

WASHTENAW
COMMUNITY COLLEGE
75-76 bulletin

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the W.C.C. spirit

The first graduating class at Washtenaw Community College turned aside a proposal to hold their commencement exercises at more impressive facilities away from campus. They chose, instead, to receive their honors on the front lawn of a remodeled, World War II vintage elementary school, where they had attended classes.

The first graduates reflected a spirit that has marked a decade of growth at W.C.C., and seen the college, once housed in a converted fire station, bowling alley and dairy distribution plant, become a fully accredited institution located in modern campus facilities.





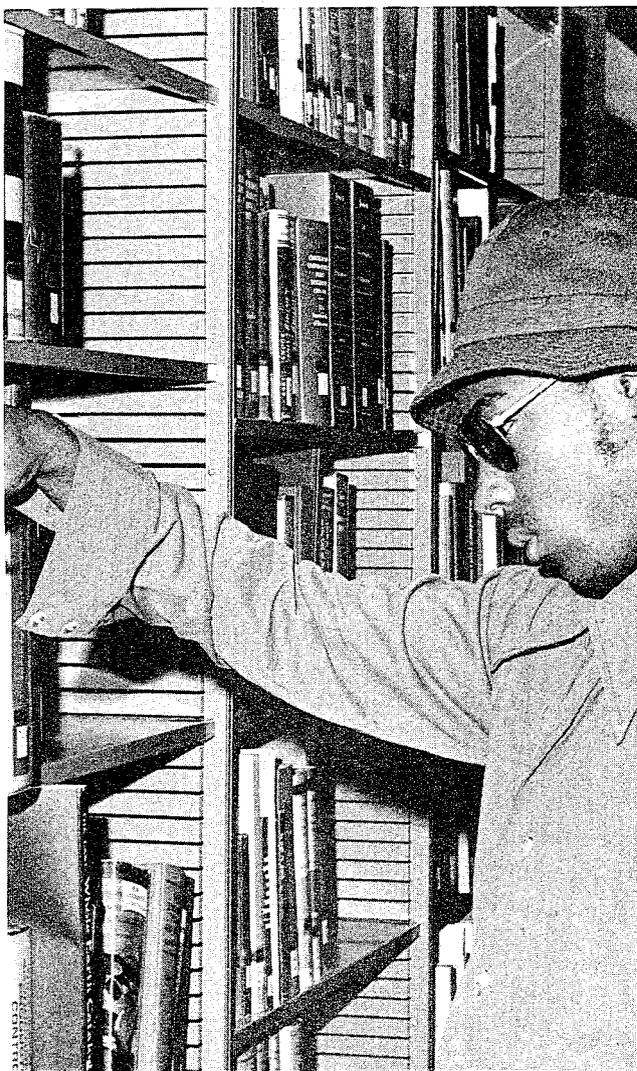
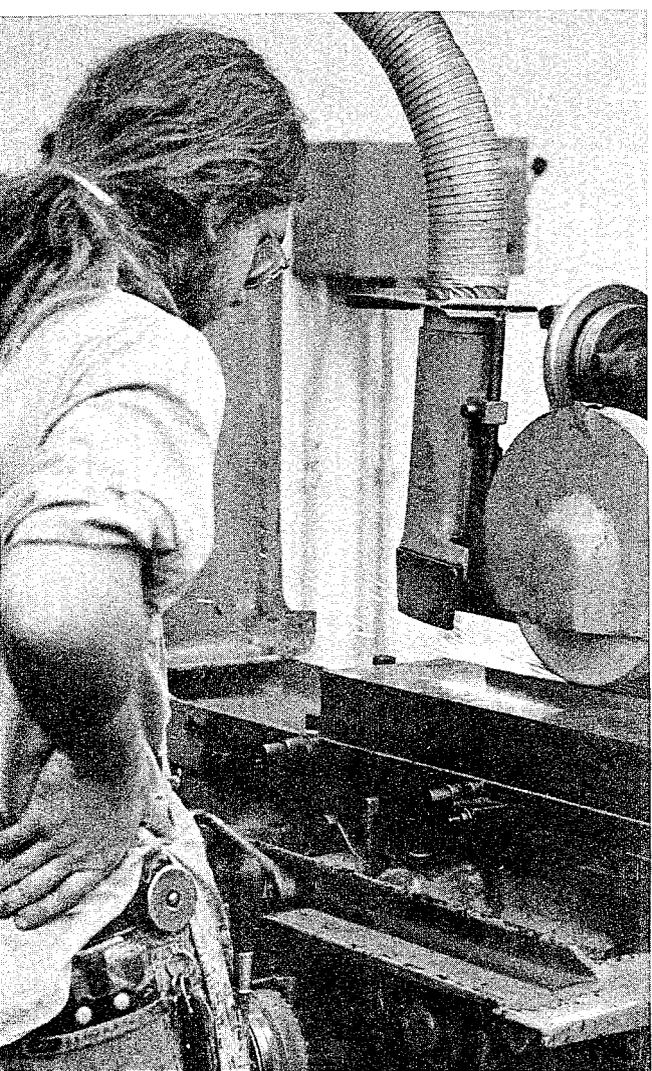
education for all

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.









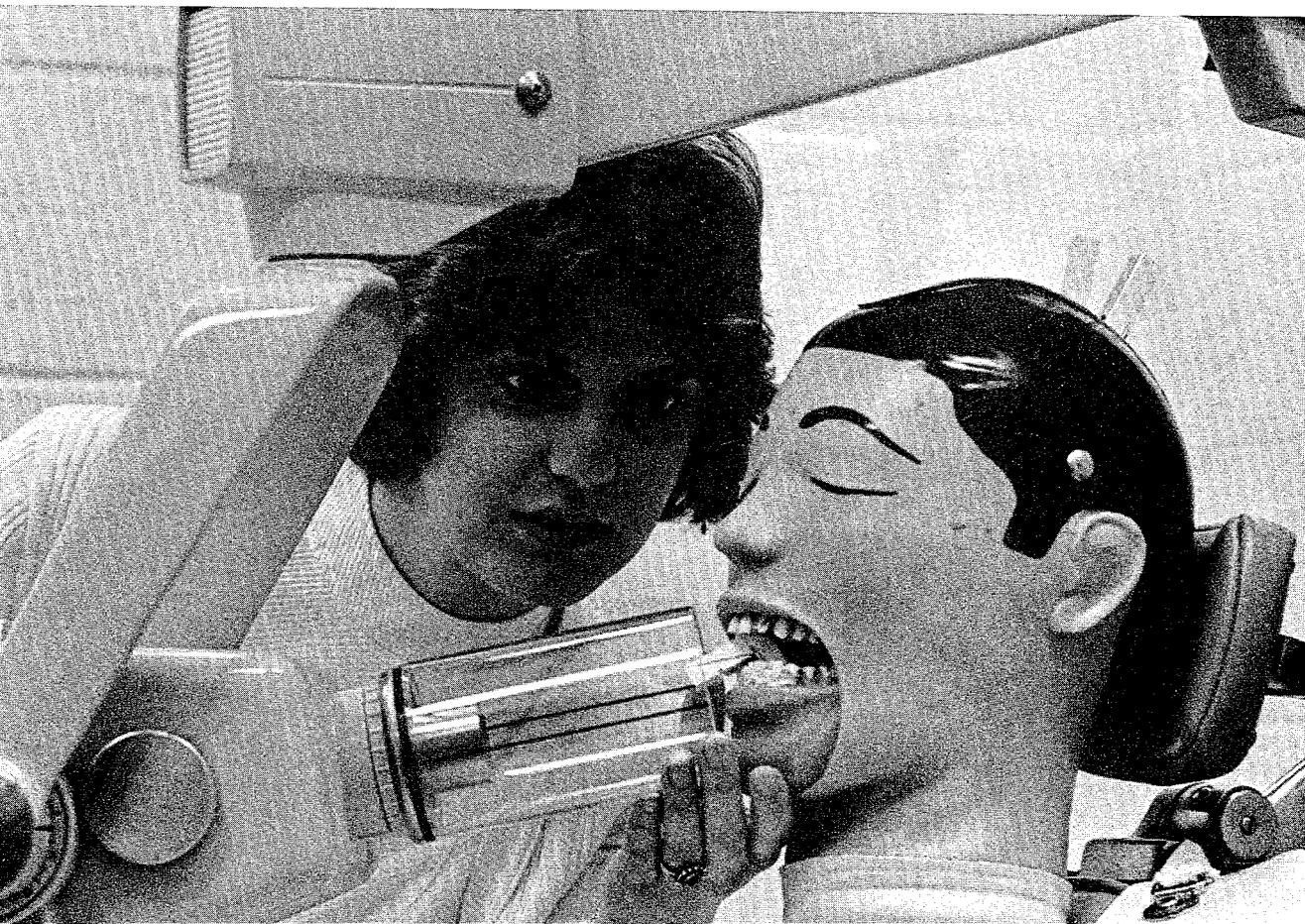
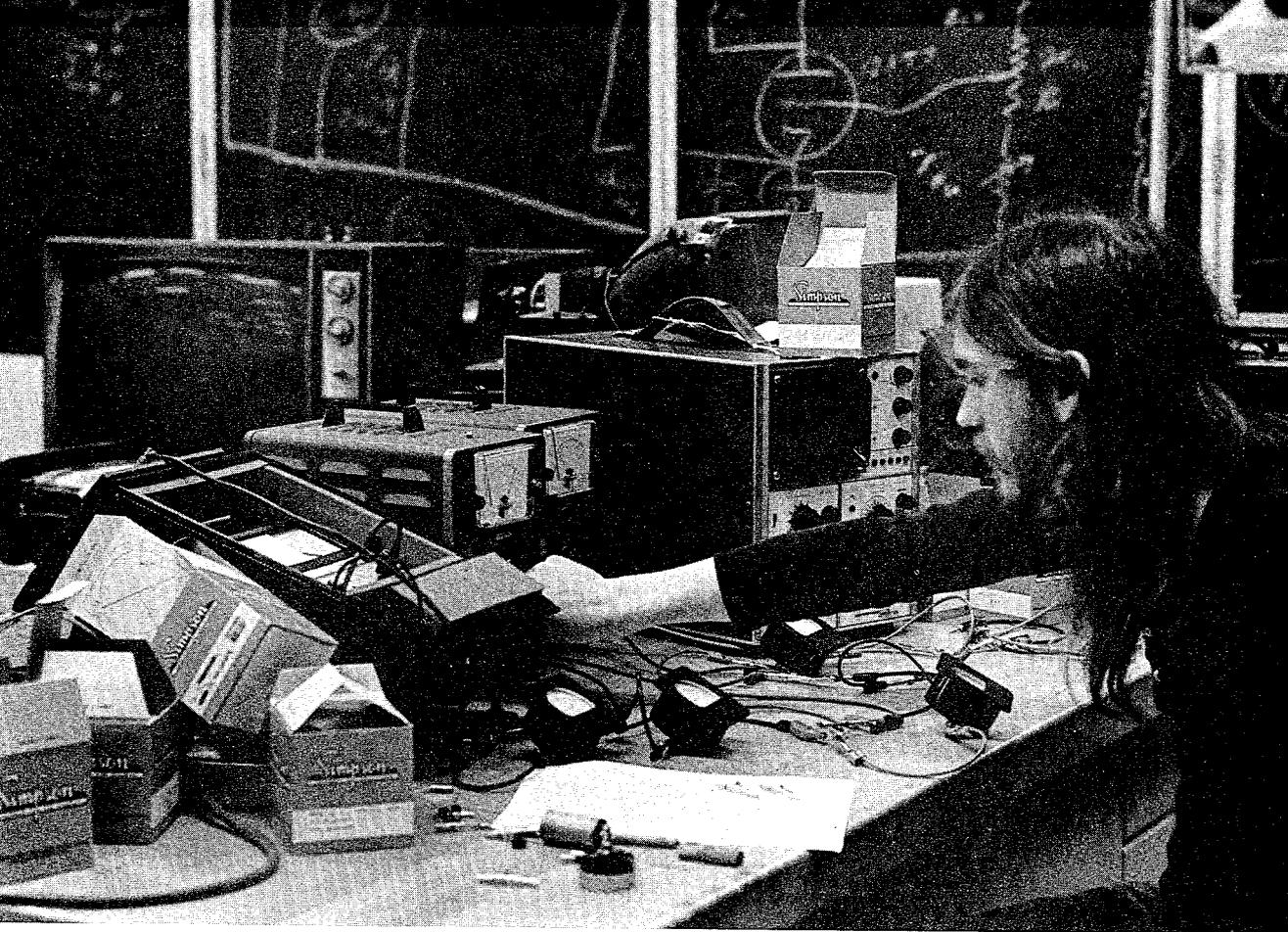
a special faculty

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.



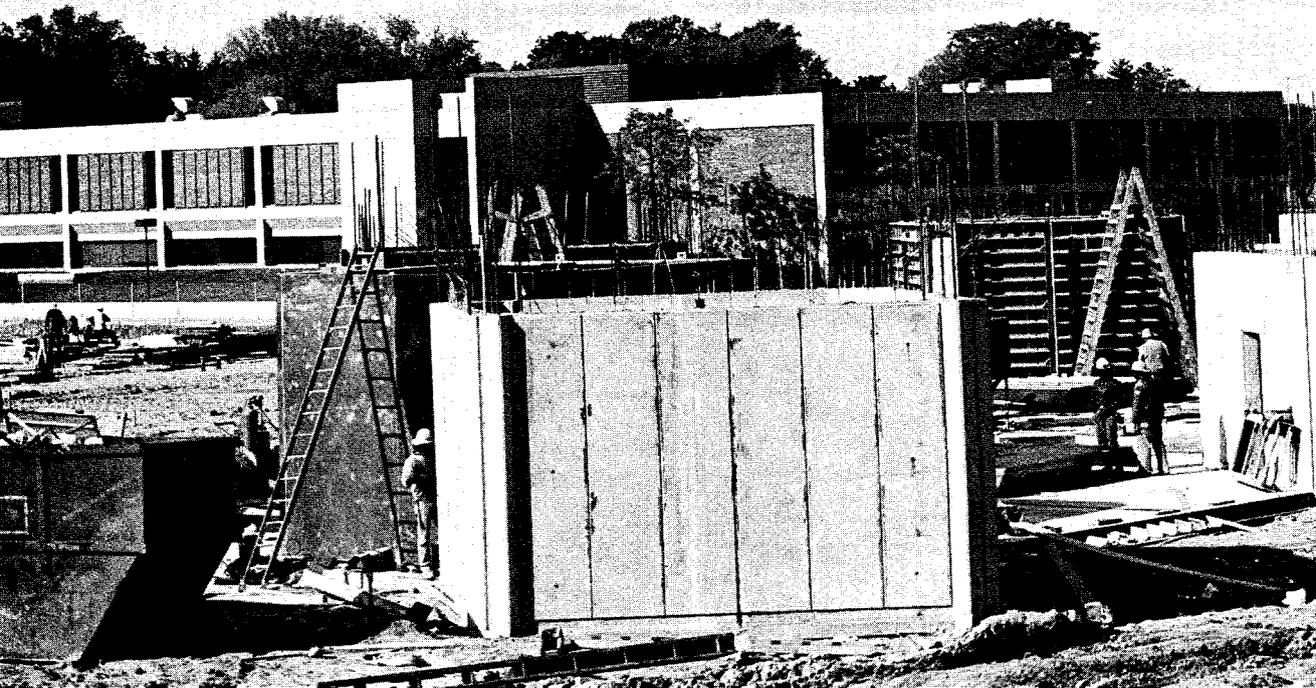




modern facilities

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.



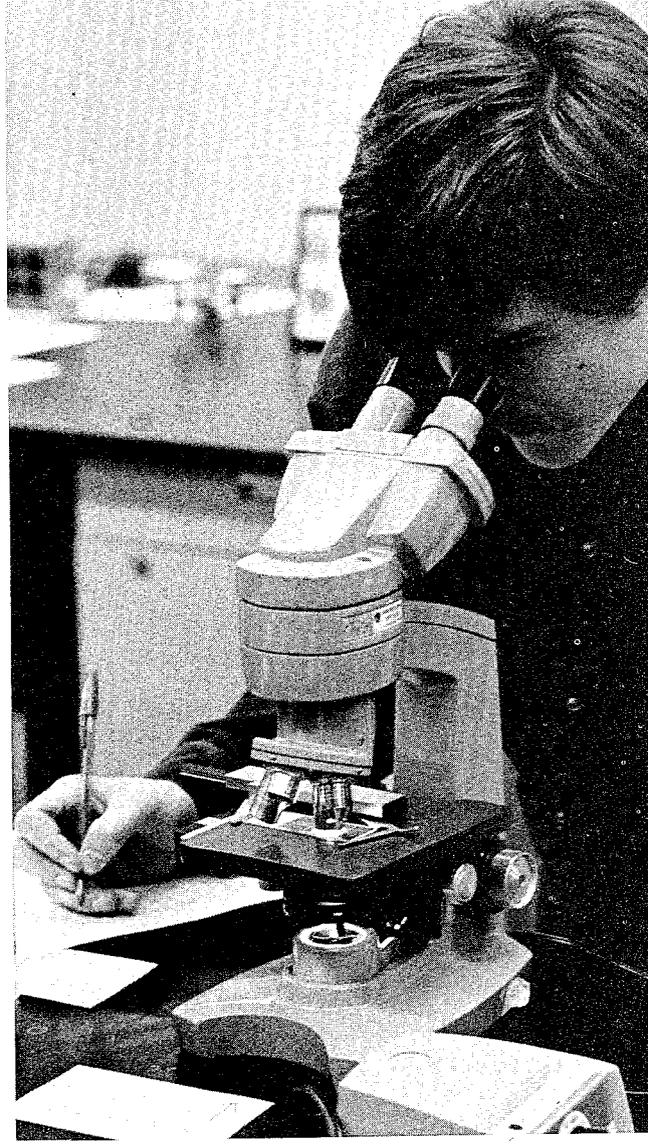
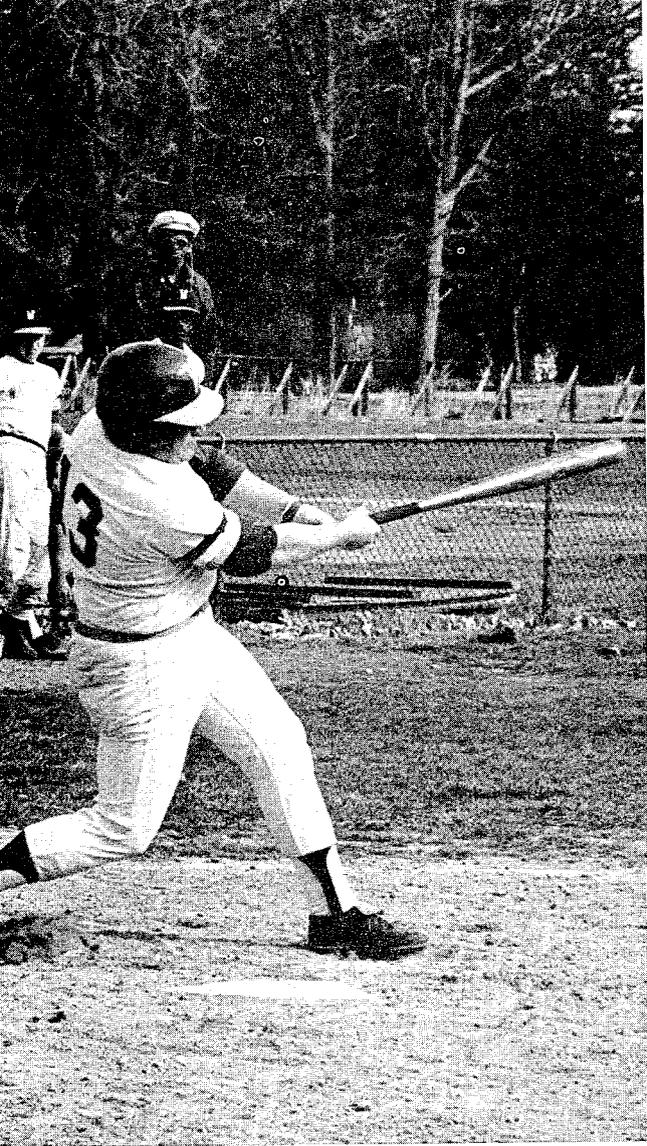


student life

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

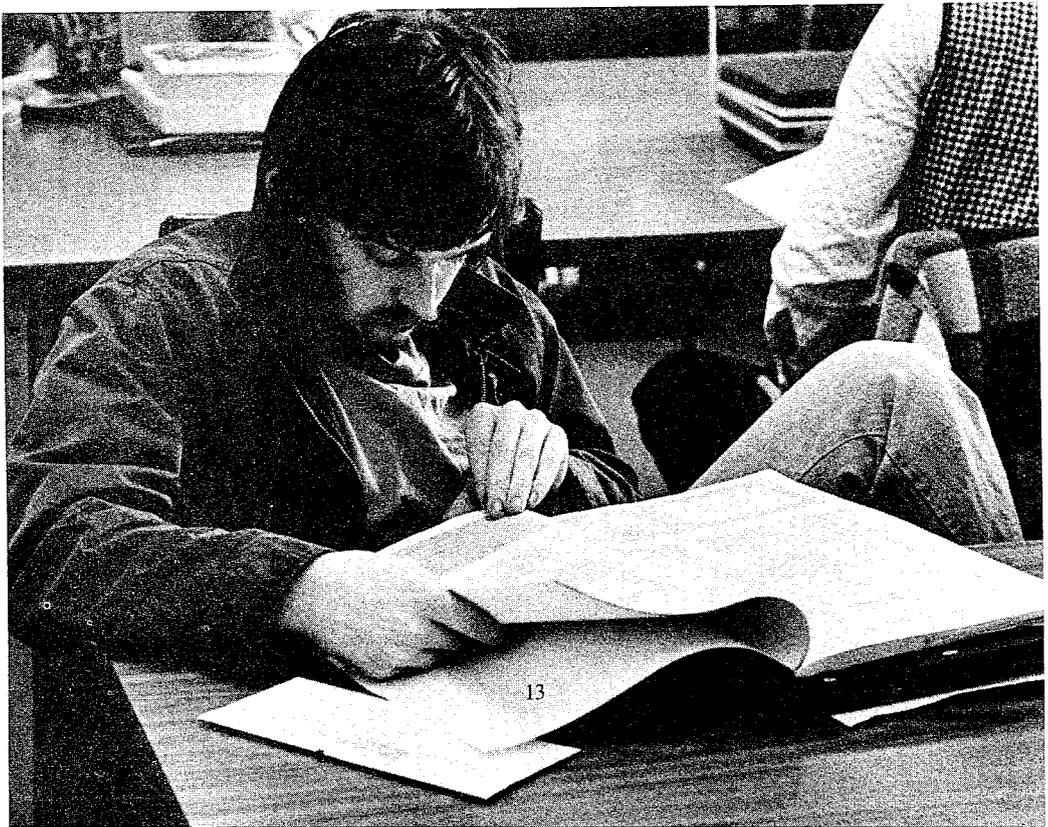
alley which had originally been used by defense plant workers. Students in automotive programs took courses in a one-time dairy distribution plant, while those in para-medical training were taught in the basement of a church in downtown Ann Arbor.

