Alcoholism Therapy I** ..... **3 credit hours**

The course is designed as the starting place for anyone in a helping or caretaker position who will be active directly or indirectly in providing service to the alcoholic and the family involved. The material will be covered in such a manner that the potential therapist shall acquire the knowledge and develop skills which will enable them to transfer this information therapeutically to the suffering alcoholic.

**131 Basic Alcoholism Therapy II** ..... **3 credit hours**

This course is designed to present five different approaches to treatment. The modes are: Gestalt, Rational Emotive, Behavior Modification, Rogerian, and Transactional Analysis. The student is presented with the theoretical rationale of each and participates in various exercises which illustrate key concepts. Also, the student also prepares and presents one of the didactic lectures from Basic Alcoholism Therapy I.

**150 Industrial Psychology** ..... **3 credit hours**

Human relations in business in industry. Special attention will be given to occupational information, personnel selection, training and development and employee appraisal. A practical introduction to the psychological dimensions and implications of the modern working world.

**200 Child Psychology** ..... **3 credit hours**

Stresses the child as an individual, his original nature and temperament, and his 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. (3 hours per week)

**207 Social Psychology** ..... **3 credit hours**

Designed to give students an understanding of the influence of social interaction upon the development of personality. Interaction between the individual and society is stressed. Includes emphasis on group dynamics and sensitivity training. (3 hours per week)

**209 Psychology of Adjustment** ..... **3 credit hours**

A study of the processes involved in the adjustment of the individual to the problems of everyday living. Emphasis given to the study of the development of techniques or adjustment to meet conflict situations in the social environment. Includes consideration of adjustment mechanisms of major societal institutions. (3 hours per week)

**230 Basic Alcoholism Therapy III** ..... **3 credit hours**

The student is required to learn the concepts underlying Basic First Aid (American Red Cross), Overdose Aid (American Red Cross), and Cardio Pulmonary Resuscitation (American Red Cross and Michigan Heart Association), and master the techniques of each. Certificates are issued in each upon the successful completion of examination. The last nine hours of the semester are devoted to becoming familiar with signs of psychopathology that would warrant referral to other professional personnel.

**231 Basic Alcoholism Therapy IV** ..... **3 credit hours**

A laboratory course designed to allow the student to practice the techniques of psychotherapy in a supervised situation. The development of emphathetic skills is stressed. Video tape is employed as a feedback device.

**233 Basic Alcoholism Therapy V** ..... **3 credit hours**

A preparation course to field placement deisgned to familiarize the prospective trainees with the policies and procedures of agency life. Skill development in 1) intake interview 2) crisis intervention 3) report writing 4) referral procedures and 5) the utilization of other helping professionals. Also included is a short unit on nutrition.

**234 Basic Alcoholism Therapy VI** ..... **3-6 credit hours**

Supervised field experience in a professional agency.

**257 Abnormal Psychology** ..... **3 credit hours**

A course dealing with the abnormalities of certain types of personalities their origin, symptoms, developments and treatment, short of psychiatric competence. Main topics — simple maladjustment; disturbances of emotional nature, of perception, memory, judgment, thought; disorders of mobility, speech, etc.; early symptoms of schizophrenia. (3 hours per week)

# quality control (Q C)

**101 Process Quality Control** ..... **3 credit hours**

The concepts of variation and methods of measuring, evaluating, and interpreting industrial data. An in-depth working knowledge of process control is imparted through the use of capability analysis and statistical control charts. Industrial applications are presented and class participation is used extensively in workshops. (3 hours per week)

**122 Sampling Quality Control** ..... **3 credit hours**

Prerequisite: Intermediate Algebra 169

The theory of probability and basic concepts of statistical sampling. The development of sampling plans, effect of sample size and acceptance number on the probability of acceptance, and the use of interpretation of sampling acceptance plans are discussed. Military 105D, sequential, and variable sampling are introduced and their effectiveness and industrial applications are analyzed. (3 hours per week)

**213 Quality Control by Statistical Methods** ..... **3 credit hours**

Prerequisites: Process Quality Control 101 and Sampling Control 122

An introduction to statistical testing for differences in sample means, variability, and fraction defectives. The concepts of linear correlation and regression analysis are introduced. Practical problems encountered in industrial quality control are solved in the classroom to illustrate the techniques presented. (3 hours per week)

**224 Quality Control Problem Solving** ..... **3 credit hours**

Prerequisites: Quality Control by Statistical Methods 213

The essential techniques required in industrial problem-solving. A thorough review of advanced control and statistical methods is directed toward solutions of practical problems in the automotive, metal working, chemical processing, and electronic fields. (3 hours per week)

**225 Quality Control Management** ..... **3 credit hours**

The total quality control concept in planning, organizing, and implementing an effective system. Details of how to plan a quality system, set up the organizational structure, integrate the support activities, install controls, and measure the results are discussed. The work of quality information equipment engineering is outlined. The main jobs of quality control are defined in terms of design control, material control, product control, and special studies. (3 hours per week)

**226 Introduction to Nondestructive Testing** ..... **3 credit hours**

A general introduction into the more important aspects of nondestructive testing as related to quality control and product quality assurance. A brief review of physical laws of light, wave motion, magnetism, and electricity is introduced to show the relation of theory to applications. Lectures will be supplemented with field trips consisting of visits to plant, equipment manufacturer, or classroom demonstration of equipment or application technique by an industrial representative. (3 hours per week)

# radio (RAD)

**101 Radio Station Equipment Operation** ..... **3 credit hours**

A course for non-engineering station personnel in the operation of control room and studio equipment. The

proper care, use and operation of consoles, microphones, phonograph tables, and tape recorders (cassette, cartridge and reel-to-reel). Basic program forms, news, music, interviews, features and commercials, are produced by the students using the equipment. (3 horus per week)

**130 Special Production Projects** ..... **.3 credit hours**

To be offered exclusively in the Spring session. Essentially a practicum allowing students, who have completed a minimum of 1 semester of study (Radio 101 or 201 or equivalent), intensive work in the operation of studio equipment. The problem to be undertaken by the class will be chosen from those facing the program in preparing for daily operation in the coming fall semester. (3 hours per week)

**201 Programming and Advance Operations** ..... **.3 credit hours**

Prerequisite: Radio 101

This class utilizes the production and writing skills developed by the students in Radio 101 to establish and maintain a daily broadcast schedule with the students rotating weekly in station positions. (3 hours per week)

See also: (brc) broadcasting

# radiation therapy technology (RTT)

**210 Clincal Practicum** ..... **.2 credit hours**

Advanced clinical experience working with radiation therapy equipment, records, simulator and examination room. (20 hours per week)

**215 Anatomy and Physiology** ..... **.2 credit hours**

To expand and supplement the student's knowledge of human anatomy with particular reference to treatment planning. Emphasis is on the areas of the brain and skull, major salivary gland, orbit and its contents, oral cavity, upper respiratory system, thyroid gland, mediastinum and chest, breast, urinary tract, female reproductive system, gastrointestinal tract and lymphatic cyctem.

**217 Protection and Shielding** ..... **.1 credit hour**

To teach the student to provide maximum safcty to patient and personnel. Emphasis is on shielding construction, effect of distance, techniques for reducing exposure to patient and protective regulations.

**218 Elementary Pathology** ..... **.1 credit hour**

To acquaint the student with normal and abnormal development, growth and structure of human cells.

**219 Radiotherapy Physics** ..... **.2 credit hours**

Expands the student's knowledge of physical principles and how to apply those principles specifically to therapeutic radiology.

**220 Clinical Practicum** ..... **.2 credit hours**

Experience in an affiliated hospital radiation therapy department. Emphasis is on being familiar with the radiation therapy department, its personnel and radiation therapy routine. (20 hours per week)

**224 Patient Care Procedure** ..... **.2 credit hours**

This course addresses Patient Care Procedures pertinent to care and examination of the cancer patient in the radiation therapy department. Emphasis is on general physical examination, accurate patient records, asepsis, equipment used in radiotherapy, medications, emergency care, nutrition and psychological status of patients with cancer.

**225 Radium Therapy** ..... **.2 credit hours**

To teach the student the physical properties, uses, dosage, calculations and care of sealed sources of radiation. Emphasis is on decay acheme and characteristics of daughter products, emmissions, half life, filtration, needle-capsule-radon seed applications, dosage calculation, recording data, radium substitutes and therapeutic isotopes.

**227 Treatment Planning** ..... **.5 credit hours**

To teach the student the principles, aims and techniques of applying ionizing radiation to the human body. Provides precise and detailed instruction supplemented with practical application in the treatment and planning rooms. Emphasis is on treatment modality, treatment techniques, therapy aids and procedures for treatment of selected areas of the body.

**229 Radiobiology** ..... **.1 credit hour**

To acquaint the student with the effects of ionizing radiation on the cells which form human tissues, their qualitative response and sensitivity.

**230 Clinical Practicum** ..... **4 credit hours**

Advanced clinical experience working in all areas of the radiation therapy department. (40 hours per week)

# radiologic technology (R T)

**111 Fundamentals of Radiologic Technology** ..... **3 credit hours**

Orientation to radiography; history, radiation protection, and professional ethics. Patient care pertinent to radiography with emphasis on medical asepsis, obtaining vital signs and precautionary technique. The principles of pediatric radiography will be discussed. (3 hours per week)

**112 Radiologic Technology Laboratory** ..... **1 credit hour**

Radiographic terminology pertinent to roentgenographic positioning. Proper positions for radiography of the osseous system upper and lower extremities. Critiques on positioning and anatomical appearance on the radiograph. Body mechanics on moving and lifting the patient will be demonstrated and discussed. (3 hours per week)

**122 Fundamentals of Radiologic Technology** ..... **3 credit hours**

Prerequisite: Fundamentals of Radiologic Technology 111

Fundamentals of radiography with emphasis on the properties of X-rays, function of the X-ray generator, the X-ray tube, principles of film processing and X-ray accessories. Radiographic exposure, charts and tables will be demonstrated and discussed. (3 hours per week)

**123 Radiologic Technology Laboratory** ..... **1 credit hour**

Prerequisite: Radiologic Technology Laboratory 112

Continuation of proper positions for radiography of the osseous system trunk, chest and spine. (3 hours per week)

**125 Anatomy and Physiology for R.T.** ..... **2 credit hours**

Prerequisite: Anatomy and Physiology 111. Second semester classification in RT program

Topographic anatomy and physiology of body systems, how they are demonstrated radiographically with and without the use of a contrast medium. (2 hours per week)

**213 Principles of Radiologic Technology** ..... **3 credit hours**

Discussions on special procedures of the male and female reproductive system, central nervous system and circulatory system. Theory of X-ray exposure, evaluation of geometric factors and the influence of radiation interaction with matter will be emphasized. (3 hours per week)

**215 Radiologic Technology Laboratory** ..... **1 credit hour**

Prerequisite: Radiologic Technology Laboratory 123

Detailed study of skull radiography including radiographic examinations of the sella turcica, orbit, paranasal sinuses and facial bones. Evaluation and critiques on positioning and anatomical appearance on the radiograph. (3 hours per week)

**224 Principles of Radiologic Technology** ..... **3 credit hours**

Prerequisite: Principles of Radiologic Technology 213

A study of special equipment used in radiography, among them are tomography, steroscopy and image intensification. A survey of trauma and diseases. Analysis and discussion of the effects of diseases. The role of radiography in the detection of deficiencies in the function and structure of organs within the body. (3 hours per week)

**227 Radiologic Technology Laboratory** ..... **1 credit hour**

Emphasis is on evaluation of X-ray exposure technique for obtaining diagnostic information on X-ray film. Structured laboratory experience conducted to illustrate film quality. (3 hours per week)

**220 Supervisory Management** ..... **2 credit hours**

An analysis of the role and responsibilities of the radiologic technology supervisor in the hospital and related facilities. Major concerns will involve managerial functions of planning, organizing, staffing, directing and influencing. Job descriptions and their function will be discussed. (2 hours per week)

**110 Clinical Practicum** ..... **1 credit hour**

Prequisite: Acceptance into Radiologic Technology Program.

Orientation to the hospital environment with emphasis on being familiar with the hospital radiology depart-

ment, its personnel and routine. Structured clinical experience in an affiliated hospital working with patients, using X-ray equipment under supervision. Application of principles learned in positioning the upper and lower extremities. (20 hours per week)

**120 Clinical Practicum** ..... **2 credit hours**

Prerequisite: Clinical Practicum 110.

Structured clinical experience working with patients using X-ray equipment under supervision. Application of principles learned in positioning the upper and lower extremities, trunk and spine. (20 hours per week)

**130 Clinical Practicum** ..... **3 credit hours**

Prerequisite: Clinical Practicum 120.

Structured clinical work experience spring and summer semesters. Experience in an affiliated hospital radiology department. Working with patients using X-ray equipment under supervision.

**217 Clinical Practicum** ..... **2 credit hours**

Prerequisite: Clinical Practicum 130.

Advanced structured clinical experience working with patients in an affiliated hospital. Application of principles, learned in positioning the upper and lower extremities, trunk, spine and skull. (24 hours per week)

**225 Clinical Practicum** ..... **3 credit hours**

Prerequisite: Clinical Practicum 217

Advanced structured clinical experience working in all areas of the radiology department. Electives will be offered to students in specialized areas where student displays an interest. ie; Pediatrics, Radiotherapy, Nuclear Medicine, Ultrasound and special procedures. (24 hours per week)

**240 Clinical Practicum** ..... **4 credit hours**

Prerequisite: Clinical Practicum 225.

Structured clinical experience spring and summer semesters. Experience in an affiliated hospital radiology department.

# reading (RDG)

**Reading Laboratory**

The laboratory is designed to help 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.

**040 Reading** ..... **3 credit hours**

The aim of this course is to provide the remedial reader with basic reading skills. A program of instruction is individually designed for each student based on his diagnostic reading test and a personal interview. (3 hours per week)

**090 Parents: Children's Reading** ..... **2 credit hours**

This course is designed for parents who are concerned about their children's reading. Special attention will be given to methods for preparing preschoolers for reading using the home as a learning environment. We will also focus on reading-related home and school problems. (3 hours per week)

**103 Study Skills** ..... **3 credit hours**

Prerequisite: Permission of instructor.

This course is designed for the competent student interested in improving his study and note taking skills. Reading and note taking techniques appropriate to specific course materials are stressed. It is essential for a student electing this course also to be enrolled in a Communication Arts, Social or Exact Science course to which he shall apply his newly learned study skills. (3 hours per week)

**104 Study Skills** ..... **1 credit hour**

This course is designed for the competent student interested in improving his study and note taking skills. Reading and note taking techniques appropriate to academic materials are stressed. Class meets for half a regular semester. (3 hours per week)

**106 Speed Reading** ..... **1 credit hour**

This course is designed for the competent student interested in becoming a more flexible reader. The student will learn to vary reading speeds and techniques appropriate to his material and purposes. Class meets for half a regular semester. (3 hours per week)

**108 Study Skills/Speed Reading** ..... **1 credit hour**

Prerequisite: Recommendation of instructor.

This course is to be elected by students desiring to complete the mini reading course sequence (Study Skills — 104 and Speed Reading 106) and thereby earn a full three credits upon successful completion.

**100 Spelling and Vocabulary Power** ..... **1 credit hour**

This course is designed for the student interested in strengthening his spelling skills and expanding his vocabulary. Emphasis will be 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. Class meets for half a regular semester. (3 hours per week)

**105 Spelling and Vocabulary Power** ..... **3 credit hours**

This course is designed for the student interested in strengthtening his spelling skills and expanding his vocabulary. Emphasis will be 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. (3 hours per week)

# refrigeration/air conditioning (RAC)

Basically this is a trade-related instruction program and 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 offered in the evening only. Membership in the Educational Society of the Refrigeration Service Engineers is required. Initiation fee and dues are approximately $35.00. Consent of advisor is required for registration.

**111 Refrigeration** ..... **4 credit hours**

Prerequisites or Co-requisites: Electrical Fundamentals 111, Applied Algebra 151 or equivalent, and RSES membership.

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. RSES I (4 hours per week)

**122 Refrigeration Equipment** ..... **4 credit hours**

Prerequisite: Refrigeration 111 or divisional consent.

Emphasis is on the functional principles and servicing of the following units: compressors, condensers (air and water-cooled), cooling towers, evaporator selection, metering devices (expansion valves, capillary tubes), motors and accessories, defrost systems, supermarket refrigeration, fresh meats, soda fountains and ice cream dispensers, ice making machines, beer cooling, milk cooking, and estimating heat loads (commercial refrigeration). RSES 11 (4 hours per week)

**123 Refrigeration and Air Conditioning Systems** ..... **5 credit hours**

Prerequisites: Refrigeration 111, 124

This course offers the student the opportunity to sketch and construct refrigeration systems. Calibrating and efficiency balance of these units are stressed. Troubleshooting electrical controls and additional study in thermodynamics is included. (6 hours per week)

**124 Basic Controls** ..... **4 credit hours**

Prerequisites: Electrical Fundamentals 111 and Refrigeration 111

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 drawings, wiring diagrams and schematics associated with R/AC controls. Safety included and seriously emphasized. RSES E-1 (4 hours per week)

**213 Air Conditioning** ..... **4 credit hours**

Prerequisite: Refrigeration 122 or divisional consent

Air conditioning 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 grilles, blowers and fans, air filters, safety, first aid and codes. RSES 111 (4 hours per week)

**214 Control Systems** ..... **4 credit hours**

Prerequisites: Basic Controls 124 and Air Conditioning 213

Presenting further study and practice in reading electronical 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, RSES E-11 (4 hours per week)

**215 Troubleshooting Controls** ..... **4 credit hours**

Prerequisite: Control Systems 214

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. RSES E-111 (4 hours per week)

**216 Systems Laboratory** ..... **5 credit hours**

Prerequisite: Refrigeration and Air Conditioning Systems 123

The second laboratory course building upon the first one for advanced troubleshooting experiences in refrigeration/air conditioning remote control systems. Calibrating and efficiency-balancing of commercial systems continues as the major thrust. (6 hours per week)

**240 Refrigeration Codes** ..... **2 credit hours**

Advisor's Consent.

