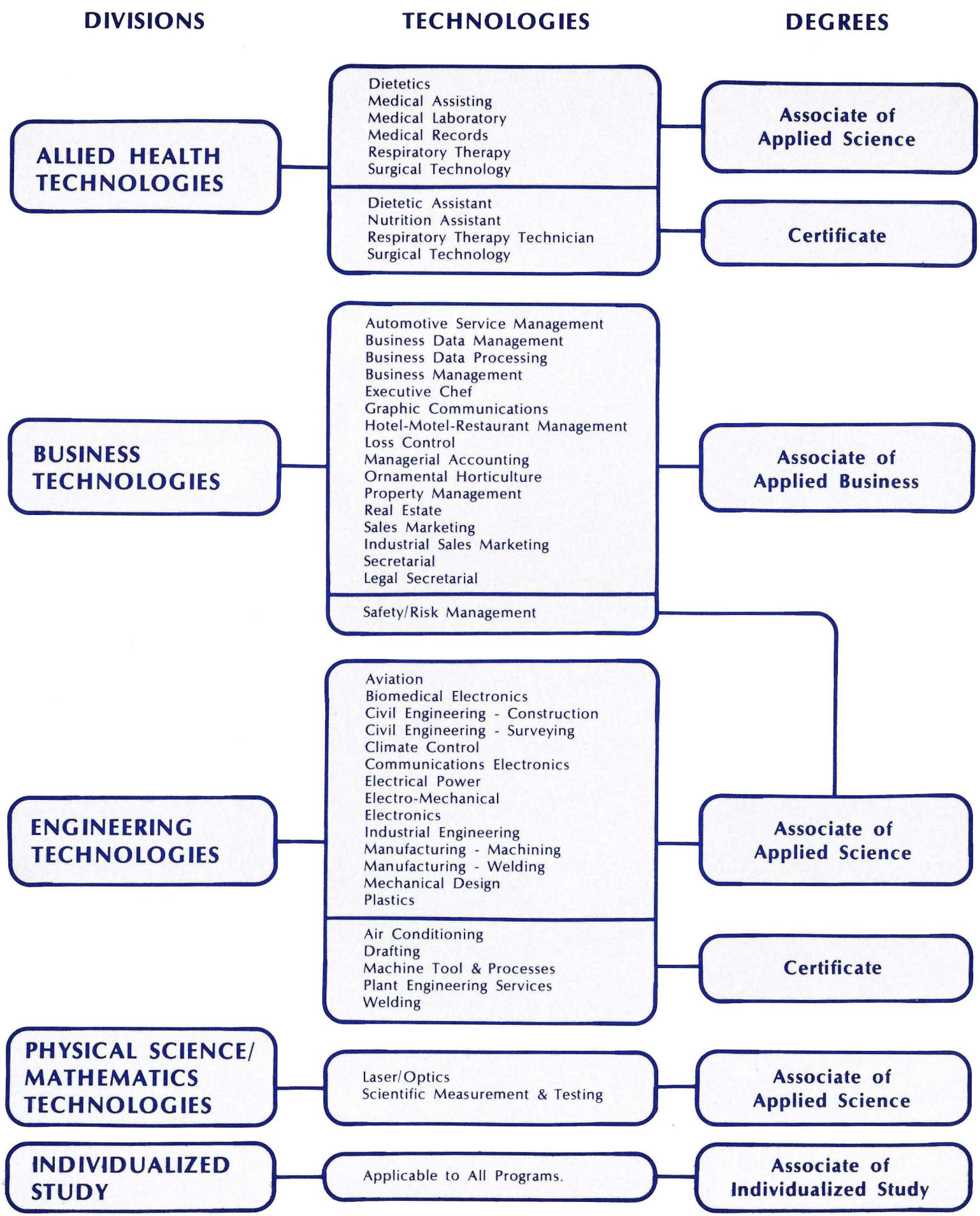
CTC

CINCINNATI TECHNICAL COLLEGE

CATALOG 1980


DIVISIONS
TECHNOLOGIES
DEGREES
ALLIED HEALTH TECHNOLOGIES
Dietetics
Medical Assisting
Medical Laboratory
Medical Records
Respiratory Therapy
Surgical Technology
Associate of Applied Science
Dietetic Assistant
Nutrition Assistant
Respiratory Therapy Technician
Surgical Technology
Certificate
BUSINESS TECHNOLOGIES
Automotive Service Management
Business Data Management
Business Data Processing
Business Management
Executive Chef
Graphic Communications
Hotel-Motel-Restaurant Management
Loss Control
Managerial Accounting
Ornamental Horticulture
Property Management
Real Estate
Sales Marketing
Industrial Sales Marketing
Secretarial
Legal Secretarial
Associate of Applied Business
Safety/Risk Management
ENGINEERING TECHNOLOGIES
Aviation
Biomedical Electronics
Civil Engineering - Construction
Civil Engineering - Surveying
Climate Control
Communications Electronics
Electrical Power
Electro-Mechanical
Electronics
Industrial Engineering
Manufacturing - Machining
Manufacturing - Welding
Mechanical Design
Plastics
Associate of Applied Science
Air Conditioning
Drafting
Machine Tool & Processes
Plant Engineering Services
Welding
Certificate
PHYSICAL SCIENCE/ MATHEMATICS TECHNOLOGIES
Laser/Optics
Scientific Measurement & Testing
Associate of Applied Science
INDIVIDUALIZED STUDY
Applicable to All Programs.
Associate of Individualized Study

1980
Cincinnati Technical College
Catalog

Contents

Cincinnati Technical College
3520 Central Parkway
Cincinnati, Ohio 45223
(513) 559-1520

GENERAL INFORMATION

CATALOG 1980

1980

CATALOG

GENERAL

INFORMATION

Mission of the Cincinnati Technical College

The Cincinnati Technical College has a vital and distinctive educational mission to perform in the interests of the educational and economic welfare of metropolitan Cincinnati. An understanding of the precise nature of this mission requires an appreciation of these three facts:

1. Technical education is a distinctive, relatively new and urgently needed type of higher education.
2. A technical college is a distinctive kind of college with the special type of expertise required to meet the need for technical education.
3. Cincinnati Technical College has a distinctive "co-opportunity" plan which enables it to serve students' and employers' needs which would not otherwise be met.

Why the Need for Technical Education Has Arisen

A scientific revolution, underway the last several decades, has quickened the pace of change in all of the professions and transformed the occupational role and the educational requirements of the professionally trained employee. In the past, the professional, the product of four or more years of college, had the time, the training and the duty to perform many practical functions in work. An engineer, for example, might spend hours drawing or routinely testing a new product. New scientific discoveries and technological advances have so enlarged the body of theoretical knowledge underlying many of the professions that now there is too little precious time in the professional curricula to develop practical skills. The mastery of theory has become the first priority of the professional. The use of this theoretical knowledge has become the dominant function of the professional in day-to-day work.

As a consequence, the professional needs the assistance of a new member of the employment team, the technician or semi-professional. And, to prepare this semi-professional to work with the scientist, or the engineer or the medical specialist, the technician requires a new type of college education.

The technician must master, to some extent, the theoretical principles relating to a specialized technology and develop the practical abilities the specialty requires. Such educational preparation is above the high school level, but does not require the four or more years of college needed by the professional. An intensive program, usually of two years duration and designed to prepare the student for immediate and effective employment upon graduation, suffices. Such a program is technical education.

The need for technicians, already great, is growing rapidly. The increase in technical jobs over the next decade will exceed that of most other employment categories according to federal projections.

How Technical Colleges Differ from Other Types of Institutions of Higher Education

Technicians are action people. They must be trained to apply theory in support of the professionals with whom they work. Their education therefore differs markedly from that of the professionals.

Technicians need some theoretical preparation, but not in the breadth and depth required of the professional. As a consequence, the technical education curriculum must be practical in nature. The first two years of college prepare the professional-to-be for more advanced college work. In the two-year education program, the technician must learn all which is needed to know in order to be employable. The curricula needed by the two are in sharp contrast: the professional is academic and theoretical; the technical is practical and action-oriented. In the first two college years, the professional level student learns how to learn more; the technical education student learns how to do well those things which must be done on the job.

Technical education, to be effective, requires a special educational environment: a faculty dedicated to practical education; laboratory equipment adequate to make such education possible; a governing body and administration dedicated to the philosophy of this education; a close working relationship with business and industry. The technical college provides that special environment.

Ohio has a network of sixteen technical colleges, all created in the last fifteen years or so as a result of federal, state and local initiatives. The National Defense Education Acts of 1958 and 1963 and the Vocational Education Acts of 1963 and 1968 helped to provide a stimulus to these and hundreds of other technical schools throughout the nation. Passage of these acts and state statutes creating technical colleges have underscored the high priority of these institutions. The orderly growth of the nation's economy depends in large measure on the quantity and quality of the supply of technicians.

The Special Needs Served by Cincinnati Technical College's "Co-opportunity" Plan

The Boards of Trustees, the administrative staff and the faculty of the Cincinnati Technical College share a profound conviction that the school's distinctive plan of cooperative education offers the soundest possible approach to technical education. The objective of any associate degree program in technical education is to prepare the student for immediate employment and potential advancement as a technician. The student must learn both the "why" and the "how." Rigorous, college-level academic instruction is necessary; it is not, however, sufficient. The student's understanding of theory and the ability to apply it are fortified with periodic practice. The classroom can provide valuable laboratory experience but it cannot duplicate an employment environment. Because many Cincinnati Technical College students spend every other term in supervised cooperative employment they are exposed to such an environment at regular intervals. The practical training received in such employment enriches the academic experience.

Certainly if the technician manpower needs of the area — already great and rapidly growing — are to be served, more high school graduates must be attracted to technical education. Yet limited family finances are a major reason why so many do not further their education after high school. Clearly, in the Cincinnati area, thousands who graduate from high school each year have the ability to complete successfully a two-year college-level technical education but do not because they cannot afford either the income forgone while in school two years or the direct expenses incurred (tuition, books, etc.) or both.

Yet few of these graduates are likely to be given effective on-the-job technician training because relatively few plants in the area can afford training programs.

The cooperative education program of the Cincinnati Technical College meets both these needs. The College therefore is now serving hundreds of students who cannot afford to attend other institutions in the area. In addition, the cooperative education plan also enables many small firms to have technician training programs of a quality they could not otherwise have. The Cincinnati Technical College has a vital and distinctive role to play in the area, contributing to both the educational and the economic welfare of the community.

The College is offering 41 associate degree programs and options in 1979-80. Each program was developed to meet a specific need for technicians in local industry demonstrated by a formal or informal feasibility study and supported by the counsel of an advisory committee representing the potential employers of such technicians. No co-op program can be started if it does not address itself to real employment needs of industry and to the real educational interests and aptitudes of local citizens. Each program requires training positions and students qualified to prepare to fill them.

The College will continue to develop programs through the feasibility study-advisory committee approach. In this manner it necessarily must be attuned to the educational needs of the students it serves and the employment needs of the companies with whom it cooperates.

History of Cincinnati Technical College

Because a great and growing shortage of technicians existed in the area, the Cincinnati Board of Education established the Cincinnati Cooperative School of Technology, a two-year institute for high school graduates, in 1966. The function of the school was to train technicians in a program combining college-level classroom instruction and cooperative work experience.

Since all technical education programs in Ohio were to come under the authority of the Board of Regents, the Cincinnati Board of Education proposed in April, 1969 that the Regents establish a Cincinnati Technical Institute District and approve CCST as the nucleus of the technical institute to serve that district. These proposals were approved by the Regents in May, 1969.

The Board of Trustees of the new district — two appointed by the Governor and five elected by the Cincinnati Board of Education — held their organizational meeting on September 15, 1969. At that meeting they appointed the President of the Institute, and approved the Institute operating plan and associate degree programs. They also changed the name of the school to Cincinnati Technical Institute, to conform with the designations of other institutes in the state.

The Board of Regents approved the degree programs and the operating plan on September 19, 1969 and issued the Cincinnati Technical Institute charter on that date.

December 31, 1969 was the final day of operation under the governance of the Cincinnati Board of Education. On the first day of the new decade, the Institute became an autonomous institution.

In June, 1970, the Board of Trustees of the Institute entered into a contract with the Cincinnati Board of Education to purchase the Courter Technical High School property, where the College is located, for $8.4 million.

The Trustees acquired title to the property in November, 1970, when they made the first payment of $3.6 million. Additional payments were made annually as the Institute moved into additional rooms and the high school operation was being phased out.

In 1972 the name of the Institute was changed to Cincinnati Technical College, in accordance with a state statute passed by the Ohio General Assembly in the fall of 1971.

On June 27, 1974, the phase out of the high school was completed and the College made the final payment of $2.7 million to the Cincinnati Public Schools.

In its thirteen years CTC has experienced tremendous growth. The first year, 1966-67, saw an enrollment of 115 students in four degree programs, a seven member staff and 37 co-op employers. This year it enrolled 4000 students in 50 degree and certificate programs and options; has a staff of 195 plus 100 part-time instructors; and has 500 co-op employers.

Accreditations & Memberships

Ohio Board of Regents
Division of Vocational Education, State Department of Education
North Central Association of Colleges and Secondary Schools
Ohio College Association
Ohio Technical and Community College Association
FAA — Approved Aircraft Maintenance Technician School
Member of the American Society of Allied Health Professions
Member of Ohio Organization of Technical Colleges
Member of Cooperative Education Association
Member of American Technical Education Association
Member of American Association of Junior Colleges
Member of National Junior College Athletic Association

Cincinnati Technical College's Unique Co-op Plan

How It Works — From the Student's Viewpoint

The Applicant Takes the Admission Test. In the admissions process, the applicant takes the entrance test, the Differential Aptitude Test of the Psychological Corporation. The applicant also usually specifies the program in which admission is sought.

The Coordinator Interviews the Applicant. After the test has been scored and after the College has received the high school transcript, the applicant is interviewed by the coordinator of the program to which admission is sought. The coordinator assesses the applicant's chances of success in the classroom and on the co-op job on the basis of the applicant's aptitude and interests as measured by test scores, high school academic record and the interview. The coordinator either (a) accepts the applicant into the program; (b) accepts the applicant on probation, if the applicant's chances for success are in question; (c) advises the applicant, if there appears to be little chance of success, to enroll in another of the programs at the College more congenial to the applicant's interests and aptitudes, and refers the applicant to the coordinator of that program or the Admissions Office.

The Student is Assigned to Either the "A" or the "B" Section. If the student is assigned to the "A" section of students, the student will spend the first quarter in school and the second on co-op. If assigned to the "B" section, the student will co-op the first quarter and spend the next in college. Whether on the "A" or "B" schedule, the student will repeat the two-quarter cycle five times until completion of the program. Ornamental Horticulture and Aviation Technology students, however, follow different schedules as explained elsewhere in the catalog.

The coordinator will attempt to help the student secure a co-op job, often times in the summer before the academic year begins. The coordinator will arrange for the student to be interviewed by an employer; the employer will make the decision to hire or not to hire.

The Student Graduates with Considerable Career Assets. Each Cincinnati Technical College graduate begins a career as a technician with these credentials: an associate degree in a technical specialty with as much as fifty percent more classroom contact hours than are provided in some two-year degree programs at other colleges; up to a full year of work experience; a level of intellectual and emotional maturity which only the co-op program could provide. Some graduates pursue a baccalaureate degree full-time. Others work toward the four-year degree by taking university courses in the evening.

Co-ops pay taxes of various kinds (state sales and income and federal income) on their earnings and by so doing, while they are receiving their education, help repay the tax money invested in their education.

Benefits of Cincinnati Technical College's Co-op Plan

The student can benefit —

(1) Educationally. From the outset of the technical education experience the student can learn on the job and in school. The two types of learning experiences are complementary. One can learn certain aspects about employment in general and a certain position in particular only through experience. Conversely, one can never learn, amid the rigors or daily work situations, innumerable lessons that can be learned only in the reflective atmosphere of the classroom. The co-op program enables a student to gain a more liberal education than could be gained in the classroom alone.

(2) Financially — through income received from co-op work. Many CTC students could not afford to attend other schools and would have to enter the job market unskilled, immediately after graduation from high school, if CTC did not have the co-op features both years. The co-op plan enables students to earn while they learn.

(3) Through guidance. Coordinator, instructors, counselors, employer — all can contribute to the guidance of the student. Many things the student learns — personal strengths and weaknesses as they relate to employment — can be learned in the very first quarter on the job. A student may find that the field chosen really does not suit him or her; the student can learn this relatively soon after graduation from high school. Or original beliefs that the student is qualified for and likely to enjoy a certain type of technical career can realistically be strengthened by what is learned on the job during each co-op term.

(4) Socially and emotionally. The two years at CTC can provide a sensibly paced transition from adolescence and high school to maturity and the world of work. The experiences gained in the classroom and on the co-op job can help ripen the social and emotional development of the student. Faculty members, employers and students themselves observe the new levels of maturity most students reach after each successive on-the-job term.

(5) Through relevant general education. Half of the CTC curriculum consists of non-technical subjects — communication skills, social studies, mathematics, science. The courses have relevance to the student's co-op job needs and provide broad preparation for the student's career and role as a citizen.

The employer can benefit:

(1) From the services provided by the school in providing co-op job applicants (the school does not select the student for the co-op job, this choice is made by the employer from a group of candidates), employee guidance, and, of course, the education provided the co-op student.

(2) From the chance to train a student for responsible work over a two-year period. The employer is not obligated to hire the student after graduation. The employer can promote the co-op, give the co-op more responsibilities, pay the co-op more; or the employer can demote the co-op, reduce pay, or even discharge this employee. The co-op must measure up.

The student's family can benefit:

(1) Financially, because many students earn more than enough to pay for their education; in fact, some students contribute significant amounts to their parents from their co-op earnings. Also the parent does not bear the expense of a complete college program only to have the student enter an occupation other than that for which the student prepared.

(2) From the assistance provided by the program in

helping the student to help himself or herself and to attain a maturity level necessary for self-direction as an adult.

The community benefits:

(1) CTC can tap the intellectual talents of many men and women which could not otherwise be developed to their potential.
(2) The increased earning potential of graduates results in greater contributions to society in terms of work accomplished, taxes paid, etc.
(3) The employer shares in the training process.
(4) The College meets previously unmet needs by providing technical education affordable by all; with a practical approach that many people require and prefer; with a close working relationship between employer and school; with a systematic approach to meeting industry's specific and current technical employment needs.

Options

Students may elect to take the complete associate degree program at their own rate of speed. Students may complete the program by attending the College for ten consecutive terms on a half-day basis.

Starting Salaries for Graduates

Average starting salaries for graduates in each technology are available from the coordinator or can be found in the Admissions Office.

Continuing Education and Extended Services

As more students with greater diversity of needs enroll, the College has developed different and improved ways of serving those needs. The recent trends being experienced may be categorized in the following way:

Changes in Academic Needs

There has been a large increase in the number of students who have already started a career and wish to develop it further through more education. Typically, these students are employed but are seeking to develop their careers to a higher level in the most efficient manner. Many students also feel a need to update their technical education and possibly attempt different career directions without interruption to their current employment.

CTC can respond to the business-industrial-professional communities' requests to provide off-campus courses to upgrade employee skills. In addition, the College works with professional and technical societies, organizations and trade unions to offer short-term and long-term programs for their members.

Change in Scheduling

Since there is an increase in the number of students who are employed full-time, the College has increased the evening offerings so that different career aspirations can be pursued while the students continue to work during regular daytime hours.

Change in Locational Needs

The trend toward more students who are working full-time also means that these students have generally more compacted daily schedules. Travel time and the energy expense of going to and coming from classes are becoming greater concerns. More students need classes located closer to their residences or to their places of employment.

Cincinnati Technical College has addressed these student needs by increasing its degree and certificate program offerings in the evening and in convenient locations. Cincinnati Technical College provides concurrent course offerings through its extension centers located within the College service area. CTC extension centers are located at Anderson High School, Colerain Vocational Center, Elder High School, Northwest Vocational Center and Oak Hills High School.

The continuing education operations also include recreational and leisure-time courses offered for the more casual interests of students. Examples of such offerings are swimming, karate, yoga, billiards, disco dancing and consumerism. This type of course is developed when there seems to be sufficient interest to form a class.

ADMISSIONS, FEES & FINANCIAL AID

CATALOG
1980

1980 CATALOG

FINANCIAL AID FEES & ADMISSIONS

Financial Information

Student Expenses

The Ohio Board of Regents provides a student subsidy to the Cincinnati Technical College for each Ohio resident enrolled. The amount received from the Regents equals about two-thirds of the College's operating costs. An additional nine percent is provided by the State Department of Education, Division of Vocational Education. The balance must come from tuition payments and other sources. Out-of-state residents pay the highest amount of tuition since the College receives no Regent's subsidy for their instruction. (See page 13 for complete explanation of residency determination.)

Fees and Charges

Resident Status[1]	Instructional Fee		General Fee[2]		Cost per Credit Hour
State of Ohio Resident	$13	+	$2	=	$15
Out-of-State Resident	$20	+	$2	=	$22

Fees are non-refundable other than the Instructional Fee.

Other Charges:

Application Fee	$20
Course Add Fee (If a course is added after scheduled Registration Day)	$ 3
*Credit By Examination Fee	$25
Graduation Fee	$25
Late Registration: (beginning second day of classes)	$10
(third day of classes)	$20
(fourth day) of classes and thereafter)	$30
Late Payment of Fees	$ 5
Transcript Fee	$ 1
Vehicle lower lot Registration Fee (per term) plus .25 per day	$ 5
Campus Upper Lot Parking Permit Fee (per term)	$20
Check Fee (For check returned by bank)	$10
Laboratory Fees on a Per Course Basis	

*If a student has already enrolled in a course and wishes to take a proficiency exam to receive credit, the student must submit a request form to the appropriate division dean. The tuition payment will cover the cost of the examination. However, if a student fails the exam and must continue in the course, a $5 fee will be charged.

Fees are subject to change.