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 Resource Center is scheduled to open in 1976.

Enrollment has steadily increased and in the Winter term of 1975, included more than 5400 students who were enrolled in more than 75 occupational programs, general studies courses and transfer classes.

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 voca-

tional, 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.

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

An Institutional Member of
AMERICAN ASSOCIATION OF
COMMUNITY AND JUNIOR COLLEGES

A Member of
MICHIGAN ASSOCIATION OF COMMUNITY COLLEGES



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

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. All first-time students enrolling for seven (7) or more semester credit hours are required to take the American College Test (ACT) and have the results forwarded to the College Counseling Office.
5. The student intending to earn a Certificate of Achievement or an Associate Degree, must request each of the colleges he (or she) has attended to send 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 before the close of 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
$\frac{3}{4}$ Time	9 through 11 credits
$\frac{1}{2}$ Time	6 through 8 credits
Less than $\frac{1}{2}$ 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:
\$12.50 per credit hour
- Michigan, Out-of-District Resident:
\$24.00 per credit hour
- Out-of-State Resident:
\$34.00 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.

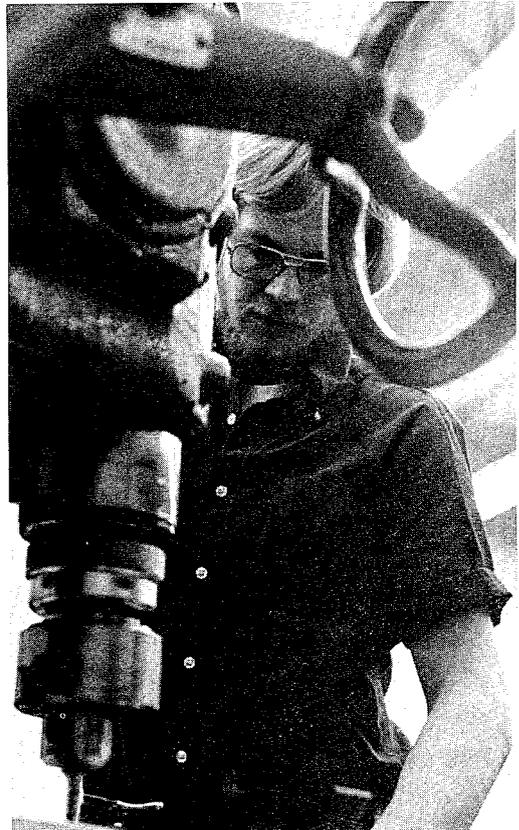
*All tuition and fees are subject to change by the Board of Trustees.

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.



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.

Questions arising from the administration of this policy will be resolved by the College Registrar.

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-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.

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

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 mid-semester, at the end of each semester, and each spring and summer session. The mid-semester grade is an indication of student progress and does not become a part of the permanent record. Both mid-semester and final grades are mailed to the home address of the student.

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.

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: During the first five (5) days of classes, an Add must be approved by the student's academic advisor or counselor. Following approval the student must take his Add cards to the Registrar's Office and complete the payment of tuition. A student is not officially registered in a class until the Add card is accepted by the Registrar's Office. Consult the semester calendar to determine the dates of the Add period.

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 by the Registrar's Office.

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.

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.

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 Counseling Office.

A student who leaves the college without withdrawing properly forfeits any tuition or deposits paid to the College.

graduation requirements

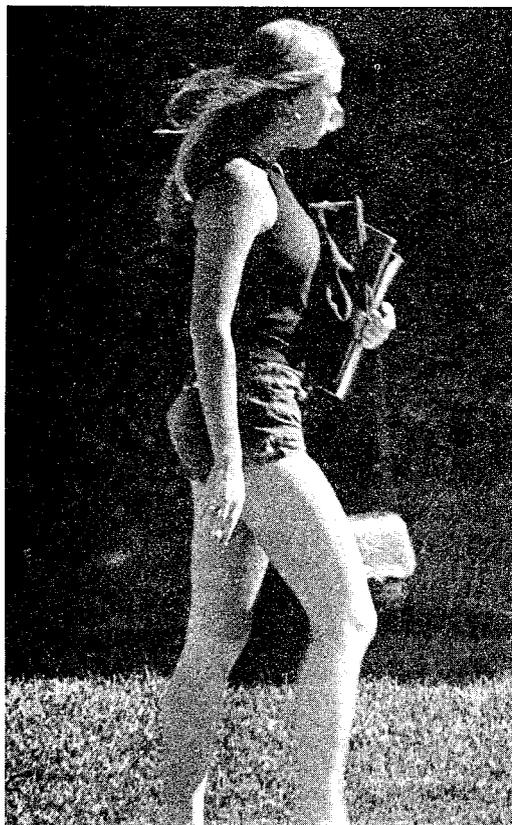
To be eligible for the ASSOCIATE DEGREE a student must:

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 Registrar's Office.
6. A second Associate Degree in an additional program area may be earned by re-enrollment and the completion of a minimum of fifteen credit hours, including all specific subject or course requirements in the selected program.

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

1. Complete a minimum of thirty credit hours (the last fifteen must be earned at Washtenaw Community College), including the specific subject matter or course requirements of the selected program. Certain programs may require more than the minimum of thirty credit hours — these must also be completed. Physical Education activity hours and credits in courses numbered 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 Registrar's Office.

Commencement ceremonies for all Washtenaw Community College graduates are held in the month of June. The conferring of Associate Degrees, the granting of Certificates of Achievement, and the giving of honors highlight the graduation exercises. Students receiving the Associate Degree or the Certificate of



Achievement are 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 3.00 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 3.00 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 3.75 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.

student services

The Student Services staff assists with counseling student-initiated activities, financial aids, job placement, admissions, registration, and emergency first-aid services.

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 will have a lasting impact on the life-style of the student by offering the opportunity to enjoy a wide range of physical, intellectual, and social interests.

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 forum

A student forum was organized in October, 1974. Its goals 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, Community Service Club, and Committee for Continuing Education of Women.

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 in Room 310 of the Exact Science Building.

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. Throughout most of the school year, students in the Food Service Program prepare hot, nutritious, noon-time meals at the nearby County Service Center.



student financial services

The Student Financial Services Office at Wash-tenaw 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 in Room 310 of the Exact Sciences Building, 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: August 1; Winter Semester: December 1; Spring-Summer Semester: March 15.** 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 by 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. Statement of Financial Aid History—for students who have received financial assistance 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 eligibility 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 (cannot already have a bachelor's degree)
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 approximately \$1,100 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, which 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 deferral options are available if the student enrolls in another college or university or enters the Peace Corps, VISTA, or Military Service. In certain situations, a portion of the loan may be cancelled for full-time teaching in a formally defined "disadvantaged" school setting, full-time teaching of the handicapped, full-time educational position in an approved pre-school program, and full-time military service in an active combat zone.

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

college work-study program (CWS)

The College Work-study Program provides jobs for students with financial need for up to twenty hours a week on the 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 \$12.50 per credit hour for Washtenaw County residents, \$24.00 per credit hour for out-of-county residents, and \$34 per credit hour for out-of-state students.

DEPENDENT STUDENT BUDGET:

Tuition (12 cr. hours)	\$300
Books & Supplies	125
Room & Board	900
Personal	160
Transportation	600
	<hr/>
Total-8 months	\$2085

SELF-SUPPORTING SINGLE STUDENT BUDGET:

Tuition (12 cr. hours)	\$300
Books & Supplies	125

Room & Utilities	960
Food	520
Medical	120
Transportation	600
Personal	200

Total -8 months \$2825

MARRIED, OR SINGLE WITH CHILD BUDGET:

Tuition (12 cr. hours)	300
Books & Supplies	125
Room & Utilities	1600
Food	800
Medical	200
Transportation	800
Personal	320

Total -8 months \$4145

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.

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. 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, 310 B.

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, Room 310 ESB.

law enforcement education program

Grants for tuition and books 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, 310 ESB.

michigan veterans trust fund

The MVTF provides tuition for children of deceased or disabled Michigan veterans. Applications are available through the Registrar's Office, 106 ESB.

The MVTF also provides six-month loans to veterans for emergency situations. Information and applications are available in Student Financial Services, 310 ESB.



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 age club

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

Washtenaw County residents who are 55 years of age or older and retired or over 60 are eligible to join with a one dollar per year fee that entitles them to all school services including enrollment in classes.

Use of the college facilities, including the library, counseling services and Student Activities sponsored

events are privileges of Golden Age Club members.

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, which is good for one year, is renewable, and can be applied for by mail or in person at the Registrar's Office. Members can enroll for a class following regular registration procedures without experiencing any additional costs.

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 - 6 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:

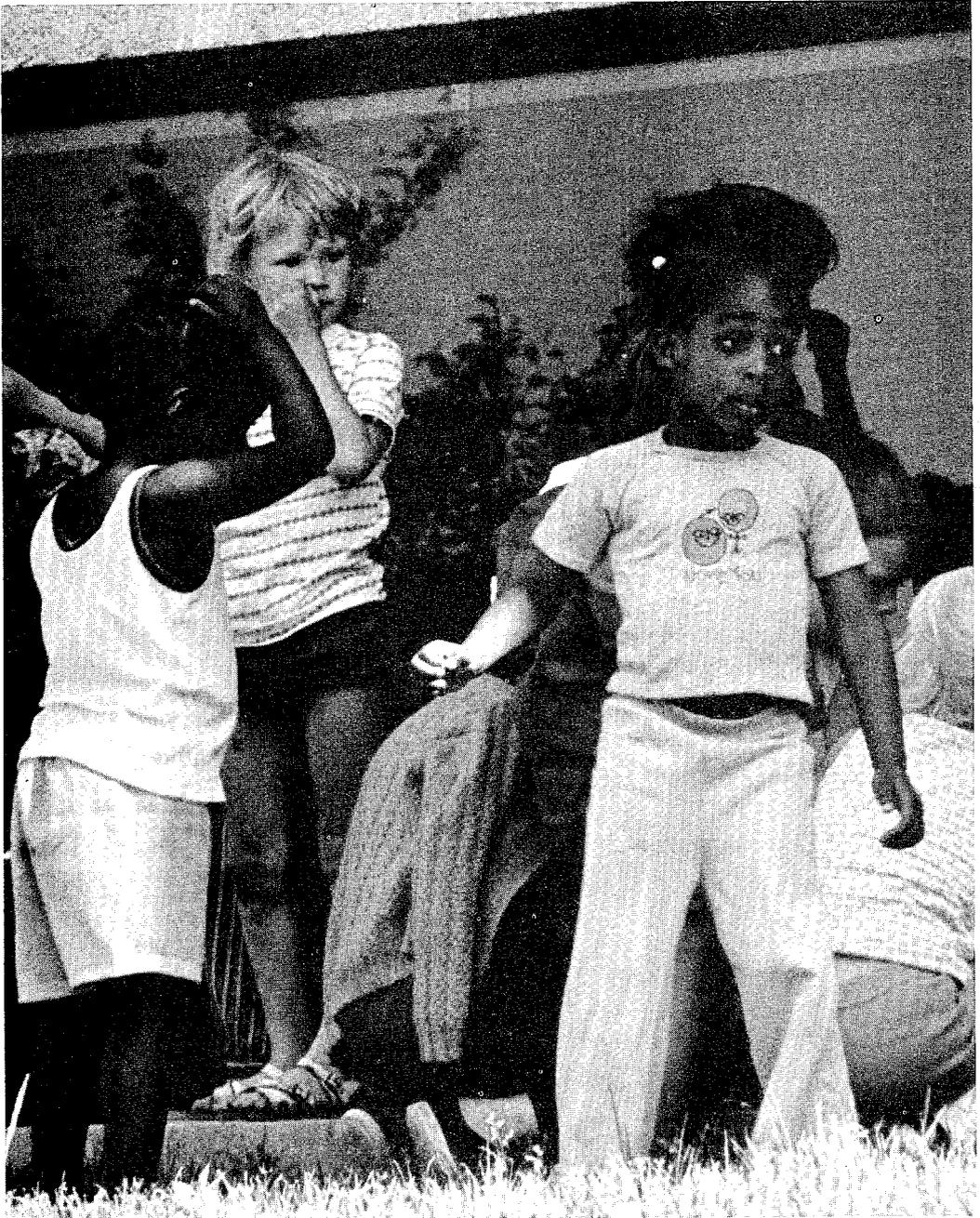
- 1) Go to the Center, work out a tentative schedule, pick up information packet.
- 2) Register at ESB for your classes.

- 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 (macro 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 Wash-tenaw) 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 environ-ment, 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

The Black Studies Division of the College was born as the result of student protest led by the Black Student Union. The students insisted that relevant Black content be included in the College curriculum. On May 6, 1969, the Board of Trustees appointed a Black Studies committee composed of students, faculty, and administrators invested with the power to implement a unique Black Studies Division.

In the Fall of 1969 the Black Studies program was under way.

objectives

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.

There is no degree offered in Black Studies as a major field. A variety of courses in art, music, history, economics, politics, psychology, and literature are offered as an integral part of existing programs and as elective courses. Timely workshops, speaker-lecturers, and consultation are basic parts of the Black Studies curriculum.

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, workshop, series of sessions, etc.) which are available on a regular basis throughout 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.

Included in these short-course offerings are the following:

Basic Personal Income Tax

Key-Punch Operations

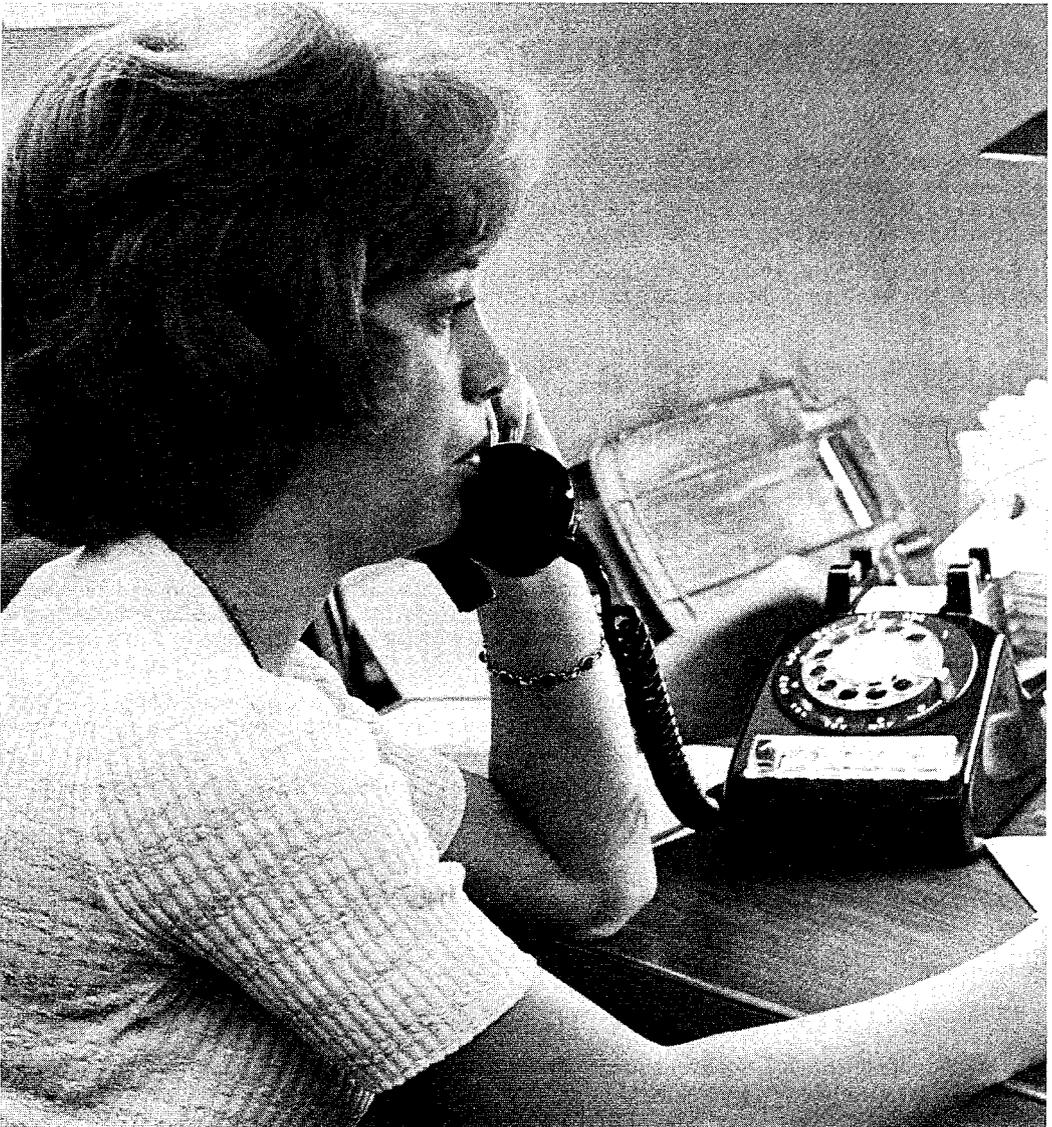
Data Processing/Unit Record Operations

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

Course	Description	Hrs.
FIRST TERM		
G-B 140	Business Occupational Foundations	3
ACC 111	Principles of Accounting	3
D-P 111	Principles of Data Processing*	5
MTH 167	Finite Mathematics or Fundamentals of Occupational Mathmetics	3
ENG 091	English Fundamentals or	
ENG 111	English Composition	3
		17

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
GB.111	Business Law	3
E-C 211	Principles of Economics	3
G-B 207	Business Communication	3
MET 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
EC-222	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-62

*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

Course	Description	Hrs.
FIRST TERM		
G-B 140	Business Occupational Foundations	3
D-P 111	Principles of Data Processing	5

MTH 090	Foundations of Occupational Mathematics or Math Elective	3
ENG 091	English Fundamentals or	
ENG 111	English Composition	3

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SECOND TERM		
D-P 122	Data Processing Applications	5
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	3
SPH 100	Fundamentals of Speaking	3

17

THIRD TERM		
D-P 213	Computer Programming	5
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

17

FOURTH TERM		
D-P 224	Data Processing Systems & Procedures	5
MGT 230	Office Management	3
MGT 200	Human Relations in Business & Industry	3
EC-222	Principles of Economics	3
I-E 200	Internship-Externship or Business Elective	3

17

Total Credit Hours For Program—65

DATA RECORD OPERATOR One-Year Program—Code 532

Course	Description	Hrs.
FIRST TERM		
D-P 111	Principles of Data Processing	5
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

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SECOND TERM		
D-P 122	Data Processing Applications	5
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

3
3

17

Total Credit Hours For Program—31

**PUBLIC ADMINISTRATION
TECHNICIAN**

Two-Year Program—Code 551

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
		<hr/> 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 Elective**	3
		<hr/> 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 111	Principles of Data Processing*	5
I-E 200	Internship-Externship or Elective**	3
		<hr/> 17

FOURTH TERM

EC-111	Introduction to Economics	3
ACC 092	Fundamentals of Accounting or	
ACC 122	Principles of Accounting	3
G-B 207	Business Communication	3
SOC 100	Principles of Sociology	3
I-E 200	Internship-Externship or Elective**	3
		<hr/> 15

Total Credit Hours For Program—62

*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

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 hours
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

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:

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

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

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

and one elective from the following three courses:

GB 111 Business Law I.....	3 credit hours
LA 127 Domestic Relations	3 credit hours
LA 200 Income Tax.....	3 credit hours

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

LA 200 Income Tax Law	3 credit hours
LA 201 Real Estate and Probate Law I.....	3 credit hours
LA 202 Real Estate and Probate Law II.....	3 credit hours

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

LA 211 Litigation I (Civil, Divorce, Criminal)	3 credit hours
LA 222 Litigation II (Civil)	3 credit hours

and one elective from the following three courses:

GB 111 Business Law I.....	3 credit hours
LA 127 Domestic Relations	3 credit hours
LA 201 Real Estate and Probate Law I.....	3 credit hours

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

GB 111 Business Law I.....	3 credit hours
LA 200 Income Tax Law	3 credit hours
LA 210 Business Organization (Partnership & Corporation)	3 credit hours

**MANAGEMENT TECHNICIAN
Two-Year Program—Code 541**

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 111	Principles of Data Processing*	5
ENG 111	English Composition or	
ENG 122	English Composition	3

17

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

15

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—62

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

**MARKETING TECHNICIAN
Two-Year Program—Code 542**

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 111	Principles of Data Processing*	5
MGT 208	Principles of Management	3
S-O 130	Business Machines	3
ENG 111	English Composition	
ENG 122	English Composition	3

17

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—62

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

**MARKETING AIDE
One-Year Program—Code 543**

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
		<hr/> 18

Total Credit Hours For Program—33

SECRETARIAL TECHNICIAN Two-Year Program—Code 561

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
		<hr/> 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	3
S-O 130	Business Machines	3
I-E 200	Internship-Externship or Business Elective***	3
SPH 100	Fundamentals of Speaking Elective	3
		<hr/> 15