American National Standard B9 ASHRAE Standard and City of Ann Arbor Reciprocal Council. (2 hours per week)

# respiratory therapy (RTH)

**WORK EXPERIENCE**

During Spring-Summer break students are required to obtain employment (paid) at a hospital in order to gain respiratory therapy experience. The employing hospital must be approved by the medical director of the respiratory therapy program. (Nine weeks, 40 hours per week or 360 clock hours.)

**097 Respiratory Therapy Review** ..... **1 credit hour**

This course is designed to assist graduate of Respiratory Therapy Programs studying for their certification or registry exams. Offered the five Saturday mornings preceding the exam. Emphasis is placed on sample examinations. (5 three-hour sessions)

**121 Basic Equipment and Procedures** ..... **4 credit hours**

Prereauisite: Admission to the Respiratory Therapy Program.

An introductory course dealing with the instruments and techniques used by the respiratory therapist. The course involves principles of operation and maintenance repair of various analyzers, humidifiers, masks, catheters, respirators, tents, and regulators. Involved are three hours of laboratory and one hour of lecture. (4 hours per week)

**122 Respiratory Physiology** ..... **2 credit hours**

Prerequisite: Basic Anatomy & Physiology 111

Intended for respiratory therapy students only. An in-depth study of the anatomy and physiology of the respiratory system and the diseasesthat affect it. Involved are two hours of lecture. (2 hours per week)

**123 Respiratory Physiology Lab and Recitation** ..... **3 credit hours**

Prerequisite: Basic Anatomy and Physiology 111.

To be taken concurrently with 122 Respiratory Physiology. Intended for respiratory therapy students only. Dissection of animal lungs, heart, and chest muscles. Experiments with EKG's metabolic rate, lung volumes, etc. In the recitation portion students will research and present the causes and treatment of respiratory diseases. Involved are 2 hours of laboratory and one hour of recitation. (3 hours per week)

**199 General Clinical Practice** ..... **3 credit hours**

Prerequisite: Admission to the Respiratory Therapy Program.

Bedside practice of general respiratory therapy techniques, such as intermittent positive pressure breathing, oxygen therapy, humidity therapy, cardio-pulmonary resuscitation, sputum induction, and equipment rounds. This course will meet in a cooperating hospital. Experience will be coordinated with topics covered in Basic Equipment and Procedures 121.

**200 Advanced Clinical Practice** ..... **4 credit hours**

Prerequisite: Ventilators and Diagnostic Tests 212 prior or concurrent.

Structured, at-the-bedside practice of respiratory therapy techniques involved with the care of acutely ill patients, children, infants and premature infants, and patients with chronic obsturctive pulmonary disease. Students will be rotated through the intensive care units, pulmonary function laboratories, and pediatric units of cooperating hospitals. Involved are two eight-hour sessions per week. (16 hours per week)

**212 Ventilators and Diagnostic Tests** ..... **3 credit hours**

Prerequisite: Basic Equipment and Procedures 121.

An in-depth study of the use, classification, operation, advantages, modifications, maintenance repair and trouble shooting of medical ventilators, pulmonary function testing devices, and other respiratory therapy equipment. Involved is one three-hour session per week. (3 hours per week)

**213 Intensive and Rehabilitative Respiratory Care** ..... **3 credit hours**

Prerequisite: Basic Equipment and Procedures 121 and Respiratory Physiology 122.

A detailed study of the treatment of acute and chronic respiratory failure. The treatment of overwhelming pneumonias, adult respiratory distress syndrome, post-operative problems, poisonings, and the rehabilitation of patients with chronic pulmonary disease will be emphasized. Also, medical specialists will discuss the respiratory care of their patients. (3 hours per week)

**217 Seminar-Respiratory Therapy** ..... **2 credit hours**

Prerequisite: Basic Equipment and Procedures 121 and Respiratory Physiology 122.

In this course, three hours each week will be scheduled for seminar discussions of current problems, therapeutic complications, review of current literature, and reports of scientific meeting. In addition, a major portion of the time will be devoted to discussion of and practical application of management techniques as they apply to the operation of a respiratory therapy department. (2 hours per week)

# secretarial and office (S O)

**090 Fundamentals of Typewriting** ..... **1 credit hour**

A basic typewriting course designed to meet the needs of the non-secretarial student in developing basic typing skills. (2 hours per week PLUS 4-6 practice hours)

**100 Shorthand** ..... **4 credit hours**

An integrative program of study in Gregg shorthand designed to meet the vocational standards of the modern business office. Emphasis is placed on shorthand principles and practices, development of transcription techniques and skills, and the ability to transcribe office-style dictation. Credit and contact hours are progressive (100, A, B, C) and are contingent on student progress as determined by proficiency tests undertaken. (5 hours per week PLUS minimum 8-10 practice hours)

**107 Clerical Methods and Procedures** ..... **4 credit hours**

Prerequisite: High school typewriting proficiency or concurrent enrollment in intermediate typewriting, or equivalent.

Emphasis is on developing insights into the responsibilities of the clerical office staff, personal qualifications, human relations factors, and their relationship to the effective integration of clerical office methods, systems, and procedures. Includes the study of filing and records systems, telephone and telegraph communication, written reports, transcribing and duplicating equipment. (4 hours per week plus minimum of 4 weekly machine room hours)

**110 Typewriting** ..... **3 credit hours**

An integrative, programmed approach to the development of operative skill in typewriting as a vocational tool. Course coverage includes training in the mastery of the keyboard, development of proper techniques, building speed and accuracy, exposure to basic typing applications and word processing. Credit and contact hours are progressive (110, A, B, C) and are contingent on student progress as determined by proficiency tests. (4 hours per week PLUS minimum 8 practice hours)

**Business Machines** ..... **3 credit hours**

Prerequisite: Foundations of Occupational Mathematics 090 or equivalent.

Instruction in the basic mathematical processes on modern calculating machines of both listing and non-listing types. Emphasis throughout the course is on machine applications to mathematical problem-solving. (3 hours per week PLUS minimum 6 practice hours)

**150 Office Systems and Procedures** ..... **4 credit hours**

Prerequisite: Two-year high school typewriting proficiency or concurrent enrollment in advanced typewriting, or equivalent.

A practical study of the fundamental systems and procedures comprising the modern business offices. Emphasis is on developing insights into the responsibilities of the office staff, personal qualifications, human relations factors, and their essential relationship to the effective integration of all systems and procedures. Includes the study of filing and records systems, telephone and telegraph communications, written reports, transcribing, duplicating equipment, and word processing. (4 hours per week PLUS minimum of 4 weekly machine room hours)

**200 Machine Shorthand** ..... **2 credit hours**

An integrative applied approach to the study of modern machine shorthand designed to acquaint the student with the theory and principles of machine shorthand as it relates to business and industry and other specialized fields. Skill development and speed building in recording and transcribing notes are emphasized. Course credit and contact hours are progressive (200, A, B, C, etc.) and are contingent on student progress as determined by proficiency tests. (2 hours per week PLUS minimum 6-8 practice hours)

# social science (S S)

**100 Woman 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. (3 hours per week)

**109 Women's Health Care** ..... **3 credit hours**

Patient's rights, malpractice, natural childbirth, menopause, birth control research, medical experimentation, prescription drugs, doctor/patient relationship, breast self-exam, unnecessary surgery, and other issues relating to medical care for women.

**201 Health Care Issues** ..... **3 credit hours**

A practical study of the legal and ethical responsibilities 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. (3 hours per week)

# sociology (SOC)

**100 Principles of Sociology** ..... **3 credit hours**

Emphasis is placed on basic concepts used in an analysis of social behavior and the processes by which new members of group are oriented to prevailing patterns of behavior. A study of the process of cultural change basic to all programs in social work, or advanced work in the social sciences. (3 hours per week)

**150 Marriage and the Family** ..... **3 credit hours**

Designed for all students, the aim of the course is to promote stable marital relations. Special emphasis on the psychology of sex, adjustment of the individual to problems of everyday living, techniques of adjusting to conflict situations, emotions, perception, personality. (3 hours per week).

**201 Medical Sociology** ..... **3 credit hours**

Medical Sociology deals with the application of sociological principles in studying health, health care, and health services. This course will center around the concepts that social, mental and environmental factors influence health, and that the study of these and related factors can provide students with a broad concept of health. (formerly Health Sciences 201)

**202 Criminology** ..... **3 credit hours**

An examination of the theories which attempt to explain criminal behavior. The punishment vs. rehabilitation schools of thought will be dealt with as will capital punishment. Attention will also be given to the functioning of police and court systems. (3 hours per week)

**205 Racial and Ethnic Relations** ..... **3 credit hours**

Examination of the basic concepts of racial and ethnic relations and the concept of race. The course will also examine and analyze the course of oppression and suppression, superiority and inferiority, and majorities and minorities in the racial subgroups.

**207 Social Problems** ..... **3 credit hours**

Problems of satisfying human needs and wants are considered. These include non-economic needs and wants as well as treatment of the ways in which resources are allocated and products distributed in response to economic needs and wants. The significance of continuing transition to industrialism with the major theme being the disruptive disparity between the rates of technological and societary change and consequent need to cultivate sciences concerned with human behavior. (3 hours per week)

**250 Juvenile Delinquency** ..... **3 credit hours**

Growing-up process of late childhood and adolescence from sociological and cultural viewpoint. Problems of the individual in his social environment, group forces which lead to his maladjustment, and sociological principles for working with youth from the viewpoint of parent, teacher, police, and youth organization leader. (3 hours per week)

# spanish (SPN)

**111 First Year Spanish** ..... **3 credit hours**

This is a beginning course in Spanish using the conversational approach. The spoken language is mastered through classroom and laboratory practice. Cultural aspects of Spain and Latin America are highlighted. (4 hours per week)

**120 Conversational Spanish** ..... **2 credit hours**

This basic Spanish course is conversational in approach and assumes no previous knowledge of the language. It is designed for persons interested in practicing the fundamentals of spoken Spanish to enhance their travel enjoyment in Spain and Latin America as well as appreciation of these exciting cultures. It may be taken as a review for students already enrolled in the first year course. (2 hours per week)

**121 Conversational Spanish** ..... **2 credit hours**

Prerequisite: Spanish 111 or Spanish 120, or permission of instructor

A continuation of Spanish 120 which provides vocabulary expansion and cultural insights through total student involvement in the conversation practice sessions of this flexibly structured course. (2 hours per week)

**122 First Year Spanish** ..... **3 credit hours**

Prerequisite: Spanish 111, its equivalent or permission of instructor

A continuation of Spanish 111, with emphasis on the spoken form and on the cultures of Latin American countries and Spain. (4 hours per week)

**213 Second Year Spanish** ..... **3 credit hours**

Prerequisite: Spanish 122, its equivalent or permission of instructor

This is an intermediate course in Spanish using the conversational approach. First year emphasis on spoken form and culture is renewed. Attention is given, as well, to the written form. (3 hours per week)

**224 Second Year Spanish** ..... **3 credit hours**

Prerequisite: Spanish 213, its equivalent or permission of instructor

A continuation of Spanish 213 with special attention to literature in Spanish. (3 hours per week)

# speech (SPH)

**100 Fundamentals of Speaking** ..... **3 credit hours**

Instruction in essential speech processes and skills is offered. Organization of speeches and effective delivery will be studied through the use of practical problems. (3 hours per week)

**103 Radio and Television Announcing** ..... **3 credit hours**

The development of an effective voice for speaking on the microphone through a study of contemporary standards in broadcast diction and voice production. The study of voice requirements for standard broadcast forms, news, interviews, features, commercials and music continuity. Basic oral reading techniques and a brief introduction to the International Phonetic Alphabet. (3 hours per week)

**183 Advanced Public Speaking and Persuasion** ..... **3 credit hours**

A continuation of theory and practice in the principles of effective public speaking. Course includes practice in securing the acceptance of ideas through psychological appeal as well as logical reasoning. (3 hours per week)

**185 Public Speaking and Debate** ..... **3 credit hours**

An introduction to the rhetoric of persuasive and argumentative speaking. The historical and contemporary forms of debate. Experience in the preparation and delivery of major speeches, and experience in team debating. (3 hours per week)

**187 Oral Intepretation of Literature** ..... **3 credit hours**

Extensive practice in reading aloud for contemporary communication situations. The course concentrates on effective oral communication of the written word in such forms as news stories, reports, advertising, poetry, and other forms of literature in various speaking situations including use of the public address system and tape recording. Recommended for students entering elementary education. (3 hours per week)

**191 Basic Acting Workshop** ..... **credit hours**

Acting as a speech experience, developing confidence, emotional perception, and an objective appraisal by the

student of his own special speech talents. Through the performance of dramatic roles students achieve a greater freedom of movement and vocal variety in any public situation. It also provides the fundamentals of theatre work for the student who would like to continue his experience through local community theatre. (3 hours per week)

**192 Basic Staging** ..... **3 credit hours**

A workshop in laboratory theatre, this course provides preparation for classic and innovative performance theatre. (3 hours per week)

# technical and commercial art (TCA)

**100 Perspective and Parallel Projection** ..... **4 credit hours**

Prerequisite: Technical Drawing 100 or consent of division.

A detailed study of developing ideas by three dimensional drawing techniques. Emphasis is placed on the fundamentals of oblique, one point, point, isometric, two points, and three point perspective projection. Projects utilizing parallel and perspective projected shadow construction are emphasized. (6 hours per week)

**101 Technical Illustration** ..... **4 credit hours**

Prerequisite: Perspective and Parallel Projection 100 or consent of division

Illustration projects utilizing perspective and parallel projection and mechanical art aids. Information for problems is obtained from blueprints, written communication, and other sources. Assignments will deal with the presentation of assemblies, exploded views, section, and phantom drawings used by automotive, aircraft, and electronics industries. (6 hours per week)

**110 Lettering and Layout** ..... **4 credit hours**

Introduction to the various styles of lettering and techniques used in the design of posters, brochures, and other advertising forms. Also studied are basic techniques in the preparation of art work to be reproduced. (6 hours per week)

**111 Basic Drawing** ..... **3 credit hours**

See ART for course description.

**112 Basic Design** ..... **3 credit hours**

See ART for course description.

**120 Commercial Rendering** ..... **4 credit hours**

Co-requisite: Technical Rendering 122

An introduction to the various materials and rendering techniques used by the commercial artist. Assignments will deal with the rendering of commercial illustrations with water colors, tempera, acrylics, pastels, colored pencils, and pen and ink. (6 hours per week)

**121 Advertising Layout** ..... **4 credit hours**

Prerequisite: Perspective and Parallel Projection 100, Basic Drawing 111 and Basic Design 112 or consent of division.

An application of various techniques and methods used to develop commercial advertising art. A simulation of studio situations and problem-solving from rough lettering and layout to final art. (6 hours per week)

**122 Technical Rendering** ..... **4 credit hours**

Co-requisite: Technical Illustration 101

Fundamentals of rendering techniques and the various compatible materials used in industry by the technical illustrator. Projects will be directed in parallel and perspective shadow construction. Stipple, smudge, and French rendering of geometrics and airbrush and brush photographic retouching. (6 hours per week)

**140 Life Drawing** ..... **3 credit hours**

See ART for course description.

**214 Photography** ..... **4 credit hours**

See PHOTOGRAPHY for course description.

**226 Commercial Display** ..... **4 credit hours**

Prerequisite: Demonstration of working knowledge of color and color relationships.

An introduction to the techniques of the design and construction of two and three dimensional displays. The

assignments emphasize the design, the working drawing or blueprint, and the construction of a functioning model. (6 hours per week)

**227 Graphic Reproduction** ..... **4 credit hours**

A survey of the basic processes and techniques used to reproduce graphic materials. Included is a systematic study of the following equipment: letterpress, blueprint machine, spirit duplicators, electrostatic copiers, silk screens, and light duty offset presses. Emphasis is placed on the techniques used for properly preparing and finishing copy for reproduction. (6 hours per week)

**228 Airbrush Techniques** ..... **4 credit hours**

Co-requisite: Commercial Rendering 120 or consent of division.

Development of rendering techniques using an airbrush and various associated materials. Assignments deal with rendering illustrations and photo retouchings with airbrush techniques. (6 hours per week)

**236 Specialized Study** ..... **2-8 credit hours**

Prerequisite: Consent of division.