Co-op Employment

Two (2) credit hours for approved cooperative work experience are granted for terms 1 and 2, and three (3) credit hours for terms 3, 4 and 5 in most technologies. Please refer to the specific curriculum to determine exact co-op credits required. Charges for co-op credit must be paid in advance on the established registration date.

Books and Supplies

The cost of books and supplies can vary greatly from term to term. Also, different programs have different requirements. Students in the engineering technologies, for example, generally will spend more on supplies and equipment than the business oriented programs.

The first school term usually is the most expensive one as students purchase books and supplies at that time that they also use in later terms. The average range of expenses for books and supplies per term is $70-$100.

[1]Please refer to page 13 of the College catalog.
[2]The General Fee finances non-instructional services to students for which instructional subsidies cannot be used.

Refunds

1. Fees are not refundable. A refund of basic tuition may be requested by any student who withdraws from the College according to the schedule detailed below.
2. Requests for refunds will only be considered if the student completes and signs the official withdrawal form in conjunction with the coordinator of that student's technology.
3. **Students who do not follow the established withdrawal procedures of the College will not be eligible for a refund.**
4. Withdrawal of a student who had been permitted to make only a partial payment at registration will be handled precisely as it would have been had complete payment been made.
5. If a student has a financial obligation or balance due the College and leaves without following the established withdrawal procedure, the entire balance is due immediately and no refund or credit is possible.
6. The official date of withdrawal is the date recorded on the withdrawal form when it is signed by the student and coordinator. Tuition refunds, when allowed, are made on basic tuition only at the following rates:

During the first week of the term	80%
Second week	60%
Third week	40%
Fourth week	20%

7. If a student drops a course during the first or second week of the academic term and signs a course withdrawal form, the student will be entitled to an 80% refund of the instructional fee for that course in the first week and 60% of the instructional fee in the second week.

The Cincinnati Technical College reserves the right to revise this statement of tuition refunds at any time.

Student Bookstore

The bookstore is located on the first floor of Wing C. A complete supply of new texts and a limited supply of used books are available covering all the courses offered at the College. The store also carries a complete line of classroom supplies, notebooks, pens, pencils, various tools used in labs, etc. T-shirts, sweatshirts, gym bags, jackets and various sundry items with the College's insignia are available.

Used books are purchased by the bookstore during the two week period prior to the start of each new academic term. However, only books that will be used the following term will be purchased.

Books for which an exchange or refund is requested must be accompanied by the original receipt and presented to the College bookstore during the first week of school after the established registration day for each term. If a student drops a course and wishes a refund within the established time frame, the student must show the bookstore personnel

Admissions Information

General Admission Requirements

Applicants must meet the following qualifications:

1. Submit a transcript of credits earned in high school.
2. Achieve satisfactory scores on entrance examinations.
3. Possess physical qualifications to perform acceptably in the field of training selected.
4. Interview with the coordinator of the selected program.
5. Complete necessary high school courses needed as a prerequisite(s) for the desired program.

Application for Admission

Apply early! Each year some programs are filled by early spring. (Applicants for these filled programs may be placed on stand-by lists.)

To apply, follow these steps carefully:

1. Detach the application which appears in this catalog or obtain an application from your high school counselor or by writing or calling the Admissions Office.
2. Complete the application form and submit it to the Admissions Office with the twenty dollar ($20) application fee. This fee partially covers the cost of administering the entrance test, counseling, processing and registering the accepted student. It is **not** refundable.
3. Have a copy of your high school transcript sent to the Cincinnati Technical College. This should be done as soon as you have decided to apply for admission.
4. Take the entrance examination, the Differential Aptitude Test (DAT), on the earliest possible date. No final action can be taken on your application until the examination has been taken (or waived by the program coordinator). The dates on which the examination will be administered are listed in this catalog.
5. If you have attended another college or university, a transcript of credits must be submitted before the interview so that transferability of course credits can be determined at that time.
6. Two weeks after all the necessary information has been sent (or requested to be sent) to the Admissions Office and the entrance test requirement has been met, call to confirm the completeness of your application file.

An interview may then be scheduled to meet with the program coordinator and receive a decision regarding acceptance.

Student Deposit

A deposit of at least thirty dollars ($30), payable when an applicant receives notice of tentative acceptance, will apply toward fees later charged to the full-time day student when that student enrolls. Payment of the deposit when due assures the applicant of a place in class and is considered as evidence of good faith that the student will register.

The student fee deposit will not be refunded if the applicant decides not to enter Cincinnati Technical College.

Credit for the fee deposit may be extended for 1) twelve months when an applicant fails to register due to illness or other causes entirely beyond the applicant's control or 2) the period of active duty when an applicant enlists in military service. Upon registration within the specified time limits, the credit will apply toward fees charged to the same person only when the prospective student enrolls as a full-time student in any program.

Application for credit must be made in writing at the time of the admission cancellation. Proof of any extenuating circumstances may be required. The Vice President for Finance and Business Affairs is authorized to make decisions on these matters in accordance with school regulations.

Advanced Standing

A student desiring advanced standing by transfer of credits from other colleges must request any colleges previously attended to forward directly to the Director of Admissions a transcript of academic record. Courses paralleling Cincinnati Technical College courses in which a student has achieved a grade of "C" or better will be considered for credit.

Foreign Students

Foreign applicants must follow the prescribed application procedures as set forth on this page. In addition they must submit TOEFL examination results.

A Declaration and Certification of Finances shall be supplied to the College before a Certificate of Eligibility (Form I-20 or DSP-66) will be authorized. Therefore all foreign students should contact the Dean of Student Support Services as soon as possible in order to facilitate enrollment.

Entrance Test

All applicants for admission to the Cincinnati Technical College must satisfy the entrance examination requirement before any final decision on acceptance can be made.

The exam will be administered at the Cincinnati Technical College on the dates listed below or by personal appointment upon request. The test takes about 3½ hours.

Applicants are urged to take the exam on the earliest date possible and to submit all other necessary forms since many programs are filled by early spring.

Applicants living outside of the Greater Cincinnati area, who cannot arrange to take the exam in Cincinnati, should write the Admissions Office as early as possible so special arrangements might be made through the applicant's high school or educational officer if the applicant is in military service.

At the discretion of the program coordinator, SAT or ACT scores, previous college or work experience may be substituted to satisfy the entrance test requirement.

Entrance Test Dates
1980

February 9
March 8
April 12
May 3

All regularly scheduled tests are held on the Saturday mornings listed above. The tests will begin **promptly** at 8:15 a.m. Applicants should make arrangements to be present by 8:00 a.m.

Because of weather conditions, these dates are subject to change. Please confirm your test date with the Admissions Office, 559-1520.

a copy of the drop/add form. Books on approved technology booklists can only be returned as used books and refunded accordingly.

Regular bookstore hours are 9:00 a.m. to 7:00 p.m. Monday through Thursday, and 8:00 a.m. to 4:00 p.m. on Friday. Hours are extended from 8:00 a.m. to 8:00 p.m. Monday through Thursday during the week preceding registration, the week of registration and the first week after registration.

Student Parking

CTC provides on campus parking for students on a first come, first served basis. All vehicles parking on school premises must be registered and display a decal on the lower left side of the windshield. Four parking plans are available to students. The rates under the parking plans will be effective for day students starting with the June term. Parking increases for the evening division will be effective at the start of the terms in June.

Details concerning the types and price of parking permits are sent to students with registration materials each term. When campus parking lots are full, there also is on-the-street parking available.

Financial Aids

For students who have need for financial assistance, there are a limited number of resources available. *All students must be fully accepted by the College into a degree or certain certificate granting programs before financial aid can be awarded.*

1. OHIO INSTRUCTIONAL GRANTS — These grants are intended to provide eligible students with a supplemental source of financial aid in order to attend an eligible Ohio college or university. Consideration and awarding of grants shall be determined and provided by the Ohio Board of Regents and such grants shall only be applied to the instructional and general fees of the college or university in which the student is enrolled. Applications may be obtained from the Ohio Board of Regents in Columbus or the CTC Financial Aid Office.

2. SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANTS (SEOG) — This federal grant provides a source of assistance for limited-income families in particular. The grants range from $200 to $1000 a year, but none may exceed fifty percent of the college's estimate of the student's financial need. No repayment is required.

3. COLLEGE WORK-STUDY — The College Work-Study Program established by the Economic Opportunity Act of 1964 provides jobs for students from low-income families. The jobs are provided through the college, either on the campus or off.

4. FEDERALLY SPONSORED LOANS — There now are two types of federally sponsored loans generally available.

A. Loans under the **National Direct Student Loan Program.** Eligible students may borrow up to an aggregate of $2500 during the first two years of college. Repayment and interest charges (3%) do not begin until nine months after the student leaves school. Repayment may be extended over a ten-year period.

B. Partly subsidized loans are made through local lending institutions under the **Guaranteed Loan Program.** Information on these loans is available from local banks, savings associations, credit unions and other lending institutions.

5. THE BASIC EDUCATIONAL OPPORTUNITY GRANT PROGRAM — This is a federal aid program designed to provide financial assistance to students who need it to attend post-high school educational institutions. Grants range from $200 to $1800 depending on the cost of the program of study.

6. SCHOLARSHIPS — A limited number of scholarships are provided by private organizations and community groups for the use of deserving and needy students. These awards are made on the basis of academic performance with some consideration to need.

For consideration for these programs the student should file: (1) Cincinnati Technical College Application for Financial Aid, (2) A Financial Aid Form, (3) Ohio Instructional Grant Application and (4) Basic Educational Opportunity Grant Application.

ALL APPLICATIONS SHOULD BE COMPLETED BY APRIL 1 TO INCREASE POSSIBILITIES OF SECURING AID.

Disbursement — All funds except College Work-Study are credited directly to the student's account. Funds in excess of tuition charges are disbursed to the student one month after the first day of class. Work-Study students receive a check every two weeks for services performed. Students must submit time sheets for work-study funds.

Rights and Responsibilities — All aid recipients are required to maintain academic status.

All financial aid recipients are required to sign a notarized affidavit of educational purpose which states that the student understands that any financial aid funds received will be used "solely for expenses related to attendance and continued attendance" at CTC.

More detailed information concerning financial aid is contained in the CTC Financial Aid Handbook available from the CTC Financial Aid Office.

RESIDENCE OF STUDENTS

In determining whether or not an enrolled student at Cincinnati Technical College is an Ohio resident, a determination of fact shall be made in accordance with these standards. A non-resident student may have his or her residency status reviewed after living for twelve consecutive months in Ohio.

A. Authority and Effective Date.

1. It is the intent of the Ohio Board of Regents in promulgating this Rule to exclude from treatment as residents, as that term is applied here, those persons who are present in the State of Ohio primarily for the purpose of receiving the benefit of a state supported education while insuring that that same benefit is conferred on all bona fide domiciliaries of this State whose permanent residence and legal citizenship is in Ohio, and whose actual source of financial support is subject to Ohio taxation.

2. This Rule shall be effective as of September 1, 1977, and shall continue in effect until its rescission or amendment.

B. Definitions.

For purposes of this Rule:

1. A resident of Ohio "for all other legal purposes" shall mean any person who maintains a 12 month place or places of residence in Ohio, who is qualified as a resident to vote in Ohio and receive state welfare benefits, and who may be subjected to tax liability under Section 5747.02 of the Revised Code; provided such person has not, within the

time prescribed by this rule, declared himself or herself to be or allowed himself or herself to remain a resident of any other state or nation for any of these or other purposes.

2. "Financial support" as used in this Rule, shall not include grants, scholarships and awards from persons or entities which are not otherwise related to the recipient.

3. An "institution of higher education" as used in this rule shall mean any university, community college, technical institute or college, general and technical college, medical college or private medical or dental college which receives a direct subsidy from the state of Ohio.

C. General Residency from Subsidy Purposes.

The following persons shall be classified as residents of the State of Ohio for subsidy and tuition surcharge purposes:

1. Dependent students, at least one of whose parents or legal guardian has been a resident of the State of Ohio for all other legal purposes for 12 consecutive months or more immediately preceding the enrollment of such student in an institution of higher education.

2. Persons who have resided in Ohio for all other legal purposes for at least 12 consecutive months immediately preceding their enrollment in an institution of higher education and who are not receiving, and have not directly or indirectly received in the preceding 12 consecutive months, financial support from persons or entities who are not residents of Ohio for all other legal purposes.

3. Persons who live and are gainfully employed on a full-time or part-time and self-sustaining basis in Ohio and who are pursuing a part-time program of instruction at an institution of higher education, their spouses and dependents.

4. Persons who have been reclassified as residents under provisions of Section D.6 of this rule.

D. Specific Exceptions and Circumstances.

1. A person on active duty status in the United States military service who is stationed and resides in Ohio and his or her dependents shall be considered residents of Ohio for these purposes.

2. A person who enters and currently remains upon active duty status in the United States military service while a resident of Ohio for all other legal purposes and his or her dependents shall be considered residents of Ohio for these purposes as long as Ohio remains the state of such person's domicile.

3. Any alien holding an immigration visa shall be considered a resident of the State of Ohio for state subsidy and tuition surcharge purposes in the same manner as any other student.

4. No person holding a student or other temporary visa shall be eligible for Ohio residency for these purposes.

5. A dependent person classified as a resident of Ohio who is enrolled in an institution of higher education when his or her parents or legal guardian remove their residency from the State of Ohio, shall be considered a resident of Ohio for these purposes during continuous full-time enrollment and until his or her completion of any one academic degree program.

6. Any person once classified as a non-resident, upon the completion of 12 consecutive months of residency in Ohio for all other legal purposes, may apply to the institution he or she attends for reclassification as a resident of Ohio for these purposes. Should such person present clear and convincing proof that no part of his or her financial support is, or has in the preceding 12 consecutive months been provided directly or indirectly by persons or entities who are not residents of Ohio for all other legal purposes, such person shall be reclassified as a resident.

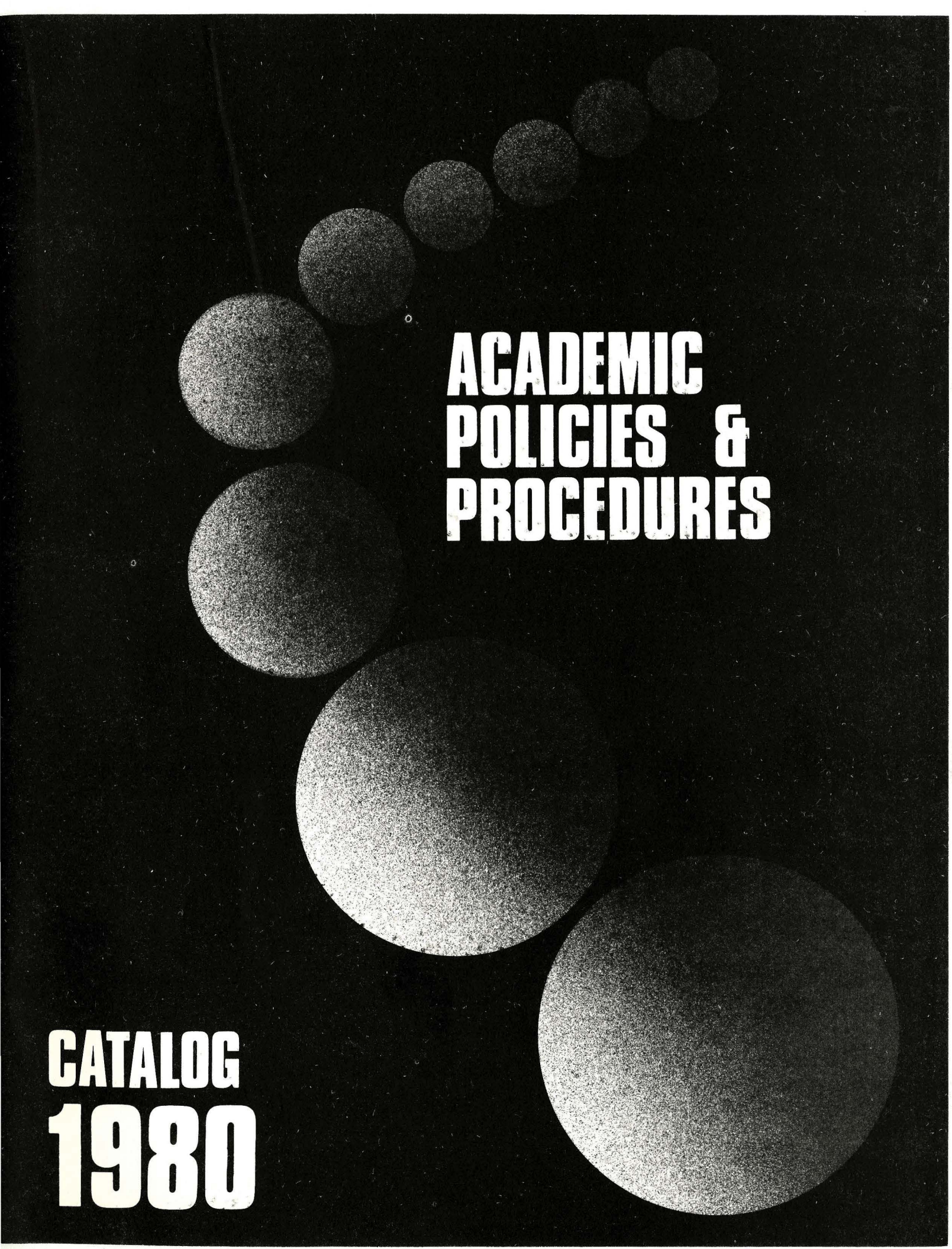
Evidentiary determinations under this Rule shall be made by the institution which may require, among other things, the submission of information regarding the sources of a student's actual financial support to that end.

7. Any reclassification of a person who was once classified as a nonresident for these purposes shall have prospective application only from the date of such reclassification.

E. Procedures.

Institutions of higher education charged with reporting student enrollment to the Ohio Board of Regents for state subsidy purposes and assessing the tuition surcharge shall provide individual students with a fair and adequate opportunity to present proof of their Ohio residency for purposes of this Rule. Such institution may require the submission of affidavits and other documentary evidence which it may deem necessary to a full and complete determination under this Rule.

A review of a student's residency status will be made upon proof of proper documentation that the student has been a resident of the state of Ohio for twelve (12) consecutive months prior to the request for residency review. A form for residency review is available in the Registrar's Office. The completed form should be presented to the Dean of Student Support Services for consideration and evaluation.


ACADEMIC
POLICIES &
PROCEDURES
CATALOG
1980

1980 CATALOG

ACADEMIC POLICIES & PROCEDURES

Registration

Students registering for the first time will receive detailed information in advance of the first term. Class scheduling, advisement and registration will take place on registration/orientation days for first term students.

Currently enrolled students register for classes during the last two weeks of the term for the next term and/or the alternate term if they will be out on co-op.

Students must make or arrange tuition payments at least one week prior to the beginning of the term. Students who fail to make payments before the deadline cannot be assured of class schedules consistent with their planned program curricula.

Students may be assigned to either classes or cooperative education for the first term depending upon individual program requirements and the student's date of acceptance.

Academic Requirements

Grading System

A student successfully completing the course requirements for a program and having the stipulated cumulative grade point average is granted an associate degree or certificate in the appropriate area of study. The student must have an accumulative grade point average of 2.00 or higher to meet graduation requirements. Courses graded I, IP, W, WP, S, U and EC are not included in the computation. Courses graded F and WF are included unless they are not part of the curriculum applicable to the degree program being pursued or if that course has been retaken and a higher grade has been earned.

The following system is used by instructors to evaluate student achievement in each subject:

Grade	Quality	Points Per Credit Hours
A	Superior	4
B	Good	3
C	Average	2
D	Poor	1
F	Failing	0
I	Incomplete	Not Computed
W	Withdrawal	Not Computed
WF	Withdrawal, Failing	0
WP	Withdrawal, Passing	Not Computed
X	Audit	Not Computed
EC	Credit by Examination	Not Computed
K	Transfer Credit	Not Computed
S	Satisfactory	Not Computed
U	Unsatisfactory	Not Computed
N	No Grade from Instructor	Not Computed
IP	In Progress (For self-paced instruction)	Not Computed

Advanced standing to a maximum of 45 credit hours can be gained through the following ways:

- Transfer of Credit (K): A student desiring advanced standing by transfer of credit from other colleges must request any colleges previously attended to forward directly to the Director of Admissions a transcript of academic record and the college catalog. Courses paralleling those of Cincinnati Technical College in which a student has achieved a grade of "C" or better will be considered for credit.
- To apply for a credit transer a student must do so with the program coordinator before the end of the first term. If transfer credit is to be applied to the first term, the student must see the coordinator before the end of the first week of the term. After the transfer form is completed and is approved by the division dean, the student will receive a copy of the transfer form.
- Credits earned through the Advanced Placement Program of the College Entrance Examination Board (K). Only courses which can be substituted for courses in the curriculum to be followed at Cincinnati Technical College can be accepted. A score of "3" or better must have been earned in each such course.
- Credits earned through the College Level Examination Program (CLEP) (K). Only courses which can be substituted for courses in the curriculum to be followed at Cincinnati Technical College can be accepted.
- Credits earned through Cincinnati Technical College's Credit-By-Examination Programs (EC). Students who have completed high school vocational or academic courses or courses offered in business and industrial training programs which "match up" in content with courses in their Cincinnati Technical College curriculum are advised to inquire about the Basic Examination Program (BEP) and the Technical Examination Program (TEP) offered by the Business Technologies Division and the comparable credit-by-examination programs of the Allied Health Technologies Division and the Engineering Technologies Division.
- If a student has already enrolled in a course and wishes to take a proficiency exam to receive credit, the student must submit a request form to the appropriate division dean. The tuition payment will cover the cost of the examination. However, if a student fails the exam and must continue in the course, a $5 fee will be charged.
- Credit Waived through Vocational Senior Teacher Referral (EC). Students who have earned an "A" or "B" in their completed high school vocational program of Butler County Joint Vocational School, Cincinnati Public Schools, Colerain Vocational Center, Northwest Vocational Center, The Great Oaks Joint Vocational Schools, U.S. Grant Joint Vocational School, Warren County Joint Vocational School and West Clermont County Career Center can waive specific courses in related technical programs at Cincinnati Technical College if the senior teacher of their program submits a recommendation on the Advanced Standing Referral Form to waive such courses. Students who desire to waive courses by this means are advised to inquire about the articulation program with their coordinator. This program of advanced standing is being conducted on a pilot basis for two years beginning September, 1979. No charge is made for the waived courses for which credit is received.
- Credit through Proficiency Examination (EC). Students who believe they have achieved the necessary level of competency are advised to inquire about proficiency examinations which are available for skill-oriented courses in Cincinnati Technical College curricula. (Students who wish to test out of a course after

registering for the course must do so before the completion of the second week of the academic term.)