THIRD TERM

S-O 100	(A, B, C) Shorthand and/or Elective**	3
D-P 111	Principles of Data Processing	5
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
		<hr/> 17

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
		<hr/> 16

Total Credit Hours For Program—63 or 64

*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:

- EC-211 Principles of Economics
- G-B 122 Business Law
- MGT 230 Office Management



CLERK-TYPIST

One-Year Program—Code 562

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 Occupations 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)

community service occupations

CHILD CARE WORKER

Two-Year Program—Code 460

Course	Description	Hrs.
FIRST TERM		
CCW 101	Child Development	3
*CCW 107	Educational Experiences in Science & Math	3
*CCW 105	Practicum I	3
ENG 111	English Composition	3
PE 130	American Red Cross	3
		15

SECOND TERM

CCW 103	Alternative Programs in Child Care	3
BLS 150	Afro-American History or	
BLS 157	Afro-American Music	3
ENG 210	Children's Literature	3
IFM 129	Nutrition and Life Cycle Elective	3
		15

THIRD TERM

*CCW 108	Educational Experiences in Expressive Arts	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 110	Sexual Concerns with Pre-Schoolers	3
CCW 120	Educational Psychology	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

FIRE PROTECTION TECHNICIAN

Two-Year Program—Code 631

Course	Description	Hrs.
FIRST TERM		
F-P 100	Introduction to Fire Protection	3
F-P 101	Hydrostatics I	3
CEM 097	Chemistry of Combustibles	3
PSY 100	Introductory Psychology	3
ENG	English Elective	3
		15

SECOND TERM

F-P 097	Labor Relations in the Public Sector	3
F-P 111	Hydrostatics II	3
F-P 122	Fire Prevention Theory & Application	3
ENG	English Elective	3
SPH	Speech Elective	3
		15

THIRD TERM		
F-P 109	Fire Operation Strategy	3
F-P 210	Introduction to Fire Administration	3
F-P 213	Fire Investigation and Arson	3
E-C 111	Introduction to Economics	3
PLS 150	State & Local Government & Politics	3
BPR 100	Blueprint Reading for Construction Trades	2
		<hr/> 17

FOURTH TERM		
F-P 189	Study Problems	3-6
F-P 209	Advanced Strategy	3
F-P 224	Protection Systems in Industry	3
SOC 100	Principles of Sociology	3
S-O 110A	Typewriting	3
		<hr/> 15-18

Total Credit Hours For Program—62-65

**CULINARY ARTS TECHNICIAN
Two-Year Program—Code 641**

Course	Description	Hrs.
FIRST TERM		
C-A 100	Introduction to Restaurant Management	3
C-A 110	Sanitation and Hygiene	3
C-A 111	Elementary Food Preparation	6
Acc 091	Fundamentals of Accounting or	
ACC 111	Principles of Accounting	3
		<hr/> 15

SECOND TERM		
C-A 118	Principles of Nutrition	3
C-A 120	Organization and Management of Food Systems	3
C-A 122	Quantity Food Production	6
D-P 111	Principles of Data Processing	5
		<hr/> 17

THIRD TERM		
C-A 227	Advanced Culinary Techniques	6
C-A 228	Layout and Equipment	6
C-A 224	Economics of Volume Feeding	4
		<hr/> 16

FOURTH TERM		
PLS 108	Government and Society	3
D-P 122	Data Processing Applications	5
D-T 209	Food Systems Seminar	2
C-A 189	Independent Directed Study	3
C-A 199	On-The-Job Training	3
		<hr/> 16

Total Credit Hours For Program—64

**FOOD SERVICE SPECIALIST
One-Year Program—Code 642**

Course	Description	Hrs.
FIRST TERM		
C-A 100	Introduction to Restaurant Management	3
C-A 111	Elementary Food Preparation	6



C-A 110	Sanitation and Hygiene	3
C-A 224	Economics of Volume Feeding	4
		<hr/> 16

SECOND TERM

C-A 228	Layout and Equipment	6
C-A 122	Quantity Food Production	6
C-A 227	Advanced Culinary Techniques	6
		<hr/> 18

Total Credit Hours For Program—34

**DIETETIC TECHNICIAN
Two-Year Program—Code 643**

Course	Description	Hrs.
FIRST TERM		
D-T 101	Introduction to Allied Health	3
CUL 110	Sanitation and Hygiene	3
CUL 111	Elementary Food Preparation	6
D-T 113	Anatomy and Physiology	3
CUL 118	Principles of Nutrition	3
		<hr/> 18

SECOND TERM

CUL 120	Organization and Management of Food Systems	3
CUL 122	Quantity Food Production	6
D-T 127	Advanced Nutrition	3
ENG	English Elective*	3
		<hr/> 15

THIRD TERM

D-T 219	Clinical Nutrition	6
CUL 228	Layout and Equipment	6
PLS	Political Science Elective*	3
		<hr/> 15

FOURTH TERM

D-T 209	Food Systems Seminar	2
CUL 224	Economics of Volume Feeding	4
CUL 227	Advanced Culinary Techniques	6
D-T 229	Quality Control of Food Systems	2
		<hr/> 14

Total Credit Hours For Program—62

*Must meet State requirements

**CRIMINAL JUSTICE TECHNICIAN
Two-Year Program—Code 651**

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 Law Enforcement/ Criminal Justice	3
SOC 100	Introductory Sociology	3
		<hr/> 15

SECOND TERM

PSY 108	Dynamics of Behavior	3
C-J 111	Police Community Relations	3
SOC 153	Juvenile Delinquency	3
SOC 202	Criminology	3
BLS 107	Black Psychology	3
		<hr/> 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
		<hr/> 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
		<hr/> 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

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
		<hr/> 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
		<hr/> 15
THIRD TERM		
HMT 104	Service Industry Equipment & Utilities	5
MTH 169	Intermediate Algebra	3
HMT 222	Lodging Management	3
DP 111	Principles of Data Processing*	5
		<hr/> 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
		<hr/> 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

(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
		<hr/> 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
		<hr/> 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
		<hr/> 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
		<hr/> 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)

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
		<hr/> 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
		<hr/>
		13

SPRING - SUMMER

MTH 090	Foundations of Occupational Math	3
R T 130	Clinical Practicum	3
		<hr/>
		6

THIRD TERM

R T 313	Principles of Radiologic Technology	3
R T 215	Radiologic Technology Laboratory	1
PHY 141	Physics for Health Occupations	3
R T 217	Clinical Practicum	2
PSY	Elective	3
		<hr/>
		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 Elective	3
		<hr/>
		12

SPRING - SUMMER

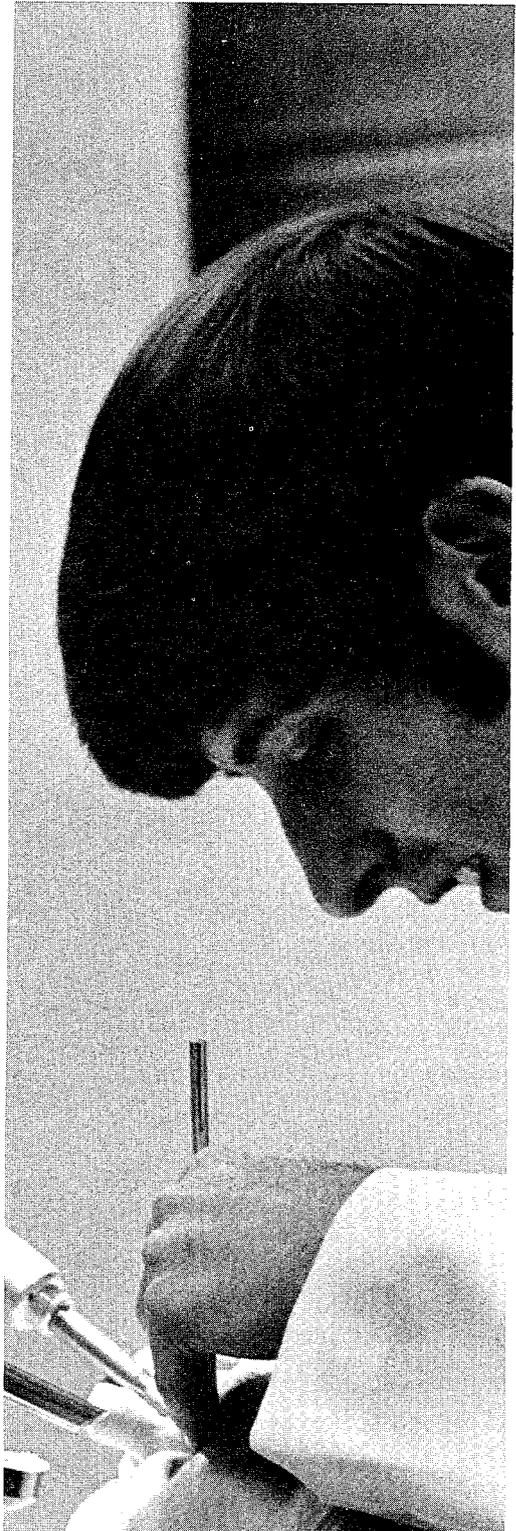
R T 223	Supervisory Management	2
R T 240	Clinical Practicum	4
		<hr/>
		6

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.



RESPIRATORY THERAPIST*
Two-Year Program—Code 721

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

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 Elective (PLS 108, 112, 150)	3
ENG	English or Speech Elective	3
RTH 200	Advanced Clinical Practice	4
		13

Total Credit Hours for Program—61

High School Chemistry—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, Wayne County General Hospital, Garden City Hospital, Annapolis Hospital, and McPherson Health Center.

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

SECOND YEAR
Alternate "A" For Experienced
Therapists—Code 722

Course	Description	Hrs.
SUMMER TERM		
RTH 200	Advanced Clinical Practice	4
FALL TERM		
RTH 213	Intensive and Rehabilitative Respiratory Care	3
RTH 200	Advanced Clinical Practice	4
RTH 217	Seminar Respiratory Therapy	2
ENG	English or Speech Elective	3
PSY	Psychology Elective (PSY 100, 108, BLS 107)	3
		15

WINTER TERM		
Work Experience		
MTH	Mathematics Elective (097 or higher number)	3
SOC	Sociology Elective (Medical Soc. 201, or 100, 150, 202, 207, 250)	3
PLS	Political Science Elective (PLS 108, 112, 150)	3
		9

Total Credit Hours For Program—61

Alternate "B" One-Year Program—Code 723

For registered nurses or persons holding a baccalaureate degree with a biology major or persons holding a baccalaureate degree with a *Natural Science Minor.

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 200	Advanced Clinical Practice	4
		<hr/>
		16

SPRING TERM

RTH 212	Ventilators and Diagnostic Tests	3
		<hr/>
		3

SUMMER TERM

Work Experience (Optional)

Course	Description	Hrs.
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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
		<hr/>
		11

Total Credit Hours For Program—29

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

MEDICAL OFFICE SPECIALIST

Course	Description	Hrs.
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FIRST TERM

S-O 110	(A, B, C) Typewriting	2
S-O 100	(A, B, C) Shorthand	3
HS 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
		<hr/>
		15

SECOND TERM

S-O 110	(A, B, C) Typewriting	2
S-O 100	(A, B, C) Shorthand	3
MO 199	On-the-Job Training	3
SPH 100	Fundamentals of Speaking	3
PSY 100	Introductory Psychology	3
		<hr/>
		14

THIRD TERM

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

FOURTH TERM

MO 199	On-the Job Training	3
DP 122	Data Processing Applications	5
PLS 108	Government and Society	3
ENG 100	Technical Communications	3
PSY 200	Child Psychology	3
		<hr/>
		17

Total Credit Hours For Program—62

PRACTICAL NURSE*

The following courses in the nursing program curriculum must be taken in sequence.

Course	Description	Hrs.
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FIRST TERM

BIO 111	Anatomy and Physiology	4
BIO 112	Anatomy and Physiology Laboratory	1
BIO 127	Hospital Microbiology — 2 times a week (7½ wks.)	1
NUR 100	Nursing Fundamentals	4
NUR 110	Nursing Fundamentals Laboratory	2
NUR 115	Nursing Clinical Experience	1
PSY 100	Introduction to Psychology	1
NUR 117	Nutrition for Nurses	2
NUR 118	Personal and Community Health — 2 times a week (7½ wks.)	1
		<hr/>
		17

SECOND TERM

NUR 125	Medical-Surgical Nursing with Laboratory	6
NUR 120	Medical-Surgical Nursing Practice	6
ENG 107	Communication Skills* *English Elective	3
		<hr/>
		15

SPRING - SUMMER

NUR 135	Maternal and Child Nursing with Laboratory	3
NUR 130	Maternal and Child Nursing Practice	4
NUR 145	Advanced Medical-Surgical Nursing with Laboratory	3
NUR 140	Advanced Medical-Surgical Nursing Practice	4
NUR 147	Growth and Development	3
		<hr/>
		17

		<hr/>
		49

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

technical and industrial programs

AUTO BODY SPECIALIST Advanced Certificate—Code 810

Course	Description	Hrs.			Hrs.
			WF 101	Acetylene Welding	2
			MTH 090	Foundations of Occupational Mathematics	3
					<hr/> 15
	FIRST TERM			SECOND TERM	
ABR 111	Auto Body Repair Fundamentals	4	ABR 124	Automobile Refinishing	4
ABR 112	Automobile Refinishing Fundamentals	4	ABR 123	Body Repair Methods	4
ABR 113	Light Body Service	2	ABR 126	Fundamentals of Frame and Body Alignment	3
WF 101	Acetylene Welding	2	WF 102	Arc Welding	2
ENG 107	Communication Skills	3	ENG 107	Communication Skills	3
		<hr/> 15			<hr/> 16
	SECOND TERM			SPRING - SUMMER	
ABR 123	Body Repair Methods	4	ABR 125	Flat Rate Estimating	2
ABR 126	Fundamentals of Frame and Body Alignment	3	ABR 220	Collision Estimating	2
AS 202	Automotive Air Conditioning	1			<hr/> 4
WF 102	Arc Welding	2		THIRD TERM	
PLS 108	Government and Society	3	ABR 219	Major Repair Procedures	8
		<hr/> 13	PLS 108	Government and Society	3
	SPRING-SUMMER			*Approved Elective	3
ABR 125	Flat Rate Estimating	2		*Approved Elective	3
ABR 220	Collision Estimating	2			<hr/> 17
ABR 199	On-the-Job Training	4		FOURTH TERM	
		<hr/> 8	ABR 230	Specialized Study	4-8
	THIRD TERM		PSY 150	Industrial Psychology	3
ABR 219	Major Repair Procedures	8		*Approved Elective	3
		<hr/> 8			<hr/> 10-14
	FOURTH TERM			Total Credit Hours For Graduation—64	
ABR 230	Specialized Study	8		*Electives selected to satisfy student's specific goal. Subject to approval of program advisor.	
		<hr/> 8			

Total Credit Hours For Program—52

AUTO BODY SERVICE TECHNICIAN Two-Year Program—Code 811

Course	Description	Hrs.			Hrs.
	FIRST TERM			FIRST TERM	
ABR 111	Auto Body Repair Fundamentals	4	ABR 111	Auto Body Repair Fundamentals	4
ABR 112	Automobile Refinishing Fundamentals	4	ABR 112	Automobile Refinishing Fundamentals	4
ABR 113	Light Body Service	2	ABR 113	Light Body Service	2
		<hr/> 2	WF 101	Acetylene Welding	2
			ENG 107	Communication Skills	3
					<hr/> 15

AUTO BODY REPAIRMAN One-Year Program—Code 812

Course	Description	Hrs.
	FIRST TERM	
ABR 111	Auto Body Repair Fundamentals	4
ABR 112	Automobile Refinishing Fundamentals	4
ABR 113	Light Body Service	2
WF 101	Acetylene Welding	2
ENG 107	Communication Skills	3
		<hr/> 15

SECOND TERM		
ABR 123	Body Repair Methods	4
ABR 126	Fundamentals of Frame and Body Alignment	3
AS 202	Automotive Air Conditioning	1
WF 102	Arc Welding	2
PLS 108	Government and Society	3
		<hr/> 13

SPRING - SUMMER		
ABR 125	Flat Rate Estimating	2
		<hr/> 2

Total Credit Hours For Program—30

AUTOMOBILE SPRAY PAINTER One-Year Program—Code 813

Course	Description	Hrs.
FIRST TERM		
ABR 111	Auto Body Repair Fundamentals	4
ABR 112	Automobile Refinishing Fundamentals	4
ABR 113	Light Body Service **Approved Elective	2 3
		<hr/> 13
SECOND TERM		
ABR 124	Automobile Refinishing	4
ABR 189	Study Problems	4
PLS 108	Government and Society	3
ENG 107	Communication Skills	3
		<hr/> 14
SPRING-SUMMER		
ABR 199	On-the-Job Training	3
		<hr/> 3

Total Credit Hours For Program—30

*May substitute 3 hrs. Study Problems.

On-the-Job Training 199-10 hours per week per credit hour.

**Electives subject to approval of student's advisor.

AUTOMOTIVE SERVICE TECHNICIAN Two-Year Program—Code 815

Course	Description	Hrs.
FIRST TERM		
AS 100	Introduction to Auto Service	1
AS 101	Automotive Electricity	2
AS 102	Engine Operation	2
AS 103	Basic Carburetion	1
AS 104	Brake Systems	2
AS 150	Light Service Repair	2

WF 101	Acetylene Welding	2
MTH 090	Foundations of Occ. Mathematics	3
		<hr/> 15

SECOND TERM		
AS 105	Wheel Balancing and Alignment	2
AS 106	Cranking and Charging Systems	2
AS 107	Fuel Systems	2
AS 108	Transmission and Power Trains	2
AS 207	Steering Systems	1
AS 209	Disc Brakes	1
PHY 090	Automotive Physics	3
ENG 107	Communication Skills	3
		<hr/> 16

SUMMER		
AS 199	On-the-Job Training or Approved Elective	4
		<hr/> 4

THIRD TERM		
AS 201	Automotive Tune Up & Test Equipment	2
AS 202	Heating & Air Conditioning	2
AS 203	Automatic Transmissions	2
AS 204	Suspension Systems	2
AS 212	Electrical Circuits	1
AS 222	Auto. Sales and Service Records	1
WF 221	Applied Automotive Welding	1
PLS 108	Government and Society	3
		<hr/> 14

FOURTH TERM		
AS 205	Practical Field Experience	4
AS 206	Measurement of Vehicle Performance	2
AS 208	Automatic Transmissions Hyd. Sys.	2
AS 210	Noise, Vibration, and Harshness	1
AS 211	Emissions	1
AS 215	Customer Relations	2
PSY 150	Industrial Psychology	3
		<hr/> 15

Total Credit Hours For Program—64

AUTOMOTIVE MECHANIC PROGRAM One-Year Program—Code 816

Course	Description	Hrs.
FIRST TERM		
AS 100	Introduction to Auto Service	1
AS 101	Automotive Electricity	2
AS 102	Engine Operation	2
AS 103	Basic Carburetion	1
AS 104	Brake Systems	2
AS 150	Light Service Repair	2
AS	Approved 2 Hour Elective in A.S.	2
WF 101	Acetylene Welding	2
		<hr/> 14

SECOND TERM		
AS 105	Wheel Balancing & Alignment	2
AS 106	Cranking and Charging Systems	2
AS 107	Fuel Systems	2
AS 108	Transmission and Power Trains	2
AS 201	Automotive Tune-Up & Test Equipment	2
AS	Approved 1 Hour Elective in A.S.	1
AS 211	Emissions	2
AS	Communication Skills I	3
		<hr/>
		16

Total Credit Hours For Program—30

ARCHITECTURAL DRAFTING TECHNICIAN
Two-Year Program—Code 821

Course	Description	Hrs.
FIRST TERM		
ARC 111	Architectural Drawing	6
S-O 090	Fundamentals of Typewriting	1
ARC 117	Construction Materials	3
MTH 169	Intermediate Algebra	4
ENG 091	English Fundamentals or	
ENG 111	English Composition	3
		<hr/>
		17

SECOND TERM		
ARC 122	Architectural Drawing	6
ARC 120	Mechanical Equipment	2
ARC 150	Presentation Drawings and Models	4

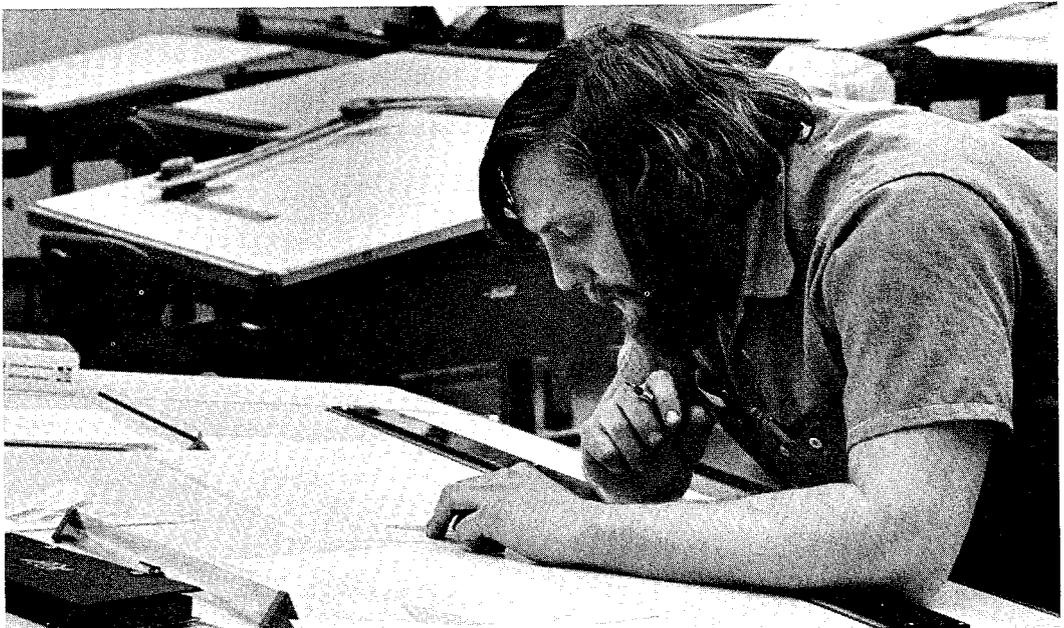
ARC 209	Surveying	3
ARC 100	Specifications	1
		<hr/>
		16
THIRD TERM		
ARC 213	Architectural Drawing	6
ARC 210	Structure in Architecture	2
ARC 207	Estimating Construction Costs	2
PHY 111	Introductory Physics	4
ENG 100	Technical Communications	3
		<hr/>
		17