An opportunity for students to work independently with faculty consultation in major study areas of Commercial Art and Technical Illustration. Directed periods of concentrated effort on assignments to demonstrate the individual's development and understanding within selected occupational areas. Major study areas of specialization may include: animation and cartooning, medical illustration, animal illustration, commercial photography, graphic reproduction, advertising and lettering, layout, fashion illustration, and commercial displays. (Class hours arranged)

# television (T V)

**101 Television Studio Operation** ..... **3 credit hours**

The operation of studio equipment. Covers stuido floor management, including preparation and use of simple graphics, plus directing techniques for non-dramatic programs. Students will prepare and produce news, feature and interview programs. This class prepares a student for non-engineering production functions in the local station. (3 hours per week)

**106 Audio-Visual Methods for TV** ..... **3 credit hours**

A course for the television student having no previous art training. TV screen size, ratio, masking problems and gray scale covered. The student will prepare basic TV production elements: title cards, illustrations, photographs, sets, properties, sound effects and music tracks. The use of basic audio visual equipment will be taught, especially the overhead projector and the sound/slide presentation. Studio equipment will be used by the student for the production of short programs using the production elements prepared in class. (3 hours per week)

**108 Video Tape Recorder Operation and Maintenance** ..... **3 credit hours**

The operation and maintenance of all basic equipment used in closed circuit black and white television recording. Emphasis is placed on the VTR (Video Tape Recorder) but all components in the video chain are covered: Cameras, lighting, sets, graphics, special effects generators, microphones and audio consoles. Studio and portable TV equipment is available to the students for the production of short programs illustrating the principles taught. No prior mathematics, electronic engineering or television production experience is required. (3 hours per week)

**109 Television-Film Acting** ..... **3 credit hours**

The techniques of playing for the camera: naturalism, "coming to the mark", confined playing area, broken scenes, post-sync soundtracks, reaction shots, multiple takes, quick studies, consistent characterization in reverse shooting, star types, feature types, cameos. (3 hours per week)

**111 Staging and Lighting** ..... **3 credit hours**

A course in design, construction and mounting of basic sets for stations and production studios plus basic studio lighting and lighting components. Covers use of the incident light and spot meter; full sets, partial sets and cameo; studio furniture and decoration; and studio graphics and mountings for them. (3 hours per week)

**130 Special Production Projects** ..... **3 credit hours**

To be offered exclusively in the Spring session. Essentially a practicum, allowing students, who have completed a minimum of 1 semester of study (Television 101 or 201 or equivalent), intensive work in the operation of studio equipment. The problem to be undertaken by the class will be chosen from those facing the program in preparing for weekly production in the coming fall semester. (3 hours per week)

**201 Programming and Advanced Television Production** ..... **3 credit hours**

Prerequisite: Television 101

Using skills developed in the preceeding class (TV 101), students will produce live, tape and film programs, especially news, utilizing advanced techniques of production and working as producers, writers, directors and related personnel. (3 hours per week)

**103 Copywriting, Features and Commercials; Film and TV Documentary** ..... **3 credit hours**

The writer as the basic program source. Program formats, continuity books, rewriting. Writing for the ear not the eye. Includes the one minute commercial form, dialoguing, characterization, and voiceovers. Also, study of the larger form of the documentary, its history and current status. (3 hours per week)

**105 Advertising: The Agency and the Multi-Media Campaign** ..... **3 credit hours**

A course stressing that even a small local agency today must be equipped to provide service for a client in radio and television as well as the print media. Study emphasizes station personnel must also recognize that broadcast materials from the sponsor's viewpoint are only part of a larger picture. This class is designed to provide broadcast personnel with experience with other advertising media, newspapers, magazines, billboards, direct mail, display, etc. A practical and functional focus on advertising. (3 hours per week)

**107 Broadcast Journalism** **3 credit hours**

Course includes organizing the newscast from the newswire, network news, the actuality wire and the beeper phone. Also, local news reporting, features, special events and sports. And study of Journalistic ethics, news and the FCC, the Fairness Doctrine. (3 hours per week)

**203 Station Management** ..... **3 credit hours**

Non-production and non-broadcast functions in the station. A brief history of broadcasting as a guide to its legal responsibilities under the Rules and Regulations of the Federal Communications Commission, the development of business structure including contracting for services such as news, music and film. Also, the sale of time under the conditions of the "rate-card", sales and station promotion, budgeting, "logging" and the preparation of all necessary reports. (3 hours per week)

# welding and fabrication (W F)

**100 Fundamentals of Welding** ..... **2 credit hours**

A basic combination welding course dealing with oxy-acetylenes 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)

**101 Acetylene Welding** ..... **2 credit hours**

A basic course designed for students who need a knowledge of oxy-acetylene welding and a degree of skill required by industry. This course is primarily for students whose occupations are associated with welding. (4 hours per week)

**102 Arc-Welding** ..... **2 credit hours**

An introductory course in arc welding covering theory and practice. Proper procedures for various welding positions are taught. Both AC and DC welding is covered. Electrode identification, classification, and their proper applications to typical operations are applied. (4 hours per week)

**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. The instruction includes theory directly related to the composition and properties of these metals. (4 hours per week)

**111 Welding and Fabrication (Basic Oxy-Acetylene)** ..... **4 credit hours**

The use of oxy-acetylene equipment to perform such operations as butt, lap, and fillet welds using filler rods. Flame cutting, brazing, and silver soldering are included. Safety procedures and practices of gas welding are emphasized. (8 hours per week)

**112 Welding and Fabrication (Basic Arc)** ..... **4 credit hours**

The use of arc welding equipment both A.C. and D.C. to perform such operations as butt, lap, and fillet welds. Using bare and shielded electrodes, all-purpose and special electrodes. Study of electrical welding, power supplies and electrodes is included. Safety procedures are stressed. (8 hours per week)

**123 Welding and Fabrication (Advanced Oxy-Acetylene) .....4 credit hours**

Prerequisite: Welding and Fabrication 111.

Advanced instruction 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)

**124 Welding and Fabrication (Advanced Arc) .....4 credit hours**

Prerequisite: Welding and Fabrication 112.

Advanced instruction in arc welding using both A.C. and D.C. are welding equipment. Emphasis on "out of position" welded joints in mild steel, alloy steels, and pipe procedures are covered for cutting, beveling, and fabricating various welded joints. Related theory, codes, and standards are included. (8 hours per week)

**200 Layout and Theory for Welders .....2 credit hours**

Layout problem solving for the welder including techniques using layout die, combination squares, protractors, center heads trammel, points, dividers, and straight edges. Template making for pipe cutting and joining 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. (2 hours per week)

**215 Welding and Fabrication (T.I.G.) .....3 credit hours**

Prerequisite: Consent of division.

Tungsten-insert-gas shield arc welding with manually operated torch on such metals as aluminum, mild steel, and stainless steel. Technical theory directly related to tig welding including the composition and properties of metals is included. (6 hours per week)

**221 Applied Automotive Welding .....1 credit hour**

Practice in the application of welding funamentals, with emphasis on cutting and brazing. (2 hours per week) 7-½ weeks

**226 Welding and Fabrication (Specialized) .....3 credit hours**

Prerequisite: Consent of division.

Specialized oxy-acetylene welding, inert-gas-shielded arc, and consumable carbon dioxide welding. Emphasis is given the welding of various metals such as aluminum, stainless steel, high alloy steels, and cast iron. Procedures for welding of the exotic metals such as titanium, tantalum, columbium, zirconium, and molybdenum are included. (6 hours per week)

**189 Study Problems .....2-8 credit hours**

Prerequisite: Consent of division.

Directed activities in a major occupational area; 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 development of understanding and skill development within the selected occupation. Applicable to occupational divisions in the College.

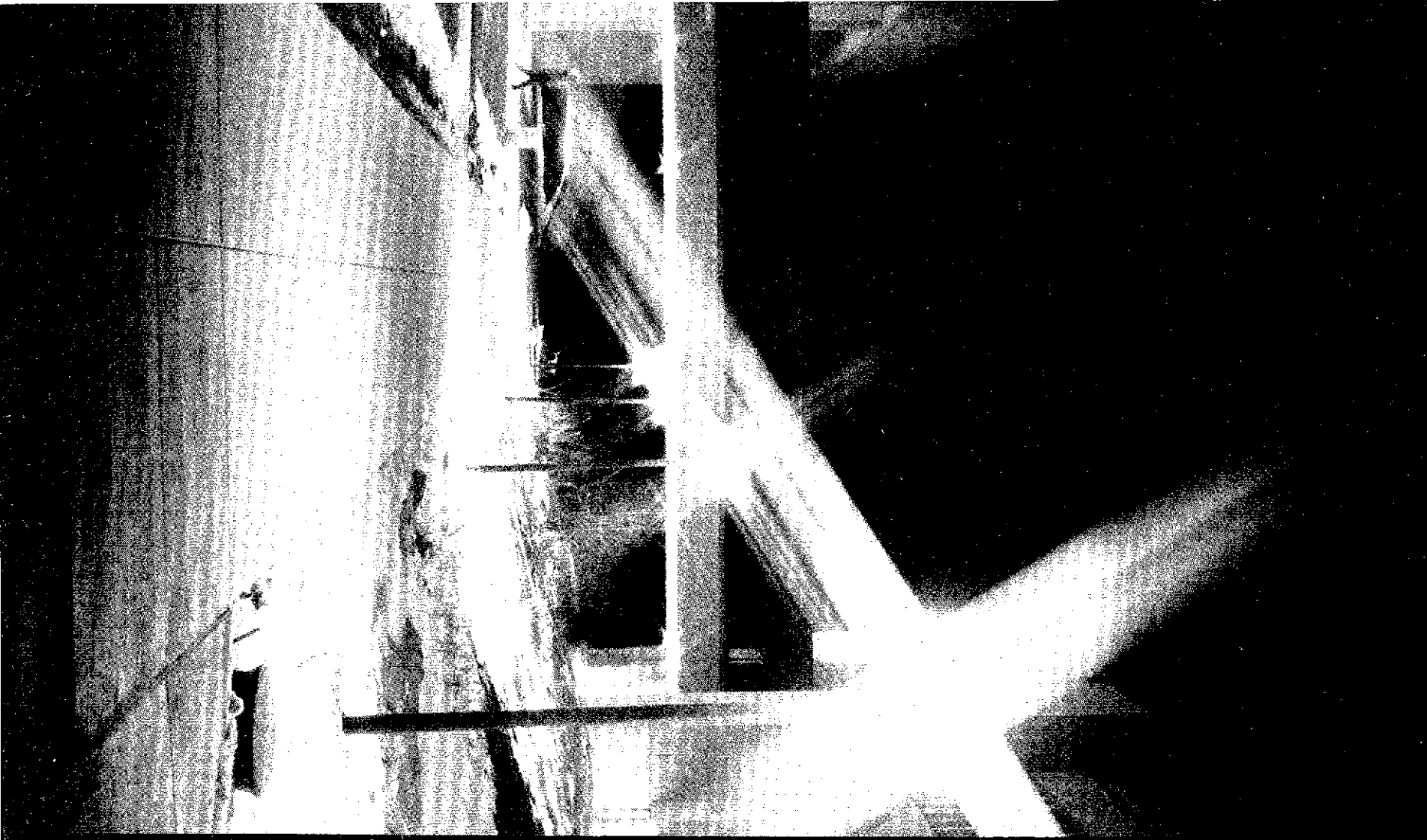
**199 On-The-Job Training .....1-6 credit hours**

The College offers cooperative occupational-experience programs to interested and qualified students in both the Occupational and General Studies areas. These programs are designed to produce a learning situation (training station) which would be impossible or undesirable to reproduce in a campus environment.

The student may be placed in a training station in business and industrial firms as well as educational 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 occupational experience program.

Students planning to enroll for credit must first review their plans with their advisor and the Coordinator of Cooperative Occupational Education to obtain their 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.



# supplement: new courses

# art (ART)

**103 Basic Crafts Experience** ..... **2 credit hours**

Offering students an opportunity to explore and manipulate a wide variety of materials in creative introductory crafts study, course work includes copper tooling and enameling, work with clay, and use of other materials. (2 hours per week)

**104 Basic Clay Experience** ..... **2 credit hours**

This course is a basic introductory study in clay modeling, emphasizing handbuilt forms, exploring methods such as coil, slab and texture embellishment with found objects for clay tools. Students' personal interests are emphasized, and work may take the form of clay sculpture, jewelry, or other utility-oriented pieces. (2 hours per week)

**105 Basic Ceramics** ..... **1 credit hour**

In this introductory ceramics course, students will be introduced to various hand-building techniques. Students will be involved in all phases of clay work including creating and executing designs, applying their own glazes, learning clay techniques, kiln loading (as possible), and learning to evaluate their work. This is a 10 week course. (3 hours per week)

**106 Basic Jewelry Making** ..... **2 credit hours**

An introductory course in basic jewelry making and design techniques working with metals and other jewelry materials. (3 hours per week)

**107 Advanced Jewelry Making** ..... **2 credit hours**

A course designed to further investigate design elements for jewelry making by techniques found through soldering and casting of metals. Also includes exploring inlay metal forming and stone setting. For students with previous jewelry making background. (3 hours per week)

# astronomy (AST)

**111 General Astronomy** ..... **3 credit hours**

An introductory survey of the solar system and the universe. Designed for both transfer and vocational students. No previous mathematics or science is required. Topics to be covered include: the sun, moon and planets; Ptolemaic and Copernican systems; seasonal changes in the sky; and modern ideas growing from early beliefs in astrology. (2 hours of laboratory supplement, 2 hours of lecture and discussion)

**122 Modern Astronomy** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097 and General Astronomy 111.

A continuation of General Astronomy 111, but with a more quantitative approach. Topics to be covered will include stellar evolution, quasars, black holes, UFO's and time travel. Students will discover that in modern astronomy, truth is in fact stranger than fiction. (4 hours per week)

**150 Introduction to Astronomy** ..... **1 credit hour**

A course based on direct observation of the stars, moon and planets both by telescope and through planetarium visits. It is intended for any interested person and no prior knowledge is assumed. (2 hours per week for 7 weeks)

# automotive service (A S)

**222 Auto Sales Service Recordkeeping** ..... **1 credit hour**

An introduction to and practice with the preparation of forms and other records used by dealerships, independent garages and other repair facilities. (2 hours per week)

# biology (BIO)

**143 Practical Nutrition** ..... **2 credit hours**

A course relating animal growth and development with food intake. Special emphasis is placed on the effect of nutrition on humans. (2 hours per week)

**288 Advanced Beekeeping** ..... **2 credit hours**

Deals with stocking the hive, ordering bees, handling the queen, and the commercial aspects of beekeeping. (2 hours per week)

**289 Field Beekeeping** ..... **2 credit hours**

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

In addition to reading about colony manipulation, participants will have an opportunity to try their skill at such activities as finding the queen, reversing supers, top and bottom supering, uniting colonies, making divisions, requeening a colony, hiving a swarm, identifying laying workers, and learning how to raise and store queens.

This course is primarily for those who have taken a beginning beekeeper course or who own at least one colony of honeybees. (2 hours per week)

# black studies (BLS)

**151 Black Politics** ..... **3 credit hours**

The purpose of this course is to broaden and deepen students' awareness of the contribution that Blacks have made to Political thought. Secondly, the course aims at making students aware of the role that Blacks have played in participating in the Political Process in various areas, at different levels, and in many dimensions; the course also emphasizes the need for stepping up this participation in the Political Process, and the possibilities as well as opportunities, that are open to Blacks in this respect. The students' background, environment, and experience will be given top priority as well as full attention throughout the course. (3 hours per week)

**151 The Black Family** ..... **3 credit hours**

A study of the structure and functions of the Black family as a dynamic social organization. This course includes an analysis of African roots; the impact of the slave experience on Black families in the Americas; an assessment of family strengths and their implications for the present and future struggle for survival. (3 hours per week)

**152 Roots** ..... **3 credit hours**

Using Alex Haley's "Roots" as a point of departure, this course examines key sociological and anthropological issues in the development of the African-American family as they are related to African-American cultural history. Topics to be covered include: the African cultural heritage in the Americas, race relations, oral literary history, genealogical research, the Black family during the pre-Civil War and Reconstruction periods of American history. (3 hours per week)

**204 Social and Religious Heritage of Africa** ..... **3 credit hours**

This course examines the contributions of African Civilizations to the world in Social and Religious terms, with attention also paid to achievements in philosophy of life and basic technology. Attention is paid both topically and chronologically to prehistoric and early historic circumstances, including the inception of hominid life. (3 hours per week)

# chemistry (CEM)

**222 Organic Chemistry** ..... **5 credit hours**

Prerequisite: Organic Chemistry 211 and General Chemistry 122.

A continuation of Organic Chemistry 211 involving the study of the derivatives of aliphatic and aromatic compounds. The accompanying laboratory will stress techniques used in the preparation and handling of organic compounds. Organic Chemistry 222 has three 1-hour lectures and two 3-hour laboratory sessions per week. (9 hours per week) Normally offered Winter semester only.

**230 Chemical Literature** ..... **1 credit hour**

Prerequisite: General Chemistry 122.

Intended both for the chemical technician and the chemical engineer, the course gives a systematic introduction to the uses of chemical literature. Audiotutorial. (1 hour per week)

# construction technology (C T)

**161 Block Laying** ..... **4 credit hours**

A basic course in the laying of standard sizes of block masonry units to construct masonry block foundations and piers; establishment of masonry work to modular height and length is taught.