- Credit Waived for Documented Valid Academic or Work Experience (EC). Each academic division will evaluate documentation which either 1) indicates course content and hours such as that provided by military programs, industrial programs and hospital programs, or 2) provides evidence that the applicant has already demonstrated through successful work experience those skills or competencies which are the desired end-product of one or more courses the applicant would ordinarily take in the Cincinnati Technical College program curriculum. (A fee is charged for each course for which EC credit is granted.)

Course Withdrawal (W, WP, WF)

A student may withdraw from any course before the end of the fourth week without penalty and receive a "W" grade for the course. A grade of "WP" will be given a student who withdraws after the fourth week with a passing average at the time of withdrawal. A grade of "WF" will be given the student who withdraws after the fourth week with a failing average at the time of withdrawal. A grade of "F" is assigned as the final grade in a course if the student discontinues attendance without officially dropping the course.

Incomplete (I)

An incomplete grade indicates that a student has met the attendance requirements but has not completed the academic requirements of the course. An incomplete grade must be removed from a student's record through arrangements with the instructor. If the incomplete is not removed within twenty weeks, an "F" grade will be recorded.

In Progress (IP)

A grade of IP (In Progress) may be assigned by an instructor in a self-paced course when the student has been unable to complete all of the modules within the normal ten week term. The student will be allowed a maximum of an additional ten week term to complete the course without re-registering.

Audit (X)

A student may audit a course without credit. However, a student may not request a transfer from "credit" to "audit," or vice versa, after the completion of the second week of the academic term. Regular tuition is charged for audit registration.

Academic Probation and Dismissal

Academic standards require that a student maintain at least a 1.50 point average in each term and the following cumulative grade point average:

Credit Level	Credit Hours Attempted	Cumulative Average
I	1 to 18	1.50
II	19 to 36	1.75
III	37 and over	2.00

In addition to the above listed overall requirements, a student is also subject to a probationary status or to dismissal if the cumulative grade point average in the core courses of the student's program falls below 2.00. The courses generally considered to be "core" within a program are those that are classified as "technical" by the Ohio Board of Regents.

Students not maintaining the above cumulative averages will be placed on academic probation. Each student placed on academic probation must be notified officially and in writing of this status and be given an opportunity to respond to the notification. The letter will give the reasons for the probation and state both the term during which the student's academic performance led to the probation and for the term which the probationary period applies.

If a probationary student does not attain the required grade point averages upon completion of the probationary term(s), the student is then notified by letter of his or her dismissal and the opportunity to arrange a student hearing to request an extension of the probationary period.

Removal of Grade Deficiencies

Deficiencies may be cleared by:

1. Repeating the course at Cincinnati Technical College.
2. Repeating the course at another school approved by the coordinator.
3. Tutorial work presented by the instructional staff.

In planning for the removal of grade deficiencies, the student should contact the appropriate coordinator for academic advising.

Reinstatement Following Academic Dismissal

In order to be reinstated into a program a student must submit a request in written form to the appropriate division dean for readmission to the College program. Final permission will be decided by the division dean.

Withdrawal From and Readmission to a Program

A student who fails to enroll for three (3) consecutive terms will be considered withdrawn from the program. In such a case the student must apply for readmission to the program.

Grade Reports

Grade reports will be mailed to the student after the end of each term. Students receiving grades of "F" or "I" will receive written notification and be requested to contact a program coordinator for academic advisement.

Dean's List

In recognition of academic excellence, a Dean's List is compiled each academic term. To qualify a student must have an average in the term of 3.50 or greater and must have completed 12 or more credit hours in that term.

Transcripts

Upon the student's written request, an official transcript of academic record will be forwarded to any employer or educational institution. A nominal fee will be charged for each transcript after the first one has been issued.

No degree will be granted or transcript provided until all financial obligations are completely paid.

Graduation Requirements

To qualify for the associate degree, a student must declare a major and fulfill the program requirements as identified at the time of matriculation and attain at least a 2.0 core grade point average (G.P.A.) and a 2.0 cumulative G.P.A. It is the student's responsibility to successfully complete the courses necessary for graduation. A transfer student must take at least forty-five (45) credit hours at Cincinnati Technical College and maintain a 2.0 core G.P.A. and a 2.0 cumulative G.P.A.

As a part of the graduation requirements, a student must complete at least 21 credit hours in the Communication Skills/Social Sciences area. Of the 21 credit hours, 12 must be in communication skills and 9 in the social sciences. The communication skills requirement consists of 6 credit hours in written composition, 3 credit hours in technical writing or business communication, and 3 credit hours in oral communication. To complete the minimum requirements in the social sciences, a student, in consultation with an academic advisor, will select a minimum of three courses (nine credit hours) from at least two of the four areas: psychology, economics, sociology, and community relations.

A student who changes programs is subject to the requirements of the new program at the time of the change. A student who extends study beyond the normal two years of study is subject to the requirements of the program as published at the time of admission or those approved by the division dean. A student who does not enroll for three consecutive terms must be readmitted to the program.

Application for the diploma must be made by the student in the Office of Admissions and Records before May 1 of the year of expected graduation.

Graduation Honors

Students who achieve a cumulative grade point average of 3.50 or higher for five terms will graduate with honors. "Honor" awards will be designated on the diploma and will be classified as follows:

Cum Laude	3.50 - 3.79
Magna Cum Laude	3.80 - 3.89
Summa Cum Laude	3.90 - 4.00

Transferability of Credits

The amount of credit that a graduate of the Cincinnati Technical College can transfer to another institution of higher learning depends upon these factors: 1) the academic relationship of the curriculum completed to that which the student intends to pursue at the receiving institution; 2) the student's academic record and promise of success; and 3) the policies of the receiving institution regarding graduation requirements and course requisites.

Cooperative Education Program: Options, Requirements, Policies

Options

Students attending Cincinnati Technical College may meet their associate degree requirements in any of three different ways:

1. Participating in CTC's full co-op program, in which students alternate full-time quarters in the classroom with full-time quarters of co-op employment.
2. Attending classes on a half-day schedule for ten consecutive quarters and co-oping in a half-time (or longer) position.
3. Pursuing a non co-op, totally academic program. Students wishing not to co-op may attend CTC ten consecutive academic quarters on a reduced load basis, averaging slightly more than ten quarter credits each quarter. Students who wish to complete a degree program in less than ten quarters should consult the appropriate division dean to ascertain the feasibility of their desire since some programs (specifically the health technologies) require work experience as clinical training.

A part-time program leading to graduation in more than two years generally can be arranged.

The Co-op Experience

Students who wish to participate in the co-op program must be able to demonstrate to prospective co-op employers that they have achieved a level of social and emotional maturity that qualifies them for employment. The decision to hire (and at what level) or not to hire a student rests solely with the employer.

The employer is solely responsible for decisions regarding the retention or dismissal, promotion or demotion of a co-op. The merit of the co-op's work performance determines the degree of success achieved.

As the co-op acquires more technical knowledge and more work experience, the student's chances of obtaining more challenging job assignments are enhanced. In short, a co-op is in a real work situation which requires the student to meet all of the standards set by the employer. The student enjoys no special privileges because of student status.

Every effort will be made to place early enrollees on work-experience jobs during the summer months prior to the opening of the fall term. Students are encouraged to locate employment for themselves within a framework which serves the purpose of technical education.

While the Cincinnati Technical College has been quite successful in placing students on cooperative work jobs, there can be NO ABSOLUTE GUARANTEE. Cooperative employment and continued employment depend on what the individual student can offer to employers. Students who have not demonstrated employability in some form may be advised to discontinue the co-op program.

Violations of the work placement procedures are harmful to the student, to the cooperative employer, to the College and to the business-industrial-professional community. *No student nor any employer should attempt, under any circumstances, to influence the other for permanent employment until the student has completed the entire two-year program.*

Types of Co-op Positions

The College classifies co-op positions in three categories: A — directly related to the technology; B — indirectly related; C — unrelated.

When possible, the College would like to place all students in A type jobs, in B jobs as a second choice and in C jobs as the third choice. However, it should be recognized that both B and C jobs have many values. The work experience gained in such jobs helps the student mature socially and emotionally, helps the student educationally, and prepares the student for occupational advancement.

The lowest paid, most menial, least related co-op job is better than no co-op experience at all. Some of the most precious insights gained in life come from those experiences that accurately reflect both the frustrations and the rewards of the real world.

Services Provided in the Co-op Program

The fees charged to co-ops help defray the expenses incurred in the operation of the co-op program including services the coordinator spent to develop co-op jobs: to refer students for placement interviews, to maintain coordination contacts with employers, to maintain records, and to provide reports relating to the co-op program, to handle evaluation of co-ops by their employer, to provide co-op grades, etc.

A student who has a full-time job before entering the College and for whom a more desirable co-op job is not available at that time may elect to have this job serve as a cooperative employment position and receive co-op credit.

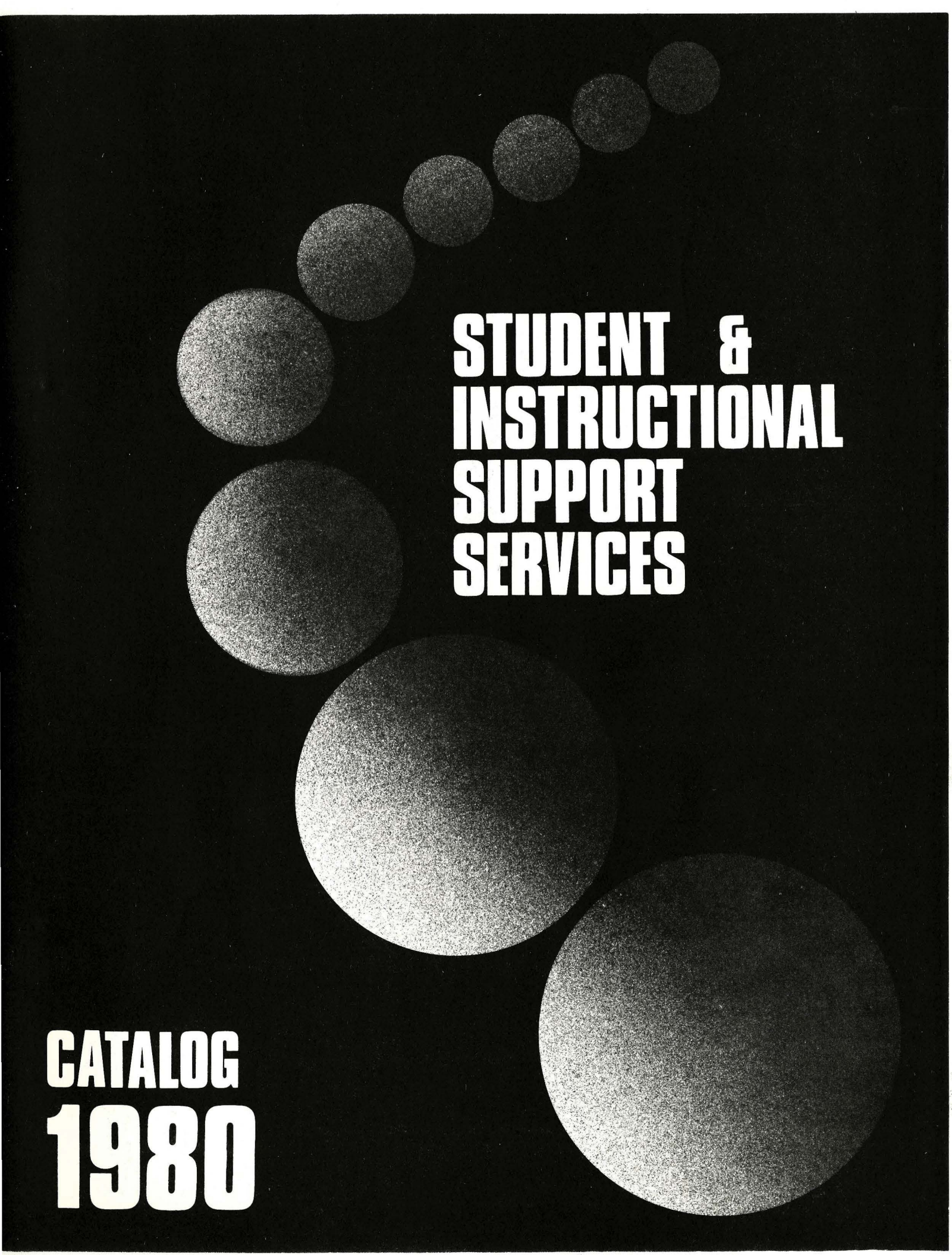
A student who does not want credit for work being performed may request to take an elective course equal in credit value to the credits that would normally be earned for the co-op term. The request must be approved by the coordinator and division dean of the division in which the student is enrolled.

Greater Cincinnati Consortium of Colleges and Universities

Twelve institutions of higher learning in the Cincinnati area, including Cincinnati Technical College, are members of the Greater Cincinnati Consortium of Colleges and Universities. Among the benefits of the Consortium is that regularly enrolled **full-time students** of one institution, under certain conditions, may register for credit in courses offered by other Consortium institutions in which no instruction is available at their own institution. Contact the Office of Admissions for information.

Project Ahead

Cincinnati Technical College cooperates with the U.S. Army in an educational program called Project Ahead that permits an enlisted person to accumulate college credit at CTC while serving a tour of duty elsewhere. The course credit may come from courses taken at colleges near the military base where the student is stationed, special military training approved by the coordinator and the division dean, or through the College Level Examination Program (CLEP). An applicant who is enlisting in or is already an enlisted member of the U.S. Army and who meets the CTC entrance requirements is eligible. Contact the Director of Admissions for full details.


STUDENT &
INSTRUCTIONAL
SUPPORT
SERVICES
CATALOG
1980

1980 CATALOG

STUDENT & INSTRUCTIONAL SUPPORT SERVICES

Student and Instructional Support Services

Student Support Services

As a service to students and to the community, Cincinnati Technical College maintains a staff of professional counselors to assist students in making intelligent decisions regarding their career, educational and personal-social plans. Special services provided by the Student Support Services staff include counseling, financial aids, student activities and veterans affairs. Under the leadership and coordination of the Dean of Student Support Services, professional staff members work together to provide a diversity of out-of-class activities and services designed to promote the personal development of each student.

Student Senate

An Executive Council is elected by the student body and serves both school sections. This council meets once a month and bridges the gap between the two school sections.

Each school section has its own Student Senate officers, of which the president serves on the Executive Council. These officers also are elected by the student body. Concerts, picnics, movies and dances are just a few of the activities sponsored by the Student Senate. The Student Senate sponsors social activities and serves as the liaison between students and the College.

Athletics

The Tigers of Cincinnati Technical College are working to build a winning tradition in athletics. As members of the National Junior College Athletic Association (NJCAA), the Tigers compete in an ever-expanding inter-collegiate sports program.

On the horizon at Cincinnati Tech is an expanding athletic program in both men's and women's sports. Men's soccer and baseball will be offered in the future along with women's volleyball and basketball. At the present time CTC offers intercollegiate men's basketball and golf.

In basketball the Tigers are a member of Region XII of the NJCAA and play a very competitive junior college schedule. In the 1978-79 season the Tigers compiled a 21-9 record and placed their first player ever into a Division I college.

Along with the inter-collegiate competition, Cincinnati Technical College offers an expanding intra-mural program. Class competition is intense in basketball, softball and volleyball. More programs will be added in the future. The gymnasium and swimming pool are open for student use each day.

Counseling

The Counseling Service at Cincinnati Technical College consists of professional counselors available to assist students and potential students. Career decisions and concerns, testing, personal problems, admissions advising and assistance to special students are some of the areas serviced by the counselors. Students requiring special help or having special concerns beyond the capabilities of the Counseling Service are referred to various community agencies. All counseling sessions are matters of strict confidence.

Living Accommodations

The Cincinnati Technical College has no student housing facilities of its own as it is primarily a "commuter" institution. However, for individuals living too far from the College to commute, reputable, efficiently-operated living accommodations are available at reasonable costs. For information concerning housing facilities, contact the Office of Student Support Services at the College.

Veterans

Cincinnati Technical College maintains an Office of Veterans' Affairs to aid persons attending school on V.A. benefits. The Veterans' Affairs personnel will help students with official paperwork and information regarding benefits. All programs at Cincinnati Technical College are fully approved by the State Approving Agency for Veterans Training. Upon being accepted by CTC, veterans should contact this office for full information concerning application for Veterans' Educational Benefits.

The Office of Veterans' Affairs arranges tutorial services for veterans in need of academic assistance. The Veterans Administration will reimburse the veteran for this cost. Fair and reasonable charges for this service will be determined by the Coordinator of Veterans' Affairs prior to approval of tutorial assistance.

Whenever possible, a student tutor will be utilized. However, when there is not a qualified student tutor available, the Veterans' Affairs personnel will attempt to find a qualified faculty tutor. Please contact the Veterans' Affairs Office for further information.

The State Approving Agency for Veterans Training has approved Cincinnati Technical College for the education and training of veterans under the 1966 GI Bill and orphans of veterans under Public Law 634 and 88-361.

Instructional Support Services

The Division of Instructional Support Services includes the Johnnie Mae Berry Library, Instructional Media Services, Developmental Education Services, Staff Development Services and Scheduling, Course and Curriculum Information Services. All of the offices of the division are located in the Learning Resource Center (LRC) on the first floor in the north corridor (E Wing) of the College. The LRC is open from 7:30 a.m. to 9:30 p.m. Monday through Thursday and from 7:30 a.m. to 7:00 p.m. on Fridays. The spacious new three-level LRC is both functional and attractive.

Johnnie Mae Berry Library

The Johnnie Mae Berry Library, named for CTC's first librarian, contains a growing collection of books and periodicals in various technologies as well as in general areas. A courteous and friendly staff is available for assistance at all times to assist in finding sources for information.

The library includes a computer terminal room, group study rooms, a typing area, carrels equipped for audio-visual equipment and carrels and tables for quiet study.

Instructional Media Services

The Instructional Media Center is a unit which provides audio-visual support for faculty, students and administrative staff. Students have access to various forms of audio-visual materials such as audio tapes, slides, filmstrips, videotapes, etc. The materials are to be used with the appropriate piece of equipment within the LRC. Materials may be borrowed at the charging counter of the Media Services area. The Instructional Media Center is located within the LRC.

Developmental Education

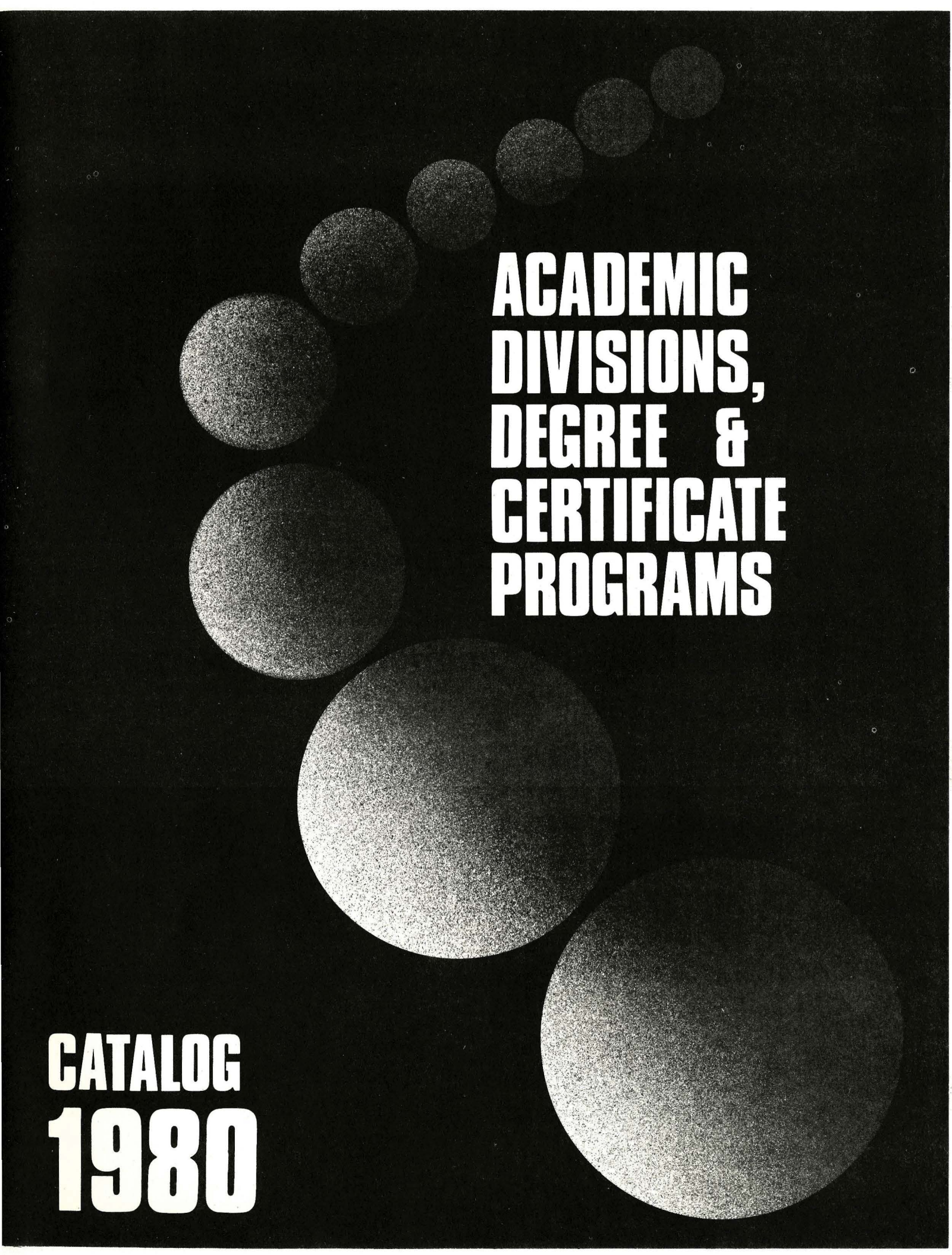
The Developmental Education program at Cincinnati Technical College assists students in preparing themselves for admission to the technical programs and continues to provide assistance as they pursue their college education. Students who have not had an opportunity to complete an appropriate educational course or program, or who have been out of school for several years and need refresher work will find that this program will help them to develop the basic skills and understanding necessary to succeed. The Office of Developmental Education is located on the mezzanine of the Learning Resource Center. For more detailed information on courses, tutoring and other services, see page 27.