FOURTH TERM		
ARC 224	Architectural Drawing	6
ARC 200	Specification Preparation	1
ARC 208	Estimating Construction Costs	2
PLS 108	Government and Society	3
PSY 150	Industrial Psychology	3
		<hr/>
		15

Total Credit Hours For Program—65

ARCHITECTURAL DRAFTING DETAILER
One-Year Program—Code 822

Course	Description	Hrs.
FIRST TERM		
ARC 111	Architectural Drawing	6
S-O 090	Fundamentals of Typewriting	1
ARC 117	Construction Materials	3



MTH 169	Intermediate Algebra	4	I-D 122	Fundamentals of Jigs and Fixtures	3
ENG 091	English Fundamentals or		MLG 101	Industrial Materials	2
Eng 111	English Composition	3	MTH 152	Applied Geometry and Trigonometry	4
		<hr/>			<hr/>
		17			17

SECOND TERM

ARC 122	Architectural Drawing	6
ARC 120	Mechanical Equipment	2
ARC 150	Presentation Drawings and Models	4
ARC 209	Surveying	3
ARC 100	Specifications	1
		<hr/>
		16

Total Credit Hours For Program—33

**CONSTRUCTION SPECIALIST
One-Year Program—Code 823**

Course	Description	Hrs.
FIRST TERM		
ARC 111	Architectural Drawing	6
ARC 117	Construction Materials	3
ARC 207	Estimating Construction Costs	2
BPR 100	Blueprint Reading for Construction Trades	2
G-B 111	Business Law	3
		<hr/>
		16

SECOND TERM

ARC 109	Site Layout	3
ARC 208	Estimating Construction Costs	2
ARC 100	Specifications	1
BPR 110	Blueprint Reading for Construction Trades	2
PSY 150	Industrial Psychology	3
ENG 100	Technical Communication	3
		<hr/>
		14

Total Credit Hours For Program—30

**INDUSTRIAL DRAFTING TECHNICIAN
(TOOLING OPTION)
Two-Year Program—Code 825**

Course	Description	Hrs.
FIRST TERM		
I-D 111	Industrial Drafting	4
M-T 111	Machine Shop Theory and Practice	4
I-D 112	Descriptive Geometry	4
MTH 151	Applied Algebra	4
		<hr/>
		16

SECOND TERM

PHY 110	Applied Physics	4
I-D 114	Industrial Drafting	4

THIRD TERM

I-D 107	Mechanisms	4
I-D 213	Fundamentals of Die Drafting	4
TCA 100	Perspective and Parallel Projection	4
N-C 100	Introduction to Numerical Control	3
ENG 100	Technical Communications	3
		<hr/>
		18

FOURTH TERM

I-D 206	Fundamentals of Plant Layout	3
I-D 224	Fundamentals of Industrial Tooling	3
N-C 121	Programming For Numerical Control	3
I-D 199*	On-the-Job Training	3
PLS 108	Government and Society	3
		<hr/>
		15

Total Credit Hours For Program—66

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

**INDUSTRIAL DRAFTING TECHNICIAN
(PRODUCT OPTION)
Two-Year Program—Code 826**

Course	Description	Hrs.
FIRST TERM		
I-D 111	Industrial Drafting	4
M-T 111	Machine Shop Theory and Practice	4
I-D 112	Descriptive Geometry	4
MTH 151	Applied Algebra	4
		<hr/>
		16

SECOND TERM

PHY 110	Applied Physics	4
I-D 114	Industrial Drafting	4
I-D 122	Fundamentals of Jigs and Fixtures	3
MGL 101	Industrial Materials	2
MTH 152	Applied Geometry and Trigonometry	4
		<hr/>
		17

THIRD TERM

I-D 107	Mechanisms	4
I-D 251	Fundamentals of Electrical Drafting	4
TCA 100	Perspective and Parallel Projection	4
ENG 100	Technical Communications	3
		<hr/>
		15

FOURTH TERM

I-D 240	Fundamentals of Product Layout	4
I-D 206**	Fundamentals of Plant Layout	3

I-D 199*	On-the-Job Training	4
PLS 108	Government and Society	3
ARC 120	Mechanical Equipment	2
		<hr/> 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.

DRAFTSMAN-DETAILER
One-Year Program—Code 827

Course	Description	Hrs.
FIRST TERM		
I-D 111	Industrial Drafting	4
I-D 112	Descriptive Geometry	4
M-T 111	Machine Shop Theory and Practice	4
MTH	Mathematics Elective	4
		<hr/> 16

SECOND TERM

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

Total Credit Hours For Program—32

CONSTRUCTION TECHNICIAN
Artisan—Wood, Plastics, Metal
Two-Year Program—Code 828

Course	Description	Hrs.
FIRST TERM		
ARC 117	Construction Materials	3
C-T 121	Carpentry	4
ENG 100	Technical Communications	3
MTH 151	Applied Algebra	3
		<hr/> 13
SECOND TERM		
BPR 100	Blueprint Reading for Construction Trades	2
C-T 221	Carpentry	4
ARC 100	Specifications	1
MTH 169	Intermediate Algebra	4
		<hr/> 11

SIX WEEKS INTERNSHIP		
C-T 199	On-the-Job Training—40 hr. week	6
C-T 199	On-the-Job Training—40 hr. week	6
		<hr/> 12

FOURTH TERM

C-T 242	Crafts in Wood, Plastic, and Non-Ferrous Metals	4
BPR 110	Blueprint Reading for Construction Trades	2
ARC 109	Site Layout	3
ARC 207	Estimating Construction Costs	2
PSY 150	Industrial Psychology	3
		<hr/> 14

FIFTH TERM

C-T 262	Building Component Fabrication	4
ARC 208	Estimating Construction Costs	2
PLS 108	Government & Society	3
SPH 100	Fundamentals of Speaking	3
		<hr/> 12

Total Credit Hours For Program—62

CONSTRUCTION TECHNOLOGY
(Architectonics)
Lighting Specialist
Two-Year Program—Code 829

Course	Description	Hrs.
FIRST TERM		
C-T 131	Electric Power Supplying	4
ARC 117	Construction Materials	3
MTH 169A	Intermediate Algebra	3
E-E 101	Servicing Techniques	4
		<hr/> 14
SECOND TERM		
C-T 231	Lighting Systems	4
BPR 100	Blueprint Reading for Construction Trades	2
ARC 100	Specifications	1
MTH 169B	Intermediate Algebra	4
		<hr/> 11

SIX WEEKS INTERNSHIP

C-T 199	On-the-Job Training—40 Hr. week	6
C-T 199	On-the-Job Training—40 hr. week	6
		<hr/> 12

FOURTH TERM

ENG 100	Technical Communications	3
BPR 110	Blueprint Reading for Construction Trades	2
PSY 150	Industrial Psychology	3
E-E 102	Appliance Repair	4
		<hr/> 12

FIFTH TERM

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

13

Total Credit Hours For Program—62

**ELECTRICAL ENGINEERING
TECHNICIAN
Two-Year Program—Code 831**

Course	Description	Hrs.
FIRST TERM		
E-E 110	Electrical Applications	4
E-E 111	Electrical Fundamentals	2
I-D 100	Technical Drawing	4
MTH 169	Intermediate Algebra or	
E-E 100	Electrical Analysis	4
ENG 091	English Fundamentals or	
ENG 111	English Composition	3
		17

SECOND TERM

E-E 122	Electrical Fundamentals	2
E-E 120	Electrical Applications	4
E-E 127	Industrial Electricity	4
PSY 150	Industrial Psychology	3
E-E 211	Basic Electronics	4
		17

THIRD TERM

E-E 200	Audio and Power Transmission	3
E-E 237	Electronic Switching and Control (Logic)	3
E-E 219	Electrical Distribution Systems	3
E-E 210	Measurements and Instrumentation Science or Technical Elective	4
		17

FOURTH TERM

E-E 220	Electrical Installation and Maintenance Practices	4
E-E 239	Electrical Design	3
E-E 240	Practices and Standards Seminar	2
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**

Course	Description	Hrs.
FIRST TERM		
E-E 110	Electrical Applications	2
E-E 111	Electrical Fundamentals	4
I-D 100	Technical Drawing	4
MTH 169	Intermediate Algebra or	
E-E 100	Electrical Analysis	4
ENG 091	English Fundamentals or	
ENG 111	English Composition	3
		17

SECOND TERM

E-E 122	Electrical Fundamentals	4
E-E 120	Electrical Applications	2
E-E 127	Industrial Electricity	4
PSY 150	Industrial Psychology	3
E-E 211	Basic Electronics	4
		17

THIRD TERM

E-E 200	Audio and Power Transmission	3
E-E 237	Electronic Switching and Control	3
PLS 208	Government and Society	3
E-E 210	Measurements and Instrumentation Science or Technical Elective	4
		17

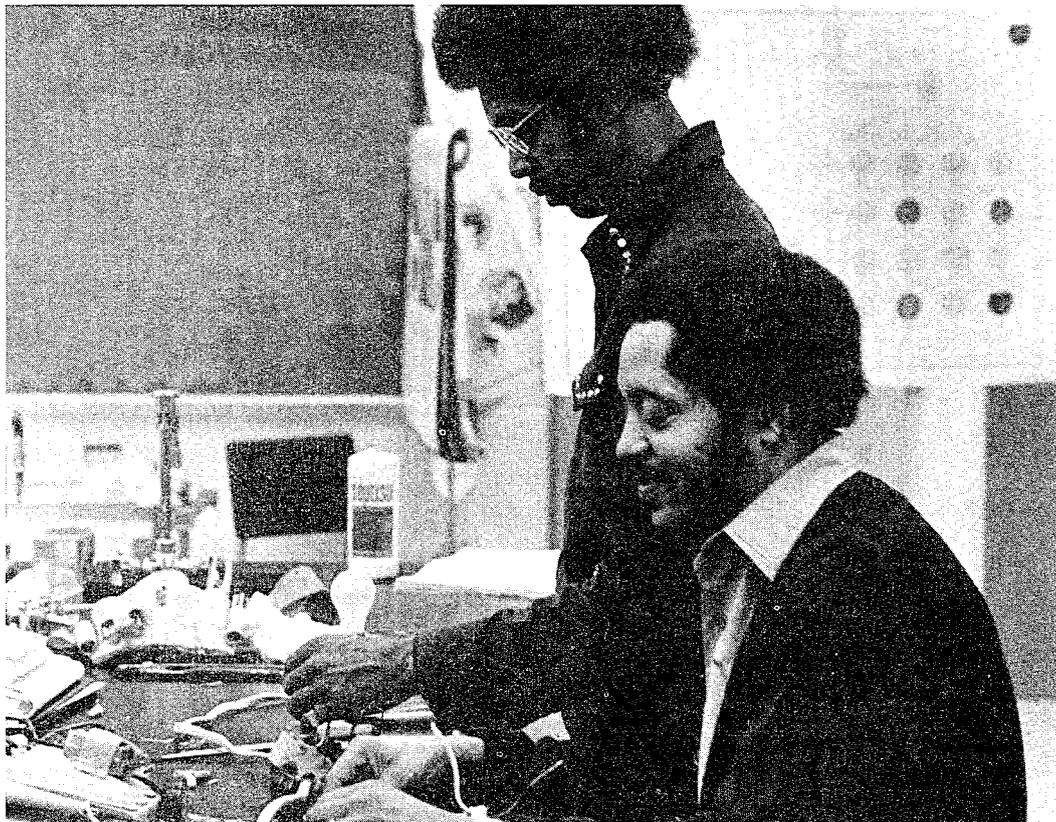
FOURTH TERM

E-E 238	Industrial Electronic Circuits	4
E-E 222	Pulse Circuits and Operational Amplifiers	4
E-E 239	Electrical Design	3
E-E 240	Practices and Standards Seminar	2
	Approved Non-Technical Elective	3
		16

Total Credit Hours for Program—67

**ELECTRICAL EQUIPMENT
REPAIRMENT
One-Year Program—Code 833**

Course	Description	Hrs.
FIRST TERM		
E-E 110	Electrical Applications	2
E-E 111	Electrical Fundamentals	4
E-E 101	Servicing Techniques	4
MTH 151	Applied Algebra	4
ENG 100	Technical Communications	3
		17



SECOND TERM

E-E 120	Electrical Applications	2	E-E 102	Appliance Repair	4
E-E 122	Electrical Fundamentals	4	E-E 211	Basic Electronics	4
E-E 102	Appliance Repair	4	PSY 150	Industrial Psychology	3
E-E 211	Basic Electronics	4			<hr/>
PSY 150	Industrial Psychology	3			17

17

Total Credit Hours For Program—34

**ELECTRONIC SERVICE TECHNICIAN
Two-Year Program—Code 834**

Course	Description	Hrs.
FIRST TERM		
E-E 110	Electrical Applications	2
E-E 111	Electrical Fundamentals	4
E-E 101	Servicing Techniques	4
MTH 151	Applied Algebra	4
ENG 101	Technical Communications	3
		<hr/>
		17

SECOND TERM

E-E 120	Electrical Applications	2
E-E 122	Electrical Fundamentals	4

THIRD TERM

E-E 212	Radio and Television Circuitry	5
E-E 237	Electronic Switching and Control	3
E-E 210	Measurements and Instruments	4
MGT 209	Small Business Management	3
		<hr/>
		15

FOURTH TERM

E-E 223	Color Television	4
E-E 224	Television Service Procedures and Practices	4
E-E 220	Electrical Installation and Maintenance Practices	4
PLS 150	State and Local Government or	
PLS 108	Government and Society	3
		<hr/>
		15

Total Credit Hours For Program—64

**FLUID POWER TECHNICIAN
Two-Year Program—Code 841**

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

Total Credit Hours for Program—64

**HYDRAULIC ASSEMBLER
One-Year Program—Code 842**

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

Total Credit Hours For Program—31

**MECHANICAL-ENGINEERING
TECHNICIAN
Two-Year Program—Code 851**

Course	Description	Hrs.
FIRST TERM		
M-T 111	Machine Shop Theory and Practice	4
BPR 101	Blueprint Reading	3
MTH 151	Applied Algebra	4
PHY 110	Applied Physics	4
ENG 111	English Composition	3
		17
SECOND TERM		
M-T 122	Machine Tool Operation and Set-Up	4
I-D 100	Technical Drawing	4
PSY 150	Industrial Psychology	3
MTH 152	Applied Geometry and Trigonometry	3
		14
THIRD TERM		
MLG 101	Industrial Materials	2
E-E 111	Electrical Fundamentals	4
FLP 111	Fluid Power Fundamentals	4
M-T 123	Machine Tool Operation and Set-Up	4
N-C 100	Introduction to Numerical Control	3
		17
FOURTH TERM		
M-T 201	Machine Tool Technology	4
MLG 123	Metallurgical Testing Procedures	2
FLP 214	Basic Hydraulic Circuits	3
ENG 100	Technical Communications	3
PLS 108	Government and Society	3
		15

Total Credit Hours For Programs—63

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

Course	Description	Hrs.
FIRST TERM		
M-T 111	Machine Shop Theory and Practice	4
BPR 101	Blueprint Reading	3
MLG 101	Industrial Materials	2
MTH 151	Applied Algebra	4
ENG 100	Technical Communication	3
		16
SECOND TERM		
M-T 122	Machine Tool Operation and Set-Up	4
PSY 150	Industrial Psychology	3
MLG 215	Heat Treatment Processes	2

I-D 100	Technical Drawing	4
MTH 152	Applied Geometry and Trigonometry	3
		<hr/> 16

Total Credit Hours For Program—32

**ELECTRO-MECHANICAL TECHNICIAN
Two-Year Program—Code 854**

Course	Description	Hrs.
FIRST TERM		
E-E 111	Electrical Fundamentals	2
E-E 110	Electrical Applications	4
M-T 111	Machine Shop Theory and Practice	4
MTH 169	Intermediate Algebra	4
ENG 100	Technical Communications or	
ENG 111	English Composition	3
		<hr/> 17

SECOND TERM

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

THIRD TERM

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

FOURTH TERM

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

Total Credit Hours For Program—65

**METALLURGY
Two-Year Program—Code 861**

Course	Description	Hrs.
FIRST TERM		
MLG 100	Intro. to Metallurgy	1
MLG 202	Manufacturing Processes	3
MLG 215	Heat Treatment	2
MTH 169	Intermediate Algebra	4
ENG 111	English Composition	3
M-T 111	Machine Shop Theory & Practice	4
		<hr/> 17

SECOND TERM		
MLG 101	Industrial Materials	2
MLG 122	General Metallurgy	3
MLG 103	Technical Metrics	1
ENG 100	Technical Communications	3
I-D 100	Technical Drawing	4
W-F 100	Fundamentals of Welding	2
		<hr/> 15

THIRD TERM

MLG 207	Testing Laboratory	2
MLG 217	Mechanical Testing	2
MLG 228	Metallography	4
CEM 111	General Chemistry	4
PSY 150	Industrial Psychology	3
		<hr/> 15

FOURTH TERM

MLG 229	Specialized Study	5
PHY 111	Introductory Physics	4
PLS 108	Government and Society	3
	Approved Elective	4
		<hr/> 16

Total Credit Hours For Program—63

**NUMERICAL CONTROL TECNICIAN
Two-Year Program—Code 871**

Course	Description	Hrs.
FIRST TERM		
N-C 100	Introduction to Numerical Control	3
M-T 111	Machine Shop Theory and Practice	4
I-D 100	Technical Drawing or	
I-D 111	Industrial Drafting	4
MTH 169	Intermediate Algebra or	
MTH 169A	Intermediate Algebra	3-4
		<hr/> 14-15

SECOND TERM

N-C 121	Programming for Numerical Control	3
N-C 122	Numerical Control Machine Tool Operation	3
M-T 122	Machine Tool Operation and Set-Up	4
I-D 112	Descriptive Geometry	4
MLG 101	Industrial Materials	2
		<hr/> 16

THIRD TERM

N-C 213	Compact II Computer Programming	4
FLP 111	Fluid Power Fundamentals	4
PLS 108	Government and Society	3
ENG 100	Technical Communications	3
PSY 150	Industrial Psychology	3-4
		<hr/> 17-18

FOURTH TERM

N-C 224	APT III Computer Programming	4
N-C 111	Manufacturing Processes for Numerical Control	3
MTH 187	Scientific and Technical Programming	3
I-D 121	Theory of Jigs and Fixtures Elective*	2
		3-4
		<hr/> 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

Course	Description	Hrs.
FIRST TERM		
N-C 100	Introduction to Numerical Control	3
M-T 111	Machine Shop Theory and Practice	4
I-D 100	Technical Drawing or	
I-D 111	Industrial Drafting	4
MTH-169	Intermediate Algebra or	
MTH-169A	Intermediate Algebra	3-4
		<hr/> 14-15

SECOND TERM

N-C 121	Programming for Numerical Control	3
N-C 122	Numerical Control Machine Tool Operations	3
M-T 122	Machine Tool Operations and Set-Up	4
ENG 100	Technical Communications	3
N-C 111	Manufacturing Processes for Numerical Control	3
MLG 101	Industrial Materials	2
		<hr/> 18

Total Credit Hours For Program—32-33

COMMERCIAL ARTIST

Two-Year Program—Code 882

Course	Description	Hrs.
FIRST TERM		
TCA 110	Lettering and Layout	4
ART 111	Basic Drawing	3
ART 112	Basic Design	3

ENG 100	Technical Communication or	
ENG 111	English Composition	3
MTH 090	Foundations of Occupational Mathematics or	
PHY 110	Applied Physics	3-4
		<hr/> 16-17

SECOND TERM

TCA 121	Advertising Layout	4
TCA 227	Graphic Redproduction	4
TCA 100	Perspective and Parallel Projection	4
PHO 214	Photography	4
		<hr/> 16

THIRD TERM

TCA 101	Technical Illustration	4
ART 140	Life Drawing	3
TCA 122	Technical Rendering	4
TCA 226	Commercial Display	4
		<hr/> 15

FOURTH TERM

TCA 120	Commercial Rendering	4
TCA 228	Airbrush Techniques	4
TCA 236	Specialized Study*	4
PLS 108	Government and Society	3
PSY 150	Industrial Psychology	3
		<hr/> 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

Course	Description	Hrs.
FIRST TERM		
TCA 110	Lettering and Layout	4
ART 111	Basic Drawing	3
I-D 100	Technical Drawing or	
I-D 111	Industrial Drafting	4
BPR 100	Blueprint Reading for Construction Trades or	
BPR 101	Blueprint Reading	2-3
MTH 090	Foundations of Occupational Mathematics or	
PHY 110	Applied Physics	3-4
		<hr/> 16-18

SECOND TERM

TCA 100	Perspective and Parallel Drawing	4
TCA 227	Graphic Reproduction	4
PHO 214	Photography	4
ENG 100	Technical Communications or	
ENG 111	English Composition	3
		<hr/> 15

THIRD TERM		
TCA 101	Technical Illustration	4
BPR 103	Sheet Metal Blue Print Reading and Layout or	
I-D 112	Descriptive Geometry	3-4
TCA 226	Commercial Display	4
TCA 122	Technical Rendering	4
		<hr/> 15-16