The art of using tools of the trade. (6 hours per week)

**181 Building Drain Systems** ..... **4 credit hours**

Installation of water supply and building drainage systems for small buildings. Pipe fitting and fixture installation taught in addition to drain service and repairs to existing systems. (6 hours per week)

**261 Block Laying** ..... **4 credit hours**

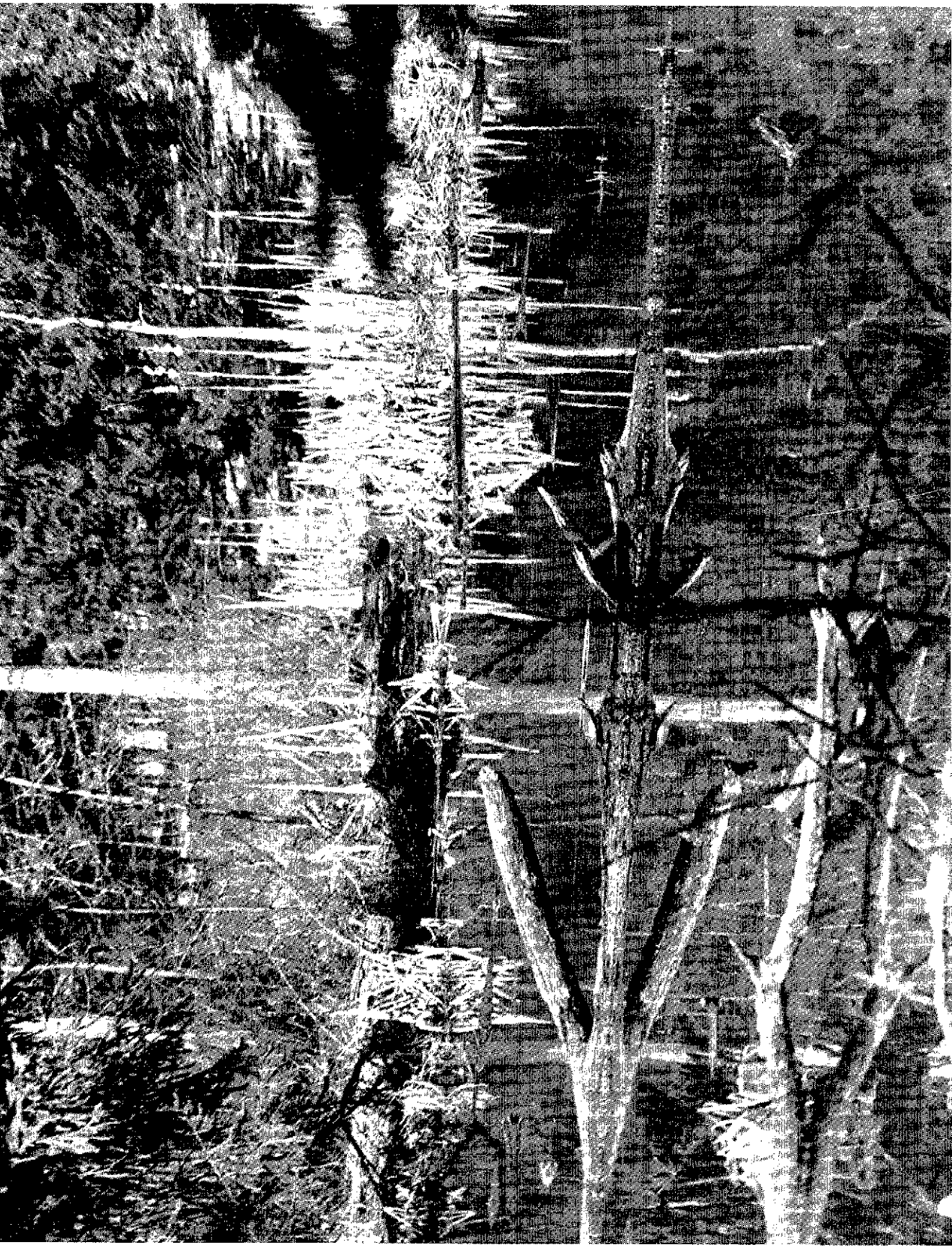
Prerequisite: C T 161.

The laying of block masonry units to form necessary wall corners, wall stretchers, piers, pilasters, and setting of lintels and reinforcement in masonry. Handling of concrete is demonstrated as it relates to masonry laying procedures. (4 hours per week)

**265 Bricklaying** ..... **4 credit hours**

Prerequisite: C T 261.

A basic course in the laying of brick. An introduction to brick as masonry units used in construction. Brick masonry elements in light frame construction including chimneys, fireplaces, piers and brick veneering. (4 hours per week)



# criminal justice (C J)

**204 Advanced Accident Investigation** ..... **2 credit hours**

To improve the skills of the police officer in conducting on-scene accident investigations.

Upon successful completion of the course, the police officer will be capable of preparing an accident case in trial-ready form for submission to prosecution; be able to describe some uses of accident data; and be familiar with causes of accidents and the production of injury. (2 hours per week)

**207 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)

**211 Crime Scene Investigation** ..... **3 credit hours**

An in-depth study of methods and techniques used in processing scene of crimes including photography, searching, note-taking and latent print processing. (3 hours per week)

# culinary arts (CUL)

**119 Baking I** ..... **4 credit hours**

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

**210 Garde Manger** ..... **4 credit hours**

Building upon elementary cold food preparation procedures, students progress to more complex, classical preparations, techniques and presentations. Food materials utilization, buffet planning and layout, equipment, zoning and service are included as well as the preparation of cold sauces, basic salads, buffet salads, butter sculpture, vegetable carving, food decorating techniques and garnish techniques. (6 hours per week)

**219 Baking II** ..... **4 credit hours**

Prerequisite: Baking I - 119

An advanced course in baking including techniques for Ice Cream Dessert, Profiterolles (Hors d'oeuvres Puffs), Beignet Souffle, cakes, pies, French desserts and gourmet items including cake and pastry decorating. (6 hours per week)

**225 Advanced Baking and Pastry** ..... **3 credit hours**

Advanced techniques, formula development, pastry presentation and the responsibilities of the pastry chef are studied. Students produce tortes, pastries, ice cream and frozen desserts and practice pastry decoration, utilizing pastillage, nougat, pulled sugar and royal icings. (3 hours per week)

**299 Dining Room Management** ..... **4 credit hours**

The traditional European brigade system is followed as students rotate daily through the various stations in the formal dining room. Individual instruction in French, Russian and American table side service. Also includes instruction on Data Terminal Systems. (6 hours per week)

# dental assisting (D A)

**111 Dental Science** ..... **.4 credit hours**

This is an introductory course in 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 nomenclature, tooth surface annotation, cavity classification, occlusion and malocclusion, dental caries and flouride. (4 hours per week)

**123 Dental Materials** ..... **.2 credit hours**

A course designed to introduce the student dental assistant to the field of dental materials. Emphasis will be placed on the chemicals and physical properties of dental materials used in the dental office. (2 hours per week)

# electricity/electronics (E E)

**025 Energy Principles and Choices** ..... **.1 credit hour**

Introductory course for technical and social studies students, teachers and the interested public. Covers the nature of energy, and useful units and formulae, energy resources and processes, social and economic dependence on energy, alternative energy sources, conservation, and personal and national choices. Lecture and demonstration. (3 hours per week)

**050 Appliance Repair** ..... **.2 credit hours**

Emphasis in this course is placed on repairs of the types of appliances that are operated by electric motors. The common types of electric motors used in appliances will be considered in depth to the extent that the student will be able to identify each type, properly diagnose its problems, correctly disassemble, make necessary repairs, reassemble and test. Also dealt with will be the mechanical systems used to link the motor to the appliance and the methods used to control the speed of the motor. Adequate lab time will be provided to enable the student to repair applainces of the types discussed in class. (2 hours per week)

**070 Using the Oscilloscope** ..... **.2 credit hours**

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. Student will learn to use the Tektronic 561-A and Xetec OS-2000 dual-trace laboratory oscilloscopes. (2 hours per week)

**241 Computer Circuits and Devices** ..... **.4 credit hours**

Prerequisites: Basic Electronics E E-211. Electronic Switching and Control E E-237.

An introductory course in digital electronic circuits and devices. The characteristics of modern integrated circuits and their applications in digital systems are studied. The operation, important electrical parameters, and application of basic logic gates are discussed with emphasis on the TTL and CMOS logic families. Extensive use is made of manufacturer's specification sheets. Topics covered include digital adders, subtractors, storage elements, shift registers, counters, timing circuits, decoders, encoders, memories and control waveform generation. Laboratory exercises provide practical experience in the use, operation, testing and troubleshooting of integrated logic circuits. (6 hours per week)

**241A Computer Circuits and Devices** ..... **2 credit hours**

Prerequisites: Basic Electronics E E-211. Electronic Switching and Control E E-237.

The first half of Computer Circuits and Devices. Topics include operation of basic logic gates, adders, subtractors, storage register elements and shift registers. (6 hours per week for 7½ weeks)

**241B Computer Circuits and Devices** ..... **2 credit hours**

Prerequisites: Basic Electronics E E-211. Electronic Switching and Control E E-237. Computer Circuits and Devices E E-241A.

The second half of Computer Circuits and Devices. Topics covered include counters, timing circuits, decoders, encoders, memories and control waveform generation. (6 hours per week for 7½ weeks)

**242 High Frequency Transmission** ..... **4 credit hours**

Prerequisite: Basic Electronics E E-211. Audio and Power Transmission E E-200.

An introduction to high frequency transmission line and antenna techniques. As part of the transmission line study, the student will be introduced to transmission line analytical concepts; measurement techniques; the use of the Smith Chart; and High Frequency generating sources. During the study of antennas, the student will be exposed to basic antenna measurement and analytical techniques to determine such antenna properties as gain, radiation pattern and impedance; in addition to being familiarized with various antenna types and typical applications. (6 hours per week)

**250 Introduction to Microprocess** ..... **4 credit hours**

Prerequisite: Pulse Circuits and Op Amps E E-222, Electronic Switching and Control E E-237, and Computer Circuits E E-241 or consent of instructor.

An introductory course on the hardware, software and applications of micro-computers and microprocessors.

Topics include number systems and codes, microcomputer architecture, register structure, types of registers, arithmetic logic units, software machine language, symbolic language, assemble language, interfacing and peripheral devices, IC interface elements, programmable interfaces, read-only memories, read/write memories, typical microprocessor systems and applications. (6 hours per week)

# english (ENG)

**025 Introduction to English Grammar** ..... **3 credit hours**

Prerequisite: Basic reading skills. Foreign students with permission of instructor.

This course is intended for the students with little or no previous instruction in English grammar. Designed to be taken in conjunction with English 030, the course emphasizes the basics, i.e., tense, number, agreement, spelling. (3 hours per week)

**031 Writing Workshop** ..... **3 credit hours**

A continuation of the Writing Workshop with an individualized program of studies in basic writing skills. (3 hours per week)

**085 Review of English Grammar** ..... **3 credit hours**

This course is designed for the student who wishes to review English and refine his/her mastery of it. Although it assumes a student's competence as a writer, it may be taken in conjunction with English 091, 100, 111, 122. The course includes a review of the basics of our grammatical system and a look at some more complex problems of the language. Such a study of grammar will help the student be more precise and effective as a writer and aid in the development of copy editing skills. (3 hours per week)

**102 Library Research Paper** ..... **.2 credit hours**

The course provides individualized instruction for the students engaged in preparing a research paper for any WCC class. Step by step help in topic selection, information gathering and organizing, compiling notes, writing a term paper and preparing a bibliography. (2 hours per week)

**145 Women Writers** ..... **3 credit hours**

A survey of poetry, fiction, drama and essays by women, with an emphasis on 20th Century writers. This course explores the writings of women authors and what those authors have to say about themselves and the world around them. (3 hours per week)

**278 Magazine Publication** ..... **3 credit hours**

Prerequisite: Permission of Instructor.

This course provides practical experience in selecting and evaluating original manuscripts, photographs and art material, editing, lay-out, and distribution of periodicals and other publications. The course work is completed in prearranged, concentrated work sessions. (3-0)

# fire protection (F P)

**103 Flammable Hazardous Materials** ..... **3 credit hours**

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

# geology (GLG)

**104 Weather** ..... **3 credit hours**

An introduction to the atmospheric processes and phenomena that produce the day-to-day weather changes experienced throughout the world. Emphasis is placed upon empirical observation of cloud type, development and movement as well as weather map interpretation and analysis to teach the student elementary weather forecasting techniques. (3 hours per week, including laboratory)

# health science (H S)

**037 Emergency First Aid** ..... **1 credit hour**

The course is designed to train foster care parents and others in some emergency care procedures to be used before an ambulance or doctor arrives. Skills taught will include artificial respiration, bleeding control and splinting; treating poisoning, burns and fainting. (15 hours per week)

**050 Protect Your Health** ..... **2 credit hours**

This is a "How to do it" course designed for any adult or senior citizen wanting to know more about the body and how to make it function better in health and disease. Focus will be on major physiological processes, signs and symptoms of common illnesses, coping mechanisms, taking action to stay well and to get well, etc. Students will work on selected problems of their choice. Course is supplemented by many audio-visual materials. (2 hours per week)

**090 Introduction to Health Careers** ..... **2 credit hours**

The objective of the course is to assist students in choosing an appropriate health career and becoming a better consumer of health care services by providing them with knowledge and experience of a wide variety of health occupations. Students will learn and observe some health services activities related to patient examination, diagnosis, prescription, treatment, rehabilitation, education as well as other management activities. Students will be assisted in selecting a health career and in preparing to enter a training program. (2 hours per week)

**105 Patient Care Procedures** ..... **2 credit hours**

The course includes patient assessment and diagnostic techniques, patient handling skills and some lab practice in basic techniques such as taking vital signs, airway management, special interview skills and so forth. (2 hours per week)

**106 Emergency Medical Treatment Clinical Practicum** ..... **1 credit hour**

The clinical and field experience will expose students to real life emergencies in hospital emergency rooms and the ambulance field. (1 hour per week)

**114 Beginning EKG Technique** ..... **3 credit hours**

This course is designed to teach the principles of the electrocardiogram, the conduction system and the techniques of taking the EKG. (3 hours per week)

**120 Help, Health and Human Services** ..... **2 credit hours**

The Helping Person is a participative learning course designed to educate persons interested in helping services such as adult foster care, emergency care, nursing, dental assisting, respiratory therapy, mental health, day care services, rehabilitative services, etc. Focus is on communication skills in face-to-face problem situations involving patients, clients and helpers or providers. (2 hours per week)

**121 Interpersonal Dynamics in Patient Care** ..... **2 credit hours**

Studies interpersonal dynamics in patient care: concepts of dyadic relationships and team relationships, responsibilities of the health worker as a helping person and as a member of the helping team; developing understanding of self and human behavior in general. (2 hours per week)

**125 Introduction to Health Gerontology** ..... **2 credit hours**

An introduction to the study of older persons. The social, psychological and biological aspects of growing old in America; the problems of aging, coping mechanisms of the aged and the social mechanizing for helping the aged. (2 hours per week)

**126 Orientation to Mental Health Field** ..... **3 credit hours**

This course offers an overview of mental health problems; basic mental health concepts, behavioral patterns and disorders, therapeutic interventions, organization of services and agencies, historical, sociological and legal aspects of mental health. (3 hours per week)

**130 Emergency Medical Services Development and Operation** ..... **2 credit hours**

The course consists of an overview of the development of the Medical Emergency Services on the National, Regional and Local levels. Emphasis is placed on the dynamics of EMS operation and impact at the local and national levels. (2 hours per week)

**133 Cardio Pulmonary Resuscitation Instructional Trainer** ..... **1 credit hour**

A course preparing people to train Resuscitation instructors. Includes updating of information and skills as well as teaching techniques. Meets Michigan Heart Association standards. (1 hour per week)

**135 Introduction to Mental Health** ..... **3 credit hours**

A course designed for the entry level health worker and intended to help the student make career choices in the field of mental health. Included are organizational concepts, structure and practices in the Mental Health Delivery System, problem solving approaches in areas such as substance abuse, forensic psychiatry, physically handicapped, social welfare, age-specific disabilities, community mental health treatment practices among others. (3 hours per week)

**148 Elementary Pharmacology** ..... **1 credit hour**

A survey of basic pharmacology. General aspects of drug administration, metabolism, excretion are discussed. Mechanisms of action, indication and contraindications and side effects of broad list of drugs are presented. (1 hour per week)

**149 Elementary Pathology** ..... **1 credit hour**

An introduction to the study of pathology; correlations with clinical medicine are emphasized. Topics include infectious diseases, tumors, chemical injuries, respiratory and cardiovascular diseases. (1 hour per week)

**150 Health Gerontology** ..... **2 credit hours**

Deals mainly with the normal process of aging, theoretical concepts, cultural, social and psychological aspects of aging. Includes historical and comparative contexts of reaction to aging, chronic diseases and other problems of biological aging. (2 hours per week)

**200 Medical Insurance Processing** ..... **3 credit hours**

The student learns about the different types of medical and dental insurance plans; the benefits provided by each, abstracting patient information needed for insurance billing, the coding and billing procedures for professional services, as well as many other aspects of handling insurance claims in the doctor's office routine. Practical exercises in learning insurance billing are emphasized throughout the course. (3 hours per week)

# heating (HTG)

**100A Low Pressure Boiler Operation** ..... **1 credit hour**

The student will develop basic techniques and understandings which will enable him/her to safely operate and maintain the most common types of low pressure boilers. Major units covered: The basic boiler, boiler fittings, feed water accessories, steam accessories, draft control, water treatment, boiler operation, boiler room safety. (1 hour per week)

# history (HST)

**107 History and Literature** ..... **3 credit hours**

Historical events as seen through the eyes of poets, dramatists and playwrights is the theme of this course. The study begins with the struggle between the Church and State in 12th century England and continues through Chaucer's view of medieval society and Shakespeare's Renaissance. The English Civil War and the French and Industrial Revolutions, as interpreted by the literature, are followed by criticisms of 19th century imperialism. The course closes with the poetry of World War I. (3 hours per week)

**200 Michigan History** ..... **3 credit hours**

A survey of major economic, social and political developments in Michigan from pre-historic times to the present. Emphasis is placed on the period prior to the twentieth century. (3 hours per week)

**204 Oral History** ..... **3 credit hours**

Tape recording the memoirs of people around us. Oral history project initiation and management are presented via lectures, guest speakers. Special emphasis is placed on class participation and practical field work. Guidance given to persons developing individual projects for themselves or their sponsoring institutions. (3 hours per week)

# journalism (JRN)

**125 Photojournalism** ..... **4 credit hours**

The course centers on a visual approach to communications. Students develop a knowledge for the use of the camera, an ability to communicate through writing, a sense of the visual impact of photography, and craftsmanship through printing techniques, camera and lens use and perspectives. (5 hours per week)

**157 Magazine Publication** ..... **3 credit hours**

Prerequisite: Permission of Instructor.