Staff Development Services

The Staff Development Center which is located in the LRC maintains a collection of professional journals, books, modules, etc. relating to personal and professional growth for faculty and staff. The Staff Development program is run by the Staff Development Committee, a representative group of College employees.

Scheduling, Course and Curriculum Information Services

The Office of the Dean of Instructional Support Services, located in the LRC, produces and maintains all official college-wide information regarding schedules, courses and curriculum for the College.


ACADEMIC
DIVISIONS,
DEGREE &
CERTIFICATE
PROGRAMS
CATALOG
1980

1980 CATALOG

PROGRAMS CERTIFICATE DEGREE & DIVISIONS ACADEMIC

Academic Divisions

Cincinnati Technical College has six academic divisions and departments which offer credit courses: Allied Health, Business, Communication Skills/Social Sciences, Developmental Education, Engineering Technologies and Physical Science/Mathematics.

Two of these six — Communication Skills/Social Sciences and Developmental Education — are non-degree granting divisions. However, their roles are essential to the academic success and career progression of students.

Communication Skills/ Social Sciences Division

Philosophy of Communication Skills

The Communication Skills department recognizes that each individual is a unique combination of attitudes, beliefs, values and experiences. Sharing this uniqueness with others is a basic need; however, individual differences can cause barriers to communication. Therefore, the department offers students a proven process with identifiable stages: 1) planning the message, 2) the initial verbalizing of the message and 3) refining techniques to produce a final written or oral presentation of the message. This process will enable each student to break down the barriers to communicate more effectively with others.

Goals of Communication Skills

Students will be able to:

1. Understand the elements of problem solving.
2. Employ various research techniques including the development of a thesis.
3. Distinguish between logical and fallacious arguments.
4. Understand written and oral communication.
5. Analyze the audience for a communication.
6. Write various types of business and technical communication.
7. Present information and technical material in a clear, organized speech.
8. Use clear, concise language at the level acceptable in business, industry and health professions.

Philosophy of the Social Sciences

Cincinnati Technical College has as its mission the provision of quality technical education. In order to function successfully on the job, technicians must have both a practical knowledge of their fields and a grasp of the framework within which they work. Essentially, it is the "social world" that forms the framework within which technical skills develop and are applied. Each of the social sciences provides a distinctive perspective of this framework. The social sciences allow students to see the relationship of their technical skills to industry, community and country, thus making for both a more productive worker and a more contented person.

Goals of Social Sciences

Students will be able to:

1. Understand the basic conceptual framework of the social sciences.
2. Develop the relationship between the individual and the social/psychological processes so that each student can see his or her role within the ever present social/psychological networks.
3. Grasp the analytical and methodological tools necessary to either control or adapt to changes in a social/psychological environment.

Developmental Education Program

The Developmental Education program consists of three component parts to assist students in succeeding in their technical programs.

Courses

Each Developmental Education course has been developed around specific objectives which relate to the courses required for the various technologies. Diagnostic techniques are used to determine individual deficiencies, to measure individual progress, and to determine when the student has met the established course objectives.

Through the use of specialized methods and modern equipment and with an extensive reliance upon learning laboratory experiences, the student may progress at an individualized rate in most courses. The student will be tested frequently to assist in ascertaining progress.

The following courses are offered:

	Credits
#0009 Interpersonal Communication	3
#0010 College Reading Skills	3
#0011 Technical Reading Skills	3
#0012 Fundamentals of English	3
#0014 College Study Skills	3
#0022 Essentials of Mathematics	3
#0024 Basic Algebra	3
#0026 Fundamentals of Business Math	3
#0035 General Science	3
#1170 Introduction to Technical Mathematics	3
#2200 Basic Chemistry	3
#2270 Introduction/Laboratory Science	3

Laboratory

Developmental Education also serves students who have been accepted into technical programs and are pursuing a full or part-time schedule of classes. On the mezzanine floor of the Learning Resource Center there is a well-equipped open laboratory where students may increase their skills in reading, English and mathematics, etc.

Tutorial Services

Tutoring is offered to those who want and need more instruction, more practice or more discussion in a particular subject. At the beginning of each term, students sign up for

tutoring hours in the subjects of their choice. As soon as a qualified student-tutor is located, weekly sessions are scheduled. Tutoring may be conducted in small groups or individually. There is no cost to students as the College pays for the student-tutors.

Allied Health Division

The Allied Health Division at Cincinnati Technical College brings together in one unit all programs for the education and training of health personnel. The division offers several associate degree and certificate programs. Additionally, the division offers special courses, workshops, seminars and forums at which persons can learn new skills and acquire new knowledge or update the knowledge and skills needed to perform effectively on their jobs.

Dietetic Assistant

The Dietetic Assistant certificate program is approved by the American Dietetic Association to fulfill the minimum requirements mandated by Medicare/Medicaid food service essentials.

The student must be employed full-time or part-time in health care food service. The program consists of one, three-hour class and four hours of institutionally based activities per week for four, ten-week terms. Each student must have available a registered dietitian preceptor. This preceptor is available for at least 18 hours during the 40 week program to assist the student to learn, interpret and implement new knowledge.

Course content includes normal nutrition, diet therapy, health care regulations, sanitation and safety, food mathematics, purchasing principles, food preparation principles, disaster plans and employee management.

A prospective student may apply for admittance to the program from March through August. A student should plan to begin the program in September.

Dietetic Assistant Certificate Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term (September)			
4190 Dietetic Assisting I	3	4	4
■ Second Term (November)			
4191 Dietetic Assisting II	3	4	4
■ Third Term (January)			
4192 Dietetic Assisting III	3	4	4
■ Fourth Term (April)			
4193 Dietetic Assisting IV	3	4	4
			16

Nutrition Assistant

The Nutrition Assistant certificate program is approved by the American Dietetic Association to meet the needs of community nutrition education programs such as the Women, Infant, Children Project; health departments and health agencies.

The admission and attendance criteria are the same as those for the Dietetic Assistant program.

Course content includes normal nutrition, diet therapy, health care regulations, sanitation and safety, family food purchasing and preparation, growth and development, nutrition assessments and nutrition education techniques.

Nutrition Assistant Certificate Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term (September)			
4190 Dietetic Assisting I	3	4	4
■ Second Term (November)			
4191 Dietetic Assisting II	3	4	4
■ Third Term (January)			
4195 Dietetic Assisting V	3	4	4
■ Fourth Term (April)			
4196 Dietetic Assisting VI	3	4	4
			16

Dietetic Technician

The Dietetic Technician is a professional in the challenging and ever-changing field of nutrition and dietetics. A Dietetic Technician is employed in the nutrition department of a hospital, nursing home, extended care facility, health maintenance organization, school or day care center. The graduate may also secure a position in a clinic, health department, or with a federal, state or local nutrition program or agency.

The technician assumes a wide range of responsibilities assisting the registered dietitian in nutrition care and departmental administration. The Dietetic Technician may be responsible for many aspects of health care from nutrition care and education of clients to the management of the food service facility. Activities in which the technician is involved include assessing a client's nutritional status utilizing appropriate assessment tools, teaching valuable nutrition concepts to individuals of varied age groups and social backgrounds, planning menus and diet modifications, training and scheduling food service employees, and supervising food production and service.

The program leading to an associate degree in Dietetic Technology begins every September and includes courses in communication skills, the basic sciences, normal nutrition, diet therapy, nutrition in disease, human growth and development, nutrition and food preparation, and food service management. A directed practice at St. Francis/St. George Hospital and area health agencies coordinates the nutrition theory with appropriate clinical experiences. The Dietetics program participates in the College concept of field related, paid cooperative experiences on alternating ten-week terms. This unique concept provides the student with the opportunity to gain practical experience in the dietetics field while earning money toward a college educaton.

The College is currently seeking approval of this program from the American Dietetic Association. Graduates of the program are eligible for membership in the American Dietetic Association.

Dietetic Technician Curriculum

Prerequisites: High school chemistry & algebra	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September)			
4005 Chemistry for Health Technology	3	2	4
4010 Human Biology	3	-	3
4000 Medical Terminology	3	-	3
4001 Introduction to Health Care	3	-	3
4101 Dietetic Tech. Orientation	1	-	1
4111 Directed Practice I (Dietetics)	-	5	1
4130 Introduction to Nutrition	3	-	3
	16	7	18
■ First Co-op Term (November)			
9301 Cooperative Employment	1	40	2
■ Second School Term (January)			
4102 Normal Nutrition	4	-	4
— General Elective (Comm. Skills)	3	-	3
— General Elective (Social/Behavioral Sciences)	3	-	3
4103 Nutrition & Food Preparation I	1	5	3
4112 Directed Practice II (Dietetics)	-	5	1
4009 Microbiology	3	3	4
	14	13	18
■ Second Co-op Term (April)			
9302 Cooperative Employment	1	40	2
■ Third School Term (June)			
4030 Tech. of Ed. for Health	4	-	4
4105 Human Growth & Development - Nutrition	4	-	4
4104 Nutrition & Food Preparation II	1	5	3
4113 Directed Practice III (Dietetics)	-	5	1
4121 Meal Management	2	2	3
— Elective (Comm. Skills)	3	-	3
	14	12	18
■ Third Co-op Term (September)			
9303 Cooperative Employment	1	40	3
■ Fourth School Term (November)			
4122 Food Service Management I	2	3	3
— General Elective (Social Behav. Sc.)	3	-	3
4031 Health Care Management	3	-	3
4114 Directed Practice IV (Dietetics)	-	5	1
4106 Nutrition in Disease	4	-	4
4120 Dietetics Safety & Sanitation	2	-	2
— General Elective (Comm. Skills)	3	-	3
	17	8	19
■ Fourth Co-op Term (January)			
9304 Cooperative Employment	1	40	3
■ Fifth School Term (April)			
4002 Community Health Services	2	-	2
4107 Diet Therapy	4	-	4
4123 Food Service Management II	2	6	4
4109 Dietetics Seminar	2	-	2
— General Elective (Social/Behav. Sc.)	3	-	3
— General Elective (Comm. Skills)	3	-	3
4115 Directed Practice V (Dietetics)	-	5	1
	16	11	19
■ Fifth Co-op Term (June)			
9305 Cooperative Employment	1	40	3
			105

Communication Skills Electives are to be selected from:

1001	Communication Skills I
1002	Communication Skills II
1010	Technical Writing
1020	Effective Speaking
1007	Research & Logic

Social/Behavioral Science Electives are to be selected from:

1021	Human Relations
1505	The Inner World of the Person
1512	Micro-Economics
1513	Macro-Economics
1521	Intro. to Sociology
1531	Political Science

Medical Assistant Technology

The Medical Assistant is a versatile person who helps the physician respond to the increasing demands of the medical profession. The Medical Assistant is an essential link between the physician and the patients, health care facilities, professional associates and the suppliers of equipment and medications.

The duties of the Medical Assistant are broad in scope, including both clinical and administrative responsibilities. The administrative Medical Assistant answers the incoming phone calls, receives patients and visitors to the office, handles correspondence and filing, maintains patients' records and reports, transcribes medical records and reports, schedules hospital/laboratory/x-ray admissions and tests, processes insurance claims and forms, makes appointments for patients, and does bookkeeping.

The Clinical Assistant weighs and measures heights of patients, records histories, takes vital signs, assists the physician in the examination rooms, interviews patients, performs electrocardiograms, gives injections, prepares patients for diagnostic tests, and performs routine laboratory procedures. Both the administrative and clinical duties are important, as few physician offices have assistants who perform only one set of functions.

Clinical rotations, or externships, are supervised work experiences for students to develop competencies in the skills needed of the Medical Assistant.

The College has applied for accreditation of its program to the American Medical Association's Committee on Allied Health Education in collaboration with the American Association of Medical Assistants.

Upon successful completion of the program and after one full year of work experience, students are eligible to take the Certified Medical Assistant Examination given by the American Association of Medical Assistants.

Students interested in entering the program should take basic chemistry, biology and algebra in high school or prior to entering the program. These courses are offered at the College by the Developmental Education department. Students must also be able to type 35 words per minute or complete a Typing I course prior to admission to the program.

Medical Assistant Technology Curriculum

Prerequisites: Chemistry, biology, algebra, typewriting (35 wpm)	Hours Per Week Class	Lab	Credit Hours
■ First Term (June & September)			
4000 Medical Terminology	3	-	3
1001 Communication Skills	3	-	3
4001 Introduction to Health Care	3	-	3

3002 Typing II	2	3	2
4201 Medical Office Practice	2	8	4
4005 Chemistry for Health Technology	3	2	4
	16	13	19
■ Second Term (September & November)			
4131 Nutrition-Developmental	4	-	4
4011 General Anatomy	2	3	3
4202 Clinical Assisting I	2	8	4
3023 Machine Transcription	5	-	2
4208 Insurance & Records	2	2	3
	15	13	16
■ Third Term (November & January)			
9311 Clinical Cooperative Education	1	40	2
■ Fourth Term (January & April)			
4203 Clinical Assisting II	2	8	4
4204 Medical Procedures I	2	8	4
1002 Communication Skills II	3	-	3
4012 Human Physiology I	3	2	4
1021 Human Relations	3	0	3
	13	18	18
■ Fifth Term (April & June)			
4211 Clinical Experience I	-	20	3
— General Elective	3	-	3
— General Elective	3	-	3
— General Elective	4	-	4
	10	20	13
■ Sixth Term (June & September)			
4205 Medical Procedures II	2	8	4
4017 Pharmacology	5	-	5
1010 Technical Writing	3	-	3
4013 Human Physiology II	3	2	4
	13	10	16
■ Seventh Term (September & November)			
4212 Clinical Experience II	1	20	3
■ Eighth Term (November & January)			
2911 Accounting I	5	-	3
4009 Microbiology	3	3	4
4209 Medical Assisting Seminar	-	5	2
4020 Pathophysiology	5	-	5
4031 Health Care Management	3	-	3
	16	8	17
■ Ninth Term (January & April)			
9312 Clinical Cooperative Education	1	40	2
			106

General Electives are to be selected from:

##1011	Effective Speaking
1521	Introduction to Sociology
1512	Micro-Economics
1505	The Inner World of The Person
1009	Business English
1531	Political Science

##Must be selected for one General Elective.

Medical Laboratory Technician

Medical Laboratory Technicians provide much of the information needed by the physician to diagnose and treat patients. They are needed in the laboratories of hospitals, clinics, research centers and industry. In biochemistry, hematology, microbiology and blood bank laboratories, they are vital parts of the health care team. In research laboratories they are assisting in the research of cancer, heart disease, birth defects, etc.

Medical Laboratory Technicians employed in a laboratory, hospital or clinic may specialize in one or two of the several areas of laboratory work or may rotate through all the departments in the laboratory. In biochemistry, they perform chemical analysis of the blood for constituents including glucose, urea, chloride, sodium, potassium and enzymes. In hematology, they take blood samples from patients, count red and white cells, determine coagulation bleeding and prothrombin times, measure sedimentation rates, and determine hemoglobin concentrations. In microbiology, they prepare and stain slides, plate cultures from urine, feces and wound specimens, determine the susceptibility of bacteria to antibiotics, and examine specimens for parasites. In blood bank, they type blood from patients, draw blood from donors, and process it. In serology, they examine specimens for antibodies against various diseases.

Students enrolled in this program spend alternating ten-week terms in school and in hospital laboratory clinical experience. Students rotate through the laboratories performing procedures in each of the following areas: hematology, coagulation and urinalysis, chemistry, blood bank, serology, microbiology and special procedures.

Students interested in entering this program should take high school or pre-tech mathematics, biology and chemistry courses prior to entering the program.

The College is currently seeking accreditation of its program from the American Medical Association's Committee on Allied Health Education in collaboration with the National Accrediting Agency for Clinical Laboratory Services. Graduates of the program may apply to the Board of Registry of the American Society of Clinical Pathology to take the certification examination. Persons passing the exam are recognized as Medical Laboratory Technicians (MLT).

Medical Laboratory Technician Curriculum

Prerequisites: Chemistry, algebra, biology	Hours Per Week Class	Lab	Credit Hours
■ First Term (June & September)			
4005 Chemistry for Health Technology	3	2	4
4001 Introduction to Health Care	3	-	3
4301 Basic Laboratory Tech	1	3	2
4302 Basic Hematology & Urinalysis	4	6	6
4000 Medical Terminology	3	-	3
4311 Clinical Applications I-Hema. & Urin.	-	6	2
	14	17	20
■ Second Term (September & November)			
4351 Clinical Experience I	1	24	4
4012 Human Physiology I	3	2	4
	4	26	8
■ Third Term (November & January)			
4303 Immunology	3	-	3
4304 Clinical Chemistry	4	3	5
1151 Science Math I	4	-	4
4312 Clinical Applications II-Clin. Chem.	-	6	2
— Elective (Comm. Skills)	3	-	3
	14	9	17

■ Fourth Term (January & April)			
4352 Clinical Experience II	1	24	4
1021 Human Relations	3	2	4
	4	26	8
■ Fifth Term (April & June)			
4305 Blood Bank - Serology	4	6	6
4009 General Microbiology	3	3	4
4013 Human Physiology II	3	2	4
4313 Clinical Applications III-Blood Bank/Serology	-	6	2
	10	17	16
■ Co-op Term (June & September)			
9301 Cooperative Experience I	1	40	2
■ Sixth Term (September & November)			
4306 Clinical Microbiology	4	3	5
2244 Physics	3	2	3
4307 Hematology II	2	3	3
4314 Clinical Applications IV-Clin. Microbi.	-	6	2
— Elective (Comm. Skills)	3	-	3
	12	14	16
■ Co-op Term (November & January)			
9302 Cooperative Experience II	1	40	2
■ Seventh Term (January & April)			
4020 Fundamentals of Pathophysiology	5	-	5
4309 Medical Lab Seminar	5	-	5
1020 Effective Speaking	3	-	3
— Elective (Comm. Skills)	3	-	3
— Elective (Behavioral Sciences)	4	-	4
	20	0	20
			105

Students must choose electives from the following:

1001	Communication Skills
1010	Technical Writing
1512	Micro-Economics
1513	Macro-Economics
1521	Intro to Sociology
1505	The Inner World of The Person
1002	Communication Skills II

Medical Record Technology

An Accredited Record Technician is a skilled person, working in a medical record area, who has satisfactorily completed a national accreditation examination which is administered twice each year by the American Medical Record Association. Successful candidates are privileged to add the initials A.R.T. (Accredited Record Technician) to their names as proof of their high qualifications.

An Accredited Record Technician is employed in the medical record department of a hospital, clinic, nursing home, tumor registry, health maintenance organization, health agency, insurance company or vital statistics organization. The technician is responsible for many aspects of preparing, analyzing, and preserving health information needed by the patient, physician, hospital, public, etc. The Medical Record Technician's duties include the daily departmental admissions and discharge procedures. These procedures are preparing the patient's index card and record folder, computing the daily hospital census, preparing birth certificates, assembling the medical records, completing quantitative analysis and service analysis, coding and indexing diagnoses and operations, and assisting in research studies, peer group reviews and utilization reviews.

The College program is accredited by the American Medical Association's Committee on Allied Health Education, in collaboration with the American Medical Association. Graduates are eligible to take the National Accreditation Examination of the American Medical Record Association for the designation A.R.T. (Accredited Record Technician).

Students interested in entering the program should have a typing speed of more than 40 words per minute, and chemistry and biology courses as prerequisites.