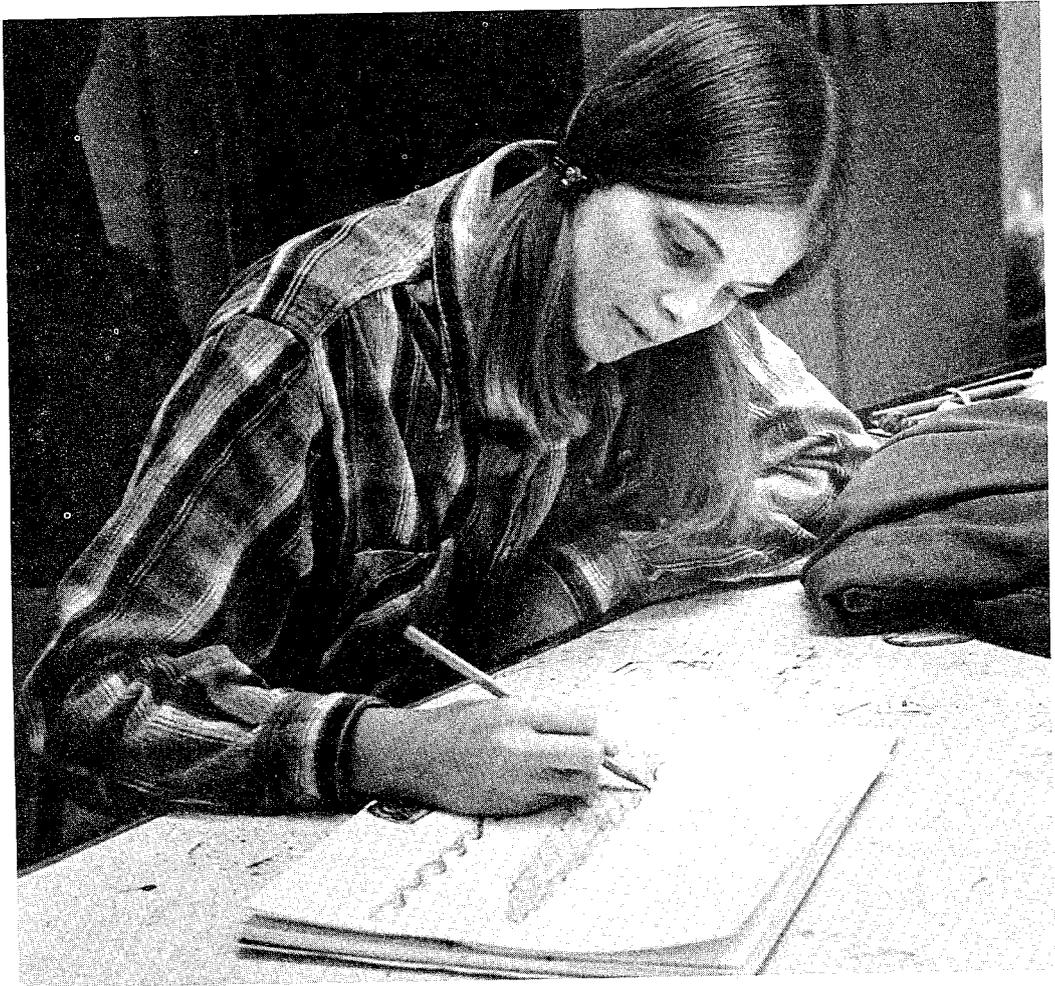
FOURTH TERM		
TCA 120	Commercial Rendering	4
TCA 228	Airbrush Techniques	4
TCA 236	Specialized Study*	4
PLS 108	Government and Society	3
PHY 150	Industrial Psychology	3
		<hr/> 18

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

Course	Description	Hrs.
FIRST TERM		
PHO 214	Photography	4
ART 112	Basic Design	3
MTH 090	Foundations of Occupational Mathematics	3
ENG 100	Technical Communication	3
PLS 108	Government and Society	3
		<hr/> 16
SECOND TERM		
PHO 215	Darkroom Techniques	5
PHO 216	Basic Color Photography	3
TCA 227	Graphic Reproduction	4
PHO 217	Studio Techniques	3
PHO 218	Photo Retouching	2
		<hr/> 17



THIRD TERM

PHO 220	Camera Selection and Use	3
PHO 221	Advanced Darkroom Techniques	2
PHO 222	Advanced Color Photography	3
PHO 223	Photographic Occupations	2
PSY 150	Industrial Psychology	3
		<hr/>
		13

FOURTH TERM

PHO 224	Darkroom Operation	2
PHO 229	Freelance Operations	3
PHO 230	Specialized Studies in Photography	4
PHO 231	Portfolio Seminar	4
MGT 209	Small Business Management	3
		<hr/>
		16

Total Credit Hours For Program—62

**PHOTOGRAPHIC ASSISTANT
One-Year Program—Code 886**

Course	Description	Hrs.
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FIRST TERM

PHO 214	Photography	4
ART 112	Basic Design	3
MTH 090	Foundations of Occupational Mathematics	3
ENG 100	Technical Communication	3
PLS 108	Government and Society	3
		<hr/>
		16

SECOND TERM

PHO 215	Darkroom Techniques	5
PHO 216	Basic Color Photography	3
TCA 227	Graphic Reproduction	4
PHO 218	Photo Retouching	2
		<hr/>
		14

Total Credit Hours For Program—30

**WELDING AND FABRICATION
TECHNICIAN
Two-Year Program—Code 891**

Course	Description	Hrs.
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FIRST TERM

W-F 111	Welding and Fabrication	4
W-F 112	Welding and Fabrication	4
M-T 100	Machine Shop Theory	3
BPR 101	Blueprint Reading	3
ENG 091	English Fundamentals or	
ENG 100	Technical Communications or	
ENG 111	English Composition	3
		<hr/>
		17

SECOND TERM

W-F 123	Welding and Fabrication	4
W-F 124	Welding and Fabrication	4
MLG 122	General Metallurgy	3
MTH 151	Applied Algebra	4
		<hr/>
		15

THIRD TERM

W-F 215	Welding and Fabrication	3
I-D 100	Technical Drawing	4
BPR 103	Sheet Metal Blueprint Reading and Layout	3
MLG 215	Heat Treatment Processes	2
PSY 150	Industrial Psychology	3
		<hr/>
		15

FOURTH TERM

W-F 226	Welding and Fabrication	3
FLP 111	Fluid Power Fundamentals	4
BPR 104	Sheet Metal Blueprint Reading and Layout	3
MTH 152	Applied Geometry and Trigonometry	4
PLS 108	Government and Society	3
		<hr/>
		17

Total Credit Hours For Program—64

**COMBINATION WELDER-MECHANIC
One-Year Program—Code 892**

Course	Description	Hrs.
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FIRST TERM

W-F 111	Welding and Fabrication	4
W-F 112	Welding and Fabrication	4
BPR 103	Sheet Metal Blueprint Reading and Layout	3
ENG 091	English Fundamentals	3
MLG 100	Introduction to Metallurgy	1
MLG 215	Heat Treatment Process	2
		<hr/>
		17

SECOND TERM

W-F 123	Welding and Fabrication	4
W-F 124	Welding and Fabrication	4
MLG 122	General Metallurgy	3
MTH 151	Applied Algebra	4
		<hr/>
		15

Total Credit Hours For Program—32

**REFRIGERATION/AIR CONDITIONING
Serviceman—Code 943**

Course	Description	Hrs.
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MTH 151	Applied Algebra or	
MTH 169	Intermediate Algebra	4
EE 111	Electrical Fundamentals	4

RAC 111	Refrigeration	5
RAC 122	Refrigeration	5
WF 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
		<hr/>
		58

**ADDITIONAL REQUIREMENTS FOR AN
ASSOCIATE DEGREE REFRIGERATION
SERVICING TECHNICIAN**

ENG	Elective 100 or above	3
PLS	Elective 108 or 150	3
Minimum		60

Basically this is a trade-related instruction program offered in co-operation with the REFRIGERATION SERVICE ENGINEERS SOCIETY, 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.

Students are requested to accumulate a basic set of servicing tools as they prepare for the job. They are also required to join the Refrigeration Service Engineers Society (RSES) which is a non-profit trade-educational organization.

**INSPECTOR-QUALITY CONTROL
One-Year Program—Code 946**

Course	Description	Hrs.
FIRST TERM		
MGL 100	Introduction to Metallurgy	1
MT 111	Machine Shop Theory and Practice	4
BPR 101	Blueprint Reading	3
MTH 151	Applied Algebra	4
MLG 215	Heat Treatment Processes	2
MLG 122	General Metallurgy	4
		<hr/>
		18
SECOND TERM		
MLG 217	Mechanical Testing	2
ENG 100	Technical Communications	3
PLS 108	Government and Society	3
QC 225	Quality Control Management	3
MTH 152	Applied Geometry and Trigonometry	4
		<hr/>
		15
Total Credit Hours For Program—30		

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

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**

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	Description	Hrs.
FIRST YEAR		
ID 100	Technical Drawing	4
BPR 101	Blueprint Reading	3
MY 111	Machine Shop Theory and Practice	4
FLP 111	Fluid Power Fundamentals	4
MLG 100	Introduction to Metallurgy	1
WF 100	Fundamentals of Welding	2
ENG 100	Technical Communications	3
PSY 150	Industrial Psychology	3
EE 090	Introductory Electricity	3
NC 100	Introduction to Numerical Control	3
		<hr/>
		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

EXAMPLE

	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 EN- GINEERING, 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 MAN- AGEMENT.	
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.**

NC 121	Programming for Numerical Control	3
NC 223	Computer Assisted Programming	3
FLP 111	Electrical Fundamentals	4
EE 111	Electrical Fundamentals	4
DP 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 hour

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

**Associate Degree Program
for
JOURNEYMAN ASSOCIATE DEGREE
MANUFACTURING ENGINEERING**

EXAMPLE

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

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

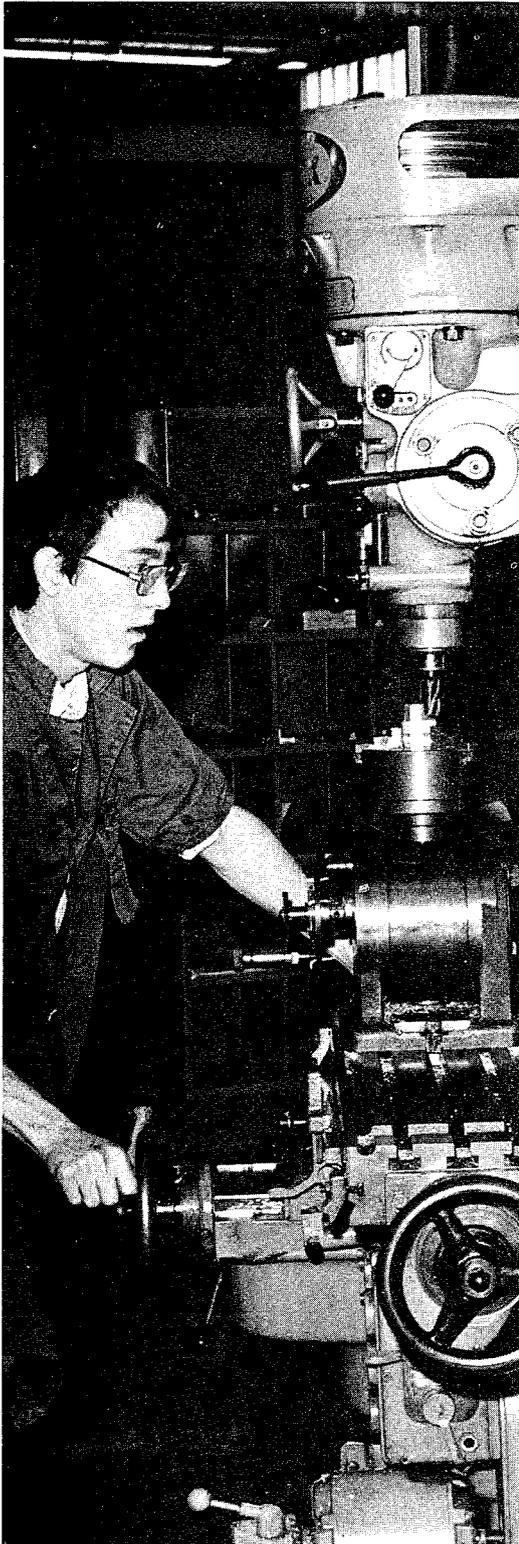
Arrangements for completing other two-year technical programs may be made by contacting the Trade Related Instruction Coordinator or a counselor.

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

NC 121	Programming for Numerical Control	3
NC 223	Computer Assisted Programming	3
FLP 111	Electrical Fundamentals	4
EE 111	Electrical Fundamentals	4
DP 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 apprentice program is approved and/or meets the College's requirements.



TOOLMAKER APPRENTICE Code-902

Course	Description	Hrs.
MT 100	Machine Shop Theory	3
BPR 101	Blueprint Reading	3
MTH 151	Applied Algebra or Appropriate Level Math	4
ID 100	Technical Drawing	4
MTH 152	Applied Geometry and Trigonometry	4
MLG 215	Heat Treat Processes	2
MLG 100	Introduction to Metallurgy	1
ID 121	Theory of Jigs and Fixtures	2
PHY 110	Applied Physics or Appropriate Level Course	4
NC 100	Introduction to Numerical Control	3
NC 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

Course	Description	Hrs.
MT 100	Machine Shop Theory	3
BPR 101	Blueprint Reading	3
MTH 151	Applied Algebra or Appropriate Level Math	4
ID 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
ID 111	Industrial Drafting	4
ID 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

Course	Description	Hrs.
BPR 101	Blueprint Reading	3
MT 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

MTL 100	Introduction to Metallurgy	1
MTL 215	Heat Treat Processes	2
ID 100	Technical Drawing	4
ID 121	Theory of Jigs and Fixtures	2
ID 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

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
ID 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

Course	Description	Hrs.
BPR 103	Sheet Metal Layout Blueprint Reading	3
BPR 101	Blueprint Reading	3
MT 100	Machine Shop Theory	3
MTH 151	Applied Algebra	4
MTH 152	Applied Geometry and Trigonometry	4
ID 100	Technical Drawing	4
MT 240	Plant Layout and Material Handling Systems	4
PHY 110	Applied Physics or Appropriate Level Course	4
WF 102	Arc Welding	2
MT 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

Course	Description	Hrs.
FLP 111	Fluid Power Fundamentals	4
MTH 151	Applied Algebra or Appropriate Level Math	4
EE 110	Electrical Applications	2
EE 111	Electrical Fundamentals	4
EE 122	Electrical Fundamentals	4
EE 127	Industrial Electricity	4
EE 211	Basic Electronics	4
EE 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.

PLUMBER/PIPEFITTER APPRENTICE Code-909

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	Pneumatics	3
ID 100	Technical Drawing	4
WF 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.

TINSMITH/SHEETMETAL APPRENTICE Code-913

Course	Description	Hrs.
MTH 151	Applied Algebra or Appropriate Level Math	4
MTH 152	Applied Geometry and Trigonometry	4
ID 100	Technical Drawing (Layout)	4

ID 112	Descriptive Geometry (Layout)	4
BPR 103	Blueprint Reading Sheet Metal	3
BPR 105	Advanced Sheet Metal	3
WF 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.



**QUALITY CONTROL TECHNICIAN
Two-Year Program—Code-944**

Course	Description	Hrs.
QC 101	Process Quality Control	3
QC 122	Sampling Quality Control	3
QC 213	Quality Control by Statistical Methods	3
QC 224	Quality Control Problem Solving	3
QC 255	Quality Control Management	3
QC 226	Introduction to Nondestructive Testing	3
		<hr/> 18

MTH 151	Applied Algebra or	4
MTH 169	Intermediate Algebra	3
BPR 101	Blueprint Reading	2
MLG 101	Industrial Materials	1
MLG 100	Introduction to Metallurgy	3
MLG 122	General Metallurgy	2
MLG 217	Mechanical Testing	2
MLG 215	Heat Treatment Processes	4
MLG 228	General Metallography	2
MLG 217	Mechanical Testing	5
DP 111	Principles of Data Process	3
ENG 111	English Composition	3
PLS 150	State and Local Government and Politics	3
CEM 111	General Chemistry	4
PHY 110	Physics or	4
PHY 111	Physics	<hr/> 60

**ASSOCIATE DEGREE OPTIONS
MATERIALS & TESTING OPTION**

QC	Core Courses	18
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MANAGEMENT OPTION

QC	Core Courses	18
MTH 169	Intermediate Algebra	4
MTH 160	Basic Statistics	4
ENG 111	English Composition and	
ENG 122	English Composition	6
EC 211	Principles of Economics and	
EC 222	Principles of Economics	6
ACC 111	Principles of Accounting and	
ACC 122	Principles of Accounting	6
DP 111	Principles of Data Processing	5
DP 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

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

SCIENCE AND ENGINEERING OPTION

QC	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

QC	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.

BOILER AND POWERPLANT ENGINEERING APPRENTICE Code-942

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

Course	Description	Hrs.
MTH 151	Applied Algebra or Appropriate Level Math	4
EE 111	Electrical Fundamentals	4
RAC 111	Refrigeration	5
RAC 123	Systems Laboratory	5
RAC 124	Basic Controls	5
RAC 214	Control Systems	5
WF 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**

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

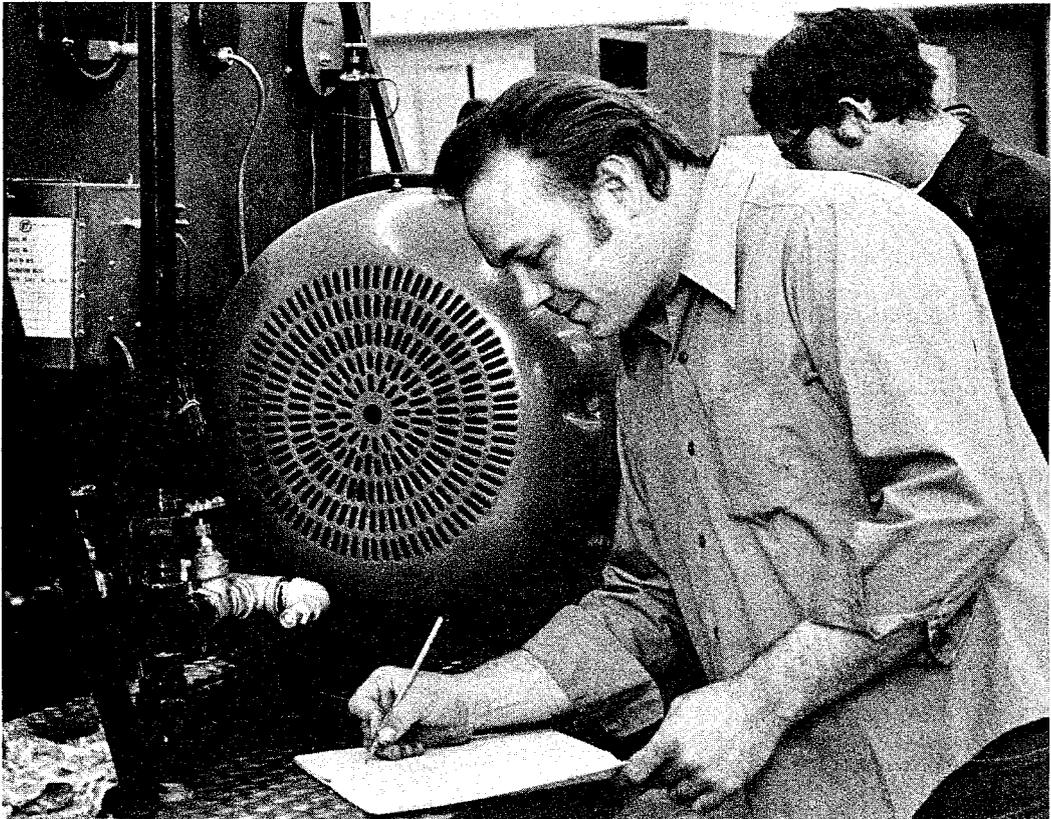
There is a minimum of 576 classroom hours of instruction required and 8000 hours of on-the-job training.

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

**HEATING AND VENTILATING SERVICE
Code-986**

Course	Description	Hrs.
MTH 151	Applied Algebra or Appropriate Level Math	4
EE 111	Electrical Fundamentals	4
HTG 111	Heating Fundamentals	5
HTG 122	Heating Systems	5
HTG 213	Heating Controls	5
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 \$28.00. Test books for the three heating courses are expensive averaging approximately \$33.00 each. Consent of advisor is required for registration.





course descriptions

189 Study Problems2-8 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 Training1-6 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.

(abr) auto body repair

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 Fundamentals4 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 Fundamentals4 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 Service2 credit hours

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)

123 Body Repair Methods4 credit hours

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

A detailed study of the automobile body that includes the 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)

124 Automobile Refinishing4 credit hours

Prerequisite: Automobile Refinishing Fundamentals 112.

A continuation of the units begun in Automobile Refinishing Fundamentals 112 including the improvement of skills, mixing and matching of high metallic colors, spot repair and complete refinishing using acrylic lacquers and enamels. Special color effects including the use of "candy" and metal flake are studied. Proper use of materials and quality workmanship are stressed. (8 hours per week)

125 Flat Rate Estimating2 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 Alignment3 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. (6 hours per week)

219 Major Repair Procedures8 credit hours

Prerequisite: Consent of Division.

A demonstration-lab course which stresses the methods and procedures involved in straightening and aligning the automobile body-frame and replacing various body panels. Lab work includes advanced instruction in using portable body-frame equipment to diagnose and repair common body-frame damage. Repair jobs are selected as being representative of front end, side, and rear end collision. Emphasis is placed on making complete and accurate estimates, repair planning, and completing the repair within the limits of established flat-rate times. (20 contact hours)

220 Collision Estimating2 credit hours

Prerequisite: Consent of division.

Extensive practice in preparing estimates of automobile collision damage. Emphasis is placed on the economics of repairing as opposed to replacing damaged body panels as well as customer and employee relations. Field trips to area dealers and collision shops provide diversified experience in estimating typical damage and developing individual style in preparing complete and accurate estimates. (4 hours per week)

230 Specialized Study4-8 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)

(acc) accounting

091 Fundamentals of Accounting3 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 Accounting3 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)

(ant) anthropology

- 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 Hindu and Buddhist Traditions**3 credit hours
 An introduction to Hindu and Buddhist traditions with particular emphasis on the role each plays in the cultures of India and Japan. The student will be introduced to various techniques of meditation. (3 hours per week)
- 211 Introduction to Yoga**3 credit hours
 An introduction to the principles and practices of Hatha Yoga. In addition to the practice of yoga postures, this course will deal with the physiology of yoga and the art of meditation.
- 222 Advanced Yoga**3 credit hours
 Prerequisite: 211 Introduction to Yoga
 A continuation of Introduction to Yoga. More advanced postures will be introduced and more time will be spent exploring the effects of yoga on the student's physiology, creativity and self-fulfillment.