This course provides practical experience in selecting and evaluating original manuscripts, photographs and art material, editing, lay-out, and distribution of periodicals and other publications. The course work is completed in prearranged, concentrated work sessions. (3-0)

# mathematics (MTH)

**099 The Metric System** ..... **3 credit hours**

Prerequsite: Basic Mathematics 039

This course is intended for students wishing to familiarize themselves with the metric system of measurement. Includes: a review of English units of measurement, an analysis of metric units of measurement, English and metric conversions (de-emphasized), reading uniform scales of measuring devices, and indirect measurements resulting from calculations. (3 hours per week)

**103 Computer Programming - BASIC II** ..... **3 credit hours**

Prerequisite: Algebra 097 or Permission of Instructor

A course in the use of Basic to solve complicated mathematical or logical problems, simulated real conditions, create games. Students will learn to manipulate logic functions, files, words, random numbers. Students will use terminals in Math Lab to write and execute their programs, and will be given their own storage space within the computer. Interesting programs will be assigned to elucidate each concept. (3 hours per week)

**149 Pre School Mathematics** ..... **1 credit hour**

A course designed to teach adults how to stimulate mathematical thinking in young children (pre-school and early elementary) by creating environments that are rich in materials and that can hasten such thinking. The students in the course will actually play with the materials and will also learn something about the math that can arise from them. Some materials that will be used are attribute blocks, geoboards and Cuisenaire rods. (1 hour per week)

**150 Layout Mathematics** ..... **3 credit hours**

A course in the application of basic mathematics to problems of job layout for skilled tradesmen. Emphasizes mathematical techniques used in the preparation of materials for welding, cutting, drilling, sanding, filing, etc. Includes a review of basic mathematical operations, measurement, economy layout, uses of layout tools, estimation, generation of patterns and templates and fabricating techniques. (3 hours per week)

**154 Layout Mathematics** ..... **3 credit hours**

Prerequisite: Basic Mathematics 039

A course in the application of basic mathematics to problems of job layout for skilled tradesmen. Emphasizes mathematical techniques used in the preparation of materials for welding, cutting, drilling, etc. Includes: a review of basic arithmetical operations, measurement, economy layout, uses of layout tools, estimation, patterns, and templates, fabrication, and applications of trigonometric functions to right triangles. (3 hours per week)

**155 Plane Geometry** ..... **4 credit hours**

Prerequisite: Introductory Algebra 097 or Applied Algebra 151

A beginning course in plane Euclidean geometry. Includes: concepts of logic, similarity, parallelism, areas, circles, Euclidean constructions, and applications. (4 hours per week)

**163 Business Mathematics** ..... **3 credit hours**

Prerequisite: Basic Mathematics 039

This course is designed as a preliminary course for business students on a four-year program. The student should follow this course with another mathematics course such as Finite Mathematics (MTH 167). Major topics covered are: arithmetic, algebraic concepts, measurement, metric system, simple and compound interest, payroll and taxes, graphs, and statistics. There is a heavy emphasis on business applications. (3 hours per week)

**165 Health Science Mathematics** ..... **3 credit hours**

Prerequisite: Basic Mathematics 039

This course is designed to teach mathematics necessary for many health related careers as well as to illustrate where that mathematics is used within the various fields of health science. It satisfies the requirement of several one and two year programs and is the foundation for more advanced mathematics used in four year programs. Topics include: applications of fractions and decimals, percent, geometry, the metric system, the apothecary system, integers, equation solving, ratio and proportion, instrumentation, graphs, statistics, and logarithms. (3 hours per week)

**177A Trigonometry** ..... **3 credit hours**

Prerequisite: Introductory Algebra 097

The first half of Trigonometry (MTH 177). Offered only as a self-pace course taught in the Mathematics Laboratory. The primary objective of the course is to teach the student to use trigonometric functions to solve triangles. Topics include: degree and radian measures, trigonometric functions of any angle, trigonometric functions of an acute angle, the pythagorean theorem, solving right triangles, the law of sines and the law of cosines, and solving oblique triangles. The use of a handheld calculator is encouraged. (3 hours per week)

**177B Trigonometry** ..... **3 credit hours**

Prerequisite: Trigonometry 177A

The second half of Trigonometry (MTH 177). Offered only as a self-pace course taught in the Mathematics Laboratory. Topics include: arc length and angular velocity, graphs of trigonometric functions, complex number, and vector applications. The use of handheld calculator is encouraged. (3 hours per week)

**295 Differential Equations** ..... **4 credit hours**

Prerequisite: Calculus II (MTH 192)

An introductory course in the techniques of solving ordinary differential equations. Topics include: equations of the first order and first degree, equations of the first order and higher degree, linear differential equations, and systems of linear differential equations. Applications from physics and chemistry are an important part of the course. (4 hours per week)

**299 Computer Graphics** ..... **3 credit hours**

Prerequisite: Fortran Programming 187

Principles of interactive computer programming using graphical input-output devices. Course covers such topics as graphical devices, interactive methods, dynamic array management, data structures, error recovery, file manipulation, graphical techniques, dynamic compilation-loading-execution of program segments. Emphasis will be placed on production programming incorporating the above topics. Student projects will be developed and executed using the M.T.S. level G and H fortran compiler and integrated graphics package. (3 hours per week).

# music (MUS)

**163 Composition: Theory and Arrangement** ..... **2 credit hours**

A course designed to enable students to develop skills and techniques in music composition, orchestration and arranging for all musical mediums. (2 hours per week)

**171 Intermediate Piano** ..... **2 credit hours**

A continuation of Music 170, this course provides piano studies beyond the elementary or beginning stage. For those with some experience in piano playing. (2 hours per week)

**173 Piano: Jazz and Blues** ..... **2 credit hours**

A piano course designed to cover such styles as blues and elementary jazz improvisation techniques. Music theory in terms of chord progression and improvisational techniques will be part of the course of study. (2 hours per week)

**183 Beginning Jazz Drum** ..... **2 credit hours**

A course in the rudimentary skills required in the performance of jazz drumming. Includes study of historical styles such as Swing, Be-Bop, and South American and African rhythms. For the experienced drummer. (2 hours per week)

**187 Sight Sing/Ear Training** ..... **2 credit hours**

This course is an approach to listening to and reading music, and is designed to develop musical, composing and listening skills. An introduction in training the ear in order to identify intervals, chords, scales and chord progressions. (2 hours per week)

**195 Jazz Guitar** ..... **2 credit hours**

This course is designed to enable students to develop skills necessary to play the guitar in different jazz styles. Includes improvisation work and chording. Requires basic guitar playing experience. (2 hours per week)

**196 Beginning Banjo** ..... **2 credit hours**

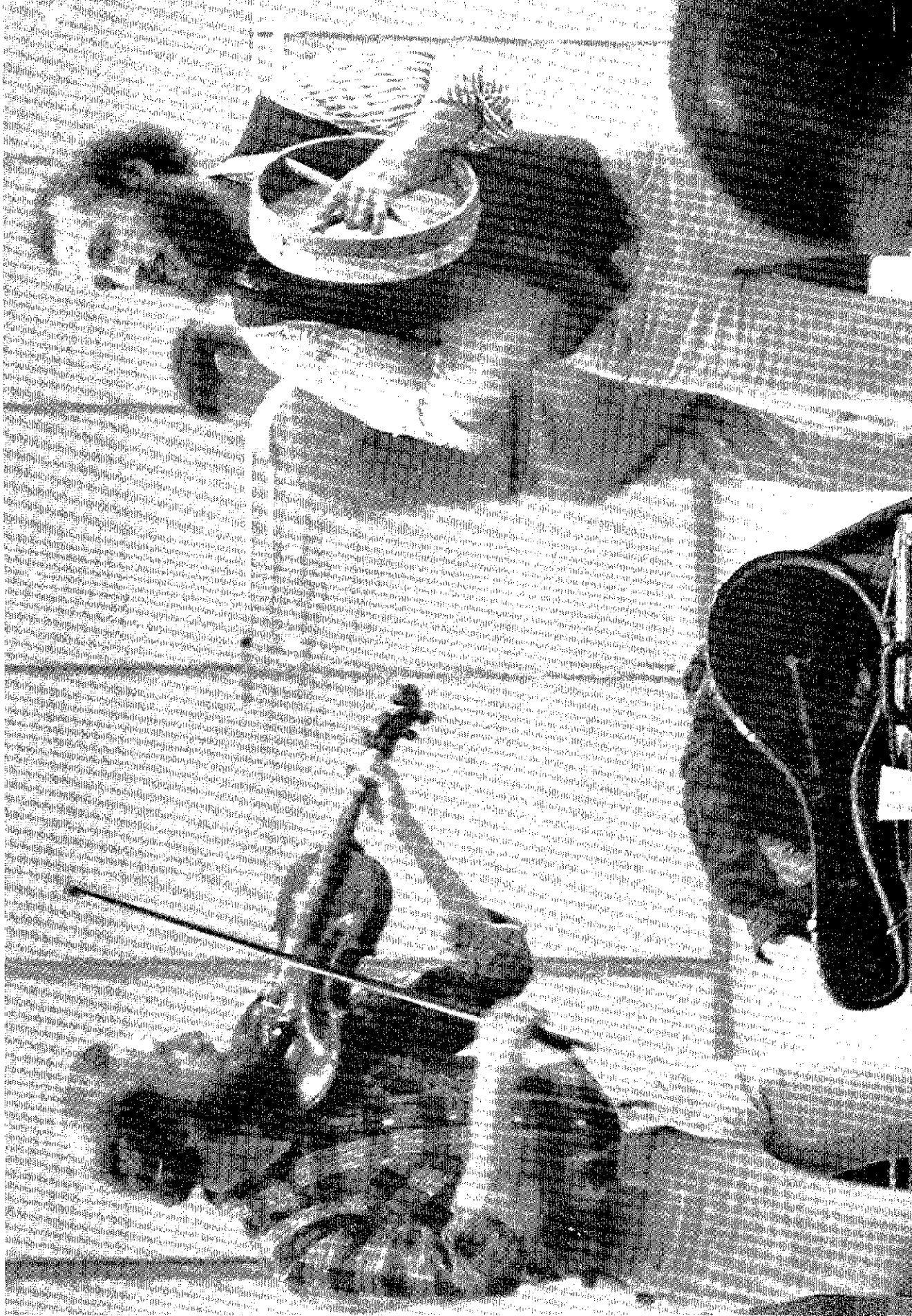
Group instruction for beginners in banjo to provide the necessary skills for performing elementary banjo music. (2 hours per week)

**198 Saxophone Jazz** ..... **2 credit hours**

Introductory group instruction in jazz saxophone techniques and various styles. Requires basic saxophone playing experience. (2 hours per week)

**200 Conducting** ..... **3 credit hours**

A course dealing with various styles and techniques of conducting ensembles. This course will cover styles of all music periods. Hand position, metric conducting, dynamics, and other such techniques as score reading and musical phrasing techniques will be discussed. (3 hours per week)



# numerical control (N C)

**225 Numerical Control Graphics** ..... **3 credit hours**

This course will consist of demonstrations, instruction and use of plotters, CRT's and all available terminals used for Numerical Control. The student will be expected to program and operate all existing equipment. (4 hours per week)

# nursing — practical (NUR)

**050 Pharmacology Prep** ..... **2 credit hours**

This course is intended to prepare licensed practical nurses for taking their first course in Pharmacology and drug administration. It includes a review of body structure and functions as well as the systems used to weigh and measure drugs. (2 hours per week)

**097 Practical Nursing Review** ..... **1 credit hour**

This seminar assists graduates of the Practical Nursing Program to prepare for the State Board of Nursing Examination. Emphasis is placed on reviewing learned materials and on taking national competitive examinations. (1 hour per week)

**121 Medical-Surgical Nursing Practice** ..... **3 credit hours**

Prerequisite: First semester courses and NUR 120 and 125

Co-requisite: Concurrent with NUR 126

Clinical experience in caring for adult patients with medical-surgical problems. Includes experience in the operating room, recovery room and emergency room, and the outpatient department. (24 hours per week)

**126 Medical-Surgical Nursing** ..... **2 credit hours**

Prerequisite: First semester courses and NUR 120 and 125.

Co-requisite: Concurrent with NUR 121.

Study of the adult patient with common medical-surgical problems. Includes principles and skills that assist the student in meeting the needs of the patient in the clinical situation. Pharmacology and diet therapy are inter-related with the study of disease conditions. (4 hours per week)

**144 Pharmacology for LPN** ..... **5 credit hours**

This course is designed for Licensed Practical Nurses who are currently practicing. It includes a study of safe drug administration, drug action, uses and effects of drug therapy, as well as drug abuses. The student also receives clinical practice in preparing and administering medicines to patients with varying health problems. (5 hours per week)

**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. The patient's phychological needs, nutrition problem solving, rehabilitation and maintenance regimens are examined through case studies and special student projects.

The course 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 setting. (3 hours per week)

# philosophy (PHL)

**200 Existentialism** ..... **3 credit hours**

A study of the historical background and essential concepts of existentialism, the concepts of dread, despair, freedom, being, and value. Considers the works of philosophers and novelists such as: Kierkegaard, Nietzsche, Heidegger, Sartre and others. (3 hours per week)

# photography (PHO)

**090 General Photography** ..... **2 credit hours**

A course for individuals who have an interest in photography. Primary emphasis is on picture taking, composition, lighting, films, etc. No darkroom work is including in the course.

Students should own or have the use of some type of camera if at all possible. (3 hours per week)

**101 Photography and Environments** ..... **3 credit hours**

A study of methods for documenting various types of environments with the camera. This will include 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)

**102 16MM Film Production** ..... **4 credit hours**

A study of the methods for production of a motion picture. The students will study the basics of film production and then be involved in the actual production of a short commercial type film. (6 hours per week)

**219 Photographic Design** ..... **3 credit hours**

Prerequisite: Photography 215.

Specialized instruction in photographic composition with emphasis on design in the photographic image through lecture, demonstration and darkroom practices. Included would be a survey of contemporary photographers and new directions in modern photographic images and design. (4 hours per week)

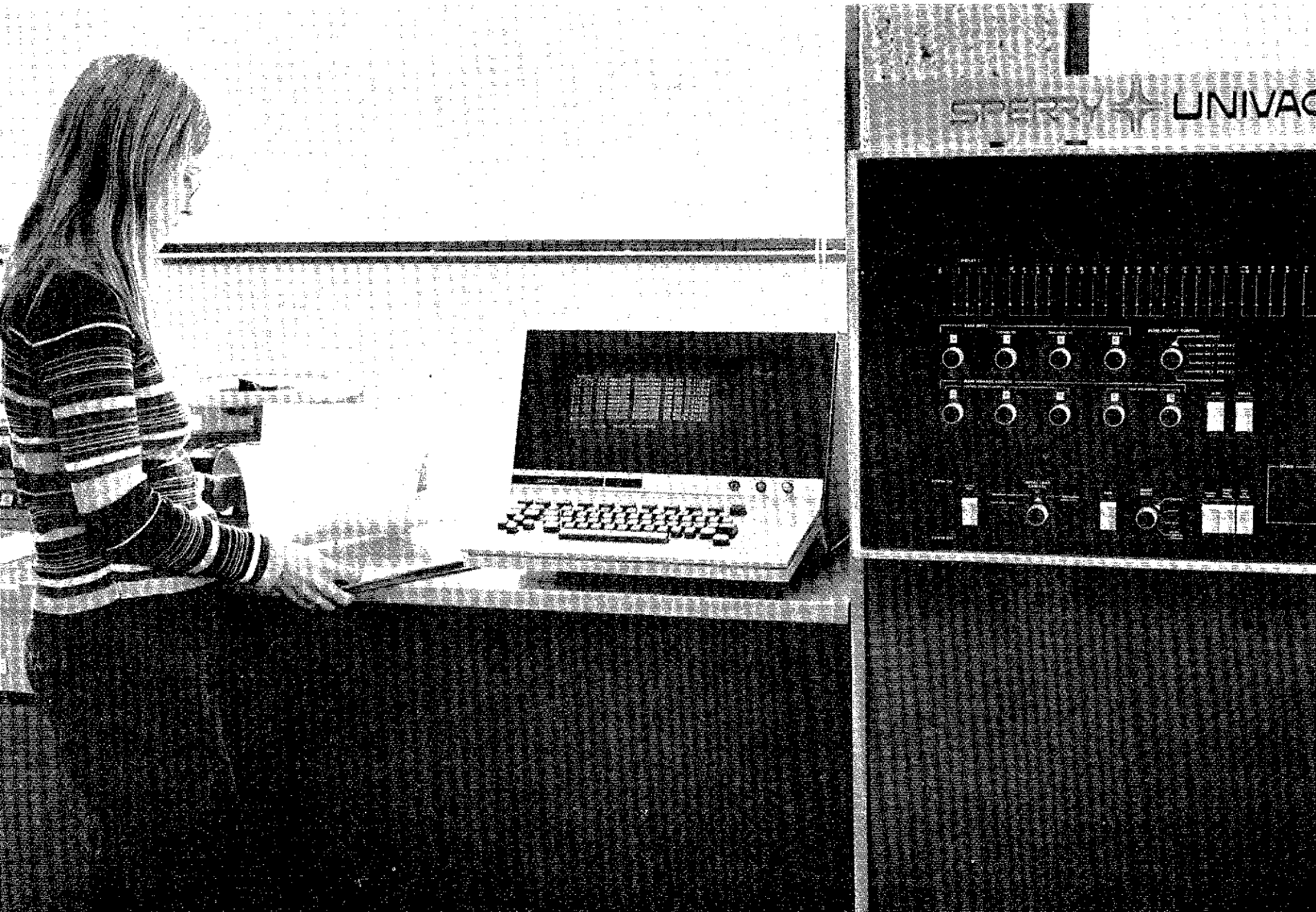
# physical education (P E)

**100 Conditioning Activities** ..... **1 credit hour**

A basic course to develop an understanding of the role and importance of physical activities in daily living. The student will develop a fitness program based upon an analysis of his/her fitness status. (2 hours per week)

**105 Independent Sports** ..... **1 credit hour**

Provides opportunities for the student to become adept in one or more activities with high carry-over value, and acquire skills which will be a source of healthful and recreational exercise. (2 hours per week)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# plastics (PLT)