Medical Record Technology Curriculum

Prerequisites: Typewriting (40 wpm), biology, chemistry	Hours Per Week Class	Lab	Credit Hours
■ First School Term (June & September)			
4010 Human Biology	3	-	3
1001 Communication Skills	3	-	3
4000 Medical Terminology	3	-	3
4001 Introduction to Health Care	3	-	3
4401 Medical Record Science I	3	4	4
— Basic Elective	5	-	3
	20	4	19
■ First Co-op Term (September & November)			
9301 Cooperative Employment	1	40	2
■ Second School Term (November & January)			
4011 General Anatomy	2	3	3
1002 Comm. Skills II	3	-	3
4400 Medical Terminology & Transcription	3	10	6
4402 Medical Record Science II	3	2	4
— General Elective	3	-	3
	14	15	19
■ Second Co-op Term (January & April)			
9302 Cooperative Employment	1	40	2
■ Third School Term (April & June)			
4012 Human Physiology I	3	2	4
1020 Effective Speaking	3	-	3
1021 Human Relations	3	2	4
4403 Medical Record Science III	3	2	4
4411 Directed Practice I	-	12	2
— Basic Elective	5	-	3
	17	18	20
■ Third Co-op Term (June & September)			
9303 Cooperative Employment	1	40	3
■ Fourth School Term (September & November)			
4013 Human Physiology II	3	2	4
4404 Medical Record Science IV	3	-	3
4412 Directed Practice II	-	16	3
1799 Survey of Data Processing	5	-	4
— General Elective	3	-	3
	14	18	17
■ Fourth Co-op Term (November & January)			
9304 Cooperative Employment	1	40	3
■ Fifth School Term (January & April)			
4020 Fundamentals of Pathophysiology	5	-	5
4409 Medical Record Seminar	3	-	3
4413 Directed Practice III	-	12	2
4031 Health Care Management	3	-	3
— General Elective	3	-	3

— Basic Elective	5	-	3
	19	12	19
■ Fifth Co-op Term (April & June)			
9305 Cooperative Employment	1	40	3
			94

Students will select General Electives from the following courses:

1001-1002	Communication Skills
1010	Technical Writing
1009	Business English
1179	Statistics
1505	The Inner World of The Person
1512	Micro-Economics
1513	Macro-Economics
1521	Intro. to Sociology

Students may select Basic Electives from the following courses:

4005	Chemistry for Health Technology
4009	Microbiology
4017	Pharmacology
1150	Health Math
4131	Developmental Nutrition

Respiratory Therapy Technician/ Respiratory Therapist

The rapid growth of technology in the field of respiratory therapy, in addition to the increased awareness of diseases affecting the respiratory system, has resulted in a demand for trained personnel.This demand is for individuals with both the work experience and the educational background to competently and effectively carry out the many tasks of respiratory therapy under medical direction.

Graduates of these programs will be trained to administer gas therapy, humidity therapy, aerosol therapy, and intermittant positive pressure breathing treatments. They should be able to assist with long-term, continuous artificial ventilation and special diagnostic and therapeutic procedures. These individuals will also be capable of administering drugs which are given through inhalation procedures and will be able to perform tasks related to patient care, especially those of airway management, while involved in giving respiratory therapy. Both technician and therapist will be trained to clean, sterilize, and generally maintain respiratory therapy equipment. In addition, they must maintain adequate and accurate records of patient's therapy and other department records.

Respiratory Therapy Technician

The technician program is a one-year certificate program. Because of the nature of the structured experiences required by accreditation agencies, the student will spend one year in course work. The program does not include cooperative education.

Students interested in enrolling in this program should have courses in high school chemistry, biology, and algebra. Individuals currently employed in health care and who seek credential requirements are encouraged to apply.

The program is accredited by the American Medical Association's Committee on Allied Health Education in collaboration with the Joint Review Committee for Respiratory Therapy Education. Graduates of the program may apply for the certification examination administered by the National Board for Respiratory Therapy (NBRT). Candidates who complete the NBRT requirements are recognized as Certified Respiratory Therapy Technicians (CRTT).

Respiratory Therapy Certificate Technician Curriculum

Prerequisite: High school general chemistry	Hours Per Week Class	Lab	Credit Hours
■ First Term (September)			
4005 Chemistry for Health Technology	3	2	4
4001 Introduction to Health Care	3	-	3
4720 Cardiopulmonary Anatomy & Physiology	3	2	4
4701 Respiratory Therapy Science I	3	-	3
4010 Human Biology	3	-	3
	15	4	17
■ Second Term (November)			
1151 Science Math I	4	-	4
4050 Patient Care Skills	2	3	3
4702 Respiratory Therapy Science II	2	3	3
4711 Clinical Practice I	-	10	2
	8	16	12
■ Third Term (January)			
4009 Microbiology	3	3	4
4703 Respiratory Therapy Science III	3	2	4
4712 Clinical Practice II	-	10	2
4007 Emergency Procedures	1	2	2
	7	17	12
■ Fourth Term (April)			
2244 Physics I	3	2	3
4704 Respiratory Therapy Science IV	3	2	4
4713 Clinical Practice III	-	30	5
	6	34	12
■ Fifth Term (June)			
4705 Respiratory Therapy Science V	3	2	4
4714 Clinical Practice IV	-	30	5
	3	32	9
			62

Respiratory Therapist

The respiratory therapist is the second level in respiratory therapy education. This program is a continuation of the first year and grants an associate of applied science degree. Because of the nature of the clinical experiences, the program does not include cooperative education. Four terms are needed, in addition to the first year, to qualify for graduation.

Individuals who are interested should be a graduate of an accredited respiratory therapy technician program. Graduates of the therapist program may apply for the registry examination administered by the National Board for Respiratory Therapy (NBRT). Candidates who complete the NBRT requirements are recognized as Registered Respiratory Therapists (RRT).

2nd Year Curriculum For Respiratory Therapist

Prerequisite: Graduation from an accredited Respiratory Therapy Technician Program	Hours Per Week Class	Lab	Credit Hours
■ First Term			
4017 Pharmacology	5	-	5
4012 Physiology I	3	2	4

— General Studies Elective	3	-	3
— General Studies Elective	3	-	3
	14	2	15
■ Second Term			
4013 Physiology II	3	2	4
4020 Pathology	5	-	5
4706 Respiratory Therapist Science VI	2	2	3
— General Studies Elective	3	-	3
	13	4	15
■ Third Term			
4707 Respiratory Therapy Science II	3	-	3
4715 Clinical Practive V	-	12	2
— General Studies Elective	3	-	3
— General Studies Elective	3	-	3
— General Studies Elective	3	-	3
	12	12	14
■ Fourth Term			
4721 Respiratory Supervision & Education	2	-	2
4723 Respiratory Therapy Seminar	1	2	2
4716 Clinical Practice VI	-	24	4
— General Studies Elective	3	-	3
	6	26	11
			55
Grand Total First & Second Years			117

Surgical Technology

The Surgical Technician program provides the student with an opportunity to work directly in the hospital operating room suites and assist the surgeon. The primary responsibilities include instrumentation, organization, anticipation of the surgeon's needs and care of the surgical patients.

This certificate program lasts one year during which the students learn the skills necessary to assist in the care of the patients in the operating room, plus the techniques of preparing, arranging and maintaining sterile supplies, instruments and equipment.

Any student who desires to do so may also pursue an Associate of Applied Science Degree in Surgical Technology by completing the required additional general education and basic courses.

Included within the curriculum are the following subjects: introduction to health care, medical terminology, anatomy, physiology, microbiology, emergency procedures and medical-surgical operative procedures.

The program begins every September, when the student spends twenty weeks at the College for academic preparation. In late January all eligible students must complete twenty weeks of clinical experience at one of the area hospitals. Upon completion of the clinical experience, the students return to the College to complete their final term of academic instruction.

The College's program is accredited by the American Medical Association's Council on Allied Health Education and Accreditation in collaboration with the Joint Review Committee for the Surgical Technician.

Upon successful completion of the one-year program, the student is eligible to take the National Certification Examination of the Association of Surgical Technicians for designation as a Certified Surgical Technician (C.S.T.).

Students may join the Association of Surgical Technologists, Inc., a professional organization which offers membership to students while attending college and after their graduation and certification. This organization's goals are education, standardization and professional recognition.

Surgical Technology* Certificate Curriculum

Prerequisites: General chemistry & biology	Hours Per Week Class	Lab	Credit Hours
■ First Term (September)			
4000 Medical Terminology	3	-	3
4014 Clinical Anatomy	2	3	3
4001 Introduction Health Care	3	-	3
4501 Introduction to Surgery	6	2	7
4511 Clinical Experience I	-	8	2
	14	13	18
■ Second Term (November)			
4012 Human Physiology I	3	2	4
4009 Microbiology	3	3	4
4502 Med/Surg Operative Proc. I	8	2	9
4512 Clinical Experience II	-	8	2
	14	15	19
■ Third Term (January)			
4521 Clinical Practice I	1	35	6
■ Fourth Term (April)			
4522 Clinical Practice II	1	35	6
■ Fifth Term (June)			
4013 Human Physiology II	3	2	4
4007 Emergency Procedures	1	2	2
4503 Med/Surg Operative Proc. II	10	-	10
4513 Clinical Experience III	-	8	2
	14	12	18
			55

*Formerly known as Operating Room Technician Program (ORT).

Associate of Applied Science Degree Option

This option is available for students enrolled in the Surgical Technology program who choose to pursue an Associate of Applied Science Degree (AAS).

Students must complete one of the following "Basic" courses:

4005 Chemistry for Health Technology
4020 Fundamentals of Pathophysiology

Students must complete 21 credit hours from the following sequence of courses:

1001 Communication Skills I
1002 Communication Skills II
1010 Technical Writing
1020 Effective Speaking
1179 Statistics
1021 Human Relations
1505 The Inner World of The Person
1512 or 1513 Micro or Macro Economics
1521 Sociology
1531 Intro. to Political Science

Students choosing the AAS option of the Surgical Technician program are encouraged to begin in the June term.

Business Technologies Division

Business and industry are constantly searching for capable, responsible men and women identified as managers who can establish a working environment in which people work together in the most effective manner to achieve management goals. The number of managerial workers required by business is great and, especially in specialized business fields, growing each year. Sound business training helps to develop better management for American business enterprise and, ultimately, has a profound influence on the economic welfare of the nation.

The Cincinnati Technical College is meeting the need for specialized business training with eighteen technological programs. Organized job experience through cooperative work assignments with leading business firms is a key phase of the learning program in each of these nineteen business curricula. Collegiate level courses in these business areas combine with job-related activities during the alternating ten-week work terms to provide students with both business skills and business experience. Upon completion of the two-year work/study program in business, students receive an associate degree and begin advancing rapidly to more responsible and better paying mid-management positions.

Automotive Service Management Technology

The automobile industry employs more people and generates more income than any other industry in the nation. Increasing numbers of automobiles, generally increased complexity of design, and additional use of complex accessories all increase the number of people employed in automotive services — and increase employment opportunities for those technicians who work at the mid-management level.

Cincinnati Technical College students are instructed in theory, procedures, practices and management techniques in school. As co-ops on the job in automotive service departments, parts departments, service stations, etc., they receive practical experience under the direction of experienced managers.

Graduates of the Automotive Service Management program, after the appropriate on-the-job work experience, could be promoted to work as service managers, assistant service managers, service writers, parts department supervisors, service station managers, technical representatives and other appropriate personnel in the automotive industry.

Automotive Service Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September & November)**				
1001	Communication Skills I	3	-	3
*11	Technical Mathematics	4	-	4
2501	Automotive Technology I	5	10	8
8102	Machine and Hand Tools	1	4	3
		13	14	18
■ **First Co-op Term**				
9201	Cooperative Employment	3	40	2
■ **Second School Term (January & April)**				
1002	Communication Skills II	3	-	3
*11	Technical Mathematics	4	-	4
2221	Technical Physics I	3	2	3
2502	Automotive Technology II	5	10	8
		15	12	18
■ **Second Co-op Term**				
9202	Cooperative Employment	3	40	2
■ **Third School Term (June & September)**				
7005	Basic Blueprint Reading & Sketching	2	2	3
1505	The Inner World of The Person	3	-	3
1512	Micro-Economics	3	-	3
2222	Technical Physics II	3	2	3
2503	Automotive Technology III	2	8	4
2510	Automotive Management I	2	3	3
		15	15	19
■ **Third Co-op Term**				
9203	Cooperative Employment	4	40	3
■ **Fourth School Term (November & January)**				
1010	Technical Writing	3	-	3
1513	Macro-Economics	3	-	3
1535	Labor-Management Relations	3	-	3
2504	Automotive Technology IV	2	8	4
7810	Welding Processes & Techniques I	3	3	3
2511	Automotive Management II	2	3	3
		16	14	19
■ **Fourth Co-op Term**				
9204	Cooperative Employment	4	40	3
■ **Fifth School Term (April & June)**				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
1823	Business Law I	3	-	3
2505	Automotive Technology V	5	10	8
		14	10	17
■ **Fifth Co-op Term**				
9205	Cooperative Employment	4	40	3
				104

*A competency-based math test will be administered to all entering Automotive Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Business Data Management Technology

Today's business is a complex organization requiring workers with specialized talents and techniques to perform efficiently in a data processing department. With an increasing number of business establishments comes the need for trained personnel to assume managerial responsibilities in computer operations.

In the Business Data Management Technology at Cincinnati Technical College, students learn the principles of both management and data processing. Business Data Management is a particularly rewarding field of study because of the increasing demand for personnel who can administer data processing operations.

The Data Management coordinator uses input-output devices, job control decks, console commands, processing programs, utility programs and operating systems. Data Management personnel in business data processing identify with company policy and work with the top management and non-supervisory employees.

Job opportunities available to graduates of the Business Data Management curriculum include the following: data entry supervisor, supervisor computer operations, computer operator, computer peripheral equipment operator and peripheral equipment operator.

Business Data Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills	3	-	3
2911	Principles of Accounting I	3	2	3
1711	Introduction to Data Management and Computer Operations	4	6	6
1712	Data-Entry Systems	4	6	6
		14	14	18
■ First Co-op Term				
9201	Cooperative Employment	3	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
1131	College Algebra	4	-	4
1731	Peripheral-Equipment Operations	3	7	5
2926	Principles of Management	3	-	3
2912	Principles of Accounting II	3	2	3
		16	9	18
■ Second Co-op Term				
9202	Cooperative Employment	3	40	2
■ Third School Term (June & September)				
—	Social Science Elective	3	-	3
1132	Business Statistics	4	-	4
1773	Data Preparation and Control	2	1	2
1741A	Operating Systems	4	6	6
2913	Principles of Accounting III	3	2	3
		16	9	18
■ Third Co-op Term				
9203	Cooperative Employment	4	40	3
■ Fourth School Term (November & January)				
1010	Technical Writing	3	-	3
1512	Micro-Economics	3	-	3
1761A	Introduction to COBOL	1	9	4
1832	Personnel Management	3	-	3
2920	Business Principles	4	-	4
		14	9	17
■ Fourth Co-op Term				
9204	Cooperative Employment	4	40	3
■ Fifth School Term (April & June)				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
1781A	Introduction to RPG II	3	7	5
1783	Research Project OR	2	3	3
2918	Managerial Accounting	3	-	3
1782	Installation Management	3	-	3
		15/14	10/7	17
■ Fifth Co-op Term				
9205	Cooperative Employment	4	40	3
				101

Business Data Processing Technology

The objective of the Business Data Processing program at Cincinnati Technical College is to provide the student with the technical training necessary to function effectively as a computer programmer/analyst and to make a significant contribution to the co-op employer during training and to the data processing community after graduation.

Data processing is an essential part of every business. Its function is to collect, control and process the data necessary to provide management with meaningful information which is useful input to the management decision-making process. This task has become more significant over the past few years due to the volume of data now available and essential to business. Thus, computers are now used extensively in data processing to perform tasks previously accomplished by clerks, statisticians and even management personnel.

The introduction and eventual sophistication of data processing equipment has created a continuous need for professional Data Processing technicians, especially computer programmers.

A computer programmer, the vital link between the computer and the systems analyst, instructs the computer to perform various tasks based on the requirements set down by the systems analyst. Assignments range from simple (listing a set of punched cards on a printing devise) to complex (developing a complete set of programs to prepare employee time records, payroll checks, payroll check reconciliation reports, quarterly FICA and Withholding Tax Reports, W-2 Forms and labor-cost distribution reports).

Business Data Processing Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills	3	-	3
1131	College Algebra	4	-	4
1721	Programming: Logic and Methods	2	3	3
1701	Introduction to Data Processing and Programming	1	9	4
2911	Principles of Accounting I	3	2	3
		13	14	17
■ First Co-op Term				
9201	Cooperative Employment	3	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
1132	Business Statistics	4	-	4
1761	Introduction to RPG II	3	7	5
1722	Basic & Assembly Programming	2	3	3
2912	Principles of Accounting II	3	2	3
		15	12	18
■ Second Co-op Term				
9202	Cooperative Employment	3	40	2

■ Third School Term (June & September)			
— Social Science Elective	3	-	3
2913 Principles of Accounting III	3	2	3
1781 Advanced RPG II	2	3	3
1742 COBOL Programming I	3	7	5
1512 Micro-Economics	3	-	3
	14	12	17
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1010 Technical Writing	3	-	3
1505 The Inner World of The Person	3	-	3
1762 COBOL Programming II	4	6	6
1763 Systems Analysis and Design	3	7	5
	13	13	17
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1020 Effective Speaking	3	-	3
1134 Fortran Programming OR	3	2	3
2914 Cost Accounting I	3	2	3
1741 Operating Systems	2	3	3
1782 Installation Management	3	2	3
1783 Research	2	3	3
1752 Real Time Systems & Data Communications	2	3	3
	18	15	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			100

Business Management Technology

A combination of business training and business experience prepares students for many opportunities in the world of business. The CTC Business Management program provides the technical skills and knowledge so valuable to business and industry.

Business Management students meet with instructors experienced in office organization, personnel procedures, management, finance, sales, accounting and related subjects. Learning experiences are provided by a program of field trips, guest lecturers with special expertise, case studies and modern visual presentation techniques.

The technical business training in this program lends itself to a wide variety of positions, often leading to promotional opportunities in credit, finance, personnel, purchasing, public relations, inventories, distribution and other areas of business management.

While engaged in their cooperative work, Business Management students participate in employment training positions in banking, insurance, retailing and other important fields. Many of Cincinnati's leading firms offer training positions for students which may lead to more responsible and challenging future assignments.

There are also opportunities to own and operate a business enterprise. Success in such a venture requires an understanding of the business skills offered through the Business Management program at Cincinnati Technical College.

Business Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1103 Math of Finance	4	-	4
3005 Administrative Typing	1	4	2
2911 Principles of Accounting I	3	2	3
2920 Business Principles	4	-	4
2901 Principles of Marketing I	2	1	2
	17	7	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1104 Financial & Statistical Analysis	4	-	4
2912 Principles of Accounting II	3	2	3
2902 Principles of Marketing II	2	1	2
1810 Principles of Salesmanship	3	-	3
1512 Micro-Economics	3	-	3
	18	3	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
2913 Principles of Accounting III	3	2	3
1505 The Inner World of The Person	3	-	3
2926 Principles of Management	3	-	3
2905 Money and Banking	3	-	3
1850 Computerized Business Applications	2	3	3
	17	5	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1851 Auditing	4	1	4
1011 Business Communications	3	-	3
2960 Principles of Finance	3	-	3
1804 Risk and Insurance	3	-	3
1823 Business Law I	3	-	3
1832 Personnel Management	3	-	3
	19	1	19
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1007 Research and Logic	3	-	3
2906 Credits and Collections	3	-	3
1824 Business Law II	3	-	3
1521 Introduction to Sociology	3	-	3
2917 Tax Accounting	3	2	3
2904 Office Management	3	-	3
	18	2	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			104

Executive Chef Technology

The food service industry, one of the country's largest in both dollar sales and number of people employed, is also one of the fastest growing industries. Continued growth is

assured with the expansion of hospitality facilities and continued national affluence.

The industry has a great need for trained cooks, chefs and other related food service personnel. But the most serious aspect of this need is the shortage of qualified chefs. At crisis proportion now, increased demands estimate that at least 40,000 qualified chefs will be required each year for the next ten years. CTC's Executive Chef program was designed to answer this growing need.

Executive Chef students are given the opportunity to participate in CTC's cooperative education program. Every other term students can obtain valuable experience by working in a food service facility to learn firsthand about their chosen career. Besides being a worthwhile training opportunity, the co-op program provides paid employment for the student.

In addition to this associate degree program, CTC offers a U.S. Labor Department chef's apprenticeship program. This training is endorsed by the Les Chefs de Cuisine of Greater Cincinnati and the American Culinary Federation. It includes both practical training and classroom instruction and can be completed on a part or full-time basis.

The similarity in course content for the degree and apprenticeship programs permits students the flexibility to be enrolled in both training experiences. Graduates would then receive an associate degree and would have completed the required national standards for journeyman chefs.

Executive Chef Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I (or 1103)	4	-	4
2801 Introduction to Restaurant Management	2	6	3
*2806 Beverage Management	2	1	2
2822 Fundamentals - Food Preparation I	2	6	3
2911 Principles of Accounting I	3	2	3
	16	15	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1102 Business Mathematics II (or 1104)	4	-	4
2821 Sales Techniques	2	-	2
2802 Restaurant Management II	2	6	3
2823 Food Preparation II	2	6	3
2912 Principles of Accounting II	3	2	3
	16	14	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
2803 Restaurant Management III	2	6	3
*1234 OSHA I	3	-	3
2824 Food Preparation III	2	6	3
2928 Hotel-Motel Accounting	3	-	3
4130 Fundamentals of Normal Nutrition	3	2	3
	17	14	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1021 Human Relations	3	-	3
1512 Micro-Economics	3	-	3
1535 Labor Management Relations	3	-	3
1823 Business Law I	3	-	3
2804 Restaurant Management IV	2	6	3
2825 Food Preparation IV	2	6	3
	16	12	18
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
1521 Introduction to Sociology	3	-	3
1824 Business Law II	3	-	3
*2805 Restaurant Management V	2	6	3
2815 Hotel-Motel Management V	3	-	3
2826 Food Preparation V	2	6	3
	16	12	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			103

*Can substitute with technical electives approved by coordinator.

Graphic Communications Technology

The influence of printing radiates through all the fields of endeavor known to Man. The printed word is necessary to sustain civilization and to support social, educational, technological and commercial growth. As society becomes more complex, communication via printing becomes increasingly important.

At Cincinnati Technical College, modern computerized typesetting equipment, high speed letterpress and offset presses, excellent ancillary equipment and expert instruction combine to provide a quality graphic arts program.

Although each Graphic Communications student masters all of the major modern graphic arts processes, the scope of the program is not limited to the development of craftsmanship. Technicians in a dynamic, growing industry constantly address themselves to new problems. The Graphic Communications program provides the scientific and technical knowledge necessary to resolve those problems.

As important as they are, craftsmanship and scientific-technical knowledge do not fully describe the Graphic Communications program. The graphic arts industry urgently requires mid-management personnel. Courses in human behavior, effective speaking, business law, etc., provide the management skills necessary for mid-management positions in shop leadership, estimating, production planning and cost control.