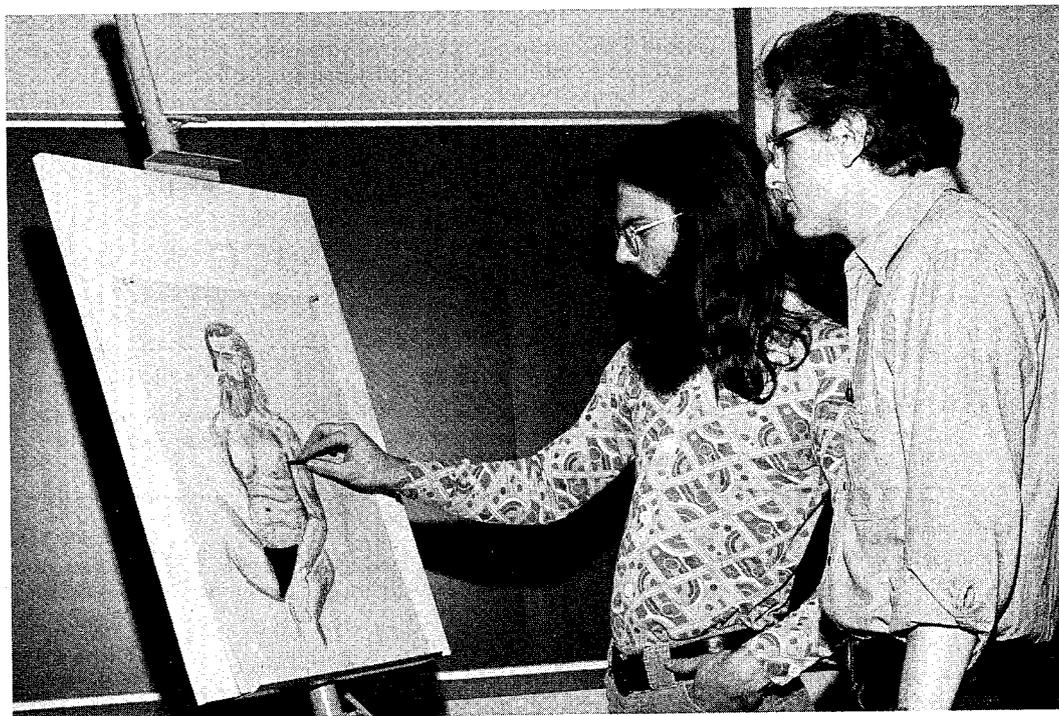
(arc) architectonics

- 100 Specifications**1 credit hour
 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 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**
 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)

(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 Painting3 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 Drawing3 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 Design3 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 Painting3 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 Drawing3 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)

125 Painting3 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 Appreciation3 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 Drawing3 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.

(a-s) automotive service

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 Service1 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 Electricity2 credit hours

Prerequisite: Service Orientation 110 concurrently.

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 Repair2 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 Carburetion1 credit hour

Prerequisite: Service Orientation 110 concurrently.

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 Systems2 credit hours

Prerequisite: Service Orientation 110 concurrently.

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

105 Wheel Balancing and Alignment2 credit hours

Prerequisite: Service Orientation 110.

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 Systems2 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 Systems2 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: Service Orientation 110.
 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
 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.
- 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 Procedures2 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 Standards1 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 Features1 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 Welding1 credit hour

See WELDING AND FABRICATION for course description.

(bio) biology

101 Concepts of Biology4 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 man and his 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 Biology4 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 man and his 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 Terminology2 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 Ecology3 credit hours

A field study of plants and animals and their interaction and relationship to environment. Emphasis will be put on ecological concepts and their effects on man and society. 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 Ecology3 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 Physiology4 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. Demonstrations and student laboratory experience will be a part of each class meeting. (4 hours per week)

112 Basic Anatomy & Physiology Laboratory1 credit hour

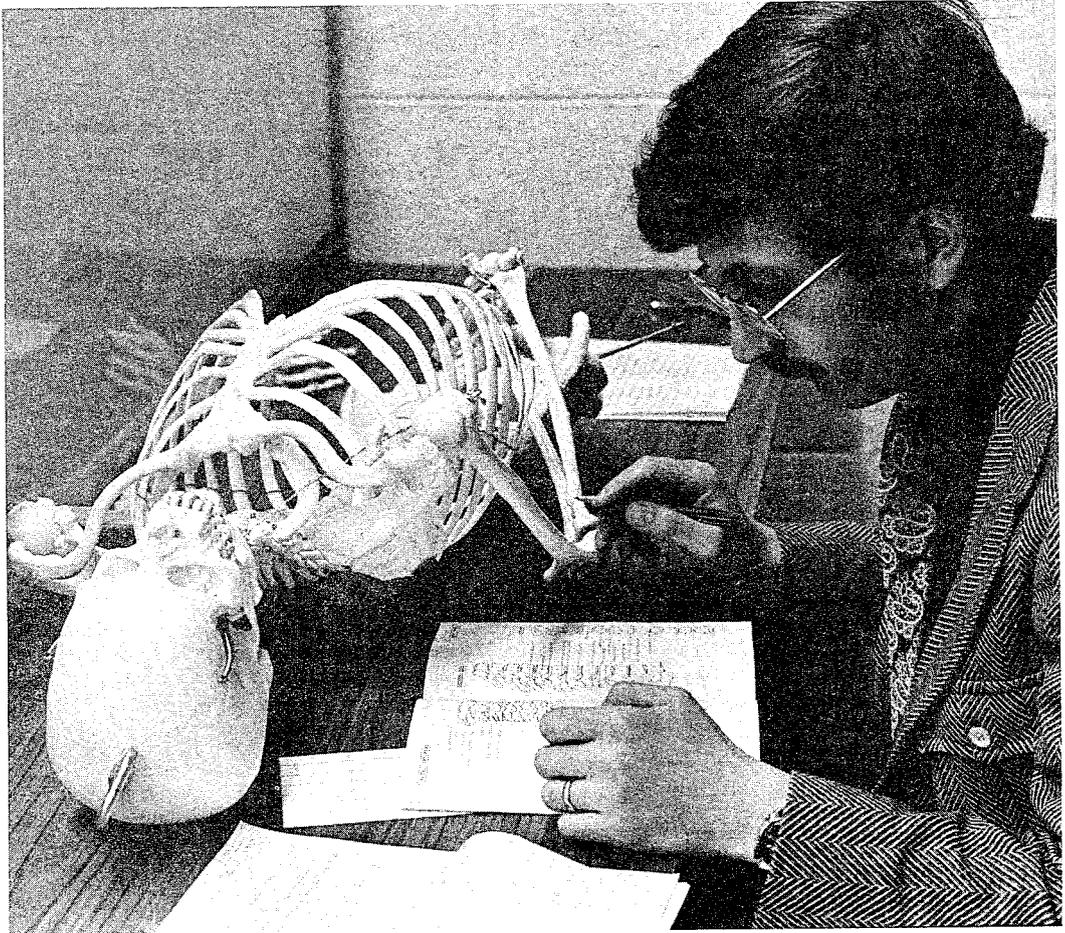
Co-requisite: Basic Anatomy & Physiology 111

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 Physiology1 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 Botany4 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 two hours of lecture and four hours of laboratory. (6 hours per week)

128 Zoology4 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 two hours of lecture and four hours of laboratory. (6 hours per week)

Applied Plant Science Sequence

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

The courses are designed for the non-specialist with interest in plants, their propagation, 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.

131 Outdoor-Garden Preparation3 credit hours

The Winter Semester course will deal basically with the propagation 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 Planting3 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 student's garden area. Control of pests will be an item of concern. (3 hours per week)

133 Garden Care3 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 Harvest3 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 Foods3 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 Plants3 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 Gardening3 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 Landscaping3 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 Biology3 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 his body works. Extensive use is made of the biology laboratory equipment. (3 hours per week)

147 Hospital Microbiology1 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 Therapy1 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 Therapy1 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 Physiology3 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 Biology1 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 Biology3 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 stress, and the biology of aging. The relationship of such knowledge to future technology, and possible social and political implications, will also be discussed. (3 hours per week)

208 Genetics4 credit hours

Prerequisite: Concepts of Biology 101 or permission.

The course is designed to acquaint students with the basic principles of heredity and their application to plants and animals, including humans. Some programmed materials are included. There is laboratory work using living and prepared materials. (6 hours per week)

237 Microbiology4 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 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 Health1 credit hour

An opportunity to visit and to observe various community agencies directly involved in your health care. Field trips to health computer facilities, planned parenthood, rape & crisis center, mental health facilities, etc. will be coordinated with discussions of services available and with interviews with staff personnel. Quality of care and economics of obtaining medical services will also be covered.



(bls) black studies

- 149 African History and the Western World3 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 History3 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 Music3 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)
- 141 Black Art Appreciation3 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)
- 192 Black Drama3 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)
- 113 Black Drawing and Painting3 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)
- 200 Black Economics4 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)
- 100 Drug Education2 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 I3 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)
- 160 Group Work II3 credit hours**
A continuation of Group Work I. 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)
- 101 Media and the Black Community3 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.

- 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)
- 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)
- 151 Black Politics**3 credit hours
 This course is designed to study the formal and informal political structure of Washtenaw County as well as the city government of Ann Arbor and Ypsilanti, and Ypsilanti Township. An analysis of the impact of the national/international political scene on local conditions is included. Within this context the political potentials and realities of the Afro-American are studied. (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)
- 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)
- 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)
- 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)

(bpr) blue print reading

- 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 interpreting 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 — Advanced3 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 Trades2 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)

(brc) broadcasting

103 Copywriting, Features and Commercials; Film and TV Documentary3 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 Campaign3 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 Journalism3 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 Management3 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.

(c-a) communication arts

031 Tae Kwon Do: Karate1 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: Karate1 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)

090 Dance Theater Workshop1 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)

(ccw) child care worker

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, especially for Black children. 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 city 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 behavior modification, Piaget, Montessori and Free Schools: their programs and methods.

105 Practicum I.....3 credit hours

Placement in WCC Children's Center.

Supervised teaching with 2-5 year old age groups most commonly worked with in day care centers.

Designed to be taken with CCW 107. Joint supervision by college and qualified day care personnel. Requires 12-15 hours per week.

106 Practicum II.....3 credit hours

Placement in Center off campus.

Supervised teaching with 2-5 year-old groups most commonly worked with in day care centers. (For people in program who expect to work in other settings — such as state hospitals etc. — appropriate age groups may be substituted.)

Designed to be taken with CCW 108. Application of theory and techniques in CCW 108. Requires 12-15 hours per week.

107 Teaching Experience in Science and Math.....3 credit hours

Techniques, principles, and activities. Emphasis on therapeutic and positive educational planning and programming.

Preparation of materials for teaching of basic science concepts and basic number concepts. Stresses basic concept development and teaching techniques. Curriculum "samples" in each area will be developed by students.

108 Teaching Experiences in the Expressive Arts.....3 credit hours

Techniques, principles, and activities. Emphasis on therapeutic and positive educational planning and programming.

Creative development of pre-school child through tools, materials, and experiences in the expressive arts. Specific areas covered are crafts, music, body movement. Samples of curriculum materials will be developed by students.

109 Language and Communication.....3 credit hours

Explores how verbal and non-verbal communication is learned and how to enhance its development. Attention is given to cultural differences. Basic activities in communication skills will be developed and experienced.

110 Sexual Concerns with Pre-Schoolers.....3 credit hours

A basic science course covering anatomy, physiology and reproduction. Discussions on how to help children and parents develop healthy sexual attitudes. Problems of value conflicts and parental concerns will be major topics of discussion.

- 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
 Enroll concurrently in CCW 111, CCW 115 or CCW 116.
 Supervised practical experience of classroom material presented in above courses. Requires 12-15 hours a week. Student will either study and develop administrative projects, develop and execute research projects or work with infants depending upon enrollment in 111, 115 or 116. Placement assignment will be made in above courses.
- 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.

(cem) chemistry

- 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 hazards. (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 quantitative 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)

(c-j) criminal justice

- 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 System3 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 Justice3 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 Seminar4 credit hours

Prerequisite: 15 hours completed in the Criminal Justice Program or permission of the instructor.

(c-t) construction technology

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.

121 Carpentry4 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)

131 Electric Power Supplying4 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)

221 Carpentry4 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 Systems4 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 Metals4 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 Fabrication4 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 Design4 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)

(cul) culinary arts

- 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)

(d-a) dental assisting

- 110 Introduction to Dental Assisting**3 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)
- 111 Dental Science**4 credit hours
This course deals with the anatomy and physiology of the head, oral cavity, and the teeth. Emphasis is placed on dental terminology and development of the human dentitions. (4 hours per week)

- 120 Oral Diagnosis Technique1 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 Procedures5 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 Science4 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 Practice5 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 Procedures4 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 Management5 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 Roentgenology2 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 Roentgenology2 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 Practice5 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)

(d-p) data processing

- 111 Principles of Data Processing5 credit hours**
 Prerequisite or co-requisite: Foundations of Occupational Mathematics 090 and first year standing or divisional consent.

An introduction to the principles and concepts of data processing including elementary computer programming techniques. Machine practice exercises are combined with classroom instruction to relate the various units of data processing equipment to the electronic computer. (4 hours per week PLUS minimum 4-6 practice hours)

122 Data Processing Applications5 credit hours

Prerequisite: Principles of Data Processing 111 or equivalent.

Course designed to acquaint the student with data processing applications in business operations. Emphasis is given to the development of an understanding of machine-systems for processing data. Includes a study of data processing applications in the areas of inventory control, payroll accounting, accounts receivable, and accounts payable. (4 hours per week PLUS minimum 4-6 practice hours)

213 Computer Programming5 credit hours

Prerequisite: Data Processing Applications 122 or equivalent.

An applied study of the functions of specific data processing equipment including a complete exposition of the Cobol system and an introduction to the Fortran and other pertinent language systems of computer programming. Course coverage provides the student with insights into the universally adaptable programming systems concepts. (4 hours per week PLUS minimum 4-6 practice hours)



224 Data Processing Systems and Procedures5 credit hours

Prerequisite: Data Processing Applications 122 and/or Computer Programming 213 or equivalent.

An introduction to the principles and concepts of programming systems and procedures enabling the student to develop the essential groundwork for more advanced study of the programming systems. Major emphasis is on the purposes and functions of various types of programming systems and procedures and their relevance to business enterprise. (4 hours per week PLUS minimum 4-6 practice hours)

Special Data Processing Modular Course Offerings

In addition to its regularly scheduled data processing courses, special modular course segments are available to students on an interim basis during the College year. These modular course segments are designed to meet the particular needs of students. They are directly applicable to the regular Data Processing Technician program.

Included in the Data Processing modular course configuration are:

111A Principles of Data Processing/Concepts & Functions3 credit hours
111B Principles of Data Processing/RPG3 credit hours
111C Principles of Data Processing/Business Fortran IV3 credit hours
111D Principles of Data Processing/B.A.S.I.C.3 credit hours
111E Principles of Data Processing/Assembler Language3 credit hours
122A Data Processing Applications/Flow Charting Techniques3 credit hours
213A Computer Programming/Introductory COBOL3 credit hours
213B Computer Programming/Intermediate COBOL3 credit hours
213C Computer Programming/Advanced COBOL3 credit hours
213D Computer Programming/Advanced Business Fortran IV3 credit hours
224A Data Processing Systems & Procedures/File Design Concepts1-3 (var.) credit hrs.

(d-t) dietetic technology

101 Introduction to Allied Health3 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 Physiology3 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)

127 Nutritional Chemistry3 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 Study3 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 Seminar2 credit hours

Prerequisite: Sophomore standing.

Group discussions of topics in the dietetic field. Use of resource and illustrative materials. (2 hours per week)

219 Clinical Nutrition6 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 Management3 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 Systems2 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.

(e-c) economics

111 Consumer Economics3 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 Economics3 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 Economics3 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)

(e-e) electricity/electronics

090 Introductory Electricity3 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 Analysis4 credit hours

Prerequisite: One year of high school algebra.

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 Techniques4 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 Repair4 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 and applications of micrologic circuit elements and operational amplifiers. (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. (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: ASA standards; segments of FCC and NEC rules and regulations; manufacturing techniques; familiarization with catalogs, products, and vendors; specification writing; professional ethics and hiring practices. Attendance at professional electrical exhibitions is encouraged. (2 hours per week)

(eng) english

030 Writing Workshop3 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 Born2 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 Born2 credit hours

A continuation of all of the aspects covered in English 050. (3 hours per week)

090 Parents: Children's Reading2 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 Fundamentals3 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 Communications3 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 Skills3 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 Composition3 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 Composition3 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)

230 Nature of English Language3 credit hours

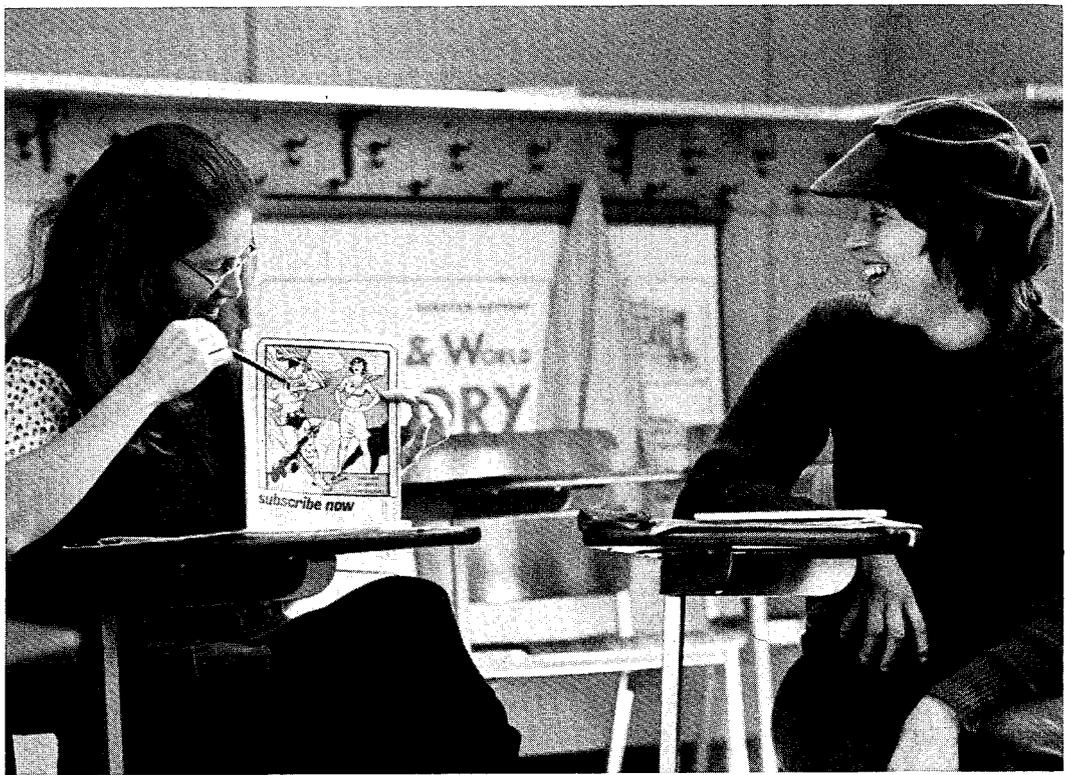
Study of the nature and development of the English language. Consideration of English from its beginning to the present. The language is examined in its social context and also in terms of dialects, speech and formal structure. (3 hours per week)

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.



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 Novel3 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 Shakespeare3 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)

211 American Literature3 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)

222 American Literature3 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)

212 English Literature3 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)

223 English Literature3 credit hours

English literature continued. A study of representative writers of the Romantic, Victorian, and Modern periods. (3 hours per week)

213 World Literature3 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)

224 World Literature3 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)

(fin) finance

100 Personal and Consumer Finance3 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 Finance3 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)

(film) film

101 Introduction to the Super 8MM Movie Camera3 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 cinematographic 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 Editing3 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 Projects3 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 Television3 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 Effects3 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 Techniques3 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)

(flp) fluid power

111 Fluid Power Fundamentals4 credit hours

Basic components of hydraulic and pneumatic systems as well as a general understanding of the basic laws and formulas. Pumps control valves, actuators, ANSI symbols are used for circuit construction and print reading. Laboratory experiences include assembly and disassembly of components and construction of hydraulic circuits. (5 hours per week)

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 Pipefitting3 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. Model implications for fluidies are introduced. (4 hours per week)
- 226 Pneumatics**3 credit hours
 Basic air systems as a power 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)

(f-p) fire protection

- 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 Problems3-6 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.