**111 Introduction to Plastic Materials** ..... **3 credit hours**

Providing the student with an understanding of Plastic and Elastomeric materials which will enable him to function effectively in this industry. Includes: how materials obtain their properties; terminology; properties of the materials and methods used to measure them; selection of materials; relationship of properties and their effect on the manufacturing process; testing and control. (3 hours per week)

# psychology (PSY)

**050 New Careers and Life Styles** ..... **2 credit hours**

Finding and using interests and aptitudes. Group and individual counseling. Career development and opportunities. Goals for mid-life and pre-retirement. Life review and 2nd and 3rd career models. (3 hours per week for 8 weeks)

**104 Interpersonal Dynamics** ..... **2 credit hours**

Deals with behavior of individuals in the work environment. Comparison of needs of organization, (productivity), and needs of individual, (satisfaction), and how to maximize both. (2 hours per week)

**106 Psychology of Aging** ..... **3 credit hours**

An overview of the Psychology of Aging; study of personality traits, emotional problems and adjustments common in the process of aging; general psychological theories related to the problems experienced by the aged. (3 hours per week)

**108 Dynamic of Behavior** ..... **3 credit hours**

Systematic presentation of issues, concepts, principles and theories in the study of human adjustment. Includes analysis of adjustment, motivation, frustration and conflict, learning, defense and escape mechanisms, fear and repression, psychoneurosis, anxiety, reactions, personality measurement, psychoanalysis and psychotherapy. (3 hours per week)

**132 Basic Alcoholism III** ..... **3 credit hours**

The student is required to learn the concepts underlying Basic First Aid (American Red Cross), Overdose Aid (American Red Cross), and Cardio Pulmonary Resuscitation (American Red Cross and Michigan Heart Association), and master the techniques of each. Certificates are issued in each, upon the successful completion of examination. The last nine hours of the semester are devoted to becoming familiar with signs of psychopathology that would warrant referral to other professional personnel. (3 hours per week)

**133 Basic Alcoholism IV** ..... **3 credit hours**

A laboratory course designed to allow the student to practice the techniques of psychotherapy in a supervised situation. The development of emphathetic skills is stressed. Video tape is employed as a feedback device. (3 hours per week)

**134 Basic Alcoholism V** ..... **3 credit hours**

A preparation course to field placement designed to familiarize the prospective trainees with the policies and procedures of agency life. Skill development in (1) intake interview, (2) crisis intervention, (3) report writing, (4) referral procedures and (5) the utilization of other helping professionals. Also included is a short unit on nutrition. (3 hours per week)

# radio (RAD)

**203 Station Management** ..... **3 credit hours**

Non-production and on-broadcast functions in the station. A brief history of broadcasting as a guide to its legal responsibilities under the Rules and Regulations of the Federal Communications Commission, the development of business structure including contracting for services such as news and music and the sale of time under the conditions of the "rate-card". Also "logging" and the preparation of all necessary reports. Budgeting. (3 hours per week)

# radiologic technology (R T)

**097 Registry Review** ..... **1 credit hour**

The Registry Review is designed to refresh the student in five basic areas of Radiologic Technology. The review will be offered in five (5) three-hour lectures on the following subjects: 1. Sensitometry, 2. Radiographic Anatomy and Positioning, 3. Radiographic Quality, 4. Radiographic Exposure and 5. Radiographic Physics. (3 hours per week)

**250 Radiographic Processing** ..... **3 credit hours**

Offers an opportunity to study and deal with problems of automatic processing. Studies the function of processing, theory of processing, sensitometry, processing chemistry, transport systems, maintenance and trouble shooting. Uses video tapes, discussion and practical experience (3 hours per week)

**251 Radiologic Science** ..... **3 credit hours**

Studies the current and emerging practices in radiographic techniques. Reviews the properties of particles and photons; interaction of radiation with matter; production of quantity and quality of radiation; x-ray tube components and operating characteristics of the x-ray machine. (3 hours per week)

# reading (RDG)

**105 Vocabulary and Spelling Power** ..... **3 credit hours**

This course is designed for the student interested in strengthening his spelling skills and expanding his vocabulary. Emphasis will be 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. (3 hours per week)

**110 Speed Reading/Vocabulary and Spelling** ..... **2 credit hours**

This course is designed for the student interested in becoming a more flexible reader as well as in strengthening his spelling skills and expanding his vocabulary. Emphasis will be placed in meeting the individual student's needs. (2 hours per week)

# respiratory therapy (RTH)

**219 Pediatrics and Neonatology** ..... **2 credit hours**

A study of medical problems and physiology unique to neonates, infants and children; such as, idiopathic respiratory distress syndrome, cystic fibrosis, Wilson-Mikety syndrome, croup, congenital heart disease, etc. (3 hours per week)

# secretarial and office ( S O)

**105 Medical Transcription** ..... **.3 credit hours**

Prerequisite: Typewriting 110B or equivalent.

An introductory course in medical terminology and medical transcription for students who are proficient in typewriting. Emphasis is placed on basic transcription techniques in order for the student to acquire a thorough knowledge of dictating/transcribing equipment. The course familiarizes the student with a broad base of medical terms and the basic types of medical reports. (4 hours per week, plus a minimum of 4 weekly machine hours)

**115 Medical Typewriting** ..... **.3 credit hours**

Prerequisite: Typewriting 110B or equivalent.

Course coverage includes typing of medical case histories and reports, using medical terminology, typing of insurance reports, claims, hospital transfer papers, discharge forms and other medical documents which would be considered routine for a medical office and services of the hospital. (4 hours per week, plus a minimum of 4 practice hours)

**120 Legal Typewriting** ..... **.3 credit hours**

Prerequisite: Typewriting 110C or equivalent.

Course is designed for students who plan to specialize in the legal field. General objectives for legal typing are: To familiarize students with legal terms and procedures, to expand students' vocabulary and improve their spelling; To provide practice material for legal dictation and for legal typewriting; To establish typewriting response patterns through repetitive practice on legal forms; To refresh and sharpen skills of the legal secretary whose legal education needs updating. (4 hours per week, plus a minimum of 4 practice hours)

**160 Legal Office Systems and Procedures** ..... **.4 credit hours**

Prerequisite: Typewriting 110C or equivalent..

A practical study of the fundamental systems and procedures comprising the modern legal business office. Emphasis is placed on teaching students the importance of cooperation and communication and other valuable skills such as keeping legal files, typing new case reports and legal documents, keeping a calendar, making court dates and appointments, taking phone calls and writing checks and ledger cards. Concentration is made on the 4 fields of law: real estate and property transfer; litigation; wills and estates; and corporations and partnerships. (4 hours per week, plus a minimum of 4 weekly machine room hours)

# social science (S S)

**050 Gerontology** ..... **.2 credit hours**

A focus on the potential of the aged, exploring attitudes and stereotypes regarding the learning and changing educational needs of the older adult. Emphasis on the need for educating persons of all ages about the process of aging and the unique problems of the aged. (2 hours per week)

**115 Assertiveness Training/Women** ..... **.3 credit hours**

Teaches non-aggressive means of reducing fears, resolving conflicts, expressing likes and dislikes more fully, experiencing personal rights, increasing self respect. (3 hours per week)

**157 Marriage-Divorce** ..... **.3 credit hours**

Structural-functional analysis of family institutions and relationship between social structure of society and family system; change and comparative analysis are emphasized. (3 hours per week)

# speech (SPH)

**186 Forensics Debate** ..... **1 credit hour**

A practical course providing debate experience including both the preparation for and participation in intramural and inter-collegiate debates. (2 hours per week)

# technical and commercial art (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. (2 hours per week)

**104 Art Materials** ..... **2 credit hours**

Introduction to the use of art materials including: pencil, ink, pen, brush, water color, acrylics, rug design and execution, and Balsa Art. Emphasis on 2-D and 3-D media. (2 hours per week)

**225 Model Construction** ..... **2 credit hours**

Prerequisite: Basic Design 112, Basic Drawing 111 and Perspective and Parallel Projection 100 or consent of division.

Visualization and construction of three-dimensional forms from blueprints, sketches and schematics; using wood, plastic, cardboard, clay and plaster for construction. Emphasis placed on use of shop equipment; blueprint reading, use of model construction materials, and cost estimating. (3 hours per week)

**230 Freelance Operations** ..... **3 credit hours**

Prerequisite: TCA 121 Advertising Layout

An in-depth study of some of the problems involved in operating a free-lance commercial art studio. A survey of types of Commercial Art and Advertising Design that the Freelance Commercial Artist would come in contact with as a one person operation. Guest speakers and various field trips will be taken to studios. (4 hours per week)

# welding and fabrication (W F)

**104 Soldering and Brazing** ..... **2 credit hours**

Course designed for basic knowledge of soft soldering, brazing, and silver soldering, copper tubing and fittings, brazing of steel, silver soldering of copper and stainless. Practical application included. (4 hours per week)

**106 Welding for Electricians** ..... **3 credit hours**

A basic course designed for electrical trade tasks. Electricians are given training in the proper usage and applications of welding equipment and related safety.

This course includes fusion welding of steel, brazing, silver and soft soldering of copper and brass. (4 hours per week)

**108 Welding/Electrician** ..... **3 credit hours**

Course designed for electricians, masons, carpenters and other trade tasks. Necessary skills acquired for American Welding Certification, enabling students to perform necessary welding functions on the job. (4 hours per week)

# word processing (W P)

**111 Word Processing Principles** ..... **3 credit hours**

A study of the basic principles and concepts of the word processing function in modern business-industrial enterprise. Development of basic insights into the growth, objectives and methods of word processing. Included will be basic terminology and concepts of word processing applications, systems design and basic memory and storage types — magnetic card, cassette tape and disk. (3 hours per week)

**122 Word Processing Applications/Dictation Equipment** ..... **2 credit hours**

Prerequisite: WP 111 and high school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent.

An integrative applied approach to the study and use of modern dictation equipment designed to acquaint the student with the theory and principles of dictation equipment as it relates to business and industry and other specialized fields. Skill development and speed building in transcription is emphasized. (2 hours per week)

**123 Word Processing Applications/Basic Practice** ..... **2 credit hours**

Prerequisite: WP 111, WP 122 and high school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent.

An integrative applied approach to the study of modern word processing typewriters designed to acquaint the student with the use of word processing typewriters as it relates to business and industry and other specialized fields. Skill development and speed building in recording and playing back is emphasized. (2 hours per week)

**124 Word Processing Applications/Advanced Practice** ..... **3 credit hours**

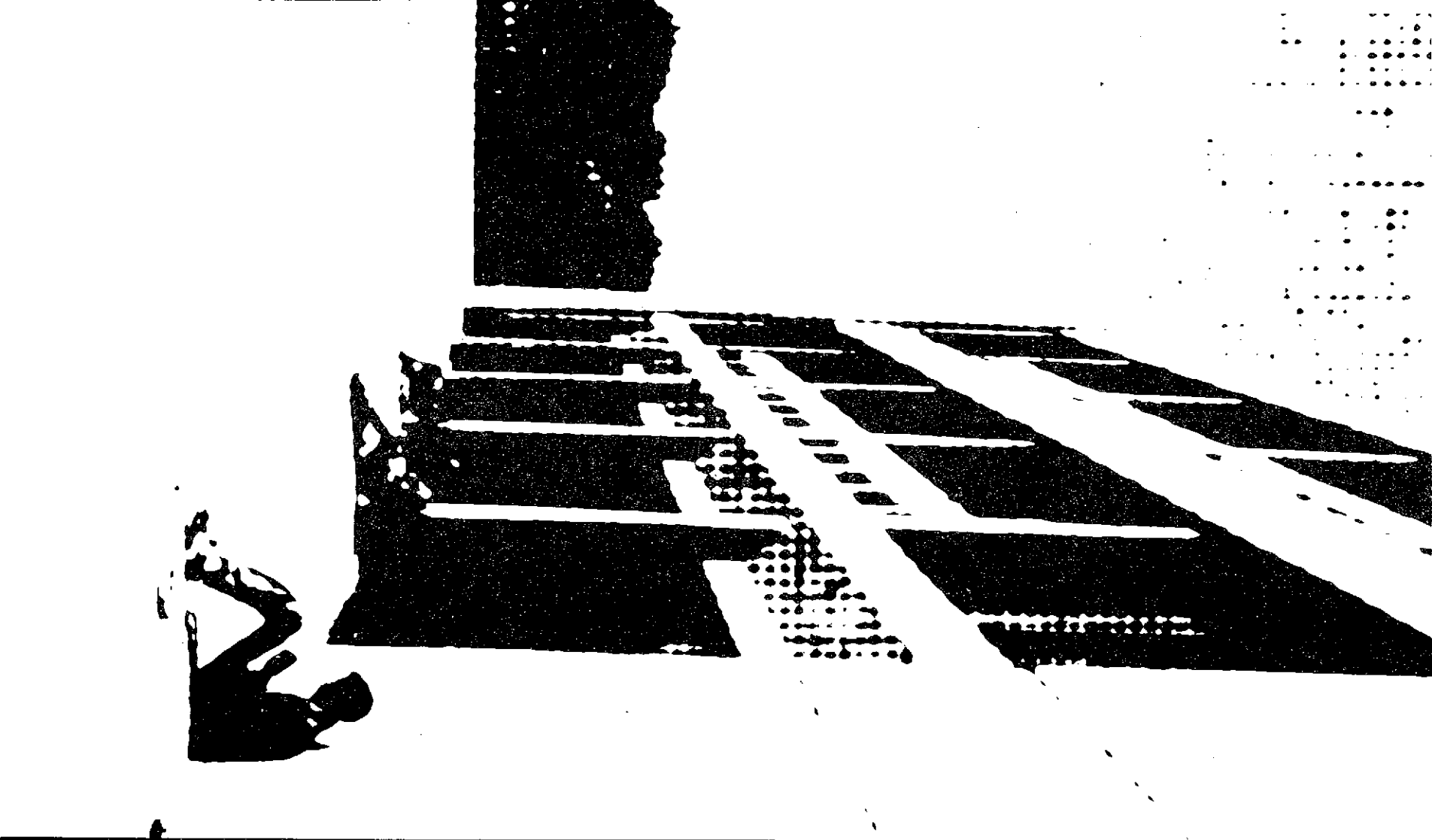
Prerequisite: WP 111, WP 122, WP 123 and high school typewriting proficiency or concurrent enrollment in intermediate typewriting or equivalent.

An integrative applied approach to the study of modern word processing equipment to acquaint the student with the use of word processing equipment as it relates to business and industry, and other specialized fields. Skill development and speed building in transcribing, recording and playing back finished word processing assignments are emphasized. (3 hours per week)

**200 Word Processing Systems and Procedures** ..... **3 credit hours**

Prerequisite: WP 111 — Word Processing Principles. WP 122, 123, 124 — Word Processing Applications.

A practical study of the fundamental systems and procedures comprising the word processing center. Emphasis is on developing insights into the responsibilities of the word processing center staff, personnel qualifications, human relations factors and their essential relationship to the effective integration of the word processing system(s) with the other business systems. Includes word processing alternatives, equipment and needs surveys, organizing and implementing word processing and management and control of the word processing function. (3 hours per week)



# college personnel

# board of trustees

| Member | Title | Term Expires |
|---|---|---|
| **Anthony J. Procassini**<br>Ann Arbor | Chairman | December 31, 1980 |
| **Ann C. Kettles**<br>Ypsilanti | Secretary | December 31, 1978 |
| **Richard W. Bailey**<br>Ann Arbor | Treasurer | December 31, 1978 |
| **James W. Anderson, Jr.**<br>Ann Arbor | Member | December 31, 1978 |
| **Richard L. Boyd**<br>Saline | Member | December 31, 1982 |
| **Henry S. Landau**<br>Ann Arbor | Member | December 31, 1982 |
| **Judy Shelton**<br>Ypsilanti | Member | December 31, 1980 |

# executive officers

**Myran, Gunder A.** ..... **President**
B.S. — Mankato State College
M.A. — University of Iowa
Ed.D. — Michigan State University

**Hurd, John D.** ..... **Dean, Business Operations**
B.B.A. — The University of Michigan
M.B.A. — The University of Michigan

**Jones, James A.** ..... **Dean, Student Services**
B.A. — Southern Illinois University
M.A. — Southern Illinois University

**Konschuh, Harry J.** ..... **Dean, Employee Relations**
B. Ed. — University of Alberta
M.A. — Michigan State University

**Lederer, Norman** ..... **Dean, Occupational Education**
B.S. — University of Wisconsin
M.A. — Louisiana State University

**Wooden, John P.** ..... **Dean, General Education**
B.S. — Winona State College
M.A. — New Mexico State University

# administrative staff

**Albert, Rudolph, A.** ..... **Coordinator, Instructional Media**
B.S. — Bradley University
M.A. — The University of Michigan

**Bertoia, Roger R.** ..... **Associate Dean, Occupational Education**
B.S. — The University of Michigan
M.S. — The University of Michigan

**Bosch, Barbara J.** ..... **Supervisor, Technical Processing, LRC**
Henry Ford Community College
Washtenaw Community College
Friden Educational Center

**Braun, George J., Jr.** ..... **Director, Institutional Research and Development**
A.B. — The University of Michigan
M.B.A. — The George Washington University
Registered School Business Official — A.S.B.O.