Graphic Communications Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1449 Estimating Preparation	2	3	3
1401 Layout and Design	2	-	2
1402 Typography	2	6	4

1415 Graphic Arts Processes	2	-	2
1512 Micro-Economics	3	-	3
	14	9	17
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1405 Proofreading and Copy Preparation	2	-	2
1410 Machine Composition	1	9	4
1460 Bindery Methods/Procedures	2	3	3
1513 Macro-Economics	3	-	3
2261 Printing Science I (Chem)	3	2	3
	14	14	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
1450 Estimating	2	3	3
1421 Cold Type Process	1	9	4
1021 Human Relations	3	-	3
1810 Salesmanship	3	-	3
2262 Printing Science II (Physics)	3	2	3
	15	14	19
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1010 Technical Writing	3	-	3
1419 Survey of Printing Inks	3	-	3
1430 Presswork	1	9	4
1480 Photolith I	2	3	3
1823 Business Law I	3	-	3
2911 Accounting I (or 2910)	3	2	3
	15	14	19
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1007 Research and Logic	3	-	3
1428 Management Survey	3	-	3
1440 Offset Press Operation	2	13	5
1481 Photolith II	2	3	3
1521 Introduction to Sociology	3	-	3
	13	16	17
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			103

Hotel-Motel-Restaurant Management Technology

Increased leisure, a higher living standard and improved transportation have caused the demand for the services of the hospitality industry to spiral. Motel, hotel and restaurant chains have responded with large scale expansion programs. As a result, the industry is experiencing a shortage of qualified personnel, particularly at the mid-management level. At present, the employment estimates indicate a conservative need for at least 100,000 supervisory employees new to the industry each year just to satisfy the demands of existing properties. Added to this total is another large number of supervisory employees to reflect the needs of the many new properties, rooms and restaurants currently being planned and constructed. Cincinnati Technical College is prepared to meet the employment needs of this industry locally through its Hotel-Motel-Restaurant Management program.

Today's modern hotel or restaurant managers must have a comprehensive knowledge of all the departments and operations in their institutions. CTC's Hotel-Motel-Restaurant program provides all phases of this training from front office procedures to mass food preparation to maintenance problems.

Graduates of this technology are found in various job positions: front office manager, superintendent of service, assistant or executive housekeeper, steward, dining room manager, assistant restaurant manager, assistant catering manager or assistant hotel manager.

H-M-R students are involved in the hospitality industry early in their academic careers. Paid cooperative work experience gives students the opportunity to see the industry in operation and to set their goals on the type of career they wish to follow within the industry. Hotels, motels and restaurants throughout the Greater Cincinnati area provide co-op employment for CTC students.

Hotel-Motel-Restaurant Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I (or 1103)	4	-	4
2801 Introduction to Restaurant Management	2	6	3
*2806 Beverage Management	2	1	2
*2811 Introduction to Hotel-Motel Management	3	-	3
2911 Principles of Accounting I	3	2	3
	17	9	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1102 Business Mathematics II (or 1104)	4	-	4
2802 Restaurant Management II	2	6	3
2812 Hotel-Motel Management II	3	-	3
2912 Principles of Accounting II	3	2	3
2821 Sales Techniques	2	-	2
	17	8	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
2803 Restaurant Management III	2	6	3
2813 Hotel-Motel Management III	3	-	3
2929 Audit Procedures and Operations	3	-	3
*2928 Hotel-Motel Accounting	3	-	3
4130 Fundamentals of Normal Nutrition	3	-	3
	17	6	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3

■ Fourth School Term (November & January)			
1021 Human Relations	3	-	3
1512 Micro-Economics	3	-	3
1535 Labor Management Relations	3	-	3
1823 Business Law I	3	-	3
2804 Restaurant Management IV	2	6	3
2814 Hotel-Motel Management IV	3	-	3
	17	6	18
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1011 Business Communications	3	-	3
1521 Introduction to Sociology	3	-	3
1824 Business Law II	3	-	3
2805 Restaurant Management V	2	6	3
2815 Hotel-Motel Management V	3	-	3
*2930 Hotel-Motel Case Studies	3	-	3
	17	6	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			103

*Can substitute with technical electives approved by coordinator.

Loss Control Technology

Business and industry throughout the country are facing serious losses due to theft and pilferage and, the greatest concern of all, employee crime. Not only do these losses affect business owners but they produce long-term effects—higher costs—to each person who consumes these goods.

To help fight this situation business owners are turning to trained specialists in the security field to join the management team. However, the demand for security personnel is much greater than the supply. In short, there are far more jobs than there are trained security specialists.

Cincinnati Technical College offers a security administration program, one of the first associate degree programs in the country, to meet this demand. The Loss Control program curriculum was developed in collaboration with the Tri-State Chapter of the American Society for Industrial Security. Although other institutions offer law enforcement and police science programs, CTC provides the classroom instruction and practical training requirements of the private security practitioner.

Students in the Loss Control program receive supervised on-the-job experience through the College's co-op program, and, because of the nature of their work schedules, can follow classes during the day or evening.

Graduates of this program are found in public agencies, private business and industry and in government divisions providing specialized security services for their employers.

Loss Control Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1101 Business Math I (or 1103)	4	-	4
1201 Private Police Officer's Training	3	10	6
1001 Communication Skills I	3	-	3
1210 Intro. to Loss Control/Sec. Admin.	3	-	3
2926 Principles of Management I	3	-	3
	16	10	19
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1102 Business Math II (or 1104)	4	-	4
*1220 Fundamentals of Fire Protection	3	-	3
*1211 Industrial Security	3	-	3
1216 Security Administration I	3	-	3
2927 Principles of Management II	3	-	3
	19	0	19
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
1823 Business Law I	3	-	3
1217 Security Administration II	3	-	3
1010 Technical Writing	3	-	3
1204 Personnel Security Systems	2	3	3
2911 Principles of Accounting I (or 2910)	3	2	3
	17	5	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1205 Criminal Interrogation	3	-	3
1021 Human Relations	3	-	3
1230 Safety Management	3	-	3
1208 Criminal Law I	4	-	4
*1233 Emergency Planning	3	-	3
1535 Labor Relations	3	-	3
	19	0	19
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1209 Criminal Law II	4	-	4
1224 Fundamentals of Fire Prevention	3	2	3
1505 The Inner World of The Person	3	-	3
1240 Directed Case Study	3	-	3
1521 Introduction to Sociology	3	-	3
	16	2	16
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			104

*Can substitute with technical electives approved by coordinator.

Managerial Accounting Technology

Managerial Accounting is especially designed to develop those individuals who have a high degree of inherent skill in accounting. The technical skills and the additional knowledge of business fundamentals provide the graduate with a thorough understanding of accounting systems and how these systems are applied in business (small and large) and industrial organizations. In addition, the program gives an indepth view into the design, maintenance and utilization of a financial system.

Cincinnati Technical College, through the Managerial Accounting program, prepares students for careers in a variety of business and industrial positions. Principal among these are positions in the field of accounting, such as junior accountants, cost accountants, payroll, finance accounting clerks, cost estimators and other specialized accounting assignments. There are many other specialized job opportunities related to the Managerial Accounting field that are available to the well-trained student.

Opportunities are provided to demonstrate, expand or refine competencies required for potential mid-management employment.

Managerial Accounting Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1103 Mathematics of Finance	4	-	4
3005 Administrative Typing	1	4	2
2911 Principles of Accounting I	3	2	3
2920 Business Principles	4	-	4
1505 The Inner World of The Person	3	-	3
	18	6	19
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1104 Financial and Statistical Analysis	4	-	4
2912 Principles of Accounting II	3	2	3
1521 Introduction to Sociology	3	-	3
2901 Principles of Marketing I	2	1	2
1512 Micro-Economics	3	-	3
	18	3	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1007 Research and Logic	3	-	3
1850 Computerized Business Applications	2	3	3
2902 Principles of Marketing II	2	1	2
2905 Money & Banking	3	-	3
2913 Principles of Accounting III	3	2	3
2926 Principles of Management	3	-	3
	16	6	17
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1011 Business Communications	3	-	3
1851 Auditing	4	1	4
1823 Business Law I	3	-	3
1832 Personnel Management	3	-	3
2914 Cost Accounting	3	2	3
2919 Intermediate Accounting	3	2	3
	19	5	19
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1020 Effective Speaking	3	-	3
1804 Risk & Insurance	3	-	3
1824 Business Law II	3	-	3
2904 Office Management	3	-	3
2915 Cost Accounting II	3	2	3
2917 Tax Accounting	3	2	3
	18	4	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			104

Ornamental Horticulture Technology

The beauty of a rose. The loveliness of the green expanse of a park. The majesty of an oak that shelters a home. How great a pleasure it is to admire these gifts of nature in an age of steel, concrete and glass, especially at a time of great concern for the environment.

Urban area residents are indebted to those who work with nature to produce these pleasures. Beauty is their business. Many of the flowers, trees, shrubs and lawns that adorn the city are their handiwork. They are the men and women of the Ornamental Horticulture industry. They include landscapers, nurserymen, greenskeepers, flower growers. Others grow vegetables from first frost to spring under glass in greenhouses.

Theirs is — literally and figuratively — a growth industry in which career opportunities are excellent for aspiring "green thumb technicians." These opportunities offer special satisfactions to those who like the elbow room of the out-of-doors, who like to work with their hands as well as their heads, and who like to work with nature but live in the city.

The Ornamental Horticulture Technology program is designed to prepare high school graduates, exhibiting the necessary interests and aptitudes, to work for a wide range of employers: garden stores, nurseries, golf courses, parks, private estates, hospitals, universities, schools and others who sell, install or maintain turf, trees, shrubs and gardens.

Because of the unique seasonal employment requirements of horticulturally related jobs, this program does not follow the usual CTC schedule of alternating in-college and on-the-job quarters. Instead, students will spend three successive ten-week terms in school and two successive terms (during the growing season) in cooperative employment during each of the two years they are enrolled in the program. The purpose of this arrangement is to maximize the learning and earning opportunities of horticulture students during the peak of the propagation, cultivation and selling season.

Ornamental Horticulture Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September)			
1001 Communication Skills I	3	-	3
3501 Horticultural Soils & Applications	6	-	6
3502 Horticultural Science I	3	2	3
3507 Arboriculture	3	2	3
3508 Turf Management I	3	-	3
	18	4	18

■ Second School Term (November)			
1512 Micro-Economics	3	-	3
3503 Horticultural Science II	3	2	3
3504 Woody Plants I	2	3	3
3505 Herbaceous Plants I	2	3	3
3506 Nursery Operation I	2	3	3
	12	11	15
■ Third School Term (January)			
1002 Communication Skills II	3	-	3
1021 Human Relations	3	-	3
1810 Principles of Salesmanship	3	-	3
3509 Landscaping I	3	2	3
3510 Horticulture and Turf Equipment	6	4	6
	18	6	18
■ First Co-op Term (April)			
9501 Cooperative Employment	3	40	2
■ Second Co-op Term (June)			
9502 Cooperative Employment	3	40	2
■ Fourth School Term (September)			
1020 Effective Speaking	3	-	3
1101 Business Math I	4	-	4
3512 Nursery Operation II	3	-	3
3515 Woody Plants II	3	-	3
3517 Turfgrass Management II	3	-	3
3518 Landscaping II	3	2	3
	19	2	19
■ Fifth School Term (November)			
1010 Technical Writing	3	-	3
2911 Principles of Accounting I	3	2	3
2926 Principles of Management	3	-	3
3511 Landscape Construction	3	2	3
3514 Garden Store Operation	2	3	3
3516 Herbaceous Plants II	3	2	3
	17	9	18
■ Sixth School Term (January)			
1505 The Inner World of The Person	3	-	3
2901 Principles of Marketing	2	1	2
3513 Horticultural Science III	3	2	2
3519 Landscape Contracts & Specifications	3	2	3
3521 Entomology & Plant Disease Control	3	2	2
3522 Nursery Operation III	3	2	3
	17	9	15
■ Third Co-op Term (April)			
9503 Cooperative Employment	4	40	3
■ Fourth Co-op Term (June)			
9504 Cooperative Employment	4	40	3
			103

Property Management Technology

The dynamic growth in the construction of apartment complexes, office structures, industrial parks and shopping centers has accelerated the demand for professionally trained property managers. An effective property manager must have the ability to properly supervise maintenance, office and accounting functions, handle tenant relations, prepare and implement management plans and operating budgets. The successful fulfillment of the functions determines whether a property is a valuable entity to the owner, tenant, resident and community. Men and women who assume responsibilities as property managers are well compensated. Property Management experience provides an excellent background to all other specialties in the real estate profession.

Cincinnati Technical College is the nation's first institution of higher learning to offer an associate degree program in Property Management. A part of CTC's Real Estate Academy, the program curriculum is based upon class discussion, case studies, publications of the Institute of Real Estate Management and National Association of Realtors. The coursework covers the resident manager through executive property manager positions.

Students receive instruction from Certified Property Managers (C.P.M.'s) who also counsel the College on the latest principles and practices employed in the Property Management field. Five of the program's technical courses (2931, 2932, 2933, 2934 and 2935) are offered only in the evening. In addition to the coursework in property management, the curriculum includes the required courses for students who wish to sit for a real estate license.

The program provides excellent cooperative employment opportunities with leading property managers and institutional owners in the Cincinnati area.

Property Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I (or 1103)	4	-	4
2951 Real Estate Principles and Practices	3	-	3
2931 On-Site Property Management I	3	1	3
1512 Micro-Economics	3	-	3
2921 Introduction to Business I	2	-	2
	18	1	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1513 Macro-Economics	3	-	3
2953 Real Estate Law	3	-	3
1102 Business Mathematics II (or 1104)	4	-	4
2922 Introduction to Business II	3	-	2
2932 On-Site Property Management II	3	1	3
	19	1	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
*2905 Money and Banking	3	-	3
2911 Accounting I	3	2	3
2933 Executive Level Property Management I	3	1	3
2952 Real Estate Brokerage	3	-	3
2954 Real Estate Finance	3	-	3
	18	3	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1007 Research and Logic	3	-	3
1021 Human Relations	3	-	3
2912 Accounting II	3	2	3

*2926 Principles of Management	3	-	3
2934 Executive Level Property Management II	3	1	3
2955 Appraisal I - Residential	3	-	3
	18	3	18
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1011 Business Communications	3	-	3
1505 The Inner World of The Person	3	-	3
*1832 Personnel Management	3	-	3
2917 Tax Accounting	3	2	3
2935 Property Management Case Study	3	-	3
2957 Seminar: Special Topics	3	-	3
	18	2	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			103

*Can be substituted with technical electives approved by coordinator.

Real Estate Technology

Real estate is one of the most stable of all career areas. Real estate sales and related real estate specialties offer unlimited opportunities for men and women to provide a valuable service to buyers and sellers of real property and to be well compensated for their efforts.

To help students and professionals with their career development, Cincinnati Technical College has instituted the Real Estate Academy. The Academy, directed and coordinated by a licensed real estate broker, provides the training to meet career objectives.

Students may elect to follow a sequenced, six-course certificate program which meets all the requirements to qualify one for the Ohio Real Estate Sales Associate and Broker's license examinations.

The two-year associate degree program curriculum includes all of the required courses for a real estate license and the Ohio Association of Realtors' GRI designation. Students may combine this two-year program with certain property management courses to earn an associate degree with a double major in Real Estate and Property Management. Students also may supplement their associate degree curriculum with technical electives in areas which will enhance their professional aspirations.

For those real estate professionals who wish to advance their skills, the Real Estate Academy will be providing special continuing education credit courses throughout the year as demand warrants their scheduling.

Real Estate (Half-Day) Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I (or 1103)	4	-	4
2951 Real Estate Principles & Practices	3	-	3
2953 Real Estate Law	3	-	3
1512 Micro-Economics	3	-	3
2921 Introduction to Business I	2	-	2
	18	0	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
1102 Business Mathematics II (or 1104)	4	-	4
1513 Macro-Economics	3	-	3
2954 Real Estate Finance	3	-	3
2940 Real Estate Sales	3	-	3
2922 Introduction to Business II	2	-	2
	18	0	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1020 Effective Speaking	3	-	3
*2905 Money and Banking	3	-	3
2952 Real Estate Brokerage	3	-	3
1804 Risk & Insurance	3	-	3
*2901 Principles of Marketing I	2	1	2
2911 Accounting I	3	2	3
	17	3	17
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1007 Research and Logic	3	-	3
1021 Human Relations	3	-	3
*2902 Principles of Marketing II	2	1	2
2912 Accounting II	3	2	3
2926 Principles of Management	3	-	3
2955 Appraisal I - Residential	3	-	3
	17	3	17
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1011 Business Communications	3	-	3
2917 Tax Accounting	3	2	3
2956 Appraisal II - Income Producing Prop.	3	-	3
1505 The Inner World of The Person	3	-	3
*1842 Advertising and Display	2	3	3
2957 Seminar: Special Topics	3	-	3
	17	5	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			101

*Can be substituted with technical electives approved by coordinator.

Safety/Risk Management Technology

Because of federal and state regulations, employees' activism and consumer demands, business and industry are allocating more monies for occupational hazard control. To insure compliance with these regulations, companies are hiring safety specialists to act as the direct link between top management and the work force. The demand for these technicians is so great that presently there are more jobs than students pursuing this career.

Students in CTC's Safety/Risk Management program are provided instruction in the detection of unsafe conditions and practices and the development of job training programs.

Not only do students learn the techniques of human relations, but they are taught the fundamentals of accident prevention as well as federal regulations including The Occupational Safety and Health Act and National Fire Prevention Codes.

Many CTC students combine this program with the Loss Control program for a double major, since industry tends to combine these specialists in one position. The Safety/Risk program allows students to take technical electives in specialized areas such as those found in other Business programs or Engineering Technologies programs.

Safety/Risk Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
2009 Industrial Safety	3	-	3
1202 First Aid	5	3	6
*3301 Principles of Maintenance	3	2	3
*1230 Safety Management	3	-	3
1237 Safety Training Methods/Techniques	2	3	3
	16	8	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
2000 Industrial Hygiene Recognition	3	-	3
*1233 Emergency Planning	3	-	3
*1238 Ergonomics	3	-	3
2010 Industrial Hygiene Measurements	2	3	3
1234 O.S.H.A. I	3	-	3
*1236 Vehicle Safety	3	-	3
	17	3	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1804 Risk and Insurance	3	-	3
1235 O.S.H.A. II	3	-	3
2011 Industrial Hygiene Control	3	1	3
1101 Business Math I	4	-	4
1001 Communication Skills I	3	-	3
2926 Principles of Management I	3	-	3
	19	1	19
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1002 Communication Skills II	3	-	3
1102 Business Math II (or 1104)	4	-	4
2927 Principles of Management II	3	-	3
1020 Effective Speaking	3	-	3
1823 Business Law I	3	-	3
2911 Principles of Accounting I (or 2910)	3	2	3
	19	2	19
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
1021 Human Relations	3	-	3
1535 Labor Relations	3	-	3
1505 The Inner World of The Person	3	-	3
1521 Introduction to Sociology	3	-	3
1824 Business Law II	3	-	3
	18	0	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			105

*Can be substituted with technical electives approved by coordinator.

Sales Marketing Technology/ Industrial Sales Marketing Technology

In the Sales Marketing program at Cincinnati Technical College, small classes, expert guidance, instruction and coordination all focus on a single objective: developing talent for the sales marketing professions. Advertising, display, retailing, wholesaling, mid-management supervision, data processing, accounting and other studies develop the attitudes and skills necessary for success.

To further meet the needs of the business community and students, this program offers the option of Industrial Sales Marketing. This option focuses on selling at the professional level by the manufacturer's representative and by the wholesale salesman who are primarily concerned with characteristics of the industrial market, purchasing agents, the product and services.

The business/industrial community in Cincinnati provides a unique laboratory in which Sales Marketing students acquire their cooperative employment experience. Greater Cincinnati is such a diverse marketing complex that this area is used by many national agencies for market research. The kinds of cooperative employment presently held by Sales Marketing students are as varied as the marketing area itself.

On-the-job training is not a substitute for the critical analysis and careful exposition undertaken in school; nor is classroom work a substitute for field experience. The Cincinnati Technical College cooperative employment system offers both in the proper proportions for optimum personal and professional growth.

Sales Marketing Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1020 Effective Speaking	3	-	3
1101 Business Mathematics I	4	-	4
1811 Introduction to Salesmanship	4	-	4
1845 Principles of Retailing	4	-	4
2920 Business Principles	4	-	4
	19	0	19
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1001 Communication Skills I	3	-	3
1102 Business Mathematics II	4	-	4
1836 Principles of Wholesaling	4	-	4
2926 Principles of Management	3	-	3

3005 Administrative Typing	1	4	2
	15	4	16
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1002 Communication Skills II	3	-	3
1505 The Inner World of The Person	3	-	3
1521 Introduction to Sociology	3	-	3
1799 Survey of Data Processing	4	-	4
1832 Personnel Management	3	1	3
2907 Introduction to Marketing	4	-	4
	20	1	20
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1007 Research and Logic	3	-	3
1512 Micro-Economics	3	-	3
1815 Audiovisual Sales Techniques	2	3	3
2908 Case Studies in Marketing	4	1	4
2911 Principles of Accounting I	3	2	3
	15	6	16
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1011 Business Communications	3	-	3
1840 Retail Merchandising & Operations	4	-	4
1823 Business Law I	3	-	3
1842 Advertising and Display	2	3	3
2912 Principles of Accounting II	3	2	3
1804 Risk and Insurance	3	-	3
	18	5	19
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			103

Industrial Sales Marketing Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1020 Effective Speaking	3	-	3
1101 Business Mathematics I	4	-	4
1846 Industrial Product Marketing I	4	-	4
1811 Introduction to Salesmanship	4	-	4
2920 Business Principles	4	-	4
	19	0	19
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1001 Communication Skills I	3	-	3
1102 Business Mathematics II	4	-	4
1813 Industrial Sales	4	-	4
1847 Industrial Product Marketing II	4	-	4
3005 Administrative Typing	1	4	2
2926 Principles of Management	3	-	3
	19	4	20
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1002 Communication Skills II	3	-	3
1505 The Inner World of The Person	3	-	3
1799 Survey of Data Processing	4	1	4
1817 Industrial Purchasing	4	-	4
1521 Introduction to Sociology	3	-	3
	17	1	17
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1007 Research and Logic	3	-	3
1512 Micro-Economics	3	-	3
1815 Audiovisual Sales Techniques	2	3	3
2911 Principles of Accounting I	3	2	3
1814 Case Studies - Industrial Sales	4	1	4
	15	6	16
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1011 Business Communications	3	-	3
2912 Principles of Accounting II	3	2	3
1823 Business Law I	3	-	3
1842 Advertising and Display	2	3	3
1820 Sales Management	4	-	4
1804 Risk and Insurance	3	-	3
	18	5	19
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			104

Secretarial Technologies

The Secretarial Technologies offer up-to-date programs for professional development in secretarial science. CTC's curricula are designed to accommodate each student's needs. For those students with no previous training, beginning Century 21 shorthand classes and beginning typing classes are offered. For those students with previous training, advanced Gregg shorthand classes and advanced typing classes are offered. (Advanced placement is achieved only through testing.)