210 Introduction to Fire Administration3 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 Arson3 credit hours

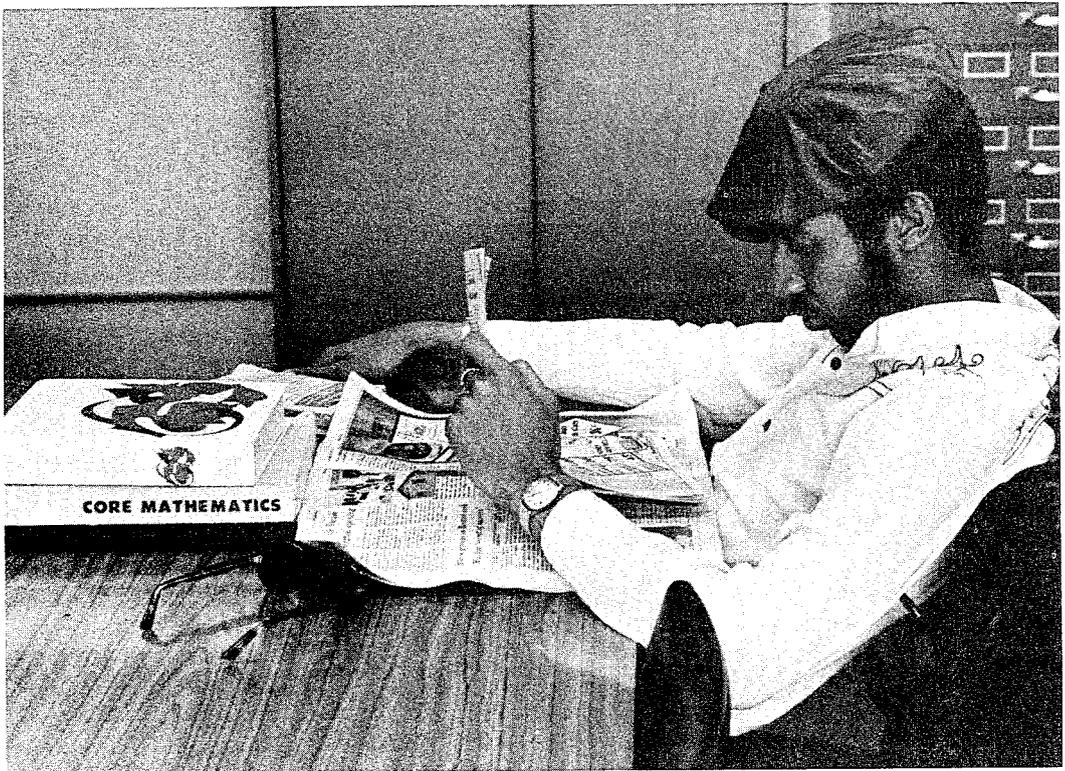
The fire fighter's role in arson investigations; the method and mechanics of protecting, searching, and controlling the fire scene; determining the point of origin, path of fire travel and fire causes; interviews and interrogations; recognizing and preserving evidence; Michigan arson laws; alibis, motives, 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 Industry3 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 Strategy3 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.



(frn) french

111 First Year French3 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)

122 First Year French3 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 French3 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 French3 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)

120 Conversational French2 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)

(g-b) general business

111 Business Law3 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 Law3 credit hours

Prerequisite: Business Law 111.

The study of corporations, property, sales, negotiable instruments, insurance, and bankruptcy. (3 hours per week)

140 Business Occupational Foundations3 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 Study2-6 credit hours

Prerequisite: Divisional consent.

A planned program of study in selected business-industrial 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 educational experience. Includes readings, analyses, conferences, reports. Variable Credit. (Hours to be arranged)

207 Business Communication3 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)

(geo) geography

100 Geography and the Environment3 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 History3 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)

(glg) geology

100 Introduction to the Earth Sciences4 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 Geology3 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 Minerals3 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 Geology4 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 Geology4 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)

(g-s) general studies

101 Legal Rights3 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 Rights3 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 Parenting1 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 Aging1 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)

(hmt) hotel motel management

102 Introduction to Service Industries3 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 & Utilities5 credit hours

Engineering in food and lodging industry, emphasizing utilities, machinery characteristics and environment.

120-223 Practicum in Organization and Management6 credit hours

Six hundred hours of actual experience in a hospitality or tourism related organization. Application of theoretical 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 Systems6 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 Management3 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.

224 Service Industry Accounting3 credit hours

Principles of accounting applied to service industries. Financial statement analysis and cash flow concepts. Managerial accounting emphasized.

230 Hotel Law4 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.

(hst) history

- 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 imperialism. 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.
- 160 History of 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.
- 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.

(htg) heating

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**5 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. (5 hours per week)
- 122 Heating Systems**5 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. (5 hours per week)
- 213 Heating Controls**5 credit hours
 Prerequisites: RSES Membership and HTG 122
 The third course in the "spiraling" series focuses on controls and troubleshooting heating equipment and systems. (5 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)



(hum) humanities

101 Introduction to Humanities3 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 Workshop3 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 Man3 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 Leisure3 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 Theme3 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 War3 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 Cinema3 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 Film3 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)

(i-d) industrial drafting

100 Perspective and Parallel Line Projection4 credit hours

See (tca) technical-commercial art for course description.

100 Technical Drawing4 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 Mechanisms4 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 Drafting4 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 Geometry4 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 Drafting4 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 Fixtures2 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 Fixtures3 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 Layout3 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)

(i-e) internships-externships

- 200 Internship-Externship**3 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 academic adviser and the Internship-Externship Program Coordinator to ensure proper program planning and to secure the appropriate divisional director's permission. No more than 12 credit hours of supervised, integrative occupational experience through the Internship-Externship Programs may be applied toward the Associate Degree, and no more than 6 credit hours toward a one-year Certificate of Achievement. (1-hour weekly seminar plus directed field projects.)

(jrn) journalism

- 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)

(mgt) management and marketing

- 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 Management3 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)

230 Office Management3 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 Management3 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 Marketing3 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 Management3 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 Principles3 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)

(mlg) metallurgy

100 Introduction to Metallurgy1 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 Materials2 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 Metrics1 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 Metrics1 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 Metallurgy3 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 Processes3 credit hours

An introduction to modern industrial processes and how metallic materials behave when subjected to them. Forging, casting, extrusion, 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, seizure, galling, and fatigue. (4 hours per week)

207 Testing Laboratory2 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 Processes2 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, spheroidizing, surface hardening processes, hardenability, and age hardening. Demonstration and lecture serve to relate theory and practice. (4 hours per week - 7½ weeks)

217 Mechanical Testing2 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 Metallography4 credit hours

Prerequisite: General Metallurgy 122.

Units of study include sample preparation for microscopic examination and photo micrography. 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 Study5 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 Laboratory1 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)

(m-t) mechanical technology

100 Machine Shop Theory3 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 Theory2 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 Practice4 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 Operation2 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-up4 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-Up4 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 Maintenance2-6 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 Technology4 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 Fundamentals3 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 Systems4 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)

(mth) mathematics

037 Independent Study1, 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 Mathematics3 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)
- 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)
- 136 Triangle Trigonometry****1 credit hour**
 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. Calculating by slide rule is encouraged. (1-4 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 Matrices1 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 Mathematics1 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 Games1 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 Wastenaw 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 Algebra4 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 Trigonometry4 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 Teachers3 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 Statistics4 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 Mathematics3 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 Algebra4 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 Algebra3 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 Algebra3 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 Trigonometry3 credit hours

Prerequisite: Introductory Algebra 097 or two terms of high school algebra.

Intended for the student whose need for general trigonometry does not include all of Precalculus 179 which contains general trigonometry as one of its topics. Also may serve as a review. Major topics are trigonometric functions of angles, law of sines and law of cosines, circular functions, 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 mathematics and computers as tools of his profession. Student is afforded an opportunity to develop algorithms, and write and execute selected programs. Both lecture and laboratory time are involved. (3 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. (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)
- 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 Numerical 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 Hewlett-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 Course4 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)

(mus) music

090 Moog Synthesizer1 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 Theory3 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 Band1 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: Ensemble1 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 Chorus1 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 Musicianship3 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 Culture3 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 Appreciation3 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 Writing3 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 Piano2 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 Guitar2 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 Guitar2 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 Guitar2 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 Banjo2 credit hours

Group instruction for beginners in banjo to provide the necessary basic skills for performing elementary banjo music. (2 hours per week)

(n-c) numerical control

100 Introduction to Numerical Control3 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 Control3 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 Control3 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 Operations3 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 Programming4 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 Programming4 credit hours
 Advanced computer programming techniques. The APT language is studied 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)

(nur) nursing

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 Fundamentals3 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.

115 Nursing Fundamentals Laboratory2 credit hours
 Laboratory practice to help the student develop basic nursing skills, applying the principles of Nursing Fundamentals (NUR 100).

110 Nursing Clinical Experience1 credit hour
 Supervised clinical experience in a longterm health care facility applying basic nursing skills in simple nursing situations.

117 Nutrition for Nurses2 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 Health1 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.

125 Medical-Surgical Nursing with Laboratory6 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.

120 Medical - Surgical Practice6 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.

147 Growth and Development3 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.

135 Maternal and Child Nursing with Laboratory3 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.

130 Maternal and Child Nursing Practice4 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.

145 Advanced Medical - Surgical Nursing3 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.

140 Advanced Medical - Surgical Nursing Practice3 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.

(p-e) physical education

110 Principles of Safety2 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 Living3 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 Controversy1 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 participants. (1 hours per week)

122 Seminar in Weight Control1 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 Aid2 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)

(phl) philosophy

101 Introduction to Philosophy3 credit hours

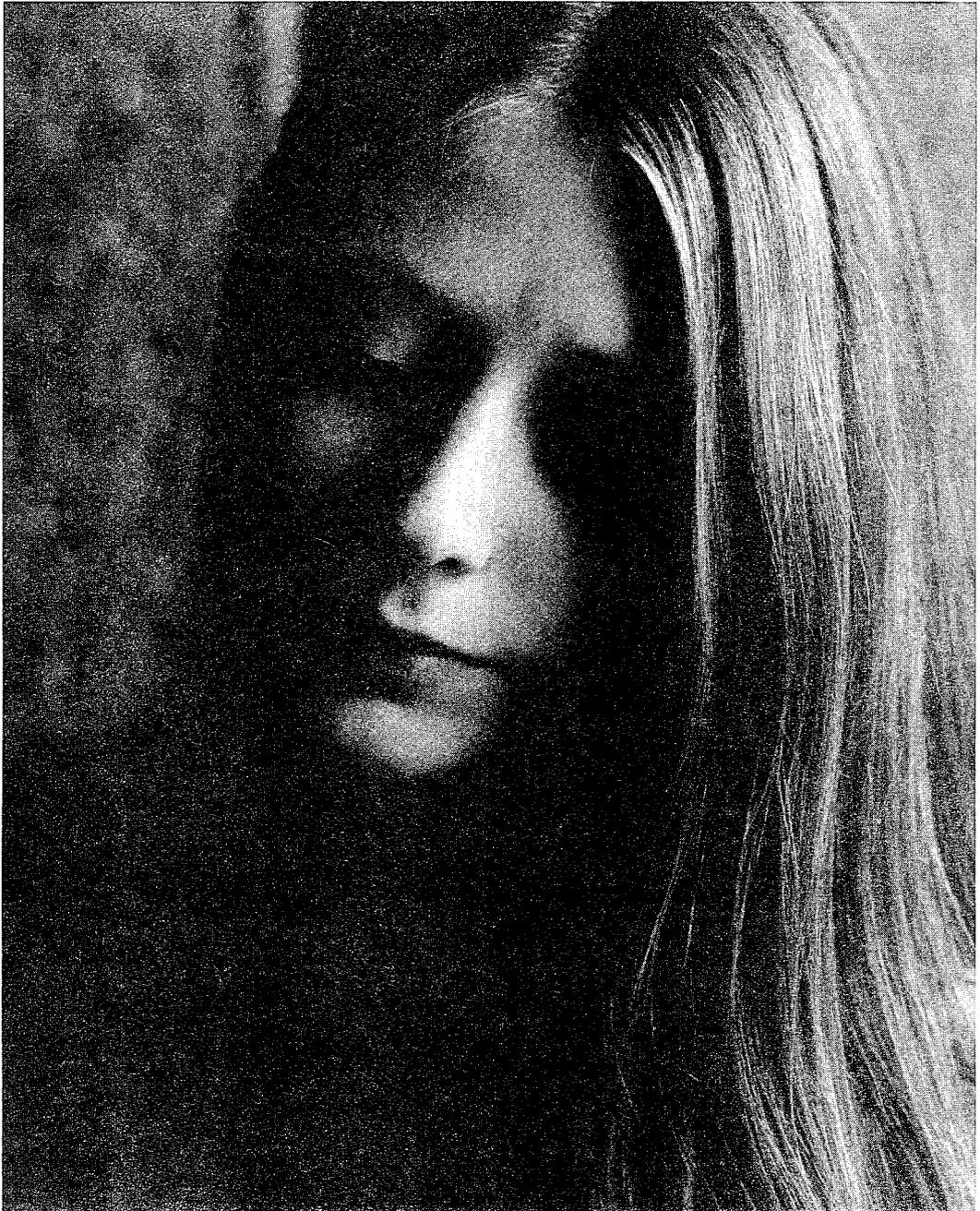
Introduction to basic philosophical principles, methods, and problems by a close study of representative philosophers. Emphasis on analytical and speculative functions. (3 hours per week)

205 Values: Ethics and Aesthetics3 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 Logic3 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)



(pho) photography

- 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.
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**
Prerequisite: 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.
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.
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 Photography2-4 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 Seminar4 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 - 4 hours per week arranged)

(phs) physical science

142 Environmental Science4 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 Astronomy1 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)

(phy) physics

090 Automotive Physics3 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 Physics4 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 Physics4 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 Physics4 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 Physics4 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 Therapy3 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.)

141 Radiologic Physics3 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 Physics3 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 Music3 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 Physics5 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 Physics5 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)

(pls) political science

108 Government and Society3 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)

122 Introduction to American Government3 credit hours

The forms and functions of American government with emphasis on national government. Decision-making process in the Congress, the presidency and the federal court system studied. Relationship of political parties and public opinion to the electoral process. MEETS THE MINIMUM REQUIREMENTS OF MICHIGAN LAW FOR THE ASSOCIATE DEGREE. (3 hours per week).

150 State and Local Government and Politics3 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 Politics3 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 Government3 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 Groups3 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)

(psy) psychology

100 Introductory Psychology3 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 Psychology3 credit hours

See (bls) black studies for course description.

108 Dynamics of Behavior3 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 I3 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 II3 credit hours

This course will provide a deeper and broader theoretical base than the beginning course but will concentrate on techniques to enable the potential therapist to function most effectively. Continuation of development of basic skills in therapy — primarily lecturing and leading groups — will be emphasized.

- 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 re-conditioning 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)
- 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)

(q-c) quality control

- 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 Testing3 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)

(rac) refrigeration/air conditioning)

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 \$28.00. Consent of advisor is required for registration.

111 Refrigeration5 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 1 (5 hours per week)

122 Refrigeration Equipment5 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 (5 hours per week)

123 Refrigeration and Air Conditioning Systems5 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 Controls5 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 (5 hours per week)

213 Air Conditioning5 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 (5 hours per week)

214 Control Systems5 credit hours

Prerequisites: Basic Controls 124 and Air Conditioning 213

Presenting further study and practice in reading electrical 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 (5 hours per week)

215 Troubleshooting Controls5 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 (6 hours per week)

216 Systems Laboratory5 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)

(rad) radio

101 Radio Station Equipment Operation3 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 hours per week)

130 Special Production Projects3 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 Operations3 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

(rdg) reading

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 Reading3 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 Reading2 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. We will also focus on reading-related home and school problems. (3 hours per week)

103 Study Skills3 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 Skills1 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 Reading1 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 Reading1 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 Power1 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 Power3 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)

(r-t) radiologic technology

111 Fundamentals of Radiologic Technology3 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 Laboratory1 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 Technology3 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 Laboratory1 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 Technology3 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 Laboratory1 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 Technology3 credit hours**
 Prerequisite: Principles of Radiologic Technology 213
 A study of special equipment used in radiography, among them are tomography, stereoscopy 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 Laboratory1 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 Management2 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 Practicum1 credit hour**
 Prerequisite: Acceptance into Radiologic Technology Program.
 Orientation to the hospital environment with emphasis on being familiar with the hospital radiology department, 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 Practicum2 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 Practicum3 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 Practicum2 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 Practicum3 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 Practicum4 credit hours**
 Prerequisite: Clinical Practicum 225.
 Structured clinical experience spring and summer semesters. Experience in an affiliated hospital radiology department.

(rth) respiratory therapy

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 Review1 credit hour

This course is designed to assist graduates 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 Procedures4 credit hours

Prerequisite: Admission to the Respiratory Therapy Program.

An introductory course dealing with the instruments and techniques used by the respiratory therapist. The course involved 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 Physiology2 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 disease that affect it. Involved are two hours of lecture. (2 hours per week)

123 Respiratory Physiology Lab & Recitation3 credit hours

Prerequisite: Basic Anatomy & 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 Practice3 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 Practice4 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 obstructive pulmonary disease. Also, practice performing pulmonary function testing and blood gas analysis. 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 Tests3 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 Care3 credit hours

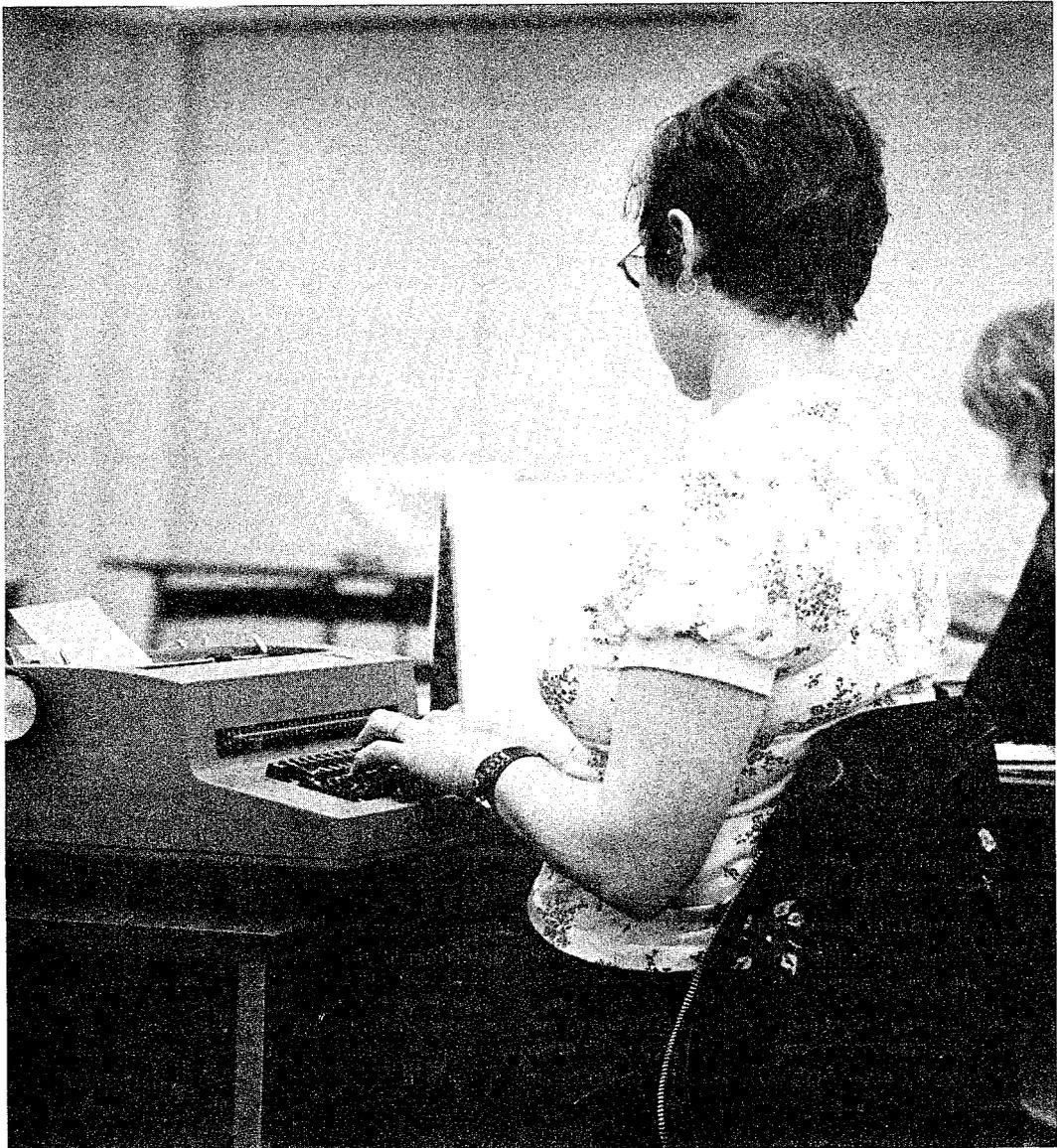
Prerequisite: Basic Equipment and Procedures 121 and Respiratory Physiology 122.