**Grengle, Geraldine H.** ..... **Administrative Assistant, President's Office**
Tiffin University
Washtenaw Community College
The University of Michigan

**Chambers, John F.** ..... **Controller**
B.S. — Ohio State University
M.B.A. — University of Detroit

**Hackney, Larry H.** ..... **Associate Dean, Evening Programs**
B.A. — Tennessee State University
M.A. — The University of Michigan
Ph.D. — The University of Michigan

**Harrison, Marcia L.** ..... **Director, CETA Operations**
A.D. — Northwestern Michigan College
B.A. — Eastern Michigan University

**Jackson, Robert L.** ..... **Coordinator, Trade Related Instruction**
Journeyman — Tool & Die & Diecast Die Maker
Henry Ford Community College
Tool & Processing Engineer

**Jacques, Edith N.** ..... **Director, Community Services**
B.A. — D'Youville College
M.A. — The University of Michigan

**Kleinhenn, Alton L.** ..... **Registrar**
General Motors Institute

**Mallory, Richard H.** ..... **Director, Auxiliary Services**
B.S. — University of Detroit

**Munn, Ben F.** ..... **Director, Computer Services Center**
B.S. — The University of Michigan

**Pollock, David S.** ..... **Executive Assistant to President**
A.B. — The University of Michigan
M.A. — Eastern Michigan University

**Reeves, Robert A.** ..... **Personnel Administrator**
B.A. — Eastern Michigan University
M.A. — Eastern Michigan University

**Sabada, Mary L.** ..... **Personnel Assistant**
Ohio University
Washtenaw Community College

**Spickard, James F.** ..... **Security and Public Safety Officer**
B.S. — Eastern Michigan University

**Stallworth, Clarence A.** ..... **Director, Building & Grounds**
B.S.E. — The University of Michigan
M.S.E. — The University of Michigan

**Taylor, O'Leta F.** ..... **Staff Benefits Specialist**
West Virginia Business College
Washtenaw Community College
The University of Michigan
Wayne State University

**Thomson, Mehran, Jr.** ..... **Associate Dean, General Education**
B.A. — Eastern Michigan University
M.B.S. — University of Colorado

**Travis, Patricia A.** ..... **Coordinator, Day Care Center**
B.A. — The University of Michigan
M.A. — Eastern Michigan University

**Wolven, Frederick F.** ..... **Director, Instructional Services**
A.B. — Central Michigan University
M.A. — Central Michigan University

# the faculty

**Agin, George C., 1968** ..... **Mechanical Technology/Fluid Power**
B.S. — Wayne State University
M.A. — Eastern Michigan University
General Motors Training Center

**Amaru, Augustine, 1966** ..... **Political Science**
B.A. — Boston University
M.A. — Michigan State University

**Amundsen, Jack, 1975** ..... **Physics/Mathematics**
B.A. — The University of Michigan
M.A. — The University of Michigan

**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

**Barron, Kenneth E., 1966** ..... **Automotive Service**
B.S. — Central Michigan University
Certified General Auto Mechanic

**Beaton, James, 1976** ..... **Culinary Arts**
Wayne County Community College
Eastern Michigan University
Wayne State University

**Belkola, Floyd E., 1966** ..... **Automotive Body Repair**
General Motors Training Center
DuPont Refinishing School
Bear Frame School

**Bellers, Clifford, 1969** ..... **Physical Education**
B.B.A. — Eastern Michigan University
M.A. — Eastern Michigan University

**Bellers, Robert, 1968** ..... **Tech Instr Assistant, Electricity/Electronics**
A.D. — Washtenaw Community College
Electronics Engineering Technician Trade School
Grantham Electronics School
F.C.C. License

**Biederman, Rosalyn L., 1967** ..... **Spanish/English**
B.A. — Ohio State University
M.A. — Ohio State University

**Bila, Dennis, W., 1969** ..... **Mathematics**
B.S. — Central Michigan University
M.A. — Wayne State University

**Bogue, Robert, 1977** ..... **Tech Instr Assistant, Automotive Service**
A.D. — Washtenaw Community College

**Bottorff, Ralph S., 1966** ..... **Mathematics**
B.A. — University of Northern Iowa
M.A. — University of Illinois
Ph.D. — The University of Michigan

**Brown, Eugene, 1977** ..... **Automotive Service**
A.D. — Washtenaw Community College
B.S. — The University of Michigan

**Burch, Wanda, 1977** ..... **Office Occupations**
A.D. — Washtenaw Community College
B.S. — The University of Michigan

**Burden, Dennis B., 1969** ..... **Veterans Counselor**
A.A. — Jackson Community College
B.A. — The University of Michigan
M.S. — California State College

**Bylsma, Donald, Jr., 1966** ..... **Sociology**
B.S. — Wayne State University
M.A. — Wayne State University
Ph.D. — The University of Michigan

**Byrd, David R., 1966** ..... **Architecture/Construction Technology**
Hampton Institute College and Trade School
N.C.A.R.B. Certified
Registered Architect — D.C., Maryland, West Virginia, Michigan
M.A. — The University of Michigan

**Cammet, Edward, 1975** ..... **Automotive Body Repair**
Army Mechanic School
Ford Motor Institute

**Campbell, Benjamin I., 1968** ..... **Psychology**
B.M. — Peabody Institute
M.A. — The University of Michigan

**Carpenter, Robert, 1976** ..... **Tech Instr Assistant, Physical Science**
B.S.E.E. — North Carolina State University
M.S. — The University of Michigan

**Charlton, Eleanor, 1966** ..... **Secretarial Studies**
B.S. — Central Michigan University
M.A. — Central Michigan University

**Cherniak, William, 1966** ..... **English**
B.A. — University of Western Ontario
A.M. — The University of Michigan
Ed.D. — The University of Michigan

**Clark, William G., 1968** ..... **Counselor**
B.R.E. — Grand Rapids Baptist College
M.A. — Western Michigan University

**Collard, Roger, 1976** ..... **Electricity/Electronics**
A.D. — Flint Junior College
B.S.E. — The University of Michigan

**Croake, Edith M., 1966** ..... **English**
B.A. — The University of Michigan
M.A.T. — Northwestern University
M.A. — Northwestern University
D.A. — The University of Michigan

**Daehler, A. Arden, 1968** ..... **Physics/Mathematics**
B.S. — University of Colorado
M.A. — Eastern Michigan University

**Daisher, Noille, M., 1968** ..... **English**
B.S. — Wayne State University
M.S. — Syracuse University
Ed.D. — Wayne State University
The University of Michigan

**Davenport, James M., 1966** ..... **Biology**
B.A. — Ohio Northern University
M.A. —Syracuse University

**Davis, Paul W., 1967** ..... **Counselor**
B.S. — Ball State University
Ed.M. — Ball State University
Ed.S. — Wayne State University
Ph.D. — The University of Michigan

**Devereaux, William, 1976** ..... **Speech**
B.A. — Michigan State University
M.A. — Michigan State University
Ed.D. — Laurence University

**Dowding, Tasman A., 1967** ..... **Mathematics**
B.S. — Kent State University
Ed. M. — Kent State University
Journeyman-Carpenter

**Eaglin, Marguerite, 1967** ..... **Counselor**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University
Sp.A. — Eastern Michigan University

**Edwards, LaRuth, 1974** ..... **Dental Assisting**
C.D.A. — American Dental Assisting Association
University of Detroit
B.S. — Shaw College of Detroit

**Entenman, Susan, 1977** ..... **Tech Serv Assistant, Computer Services**
Hillsborough Community College
Washtenaw Community College

**Fatur, Robert A., 1967** ..... **Metallurgy/Welding and Fabrication**
Wayne State University
Detroit Institute of Technology

**Figg, William, 1972** ..... **Welding and Fabrication**
Washtenaw Community College

**Finkbeiner, Charles A., 1975** ..... **Data Processing/Acctg./General Business**
A.D. — Washtenaw Community College
B.S. — The University of Michigan

**Ford, Andrew F., 1966** ..... **Industrial Drafting/Mechanical Technology**
B.S. — Wayne State University
M. Ed. — Wayne State University

**Fortner, Janis, 1978** ..... **Tech Serv Assistant, Career Placement**
A.D. — Monroe County Community College
B.A. — Eastern Michigan University

**Forsythe, Randall** ..... **Tech Serv Assistant, Computer Services**
Certificate — Hallmark Business Machines Institute
Washtenaw Community College

**French, Gargi, 1974** ..... **Chemistry**
B.Sc. — University of Bombay
Ph.D. — Radcliffe College

**Fritts, Ruth, 1968** ..... **English**
B.A. — The University of Michigan

**Frye, Iota H., 1975** ..... **Financial Aids Officer**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University

**Gannon, Jillaine, 1977** ..... **Culinary Arts**
Culinary Institute of America
B.S. — Eastern Michigan University

**Garrett, Dallas O., 1967** ..... **Numerical Control/Mechanical Technology**
B.S. — Wayne State University
M.A. — Eastern Michigan University
Numatrol Circuit Design School
Illinois Institute of Technology

**Garrett, Don L., 1975** ..... **Culinary Arts**
A.D. — Washtenaw Community College

**Gaughan, John T., 1968** ..... **English**
B.A. — St. Mary's College
B.S. — St. Mary's College
M.A. — Eastern Michigan University

**Glusac, Ivan C., 1966** ..... **Political Science/Economics**
B.S. — Wayne State University
M.A. — The University of Michigan

**Goldberg, David, 1977** ..... **Mathematics/Science**
B.S. — The University of Michigan

**Goodkin, Barbara H., 1975** ..... **Practical Nursing**
B.S.N. — The University of Michigan
M.S. — The University of Michigan

**Gray, Daniel C., 1966** ..... **Welding and Fabrication**
Journeyman Pipe Fitter and Boilermaker
Air Force Technical School
Certified Welder — Navy, Air Force, Army

**Griswold, George H., 1966** ..... **Chemistry**
B.A. — College of Wooster
M.S. — Eastern Michigan University

**Grossman, Esta, 1975** ..... **Biology**
B.A. — Pembroke College in Brown University
M.A. — The City College of the City University of New York

**Grzegorczyk, Phyllis, 1978** ..... **Practical Nursing**
Diploma — Mercy School of Nursing
B.S.N. — The University of Michigan

**Hakeem, Ivan P., 1968** ..... **Sociology**
I.D.D. — Agricultural Institute
A.B. — Clark College
M.A. — Atlanta University

**Hall, Clyde, 1978** ..... **Tech Instr Assistant, Welding and Fabrication**
A.D. — Washtenaw Community College

**Hammond, Carl F., 1967** ..... **Respiratory Therapy**
B.S. — Eastern Michigan University
A.R.I.T. ( American Registry of Inhalation Therapy)

**Hanson, Charlotte, 1966** ..... **Speech**
A.B. — The University of Michigan
M.A. — The University of Michigan

**Hastings, Janet G., 1967** ..... **Mathematics**
B.A. — The University of Michigan
M.A. — Cornell University

**Hentz, Gary R., 1967** ..... **Counselor**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University

**Hinds, Dwight D., 1968** ..... **Physics/Mathematics**
B.S. — Eastern Michigan University
M.S. — Michigan State University

**Ho, Leo C., 1975** ..... **Media Librarian**
B.A. — National Cheng Chi University
M.L.S. — Atlanta University
Ph.D. — Wayne State University

**Holmes, George H., III, 1968** ..... **History**
B.A. — University of North Carolina
M.A. — Xavier University

**Hopper, Thomas W., 1967** ..... **Automotive Service**
Certificate — Army Mechanic School
Ford Motor Institute

**Horowitz, Frederick A., 1968** ..... **Art**
B.A. — Yale University
B.F.A. — Yale University
M.F.A. — The University of Michigan

**Hower, Guy W., 1966** ..... **Financial Aids Officer**
B.B.A. — The University of Michigan
M.A. — The University of Michigan

**Hunt, Barbara, 1968** ..... **English**
B.A. — University of Toledo
M.A. — The University of Michigan

**Johnson, Joy A., 1976** ..... **Tech Instr Assistant, Practical Nursing**
A.A.S. — Oakland Community College
B.S. — The University of Michigan
M.A. — The University of Michigan

**Jones, Lola M., 1974** ..... **Student Activities Officer**
A.B. — Wayne State University
M.S.W. — The University of Michigan

**Jordan, Diane, 1978** ..... **Tech Instr Assistant, Financial Aids**
Washtenaw Community College

**Kapp, George, 1970** ..... **Mathematics/Physics**
A.D. — Washtenaw Community College
B.S.E. — The University of Michigan

**Kibens, Maija, 1976** ..... **Philosophy/Humanities**
B.A. — Mount Holyoke College
M.A. — The University of Michigan
Ph.D. — The University of Michigan

**Kokkales, Paul C., 1966** ..... **Accounting**
B.S. — Eastern Michigan University
M.A. — The University of Michigan

**Kollen, G. Michael, 1969** ..... **Psychology**
B.A. — Knox College
M.A. — New Mexico Highlands University
M.A. — The University of Michigan

**Koppin, Thomas P., 1975** ..... **Tech Instr Assistant, Photography**
A.D. — Washtenaw Community College

**Kramer, Lawrence, 1977** ..... **Electricity/Electronics**
B.S. — The University of Michigan

**Ladley, Betty A., 1969** ..... **Dental Assisting**
A.A. — Grand Rapids Junior College
C.D.A. — American Dental Assisting Association
B.S. — The University of Michigan
M.S. — The University of Michigan

**Lawrence, Morris J., 1969** ..... **Music**
Certificate — Straight Business College
B.S.M.E. — Xavier University
M.M. — The University of Michigan

**Lewis, William A., 1969** ..... **Mathematics**
B.S. — North Carolina College at Durham
M.A. — The University of Michigan

**Lim, Ana T., 1976** ..... **Tech Instr Assistant, Practical Nursing**
B.S.N. — St. Paul College of Manila

**Lockard, Jon M., 1970** ..... **Black Art**
Certificate — Meinzinger Art School
Certificate — Obleton Advertising Company
Wayne State University

**Lowe, Burton C., 1968** ..... **Mechanical Technology/Blueprint Reading**
Journeyman Industrial Machinist, Machine Repairman
Ford Motor Company Apprenticeship School
Wayne State University

**Ludos, Phillip, 1978** ..... **Public Safety Administration**
A.D. — Schoolcraft College
B.S. — Madonna College

**Mann, John B., 1971** ..... **Automotive Service**
Washtenaw Community College
B.S. — Eastern Michigan University

**Mannino, Diane, 1977** ..... **Tech Instr Assistant, Practical Nursing**
B.S.N. — The University of Michigan

**Martin, Herbert L., 1967** ..... **Psychology**
B.A. — Eastern Michigan University
M.A. — Eastern Michigan University

**Martin, John W., 1968** ..... **Commercial Art/Technical Illustration**
Certificate — Miensinger Art School
Certificate — Arts and Crafts School
A.A. — Macomb County Community College

**McClatchey, Merrill W., 1956** ..... **Speech/Humanities**
B.A. — Wayne State University
M.A. — Columbia University

**McClellan, Elwood, 1967** ..... **English**
B.A. — Michigan State University
M.A. — The University of Michigan

**McCoy, Robert, 1971** ..... **Career Placement Officer**
B.S. — Western Michigan Univeersity
The University of Michigan

**McGee, Sophie, 1969** ..... **English**
A.B. — The University of Michigan
M.G. — The University of Michigan

**McGill, John B., 1966** ..... **Mathematics**
B.S. — Eastern Michigan University

**McNally, Robert C., 1968** ..... **Counselor**
Four Year Graduate — General Motors Institute
M.B.A. — The University of Michigan
M.A. — University of Detroit

**Mealing, Percy, 1966** ..... **Mathematics**
B.A. — Talladega College
M.A. — The University of Michigan

**Mealing, Robert C., 1966** ..... **Mathmatics**
Journeyman, Industrial Machinist — Machine Repairman
Ford Motor Company Apprenticeship School
B.S. — Wayne State University

**Meeks, Sandra S., 1969** ..... **Nurse/Health Service**
B.S.N. — The University of Michigan
Registered Nurse

**Mickelson, Joan M., 1969** ..... **History**
B.A. — St. Teresa College
M.A. — Eastern Michigan University

**Miller, Louis R., 1969** ..... **Political Science**
B.S. — Eastern Michigan University
A.M. — The University of Michigan

**Mitchell, W. Bede, 1967** ..... **English**
A.B. — Wayne State University
M.A. — Wayne State University

**Morgan, Lester, 1968** ..... **Welding and Fabrication**
Journeyman, Pipe Fitter — Boilermaker
Ford Motor Company Apprenticeship School
The University of Michigan

**Moy, William, 1968** ..... **Psychology**
A.B. — Valparaiso University

**Nagel, Rosemarie E., 1967** ..... **Reading**
A.B. — The University of Michigan
M.A. — The University of Michigan

**Napier, Beverly, 1977** ..... **Tech InstrAssistant, Practical Nursing**
B.S.N. — The University of Michigan

**Nelson, Robert, 1966** ..... **Radiologic Technology**
Alexian Brothers Hospital School of Radiologic Technology
R.T. — The American Registry of Radiologic Technologists
A.A. — Fort Scott Community Junior College

**Nevers, William B., 1975** ..... **Dental Assisting**
B.S. — Wayne State University
D.D.S. — The University of Michigan School of Dentistry

**Niehaus, Paul J., 1966** ..... **Biology**
B.A. — Eastern Michigan University
M.S. — The University of Michigan

**Packard, R. James, 1969** ..... **Industrial Drafting**
A.D. — Washtenaw Community College
B.S.M.E. — University of Wisconsin
M.A.Ed. — Wayne State University

**Palay, Roger M., 1975** ..... **Mathematics**
B.S. — University of Chicago
M.S. — University of Wisconsin

**Patt, Jerry, 1968** ..... **Secretarial Studies/Accounting**
B.S. — Eastern Michigan University

**Patterson, J. David, 1977** ..... **Photography**
Kent State University
Eastern Michigan University
The University of Michigan

**Paulson, Robert W., 1968** ..... **General Business/Management**
B.S. — University of New Hampshire
M.S. — University of New Hampshire

**Phibbs, John, 1969** ..... **Tech Serv Assistant, Instructional Media**
A.D. — Washtenaw Community College
B.B.A. — Eastern Michigan University

**Plummer, Robert H., 1967** ..... **Political Science**
B.A. — Wabash College
M.S. — Indiana University
Ed.D. — Indiana University
M.P.H. — The University of Michigan

**Pogliano, Michael F., 1969** ..... **Architectonics/Construction Technology**
B.Arch — The University of Michigan
Registered Architect, Michigan
N.C.A.R.B. Certified