Besides providing a modern and thorough technical and professional education, the curricula are also designed to give attention to the liberal aspects of a college education needed by the secretary in the modern business world. This background enables the secretary to take an active part in the mainstream of society.

Secretaries are emerging as important members of the management team. Through the years they have earned recognition, status and prestige. More than ever secretaries must accept the challenge of their changing role and be prepared for the new role as part of the professional management team.

The function of the Secretarial program is to prepare men and women for these responsible secretarial and clerical positions in business as well as those in industry and public service.

Three major areas of secretarial education are offered.

Executive Secretarial — prepares a man or woman for a responsible position as an executive secretary or administrative assistant and requires a thorough background in shorthand. In addition, this program offers a study of modern business practices and office procedures.

General Secretarial— is designed for the man or woman who desires training to qualify for any of a broad range of office positions requiring a variety of technical skills. In this program a student can learn office skills, a knowledge of accounting and other fundamental office techniques as well as develop skill in the area of machine transcription.

Legal Secretarial — prepares a man or woman to be a legal secretary thoroughly familiar with judicial procedures and legal terminology in working with a wide variety of legal documents including briefs, petitions, subpeonas, wills, contracts and deeds.

Secretarial Technology Executive Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I	4	-	4
2921 Introduction to Business I	2	-	2
3001 Typewriting I	1	4	2
3011 Shorthand I - Century 21 or	4	1	4
3010 Shorthand I - Gregg	4	1	4
3021 Office Procedures	3	-	3
	17	5	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1009 Business English	3	-	3
1102 Business Mathematics II	4	-	4
3002 Typewriting II	1	4	2
3012 Shorthand II - Century 21 or	4	1	4
3020 Shorthand II - Gregg	4	1	4
3022 Office Machines	2	3	3
3032 Records Management	3	-	3
	17	8	19
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1002 Communication Skills II	3	-	3
1521 Introduction to Sociology	3	-	3
1823 Business Law I	3	-	3
3003 Typewriting III	1	4	2
3013 Shorthand III - Gregg & C21	4	1	4
3023 Machine Transcription	3	-	3
	17	5	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1011 Business Communications	3	-	3
1021 Human Relations	3	-	3
2911 Principles of Accounting I	3	2	3
3014 Transcription I - Gregg & C21	2	8	4
3024 Secretarial Procedures	3	-	3
	14	10	16
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1020 Effective Speaking	3	-	3
1512 Micro-Economics	3	-	3
1799 Survey of Data Processing	4	1	4
2912 Principles of Accounting II	3	2	3
3015 Transcription II - Gregg & C21	2	8	4
	15	11	17
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			101

Secretarial Technology General Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I	4	-	4
1799 Survey of Data Processing	4	1	4
or **Technical Elective			
2921 Introduction to Business I	2	-	2
3001 Typewriting I	1	4	2
3021 Office Procedures	3	-	3
	17	5	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1009 Business English	3	-	3
1102 Business Mathematics II	4	-	4
3002 Typewriting II	1	4	2
3022 Office Machines	2	3	3
3032 Records Management	3	-	3
2926 Principles of Management	3	-	3
	16	7	18
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1002 Communication Skills II	3	-	3
1521 Introduction to Sociology	3	-	3
1823 Business Law I	3	-	3
2905 Money and Banking	3	-	3
3027 Office Practicum	2	3	3
3003 Typewriting III	1	4	2
	15	7	17
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1011 Business Communications	3	-	3
1021 Human Relations	3	-	3
1832 Personnel Management	3	-	3
2911 Principles of Accounting I	3	2	3
3004 Typewriting IV	1	4	2
3024 Secretarial Procedures	3	-	3
	16	6	17

■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
1020 Effective Speaking	3	-	3
1512 Micro-Economics	3	-	3
2904 Office Management	3	-	3
2912 Principles of Accounting II	3	2	3
3028 Secretarial Practicum or	3	7	5
1712 Data Entry Systems	3	7	5
	18	16	22
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			105

**1804, 1811, 1836, 1840, 2911

Secretarial Technology Legal Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
1101 Business Mathematics I	4	-	4
2921 Introduction to Business I	2	-	2
3001 Typewriting I	1	4	2
3011 Shorthand I - Century 21 or	4	1	4
3010 Shorthand I - Gregg	4	1	4
3021 Office Procedures	3	-	3
	17	5	18
■ First Co-op Term			
9201 Cooperative Employment	3	40	2
■ Second School Term (January & April)			
1009 Business English	3	-	3
1102 Business Mathematics II	4	-	4
3002 Typewriting II	1	4	2
3012 Shorthand II - Century 21 or	4	1	4
3020 Shorthand II - Gregg	4	1	4
3022 Office Machines	2	3	3
3032 Records Management	3	-	3
	17	8	19
■ Second Co-op Term			
9202 Cooperative Employment	3	40	2
■ Third School Term (June & September)			
1002 Communication Skills II	3	-	3
1521 Introduction to Sociology	3	-	3
1823 Business Law I	3	-	3
3003 Typewriting III	1	4	2
3013 Shorthand III - Gregg & C21	4	1	4
1512 Micro-Economics	3	-	3
	17	5	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term (November & January)			
1824 Business Law II	3	-	3
3025 Legal Secretarial Procedures	1	4	2
2911 Principles of Accounting I	3	2	3
1021 Human Relations	3	-	3
3016 Legal Terms & Transcription I - Gregg & C21	2	8	4
1006 Business Communications	3	-	3
	15	14	18
■ Fourth Co-op Term			
9204 Cooperative Employment	4	40	3
■ Fifth School Term (April & June)			
3045 Legal Research Projects I	2	8	4
1799 Survey of Data Processing	4	1	4
2912 Principles of Accounting II	3	2	3
1020 Effective Speaking	3	-	3
3017 Legal Terms & Transcription II- Gregg & C21	2	8	4
	14	19	18
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			104

Engineering Technologies Division

The Engineering Technologies Division offers programs in many engineering disciplines to help meet the need for competent technicians which is required by the highly technological society in which Man lives. All programs are either two-year associate degree programs or one-year certificate programs.

The curriculum followed in each program provides the specialized technical instruction in the student's major area of concentration and the basic theory and skills in physics and mathematics. In addition, the student takes a variety of courses in communication skills, the humanities and the social sciences. These courses enable the student to express ideas in speech and writing and to better understand himself or herself, others and society.

As available, related co-op work experience plays an important part in the student's technical education. The student finds this work experience invaluable for an engineering career.

Upon successful completion of the two-year program the student is awarded an associate degree in applied science.

In order to insure a high degree of success in the technology selected, the student must be able to perform at established academic levels in mathematics, communication skills and reading comprehension. To aid in determining these levels it is required that all students planning to enter an engineering technology program, except those with appropriate transfer credits, take the college entrance test.

If the test indicates that a student does not meet certain academic levels, the student will be advised to take appropriate preparatory courses. Students are encouraged to test and finalize the admissions process as soon as possible. If any preparatory courses are needed, students may be able to enroll in them in the summer term, thereby bettering their chances to enter the technology in the September and/or November terms when most of the technologies coursework begins.

Aviation Technology

Ever since the pioneer flight of the Wright Brothers at Kitty Hawk, North Carolina, the aircraft industry has recorded milestone after milestone of achievement. Today, huge airplanes, carrying hundreds of passengers in luxurious comfort, have further shrunk the distance, geographically and culturally, between the continents.

The dramatic advances in Aviation have revolutionized the role of those who keep the planes safe for flying. Once they were called mechanics. Now, in the age of the jet, with electronic instruments and exotic support systems, they are called technicians in recognition of the increased knowledge and skill their task requires.

The Aviation program is designed to prepare aircraft and power-plant technicians for employment in commercial, corporate or general aviation.

The curriculum includes the theoretical and practical training designed to equip the student with the competence required to work effectively with all of these systems.

The student gains experience in working with a variety of types of aircraft and engines. The program includes eight academic terms and two co-op terms. Students in Group A co-op during the January and June terms of their second year and students in Group B co-op during the November and April terms of their second year. The first four academic terms concentrate on general and airframe and the last four terms on powerplant and business subjects.

Co-op positions are in general aviation. Graduates may be employed by fixed base operators, corporate plane operations or commercial airlines.

Aviation Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September)**				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
8100	Aircraft Orientation	3	2	3
7704	Basic Industrial Electricity	3	2	3
8102	Machine and Hand Tools	1	4	3
8103	Basic Aerodynamics & FAA Regulations	3	2	3
		17	10	19
■ **Second School Term (November)**				
*11	Engineering Math II	4	-	4
2291	Physics I - Kinematics/Dynamics	3	2	3
8120	Airframe Structures	5	5	5
8140	Aircraft Electrical Systems	5	5	5
		17	12	17
■ **Third School Term (January)**				
*11	Engineering Math III	4	-	4
7009	Engineering Graphics (Aviation)	1	4	2
2292	Physics II - Mechanics & Heat	3	2	3
8101	Welding Processes	1	4	2
8110	Fuels and Fuel Systems	1	4	2
8131	Aircraft Structures (Metal)	3	7	4
		13	21	17
■ **Fourth School Term (April)**				
1002	Communication Skills II	3	-	3
2293	Physics III - Electromagnetic Wave	3	2	3
8121	Airframe Hydraulic & Pneumatic Sys.	1	4	2
8122	Materials and Processes	2	3	3
8151	Airframe Assembly & Rigging	3	7	5
8142	Flight Line Maintenance I	1	4	2
		13	20	18
■ **Fifth School Term (June)**				
1021	Human Relations	3	-	3
8150	Aircraft Electrical Generating Sys.	3	2	3
8130	Aircraft Sys., Hyd. & Pneu. Land. Gear	3	7	5
8141	Aircraft Instr., Comm. & Nav. & Util. Sys.	5	5	5
8152	Flight Line Maintenance II	2	3	3
		16	17	19
■ **Sixth School Term (September)**				
1512	Micro-Economics	3	-	3
15	Non-tech Elective	3	-	3
8160	Powerplant Theory, Reciprocating	5	5	5
8161	Powerplant Lubrication	3	2	3
8162	Propellers	3	2	3
		17	9	17

■ Seventh School Term (November & January)			
1020 Effective Speaking	3	-	3
8170 Powerplant Theory, Turbine	5	5	5
8171 Fuel Metering Systems	3	2	3
8172 Ignition Systems	5	5	5
	16	12	16
■ Seventh Co-op Term			
9403 Cooperative Employment	1	40	3
■ Eighth School Term (April & June)			
1010 Technical Writing	3	-	3
8180 Turbine Powerplant Sys. & Components	6	4	6
8181 Powerplant Carburetor Fuel Sys.	6	4	6
8182 Airframe & Powerplant Comprehensive	3	2	3
	18	10	18
■ Eighth Co-op Term			
9404 Cooperative Employment	1	40	3
			147

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Biomedical Electronics Technology

The Biomedical Electronics Technology is a relatively new field created by the interaction of physicians, scientists and engineers. Together they have developed complex electronic apparatus now used to diagnose, prevent and treat disease. Various types of medical equipment have become almost indispensable tools of the modern physician and hospital.

Someone with a knowledge of why and how this equipment works must be available to keep it running safely and effectively. That person is a Biomedical Electronics Technician (BMET). In various sections of the country, the person may be referred to as a clinical technician, a medical instrument technician or some similar title. The technician's basic function, however, remains the same.

The BMET is employed by both hospitals and equipment manufacturers. Employers look for the following experience and education in a BMET:

- Knowledge of the theory of operation of medical equipment.
- Practical hands-on experience with medical equipment.
- Knowledge of the underlying physiological principles involved with the use of medical equipment.
- Knowledge of the safe clinical operation of such equipment.

A job description of a BMET in a hospital today would include the following:

- Installation of biomedical and related equipment
- Calibration of equipment.
- Inspection of equipment.
- Preventative maintenance and repair of equipment.
- Operation or supervision of equipment.
- Operation or supervision of safety and maintenance programs of equipment.

Occupational studies conducted by the Technical Education Research Centers (TERC) have indicated employment opportunities in the following areas:

- Hospitals—Opportunities in large metropolitan area hospitals and in community hospitals.
- Industry—Opportunities with medical equipment manufacturers, medical supply houses and contract maintenance companies.
- Government Services—Opportunities in Veterans Hospitals, Public Health Service and Research Institutes.

The entire medical field is growing. The U.S. Department of Labor **Occupational Outlook Handbook** (1976-77 edition) estimates that for the decade 1974-1985 there will be faster than average growth in the medical technician fields. One estimate puts the number of new openings for BMET's at 2000 per year nationally. This figure is expected to grow dramatically as the BMET field develops into a more defined profession.

For degreed, experienced BMET's, a certification program does exist. It is supervised by the Association for the Advancement of Medical Instrumentation (AAMI). The following requirements are needed to be admitted into a certification program.

- Two years experience as a BMET, plus a degree in a Biomedical Electronics Technology program, or
- Four years experience as a BMET, or
- Three years experience as a BMET, plus a degree in an Electronics Technology program.

Biomedical Electronics Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
*11 Engineering Math I	4	-	4
4001 Intro to Health Care	3	-	3
7710 D.C. Circuits	6	4	5
2210 Chemistry	3	2	3
7000 Engineering Orientation	1	-	1
	20	6	19
■ First Co-op Term			
9401 Cooperative Employment	1	40	2
■ Second School Term (January & April)			
1002 Communication Skills II (Recommended at night)	3	-	3
*11 Engineering Math II	4	-	4
7031 Introduction to Computer Programming	3	2	3
7720 A.C. Circuits	6	4	5
2291 Physics I - Kinematics/Dynamics	3	2	3
4011 General Anatomy	2	3	3
	21	11	21
■ Second Co-op Term			
9402 Cooperative Employment	1	40	2
■ Third School Term (June & September)			
*11 Engineering Math III	4	-	4
7730 Electronics I	5	5	5
7731 Digital Systems I	3	2	3
2292 Physics II - Mechanics & Heat	3	2	3
4012 Human Physiology I	3	2	4
	18	11	19
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3

■ Fourth School Term (November & January)			
1020 Effective Speaking	3	-	3
2293 Physics III - Electromagnetic Wave	3	2	3
1021 Human Relations	3	-	3
7741 Digital Systems II	3	4	3
7743 Communication Systems I (Rec. Elec.)	3	4	3
+7749 Biomedical Instrumentation I	3	2	3
	18	12	18
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
15 Non-tech Elective (Rec. at night)	3	-	3
1512 Micro-Economics	3	-	3
7751 Digital Systems III	4	3	5
7750 Electronics III	3	3	4
+7759 Biomedical Instrumentation II	3	4	4
	19	10	22
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			99

+OFFERED IN LATE AFTERNOON OR EARLY EVENING.

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Civil Engineering—Construction Technology

The Construction Option graduate will become a vital link between tradesman and engineer. The building construction team creates the structures of civilization: houses, roads, factories, skyscrapers and the hundred other shelters that make life worthwhile. It is challenging work! Success falls to those trained in how to plan, schedule, bid and manage the construction project. A basic understanding of engineering principles, including knowledge of new techniques ahead of the state-of-the-art, identifies a valued employee. Graduates work as field supervisors for builders, as draftsmen and office engineers for consulting firms, as laboratory technicians for testing companies. Job openings are as varied as the civil engineering profession. The rewards of the CTC program are great! The short two-year investment in time and study pays off as the quickest way to enter the construction field in positions of responsibility.

Civil Engineering-Construction Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
*11 Engineering Math I	4	-	4
2291 Physics I - Kinematics/Dynamics	3	2	3
2951 Real Estate Principles & Practice I	3	-	3
7910 Surveying Measurements	2	4	3
7911 Construction Methods	3	1	3
7000 Engineering Orientation	1	-	1
	19	7	20
■ First Co-op Term			
9401 Cooperative Employment	1	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
*11 Engineering Math II	4	-	4
2292 Physics II - Mechanics & Heat	3	2	3
7032 Intro. to Computer Programming (Civil)	3	2	3
7024 Civil Engineering Graphics I	2	4	3
7920 Surveying Calculations	4	2	3
	19	10	19
■ Second Co-op Term			
9402 Cooperative Employment	1	40	2
■ Third School Term (June & September)			
*11 Engineering Math III	4	-	4
7111 Engineering Materials	3	2	3
1021 Human Relations	3	-	3
7025 Civil Engineering Graphics II	1	4	2
7931 Light Construction	3	3	3
7934 Statics	3	2	3
	17	11	18
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3
■ Fourth School Term (November & January)			
2293 Physics III - Electromagnetic Wave	3	2	3
15 Non-tech Elective (Rec. at night)	3	-	3
1020 Effective Speaking	3	-	3
7944 Strength of Materials (Civil)	3	2	3
7945 Structural Design I	3	2	3
7943 Estimation and Inspection	3	2	3
7941 Heavy Construction (Rec. Elective)	3	2	3
	21	10	21
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
1512 Micro-Economics	3	-	3
7954 Structural Design II	2	4	3
7952 Contracts & Specifications	3	-	3
7953 Construction Management (Rec. Elective)	2	3	3
7955 Soils Engineering	2	3	3
	15	10	18
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			109

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Civil Engineering—Surveying Technology

The continuous increase in the value of land is resulting in a need for trained land managers. A vital member of the management team is the Land Surveyor.

Land Surveyors provide a variety of services including topographic mapping, field layout of construction projects, design and layout of urban subdivisions, establishment of property boundaries and preparation of legal descriptions.

Surveyors also work in specialized areas such as hydrographic mapping, aerial photogrammetry, geodetic control and mining surveys. In few other occupations is an individual given the opportunity to combine both outside field work with office work, and the flexibility of establishing a private practice or working for a larger firm.

The primary emphasis of the Surveying Option is to help prepare the student for eventual registration as a professional surveyor.

Students are exposed quickly to surveying terminology and equipment so that they can offer their co-op employer immediate service. CTC is equipped with conventional survey equipment: transits, tapes, builder's levels, etc., and with modern theodolites, electronic distance measuring equipment and automatic levels.

In a similar manner, drafting is covered early with emphasis on surveying related drawings: plats, contour maps, cross sections, profiles, etc.

Once the equipment and drafting familiarization is complete the student progresses into calculation related areas: traverses, coordinate geometry, area determination, etc. At this stage the student becomes quite familiar with handheld calculators, and is exposed to programmable calculators and larger computer systems. This completes preparation in the "basic skills."

Many areas of surveying follow. They include design and layout of horizontal, vertical and spiral transition curves, state plane coordinate calculations, document research, land survey systems, deed writing, evaluation of evidence and astronomic observations. In the fifth term students complete an actual field project from preliminary research to final resolution and platting.

Aside from the surveying courses students also take courses in related areas such as real estate, site development and drainage control.

Civil Engineering-Surveying Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September & November)**				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
2291	Physics I - Kinematics/Dynamics	3	2	3
2951	Real Estate Principles & Practice I	3	-	3
7910	Surveying Measurements	2	4	3
7911	Construction Methods	3	1	3
7000	Engineering Orientation	1	-	1
		19	7	20
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	2
■ **Second School Term (January & April)**				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
2292	Physics II - Mechanics & Heat	3	2	3
7032	Introduction to Computer Programming (Civil)	3	2	3
7024	Civil Engineering Graphics I	2	4	3
7920	Surveying Calculations	4	2	3
		19	10	19
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	2
■ **Third School Term (June & September)**				
*11	Engineering Math III	4	-	4
7111	Engineering Materials	3	2	3
1021	Human Relations	3	-	3
7025	Civil Engineering Graphics II	1	4	2
7930	Route Surveying	3	3	3
2953	Real Estate Law (Recommended Elective)	5	-	3
		19	9	18
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term (November & January)**				
2293	Physics III - Electromagnetic Wave	3	2	3
15	Non-tech Elective (Rec. at night)	3	-	3
1020	Effective Speaking	3	-	3
7949	Drainage Control Systems	3	2	3
7940	Elements of Land Surveying	3	2	3
7948	Site Development	3	2	3
7943	Estimation and Inspection (Rec. Elect.)	3	2	3
		21	10	21
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	3
■ **Fifth School Term (April & June)**				
1010	Technical Writing	3	-	3
1512	Micro Economics	3	-	3
7950	Surveying Field Project	1	6	3
7952	Contracts & Specifications	3	-	3
7957	Potable and Wastewater Treatment	3	1	3
2911	Principles of Accounting	3	2	3
		16	9	18
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	3
				109

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Climate Control Technology

Man cannot live without the air that envelops the earth, nor can Man always live comfortably, efficiently and healthily with it. Even in Man's shelters the air may be too cold or too hot, too warm or too dry, too dirty with dust, pollen or, in recent years, pollutant. For some sixty centuries of civilization Man lacked the tools and the technology to condition the air in dwellings to make them more habitable.