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 Therapy2 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 management techniques as they apply to the operation of a respiratory therapy department. (2 hours per week)



(s-o) secretarial and office

090 Fundamentals of Typewriting1 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 Shorthand4 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 Procedures4 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 Typewriting3 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 work 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)

130 Business Machines3 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 Procedures4 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 work processing. (4 hours per week PLUS minimum of 4 weekly machine room hours)

200 Machine Shorthand2 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)

(soc) sociology

100 Principles of Sociology3 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)
- 207 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 societal 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)

(sph) speech

- 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 Interpretation 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 **3 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)

(spn) spanish

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)

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)

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)

(s-s) social science

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 Issues3 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)

(tca) technical and commercial art

- 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 Display4 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 Reproduction4 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 Techniques4 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 Study2-8 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)

(t-v) television

101 Television Studio Operation3 credit hours

The operation of studio equipment. Covers studio 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 TV3 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 Maintenance3 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 Acting3 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 Lighting3 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 cameos; studio furniture and decoration; and studio graphics and mountings for them. (3 hours per week)

- 130 Special Production Projects3 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 Production3 credit hours**
 Prerequisite: Television 101
 Using skills developed in the preceding 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 Documentary3 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 Campaign3 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 Journalism3 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 Management3 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)

(w-f) welding and fabrication

- 100 Fundamentals of Welding2 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 Welding2 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-Welding2 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 Welding2 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**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**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**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**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)
- 215 Welding and Fabrication**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 fundamentals, with emphasis on cutting and brazing. (2 hours per week)
 7-½ weeks
- 226 Welding and Fabrication**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)



college personnel

board of trustees

Member	Title	Term Expires
Anthony J. Procassini Ann Arbor, MI	Chairman	December 31, 1980
Sally Buxton Ann Arbor, MI	Vice Chairman	December 31, 1978
Ann C. Heck Ypsilanti, MI	Secretary	December 31, 1978
Phillip G. Wells Ypsilanti, MI	Treasurer	December 31, 1976
Richard W. Bailey Ann Arbor, MI	Member	December 31, 1978
David V. Heebink Ann Arbor, MI	Member	December 31, 1976
William Mays, Jr. Ann Arbor, MI	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	
Hall, Richard W.	Dean, Business Operations
B.B.A. — The University of Michigan M.B.A. — The University of Michigan	
Jones, James A.	Dean, Student Personnel Services
B.A. — Southern Illinois University M.A. — Southern Illinois University	
Konschuh, Harry J.	Personnel Manager
B. Ed. — University of Alberta M.A. — Michigan State University	
Miller, Joseph M.	Dean, Occupational Studies
A. B. — Central Michigan University M.A. — The University of Michigan	
Pollock, David S.	Dean, Administration
A.B. — The University of Michigan M.A. — Eastern Michigan University	
Wooden, John P.	Dean, General Studies
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
- Bosch, Barbara J.**Supervisor, Technical Processing, LRC
 Henry Ford Community College
 Washtenaw Community College
 Friden Educational Center
- Braun, George J., Jr.**Controller
 A.B. — The University of Michigan
 M.B.A. — The George Washington University
 Registered School Business Official — A.S.B.O.
- Brengle, Geraldine H.**Administrative Assistant, President's Office
 Tiffin University
 Washtenaw Community College
 The University of Michigan
- Davis, Paul W.**Director, Community Service Occupations & Institutional Research
 B.S. — Ball State University
 Ed. M. — Ball State University
 Ed.S. — Wayne State University
 Ph.D. — The University of Michigan
- Ford, Andrew F.**Director, Technical & Industrial
 B.S. — Wayne State University
 M. Ed. — Wayne State University
- Gordus, Jeanne P.**Director, Social Sciences
 B. Mus-Manhattanville College
 M. Mus-University of Wisconsin
 A. M. — The University of Michigan
- Hackney, Larry H.**Director, Counseling & Guidance
 B.A. — Tennessee State University
 M.A. — The University of Michigan
 Ph.D. — The University of Michigan
- Harris, Helen L.**Coordinator, Practical Nursing
 Diploma — Washington University School of Nursing
 B.S. — University of Chicago
 M.A. — University of Michigan
- Ho, Leo C.**Director, Learning Resources Center
 B.A. — National Cheng Chi University
 M.L.S. — Atlanta University
 Ph.D. — Wayne State University
- Hower, Guy W.**Director, Student Services
 B.B.A. — The University of Michigan
 M.A. — The University of Michigan
- Jackson, Robert L.**Coordinator, Trade Related Instruction
 Journeyman — Tool & Die & Diecast Die Maker
 Henry Ford Community College
 Tool & Processing Engineer
- Kleinhenn, Alton L.**Registrar
 General Motors Institute

- Lamminen, Arthur J.****Director, Business & Industrial Management**
 B.S. — Tri-State College
 M.A. — Michigan State University
 Ph.D. — Indiana Northern University
- Lindow, Kenneth A.****Assistant Controller**
 A.A. — Jackson Community College
 B.A.A. — Eastern Michigan University
- Mallory, Richard H.****Director, Auxiliary Services**
 B.S. — University of Detroit
- Munn, Ben F.****Director, Data Processing**
 B.S. — The University of Michigan
- Roberts, Alvin E.****Director, Black Studies**
 B.S. — Prairie View A&M College
 M.S.W. — Wayne State University
- Ronayne, Jeanette M.****Supervisor, Day Care Center**
 A.B. — The University of Michigan
- Sabada, Mary L.****Personnel Assistant**
 Ohio University
 Washtenaw Community College
- Shrader, Stacy J.****Computer Programmer/Analyst**
 University of Detroit
- Stallworth, Clarence A.****Director, Buildings & Grounds**
 B.S.E. — The University of Michigan
 M.S.E. — The University of Michigan
- Taylor, O'Leta****Supervisor, Payroll & Staff Benefits**
 West Virginia Business College
 Washtenaw Community College
 The University of Michigan
- Thomson, Mehran, Jr.****Director, Exact Sciences**
 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, Communication Arts**
 A.B. — Central Michigan University
 M.A. — Central Michigan University

the faculty

- Agin, George C., 1968****Mechanical Technology**
 B.S. — Wayne State University
 M.A. — Eastern Michigan University
 General Motors Training Center
- Alexander, W. E., 1966****Biology**
 B.S. — Hampton Institute
 M.S. — University of Wisconsin
 M.A. — The University of Michigan

- Alpha, Emil T., 1968****Food Service Technology**
 Cooks-Bakers School, Salsberg Eiseler Hotel
 Dieticians License, State of New York
 Cornell University, School of Hotel Administration
- Amaru, Augustine, 1966****Political Science**
 B.A. — Boston University
 M.A. — Michigan State University
- 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
- 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****Electronics Lab Coach**
 A.D. — Washtenaw Community College
 Electronics Engineering Technician Trade School
 Grantham Electronics Trade School
 F.C.C. License
- Bertoia, Roger, 1966****Industrial Drafting/Occupational-Vocational Cooperative Education**
 B.S. — The University of Michigan
 M.S. — The University of Michigan
- 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
- Bollweg, John J., 1968****Logic/Philosophy**
 Ph.D. — Northwestern University
 M.A. — Roosevelt University
- Bottorff, Ralph S., 1966****Mathematics**
 B.A. — University of Northern Iowa
 M.A. — University of Illinois
 Ph.D. — The University of Michigan
- Brown, Eugene N., 1970****Automotive Service Lab Coach**
 A.D. — Washtenaw Community College
- Burden, Dennis B., 1969****Veteran Counselor**
 A.A. — Jackson Community College
 B.A. — The University of Michigan
 M.S. — California State College
- Byisma, Donald, Jr., 1966****Sociology/Criminology**
 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
- Charlton, Eleanor, 1966** **Secretarial Science**
 B.S. — Central Michigan University
 M.A. — Central Michigan University
- Chasteen, Joseph, 1970** **Dental Assisting**
 D.D.S. — The University of Michigan
- 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
- Croake, Edith M., 1966** **English**
 B.A. — The University of Michigan
 M.A.T. — Northwestern University
 M.A. — Northwestern University
- Daehler, Arden A., 1968** **Physics/Mathematics**
 B.S. — University of Colorado
 M.A. — Eastern Michigan University
- Daisher, Nollie M., 1968** **Literature**
 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
- 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
 S.A. — Eastern Michigan University
- Edwards, LaRuth, 1974** **Dental Assisting**
 C.D.A. — American Denal Assisting Association
 University of Detroit
 Shaw College of Detroit
- Fatur, Robert A., 1967** **Metallurgical Technology**
 Wayne State University
 Detroit Institute of Technology

- Figg, William, 1972****Welding Lab Coach**
Washtenaw Community College
- French, Gargi, 1974****Chemistry**
B.Sc. — University of Bombay
Ph.D. — Radcliffe College
- Garrett, Dallas O., 1967****Mechanical Technology**
B.S. — Wayne State University
M.A. — Eastern Michigan University
Numatrol Circuit Design School
Illinois Institute of Technology
- 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****Economics/Geography**
B.S. — Wayne State University
M.A. — 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
- Hakeem, Ivan P., 1968****Sociology**
I.D.D. — Agricultural Institute
A.B. — Clark College
M.A. — Atlanta University
- 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**
B.S. — Eastern Michigan University
M.S. — Michigan State University
- Holmes, George H., III, 1968****Western Civilization**
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

- Hunt, Barbara, 1968**English
 B.A. — University of Toledo
 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
- Kapp, George, 1970**Exact Sciences Lab Coach
 A.D. — Washtenaw Community College
- 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
- Ladley, Betty A., 1969**Dental Assisting
 A.A. — Grand Rapids Junior College
 C.D.A. — American Dental Assisting Association
- Lawrence, Morris J., 1969**Music
 Certificate — Straight Business College
 B.S.M.E. — Xavier University
 M.A. — The University of Michigan
- Lewis, William A., 1968**Mathematics
 B.S. — North Carolina College at Durham
 M.A. — The University of Michigan
- Lockard, Jon M., 1970**Art
 Certificate — Meinzing Art School
 Certificate — Obleton Advertising Company
 Wayne State University
- Lowe, Burton C., 1968**Mechanical Technology
 Journeyman Industrial Machinist, Machine Repairman
 Ford Motor Company Apprenticeship School
 Wayne State University
- Mann, John B., 1971**Automotive Service
 Washtenaw Community College
 B.S. — Eastern Michigan University
- Martin, Herbert L., 1967**Psychology
 B.A. — Eastern Michigan University
 M.A. — Eastern Michigan University
- Martin, John W., 1968**Commercial Art/Technical Illustration
 Certificate — Miensing Art School
 Certificate — Arts and Crafts School
 A.A. — Macomb County Community College
- McClatchey, Merrill W., 1966**Speech/Broadcasting
 B. A. — Wayne State University
 M.A. — Columbia University
- McClellan, Elwood, 1967**English
 B.A. — Michigan State University
 M.A. — The University of Michigan
- McGee, Sophie, 1969**Reading
 A.B. — The University of Michigan
 M.A. — The University of Michigan

- McGill, John B., 1966****Mathematics/Physics**
 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****Mechanical Technology**
 Journeyman, Industrial Machinist - Machine Repairman
 Ford Motor Company Apprenticeship School
 B.S. — Wayne State University
- Mickelson, Joan M., 1969****Western Civilization**
 B.A. — St. Teresa College
 M.A. — Eastern Michigan University
- Miller, Louis R., 1969****Political Science**
 B.S. — Eastern Michigan University
 M.A. — 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
- 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
- Niehaus, Paul J., 1966****Biology**
 B.A. — Eastern Michigan University
 M.S. — The University of Michigan
- Nixon, Sandra S., 1969****College Nurse/Health Service**
 B.S.N. — The University of Michigan
 Registered Nurse
- Packard, R. James, 1969****Industrial Drafting**
 A.D. — Washtenaw Community College
 B.S. — University of Wisconsin
 M.A. — Wayne State University
- Patt, Jerry, 1968****Secretarial and Office Occupations**
 B.S. — Eastern Michigan University
- Paulson, Robert W., 1968****Business Subjects**
 B.S. — University of New Hampshire
 M.S. — University of New Hampshire

- Phibbs, John, 1969**Graphics Technician
 A.D. — Washtenaw Community College
 Eastern Michigan University
- Pierce, Flavia P., 1966**History
 B.A. — St. Joseph College
 M.A. — Georgetown University
- Plummer, Robert H., 1967**Political Science
 B.A. — Wabash College
 M.S. — Indiana University
 Ed.D. — Indiana University
- Pogliano, Michael F., 1969**Architectural Drafting
 B.S. — 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
 B.S. — The University of Michigan
 M.S. — The University of Michigan
- Reeves, Robert A., 1968**Speech
 B.A. — Eastern Michigan University
 M.A. — Eastern Michigan University
- Roberts, Shirley, 1968**Psychologist
 B.A. — The University of Michigan
 M.A. — The University of Michigan
- 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
- Robinson, Albert, 1974**Electricity/Electronics
 B.A. — Indiana University
 M.S. — Eastern Michigan University
- Salerno, Douglas, 1969**Speech/Journalism
 A. A. — Kellogg Community College
 B.A. — Western Michigan University
 M.A. — Western Michigan University
- Scott, Kathleen, 1971**Reference Librarian
 B.A. — University of Iowa
 MA. — University of Iowa
- Scott, Adella, 1975**Circulation Librarian
 B.A. — The University of Michigan
 A.M.L.S. — The University of Michigan

- Shanahan, Constance, 1971**Financial Aids Officer
 B.A. — Miami University
 M.A. — University of Toledo
- Simpson, William J., 1968**Counselor
 B.S. — Alabama State College
 M.S.W. — Wayne State University
- Sims, Donald L., 1968**Admissions Officer
 B.S. — Wayne State University
 M.A. — The University of Michigan
- Slepsky, Lawrence, 1968**Physical Education/Athletics
 B.S. — Eastern Michigan University
 M.A. — Eastern Michigan University
 Ed.S. — Eastern Michigan University
- Smitley, Lynne M., 1969**Anatomy/Physiology
 B.S. — Eastern Michigan University
 M.S. — The University of Michigan
- Spencer, James E., 1967**Biology
 B.A. — Kalamazoo College
 M.S. — The University of Michigan
- Steinbach, J. Raymond, 1969**Photography
 B.S. — Michigan State University
- Stillwell-Fritts, Ruthmary, 1968**Literature
 B.A. — The University of Michigan
- Stotland, Dorothy E., 1968**English
 A.B. — The University of Michigan
 M.A. — The University of Michigan
- Strayer, James L., 1969**Biology/Ecology
 B.A. — Eastern Michigan University
 M.A. — The University of Michigan
- Susnick, Stuart B., 1969**History
 B.A. — Brooklyn College
- Swatz, Donna, 1973**Dental Assisting Lab Coach
 A.A.S. — Ferris State College
 C.D.A. — American Dental Assisting Association
- Tabor, Donald, 1971**Data Processing
 The University of Michigan
 Macomb County Community College
- Tatar, George D., 1968**Biology
 B.S. — The University of Michigan
 M.S. — The University of Michigan
- Thomas, Ervin L., 1969**Social Studies/Philosophy
 B.A. — Wayne State University
 M.A. — Wayne State University
- Toogood, Emery, 1968**Mechanical Technology/Industrial Drafting
 B.S. — Central Michigan University
 M.A. — The University of Michigan
- 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****Student Placement Officer**
 B.S. — Western Michigan University
 M.A. — Wayne State University
- Walker, W. James, 1970****Automotive Service**
 A.D. — Washtenaw Community College
 B.S. Ed. — The University of Michigan
 Certificates — Ford Motors, Chrysler Motors, General Motors and Champion Technical School
- Weidner, Hal R., 1969****English**
 A.B. — Columbia College
 M.A. — The University of Michigan
- Welch, Bruce H., 1966****Automotive Service**
 B.S. — Central Michigan University
 M.A. — The University of Michigan
 Delco Remy Automotive Electrical School
- 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 Machnist
- Williams, Calvin E., 1969****Counselor**
 B.A. — Western Michigan University
 M.A. — The University of Michigan
- Williams, Johnny L., 1967****Electricity/Electronics**
 U.S. Navy Retired — Radio Electronics
- Williams, Thomas G., 1971****Black Studies**
 B.S. — Eastern Michigan University
- Wilson, Evelyln Y., 1967****Secretarial and Office Occupations/General Business**
 B.S.S.S. — Ohio University
 M.S. — Ohio University
- Wirbel, Johanna V., 1968****Counselor**
 B.A. — Kent State University
 M.A. — The University of Michigan
- Wotring, John R., 1969****Data Processing**
 B.A. — University of Philippines
- 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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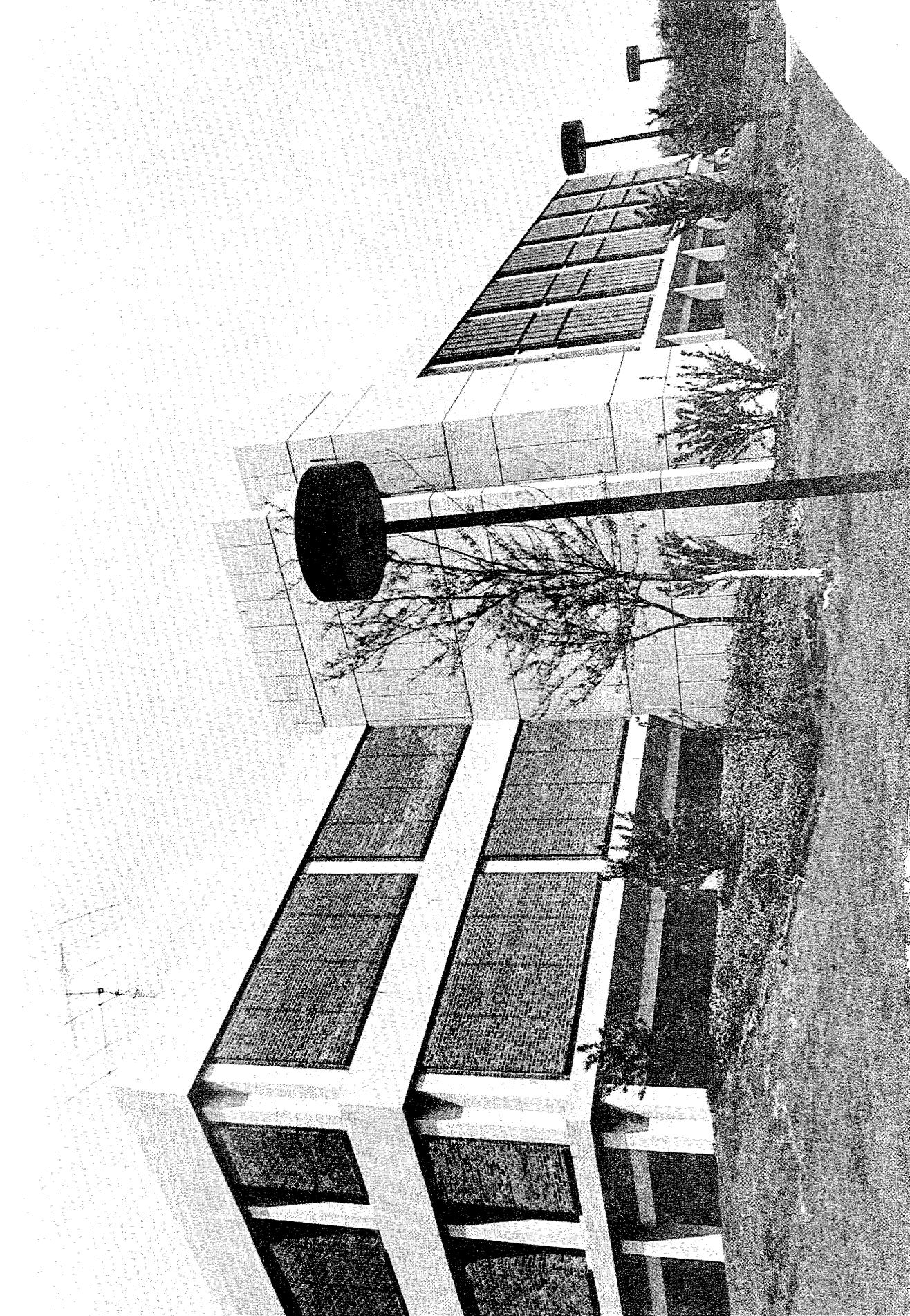
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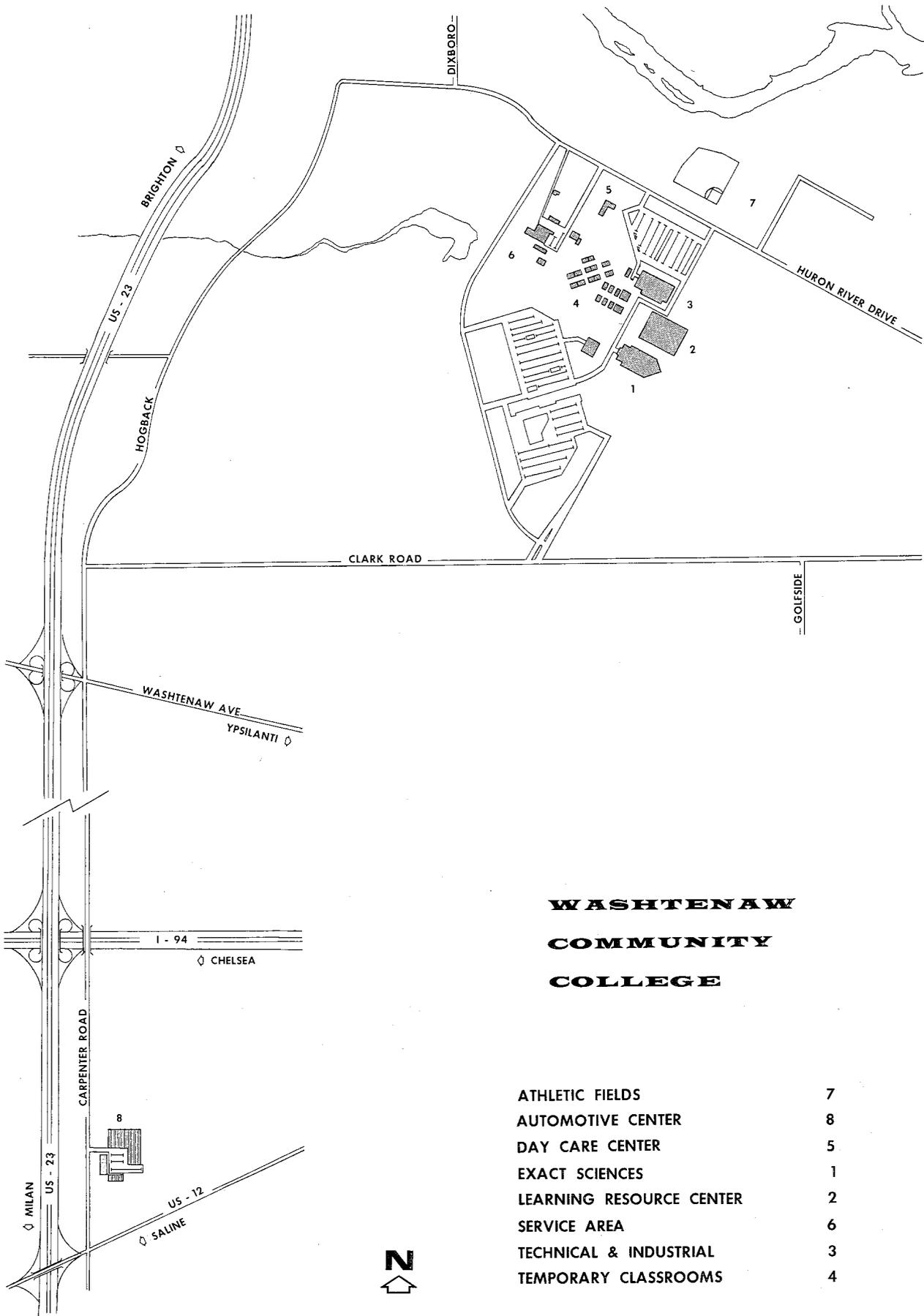
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