**Pool, Milton, 1969** ..... **Chemistry**
B.S. — Eastern Michigan University

**Prichard, Lawrence, 1968** ..... **Mathematics**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University

**Radick, Lawrence J., 1966** ..... **French/Art**
B.A. — Michigan State University
M.A. — Michigan State University

**Rees, Gerald M., 1967** ..... **Physics/Mathematics**
B.S. — The University of Michigan
M.S. — The University of Michigan

**Reps, Flavia P., 1966** ..... **Western Civilization/History**
B.A. — St. Joseph College
M.A. — Georgetown University

**Roberts, Alvin, 1968** ..... **Psychology**
B.S. — Prairie View A&M College
M.S.W. — Wayne State University

**Roberts, Shirley, 1968** ..... **Clinical Psychologist**
B.A. — The University of Michigan
M.A. — The University of Michigan

**Robinson, Albert, 1974** ..... **Electricity/Electronics**
B.A. — Indiana University
M.S. — Eastern Michigan University

**Ross, Donald L., 1966** ..... **Mathematics**
B.S. — Eastern Michigan University
M.A. — The University of Michigan
M.A.T.M. — University of Detroit

**Russell, Dean A., 1966** ..... **Electricity/Electronics**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University

**Salerno, Douglas, 1969** ..... **Speech**
A. A. — Kellogg Community College
B.A. — Western Michigan University
M.A. — Western Michigan University

**Scott, Adella, 1975** ..... **Reference Librarian**
A.B. — The University of Michigan
M.A.L.S. — The University of Michigan

**Scott, Kathleen, 1971** ..... **Reference Librarian**
B.A. — University of Iowa
M.A.L.S. — University of Iowa

**Sims, Donald L., 1968** ..... **Admissions Officer**
B.S. — Wayne State University
M.A. — The University of Michigan

**Slepsky, Lawrence, 1968** ..... **Physical Education**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University
Ed.S. — Eastern Michigan University

**Smitley, Lynn M,, 1969** ..... **Biology**
B.S. — Eastern Michigan University
M.S. — The University of Michigan

**Snyder, Marcia, 1978** ..... **Tech Instr Assistant, Culinary Arts**
A.D. — Culinary Institute of America

**Stager, Augustus, 1977** ..... **Industrial Drafting/Mechanical Technology**
B.S. — The University of Michigan

**Steinbach, J. Raymond, 1969** ..... **Photography**
B.S. — Michigan State University

**Stotland, Dorothy E., 1968** ..... **English**
A.B. — The University of Michigan
M.A. — The University of Michigan

**Strayer, James L., 1969** ..... **Biology**
B.S. — Eastern Michigan University
A.M. — The University of Michigan

**Susnick, Stuart B., 1969** ..... **Anthropology**
B.A. — Brooklyn College

**Swatz, Donna, 1973** ..... **Tech Instr Assistant, Dental Assisting**
A.A.S. — Ferris State College
C.D.A. — American Dental Assisting Association

**Tatar, George D., 1968** ..... **Biology**
B.S. — The University of Michigan
M.S. — The University of Michigan

**Thomas, Ervin L., 1969** ..... **Anthropology/Philosophy/Sociology**
B.A. — Wayne State University
M.A. — Wayne State University

**Thompson, Doreen, 1975** ..... **Sociology**
A.B. — Atlantic Union College
Licence En Lettres — University of Paris
M.P.H. — The University of Michigan

**VanderVeen, Judith, Sr., 1976** ..... **Practical Nursing**
Diploma — Mercy Central School of Nursing
B.S.N. — Mercy College of Detroit

**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

**Vrabel, George, 1969** ..... **Career Placement Officer**
B.S. — Western Michigan University
M.A. — Wayne State University

**Weidner, Hal R., 1969** ..... **English**
A.B. — Columbia College
M.A. — The University of Michigan
Ph.D. — The University of Michigan

**Welch, Bruce H., 1966** ..... **Automotive Service**
B.S. — Central Michigan University
M.A. — The University of Michigan
Certificate — Leadership Development Program

**Wheeler, Kenneth, 1966** ..... **Electricity/Electronics**
B.S.E.E. — Detroit Institute of Technology
Senior Member Institute of Electrical and Electronic Engineers

**Whiteford, Priscilla S., 1971** ..... **Anthropology**
B.A. — Western Michigan University
M.A. — The University of Michigan

**Wiernik, Peter R., 1969** ..... **Mechanical Technology**
Highland Park College
Wayne State University
Journeyman-Toolmaker and Machinist

**Williams, Calvin E., 1969** ..... **Counselor**
B.A. — Western Michigan University
M.A. — The University of Michigan
Ph.D. — The University of Michigan

**Williams, Johnny L., 1967** ..... **Electricity/Electronics**
U.S. Navy Retired — Radio Electronics
B.S. — The University of Michigan

**Williams, Thomas G., 1971** ..... **Black Literature/Afro-American History**
B.S. — Eastern Michigan University

**Wilson, Evylyn Y., 1967** ..... **Secretarial Studies/Management/General Business**
B.S.S.S. — Ohio University
M.S. — Ohio University

**Wirbel, Johanna V., 1968** ..... **Counselor**
B.A. — Kent State University
M.A. — University of Michigan

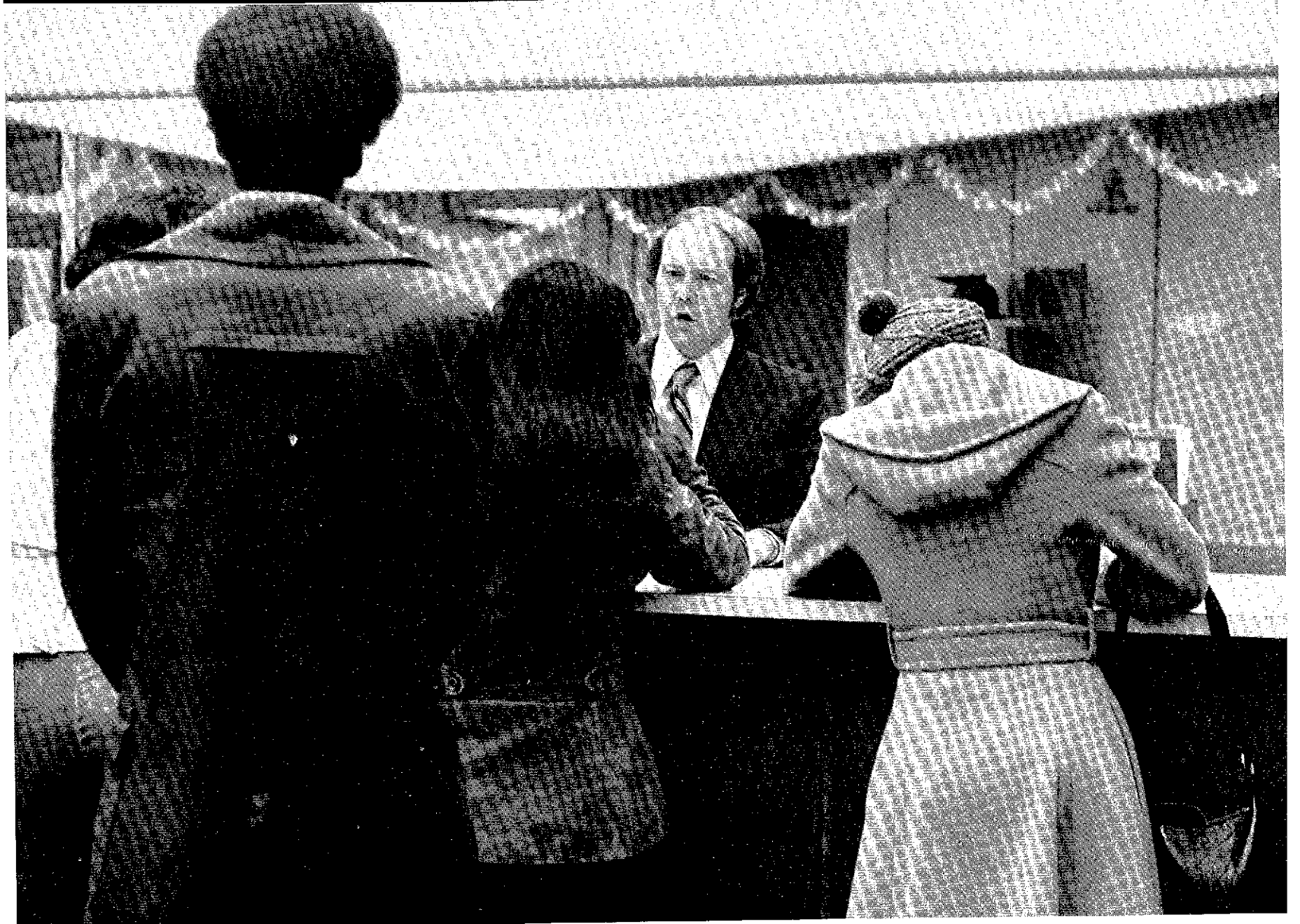
**Wotring, John R., 1969** ..... **Data Processing**
B.A. — University of Phillippines

**Young, Mary E., 1975** ..... **Counselor**
B.R.E. — Detroit Bible College
B.A. — Eastern Kentucky University
M.A. — Eastern Kentucky University

**Zaremba, Ernest, 1969** ..... **Psychology**
A.B. — The University of Michigan

**Zeeb, Ronald E., 1968** ..... **Marketing/General Business**
B.S. — Eastern Michigan University
M.A. — Eastern Michigan University

**Zenian, Paul, 1968** ..... **Art**
B.S. — The University of Michigan
M.F.A. — The University of Michigan



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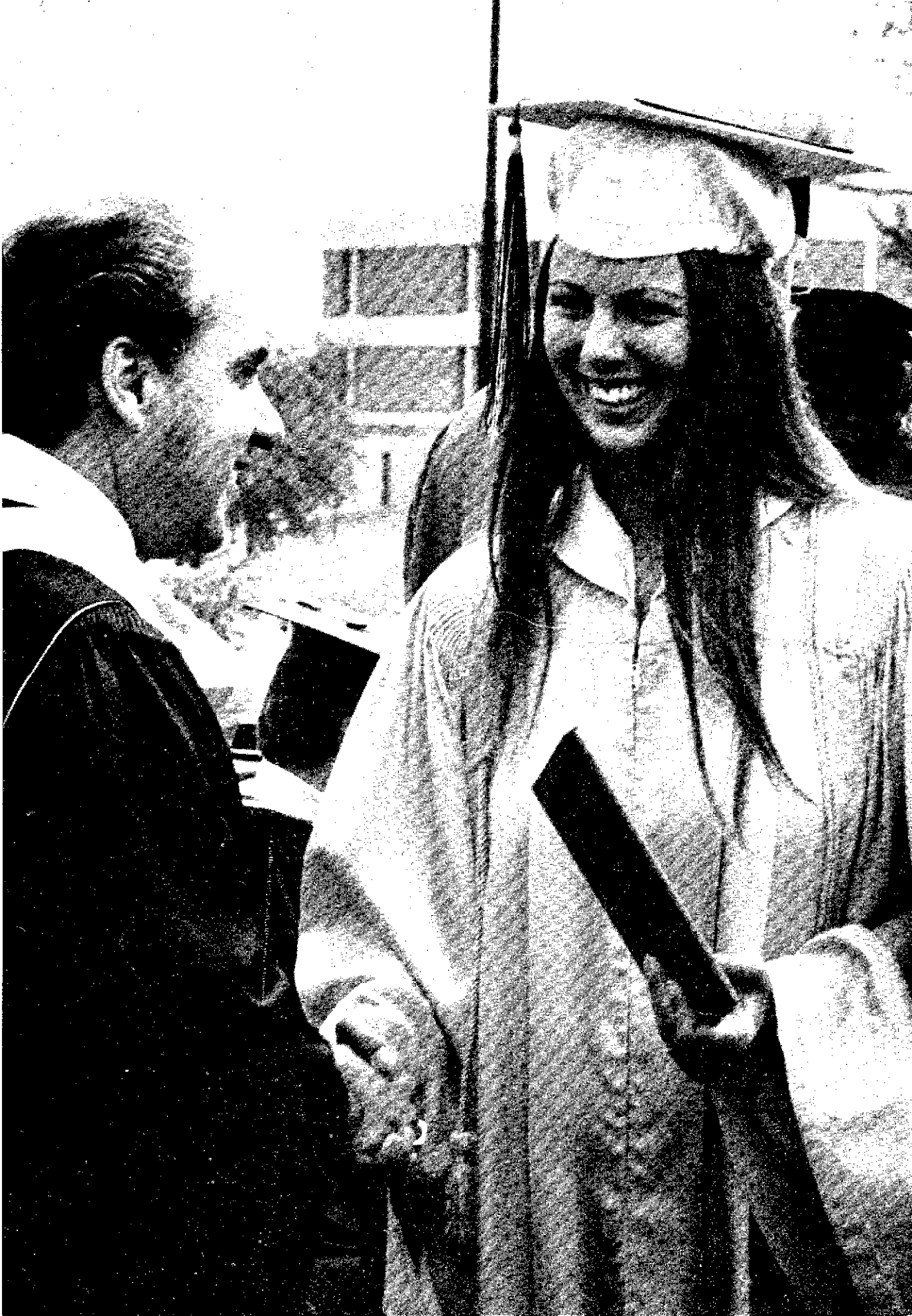

# WASHTENAW COMMUNITY COLLEGE

ANN ARBOR, MICHIGAN 48106

APPLICATION FOR ADMISSION

| | | | |
|---|---|---|---|
| FEE | | K.P. | |
| FEE BK. | | ACC. LT. | |
| TRANS. Dr. | | H.O. | |

**This application must be accompanied by a $10.00 check or money order. This fee is non-refundable and is assessed one time for all students applying for admission to the college. New Students Only.

Date _____
Month Day Year

Please Check One:

☐ Former Student Last Semester in Attendance _____ ☐ New Student**

1. This application is for: FALL 19___ WINTER 19___ SPRING 19___ SUMMER 19___
2. Social Security No. ___ / ___ / ___
3. Name _____ Female ☐ Male ☐
(Please Print) Last First Middle/Maiden
4. Date of Birth _____ Age _____ Place of Birth _____
5. Permanent Address _____
No. and Street City State Zip County
6. Mailing Address _____
No. and Street City State Zip County
7. Home Telephone (___) _____ Mailing Address Telephone (___) _____
8. How long have you lived in Washtenaw County? _____
9. What will be your major at Washtenaw Community College? _____
10. Are you retired? Yes ☐ No ☐ Veteran? Yes ☐ No ☐
11. List most recent high school and ALL colleges you have attended:**

| Name of School | Address | Months and Years of Attendance | Graduate Date |
|---|---|---|---|
| | | ___ 19___ to ___ 19___ | |
| | | ___ 19___ to ___ 19___ | |
| | | ___ 19___ to ___ 19___ | |

**If you plan to receive a certificate or degree from Washtenaw Community College, please request an official transcript from all college attended.

12. List FULL-TIME employment within the past year:

| Place of Employment | City and State | Dates — From: To: |
|---|---|---|
| | | |
| | | |

It is the policy of Washtenaw Community College not to discriminate on the basis of sex or race in admissions, employment or in the operation of any educational program or activity. Any inquiries should be directed to our Title IX Coordinator. (See current Schedule of Courses for name and location.)

*Do not write below this line.*

| Sex | Class | Residence | Program | Birthdate | Previous School | Adm. | Term of Adm. | | High Sch. Grad. | Previous College | Clsf | Survey | County | Cn | Adv |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |

CUT ON THIS LINE

# OCCUPATIONAL PROGRAMS

**500 Division of Bus. & Ind. Management**

521 Accounting Tech.
571 Assessment Administration
531 Data Processing Tech.
532 Data Record Operator
541 Management Tech.
543 Marketing Aide
542 Marketing Tech.
551 Public Administration Tech.
561 Secretarial Tech.
562 Clerk Typist

**600 Division of Human Serv. Occupations**

640 Child Care Worker
651 Criminal Justice Tech.
641 Culinary Arts Tech.
643 Dietetic Tech.
631 Fire Protection
642 Food Service Specialist
661 Hotel-Motel Management Tech.

**700 Division of Health Occupations**

711 Dental Assisting
751 Emergency Medical Tech.
731 Medical Office Specialist
735 Mental Health Tech.
760 Practical Nurse
745 Radiation Therapy
741 Radiologic Technologist
721 Respiratory Therapist
722 Respiratory Therapist Alt. A
723 Respiratory Therapist Alt. B

**800 Division of Technical & Industrial**

811 Auto Body Service Tech.
812 Auto Body Repairman
813 Auto Spray Painter
815 Auto Service Tech.
810 Auto Body Specialist
816 Auto Safety & Emissions Tech.
828 Construction Tech. (Wood, Plastics, Metal)
829 Construction Tech. (Lighting)
821 Arch. Drafting Tech.
823 Construction Specialist
825 Industrial Drafting Tech. (Tool Option)
826 Industrial Drafting Tech. (Production)
886 Photographic Assistant
885 Photographic Tech.
884 Technical Illustrator
882 Commercial Artist
827 Draftsman Detailer
831 Electrical Engineering Tech.
832 Electronics Engineering Tech.
833 Electrical Equip. Repairman
834 Electronic Service Tech.
842 Hydraulic Assembler
841 Fluid Power Tech.
853 Toolroom Machine Operator
851 Mechanical Engineering Tech.
854 Electro-Mechanical Tech.
861 Metallurgical Tech.
871 Numerical Control Tech.
872 Numerical Control Machine Operator
891 Welding & Fab. Tech.
892 Combination Welder Mechanic
822 Arch. Drafting Detailer (1 year)

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WASHTENAW COMMUNITY COLLEGE
ANN ARBOR, MICHIGAN 48106
Telephone (313) 973-3300

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