This generation is the first to develop these tools and master the technology. Air conditioning, at first considered a luxury, is rapidly being regarded as another of Man's necessities. Already one in every eight homes is at least partly air conditioned and one in every twelve completely so. Most homes under construction are being built with central air conditioning. Few apartment houses, commercial buildings or industrial plants are being built without it.

The rapid increased demand for "environmental control" has generated the new industry, Air Conditioning, with a new array of career opportunities. Manufacturers and dealers need technically trained personnel to research, develop, design, make, sell, install, service and maintain air

conditioning installations in residences, offices and plants. In some cases these units merely heat and cool the air; in others they clean and moisture-control it as well. In many instances the conditioned air serves primarily creature comfort; in other instances it is needed to safeguard sophisticated equipment, specialized industrial processes or, indeed, human life itself.

Refrigeration processes and equipment constitute a major related responsibility of this field.

The Air Conditioning industry has an acute need for trained technicians and affords them exceptional career possibilities.

Climate Control Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7510	Elements of Refrigeration	4	2	5
7701	Electrical Fundamentals I	3	2	3
7000	Engineering Orientation	1	-	1
		17	8	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
7702	Electrical Fundamentals II	3	2	3
7016	Engineering Graphics (Sheet Metal Layout)	2	2	3
7520	Elements of Heating	3	2	3
2291	Physics I - Kinematics/Dynamics	3	2	3
		18	8	19
■ Second Co-op Term				
9402	Cooperative Employment	1	40	2
■ Third School Term (June & September)				
*11	Engineering Math III	4	-	4
7530	Air Conditioning Principles I	3	2	3
7532	Sheet Metal Installation Techniques	2	2	3
2292	Physics II - Mechanics & Heat	3	2	3
7040	Industrial Management & Supervision	3	-	3
7531	Air Conditioning Applications	3	2	3
		18	8	19
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term (November & January)				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
2293	Physics III - Electromagnetic Wave	3	2	3
7540	Air Conditioning Principles II	5	2	5
7541	Air Conditioning Design I	3	4	4
		17	8	18
■ Fourth Co-op Term				
9404	Cooperative Employment	1	40	3
■ Fifth School Term (April & June)				
1010	Technical Writing	3	-	3
1512	Micro-Economics	3	-	3
15	Non-tech Electives	3	-	3
7550	Air Conditioning Principles III	3	2	3
7551	Air Conditioning Design II	3	7	5
7552	Air Conditioning Controls	3	2	3
		18	11	20
■ Fifth Co-op Term				
9405	Cooperative Employment	1	40	3
				108

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Communications Electronics Technology

Initially the term "electronics" referred primarily to the Communications specialty (for example, radio broadcasting, two-way radio, overseas communications). Even today Communications is the bridge between nearly all other electronic specialties. Since before World War II expanding job opportunities have existed in the field beyond the radio and television broadcast engineering types of jobs. Typical jobs involve data transmission, telemetry, microwaves, space command and control, message encoding and decoding (digitizing) and modern telephone links. These and many other uses of modern communications are continuously expanding the need for highly trained technicians, engineering aids, field service specialists and operators. Typical equipment used in the lab are RF signal and sweep generators, counters, panoramic receivers and AM and FM transmitters.

Communications Electronics Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7710	D.C. Circuits	6	4	5
2291	Physics I - Kinematics/Dynamics	3	2	3
7000	Engineering Orientation	1	-	1
		19	10	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
7031	Intro. to Computer Programming	3	2	3
7720	A.C. Circuits	6	4	5
2292	Physics II - Mechanics & Heat	3	2	3
		19	8	18
■ Second Co-op Term				
9402	Cooperative Employment	1	40	2

■ **Third School Term (June & September)**				
*11	Engineering Math III	4	-	4
7040	Industrial Management and Supervision	3	-	3
7730	Electronics I	5	5	5
7731	Digital Systems I	3	2	3
2293	Physics III - Electromagnetic Wave	3	2	3
		18	9	18
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term (November & January)**				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
15	Non-tech Elective	3	-	3
7740	Electronics II	4	3	4
7741	Digital Systems II	3	4	3
7743	Communication Systems I	3	4	3
		19	11	19
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	3
■ **Fifth School Term (April & June)**				
1010	Technical Writing	3	-	3
1512	Micro-Economics	3	-	3
7753	Communication Systems II	4	4	4
7754	FCC License Preparation	3	-	2
7750	Electronics III	3	3	4
7	Technical Elective	-	-	3
		16	7	19
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	3
				106

Recommended Technical Electives

7751	Digital Systems III
7752	Electronics Project
7758	Industrial Motors & Control
7040	Industrial Management & Supervision

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Electrical Power Engineering Technology

Recent industrial trends towards energy conservation and computerized equipment call for more reliable power systems. New designs and devices are required to meet not only reliability requirements, but also compliance with environmental standards. Alternate energy sources such as solar, geothermal and nuclear need to be harnessed, controlled and distributed. The development of new light sources and new structural materials has completely revolutionized the electrical power field.

All of these changes and many more indicate an unbelievable demand for qualified Electrical Power technicians. Those well-trained individuals, who understand the basic operational theory of power systems, can use that knowledge to solve problems in designs or maintenance. Electrical Power Technology consists of a design option which is concerned with laying out power and control circuits, calculating and sizing equipment, and designing lighting and heating systems. The maintenance option is concerned with training in the following areas: HVAC, electrical systems of all types and motors and controls. Both options are comprised of the same courses until the fifth term when students will be able to choose their area of course study. Electrical Power technicians will be instructed in the use of the National Electric Code and will also receive training in high voltage safety, estimation and design drafting.

The Electrical Power program has been put together with the advice of industry, the very same people who hire the co-op student. As a result the program is continually changing to meet the needs of industry and thereby offering good employment opportunities for its graduates. Previous graduates have found positions as designer draftsmen, maintenance personnel for large industrial concerns, electrical inspectors, independent contractors, cost estimators, lighting designers, industrial sales representatives, troubleshooters for sophisticated controllers and union electricians. Some have gone on to receive a baccalaureate degree in electrical engineering.

Electrical Power Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September & November)**				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
2291	Physics I - Kinematics/Dynamics	3	2	3
7010	Engineering Graphics I	2	4	3
7710	D.C. Circuits	6	4	5
7000	Engineering Orientation	1	-	1
		19	10	19
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	2
■ **Second School Term (January & April)**				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
2292	Physics II - Mechanics & Heat	3	2	3
7018	Engineering Graphics (Electrical)	1	3	2
7720	A.C. Circuits	6	4	5
7725	Electrical Lighting Design	3	-	3
		20	9	20
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	2
■ **Third School Term (June & September)**				
*11	Engineering Math III	4	-	4
1512	Micro-Economics	3	-	3
7736	Electrical Wiring Design I	3	2	3
7734	Electrical Machinery & Controls I	3	3	3
2293	Physics III - Electromagnetic Wave	3	2	3
7111	Engineering Materials	3	2	3
		19	9	19
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term (November & January)**				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3

7744 Electrical Machinery & Controls II	3	3	4
7746 Electrical Wiring Design II	3	2	3
7035 Computer Applications	3	2	3
7747 Electrical Power Distribution	3	1	3
	18	8	19
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
15 Non-tech Elective	3	-	3
7755 Electrical Estimating	2	3	3
7757 Electrical Maintenance	3	2	3
7 Technical Elective	-	-	3
7760 Electrical Monitoring Systems	3	-	3
	14	5	18
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			108

Recommended Technical Electives

7731	Digital Systems I
7135	Industrial Fluid Power Systems
7145	Statics & Strength of Materials
7040	Industrial Management & Supervision
7501	HVAC Plant Maintenance
7799	Special Problems Seminar in Electrical Design

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Electro-Mechanical Engineering Technology

The technological impact of automation in American industry, the rapidly expanding uses for electronic computers, and the tremendous increase in Man's technical knowledge have increased the need for a large number of technically trained personnel who understand both the mechanical and electrical phases of automated systems.

In an effort to meet this growing need for the highly trained technician, Cincinnati Technical College, with the assistance of interested professionals from local industry, developed the Electro-Mechanical Technology program. The program provides study and practice in measurement systems, automation and control systems, special purpose and electronic devices in production, and fabrication control in manufacturing.

The Electro-Mechanical students enjoy tremendous flexibility in job opportunities available upon graduation because of their well-rounded background in both the electrical and mechanical engineering fields. Graduates have found positions in field service of industrial equipment, research and development of industrial robots, electronic measurement and testing, equipment design, supervisory and numerous other positions. Some graduates have also furthered their education and have received baccalaureate and masters degrees.

Electro-Mechanical Engineering Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills I	3	-	3
*11 Engineering Math I	4	-	4
7010 Engineering Graphics I	2	4	3
7710 D.C. Circuits	6	4	5
2291 Physics I - Kinematics/Dynamics	3	2	3
7000 Engineering Orientation	1	-	1
	19	10	19
■ First Co-op Term			
9401 Cooperative Employment	1	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
*11 Engineering Math II	4	-	4
7031 Intro. to Computer Programming	3	2	3
7720 A.C. Circuits	6	4	5
2292 Physics II - Mechanics & Heat	3	2	3
	19	8	18
■ Second Co-op Term			
9402 Cooperative Employment	1	40	2
■ Third School Term (June & September)			
*11 Engineering Math II	4	-	4
1021 Human Relations	3	-	3
7732 Industrial Control Electronics	4	6	5
7731 Digital Systems I	3	2	3
7135 Industrial Fluid Power Systems	4	4	4
	18	12	19
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3
■ Fourth School Term (November & January)			
1020 Effective Speaking	3	-	3
1512 Micro-Economics	3	-	3
7103 Machine Processes (Rec. Elective)	1	4	2
7146 Electro-Mechanical Controls (Servomechanisms)	4	6	5
7145 Statics & Strength of Materials I	3	2	3
2293 Physics III-Electromagnetic Wave	3	2	3
	17	14	19
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
15 Non-tech Elective	3	-	3
7758 Industrial Motors & Controls	3	2	3
7142 Mechanisms Analysis (Rec. Elective)	3	2	3
7157 Electro-Mechanical Controls II (Microprocessors)	2	8	4
7144 Systems Development - N.C. (Rec. Elec.)	1	2	2
	15	14	18
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			106

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Electronics Engineering Technology

Since the advent of space technologies the field of Electronics has experienced an astronomical growth in technological advancement and application to our everyday lives. This growth has resulted in a need for knowledgeable technicians to supply services required by industry as electronics is applied to their products.

Although the transmission and reception of electromagnetic radiation for radio, television, telephones and radar is still a large area in electronics, the computer has ushered in a whole new age of digital electronics, where everything from doorbells and calculators to machine tools and rocketships utilize electronic circuitry to process information and make control decisions. The microprocessor is making a large impact in this area for industry because it is a relatively low cost, compact, computer-like device which is capable of performing the specific functions required by industry.

Manufacturers and researchers are therefore looking for persons who have

- Knowledge of the theory of operation of electronic equipment;
- Practical training and "hands-on" experience;
- Ability to apply their knowledge of electronics to the product area of the employer; and
- Willingness to work in a production type of role on the job.

A typical job description for the Digital Electronics technician would include

- Repair and/or maintenance of electronically controlled equipment;
- Inspection and final check-out of such equipment before shipment to customer;
- Installation and start-up in the field for the customer;
- Calibration of equipment;
- Operation or operational supervision of electronic equipment; and
- Engineer's assistant in development of new products.

The field of Electronics is constantly in a state of change and updating, and the need for qualified, knowledgeable technicians is correspondingly on the increase nationwide. Computer aided manufacturing and computer aided drafting are concepts only now being implemented, and the next decade promises to offer an ever-increasing demand for the Electronics Technician.

Electronics Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7710	D.C. Circuits	6	4	5
2291	Physics I - Kinematics/Dynamics	3	2	3
7000	Engineering Orientation	1	-	1
		19	10	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
7031	Intro. to Computer Programming	3	2	3
7720	A.C. Circuits	6	4	5
2292	Physics II - Mechanics & Heat	3	2	3
		19	8	18
■ Second Co-op Term				
9402	Cooperative Employment	1	40	2
■ Third School Term (June & September)				
*11	Engineering Math III	4	-	4
7040	Industrial Management and Supervision	3	-	3
7730	Electronics I	5	5	5
7731	Digital Systems I	3	2	3
2293	Physics III - Electromagnetic Wave	3	2	3
		18	9	18
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term (November & January)				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
15	Non-tech Elective	3	-	3
7740	Electronics II	4	3	4
7741	Digital Systems II	3	4	3
7743	Communication Systems I (Recommended Elective)	3	4	3
		19	11	19
■ Fourth Co-op Term				
9404	Cooperative Employment	1	40	3
■ Fifth School Term (April & June)				
1010	Technical Writing	3	-	3
1512	Micro-Economics	3	-	3
7751	Digital Systems III	4	3	5
7750	Electronics III	3	3	4
7	Technical Elective	-	-	3
		13	6	18
■ Fifth Co-op Term				
9405	Cooperative Employment	1	40	3
				105

Recommended Technical Electives

7752	Electronics Project
7753	Communication Systems II
7754	FCC License Preparation
7758	Industrial Motors & Controls
7132	Hydraulics & Pneumatics I

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Industrial Engineering Technology

A new plant is to be built. It will receive raw material for processing, fabricating, assembling and out-put finished products.

A lot of questions need to be answered. What's the best layout for the plant? How can the materials be processed most efficiently? What machines should be used? How should they be spaced? How can the employees be

Cincinnati Technical College

APPLICATION FOR ADMISSION

All students (day or evening) who plan to earn a degree must complete this application.

A $20.00 application fee (non-refundable) made payable to **Cincinnati Technical College** *must be submitted with this application. If this application is to be mailed, please do not send cash. A check or money order is preferred.*

PLEASE TYPE OR PRINT CLEARLY IN ink.

NAME _____ (last) _____ (first) _____ (middle) _____ (maiden)

CURRENT ADDRESS _____ (number and street) (city) (county) (state) (zip)

Length of Residence at Current Address _____ Yrs. _____ Mos.

TELEPHONE NUMBER ☐☐☐ - ☐☐☐ - ☐☐☐☐ (area code)

☐☐☐ - ☐☐ - ☐☐☐☐
SOCIAL SECURITY NUMBER

ARE YOU A RESIDENT OF OHIO? Yes _____ No _____

ARE YOU A U.S. CITIZEN? Yes _____ No _____

ARE YOU A RESIDENT ALIEN? Yes _____ No _____

THE INFORMATION IN THIS SECTION IS NEEDED TO COMPLETE FEDERAL AND STATE ENROLLMENT REPORTS.

SEX: Male _____ Female _____

MARITAL STATUS: Single _____ Married _____

DATE OF BIRTH: ☐☐ (day) _____ (month) 19☐☐ (year)

RACIAL/ ETHNIC GROUP: Black _____ Caucasian _____ American Indian or Alaskan Native _____ Asian or Pacific Islander _____ Hispanic _____

Do you have any health problems or physical disabilities that might effect your educational process?

Yes _____ No _____ If yes, please indicate: _____

HIGH SCHOOL ATTENDED _____ (name) _____ (state) YEAR OF GRADUATION _____

If you did not graduate, have you successfully completed the high school equivalency examination (GED)?

Yes _____ No _____ Year _____

An official high school transcript must be submitted before your interview with the program coordinator.

UNIVERSITY, COLLEGE OR BRANCH COLLEGE PREVIOUSLY ATTENDED:

_____ (previous college attended) _____ (major field) _____ (dates attended)

_____ (previous college attended) _____ (major field) _____ (dates attended)

An official college transcript must be submitted before your interview with the program coordinator.

HAVE YOU PREVIOUSLY APPLIED TO ENTER CTC? Yes _____ No _____ If yes, when? 19☐☐

HAVE YOU PREVIOUSLY ENROLLED IN CTC? Yes _____ No _____ If yes, what program? _____

Day ☐ or Evening ☐ _____ (withdrawal date)

WHEN DO YOU WISH TO ENTER CTC? Term Jan. ☐ April ☐ June ☐ Sept. ☐ Nov. ☐ Year 19☐☐

WILL YOU BE ENTERING AS A: Day Student ☐ or Evening Student ☐

WILL YOU BE ATTENDING: Full-Time ☐ or Part-Time ☐

PLEASE INDICATE THE PROGRAM FOR WHICH YOU WISH TO APPLY:

FIRST CHOICE: _____

SECOND CHOICE: _____

IF YOU CANNOT SPECIFY A PROGRAM, INDICATE THE TECHNOLOGY DIVISION OR "UNDECIDED."

ALLIED HEALTH ☐ BUSINESS ☐ ENGINEERING ☐ MATH/SCIENCE ☐ UNDECIDED ☐

EMPLOYMENT HISTORY

EMPLOYER	TYPE OF WORK	DATES

ONLY FOREIGN STUDENTS NEED COMPLETE THIS SECTION.

COUNTRY OF CITIZENSHIP _____ TYPE OF VISA HELD _____

SPONSOR IN THE UNITED STATES _____ (*last name*) _____ (*first*) _____ (*middle*)

SPONSOR'S ADDRESS _____ (*number and street*) _____ (*city*) _____ (*state*) _____ (*zip*)

SPONSOR'S TELEPHONE NUMBER ☐☐☐ - ☐☐☐ - ☐☐☐☐

SPONSOR'S OCCUPATION: _____

Students from non-English speaking countries must submit results of the TOEFL examination with this application.

PERSON TO BE NOTIFIED IN CASE OF HEALTH OR ACCIDENT EMERGENCY:

NAME _____ (*last*) _____ (*first*) _____ (*middle*)

TELEPHONE NUMBER ☐☐☐ - ☐☐☐ - ☐☐☐☐

ADDRESS _____ (*number and street*) _____ (*city*) _____ (*state*) _____ (*zip*)

ARE ANY OF YOUR EDUCATIONAL OR EMPLOYMENT RECORDS IN ANOTHER OR PREVIOUS NAME? NO ☐ YES ☐

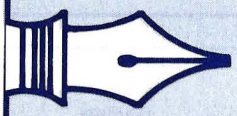
IF SO, PLEASE ENTER THE NAME HERE. _____

I HEREBY CERTIFY THAT THE INFORMATION PROVIDED IN THIS APPLICATION IS TRUE AND ACCURATE.

_____ (*date*) 19_____ _____ (*signature*)

over please

CINCINNATI TECHNICAL COLLEGE DOES NOT DISCRIMINATE ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN OR SEX IN THE ADMISSION OF STUDENTS OR IN ANY ACTIVITY CONDUCTED BY CINCINNATI TECHNICAL COLLEGE. WE SUBSCRIBE TO THE STATE AND FEDERAL LAWS WHICH PROHIBIT DISCRIMINATION DUE TO PHYSICAL DISABILITIES. CINCINNATI TECHNICAL COLLEGE IS AN EQUAL OPPORTUNITY INSTITUTION.



Reminder Check List

HAVE YOU

- ☐ COMPLETED ALL INFORMATION IN THE APPLICATION
- ☐ SIGNED AND DATED THE APPLICATION
- ☐ HAD YOUR HIGH SCHOOL TRANSCRIPT MAILED
- ☐ HAD YOUR COLLEGE TRANSCRIPT MAILED (IF APPLICABLE)
- ☐ APPLIED FOR VETERANS BENEFITS (IF APPLICABLE)
- ☐ APPLIED FOR FINANCIAL AID (IF APPLICABLE)
- ☐ ENCLOSED THE APPLICATION FEE. MAKE CHECKS OR MONEY ORDERS PAYABLE TO CINCINNATI TECHNICAL COLLEGE. **DO NOT SEND CASH.**
- ☐ MADE ARRANGEMENTS WITH THE ADMISSIONS OFFICE TO TAKE THE DIFFERENTIAL APTITUDE TEST (DAT). THIS ENTRANCE TEST IS ADMINISTERED AT THE COLLEGE.

(STUDENTS WHO HAVE TAKEN THE SAT, ACT, WHO HAVE PREVIOUS COLLEGE EXPERIENCE, OR WORK EXPERIENCE MAY HAVE THE ENTRANCE TEST WAIVED WITH APPROVAL OF THE PROGRAM COORDINATOR. CHECK WITH THE CTC ADMISSIONS OFFICE.)

ADMISSIONS OFFICE
CINCINNATI TECHNICAL COLLEGE
3520 Central Parkway
Cincinnati, Ohio 45223
513-559-1520

motivated to do high quality work? How can costs be lowered to meet those of efficient competitors?

The Industrial Engineering technician is one of the members of the productivity team interested in finding the solutions to these problems. This type of technician is used by industry in both new and long established plants to measure and analyze production data and devise means of improving the methods of production. These same problems need to be resolved in hospitals, transportation, warehousing, major department store chains and government agencies.

Graduates of this program may begin full-time work as technicians in these areas: methods, time-analysis, work measurement, production control, quality control, wage and job evaluation, material handling, plant layout. Able graduates can advance to more responsible positions with additional training and experience. The computer terminal is a normal classroom tool for use by Cincinnati Technical College students.

Cooperative training positions are in large and small industrial plants, hospitals and other areas mentioned above.

Industrial Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September & November)**				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7409	Industrial Safety	1	2	2
7111	Engineering Materials	3	2	3
7103	Machine Processes	1	4	2
7410	Materials Handling	3	2	3
7000	Engineering Orientation	1	-	1
		16	10	18
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	2
■ **Second School Term (January & April)**				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
7010	Engineering Graphics I	2	4	3
7402	Manufacturing Processes	3	-	3
7132	Hydraulics and Pneumatics I	3	2	3
2291	Physics I - Kinematics/Dynamics	3	2	3
		18	8	19
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	2
■ **Third School Term (June & September)**				
1179	Technical Statistics	4	-	4
1021	Human Relations	3	-	3
7430	Time and Motion Study	3	2	3
2292	Physics II - Mechanics & Heat	3	2	3
7144	Systems Development - NC	1	2	2
7704	Basic Industrial Electricity	3	2	3
		17	8	18
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term (November & January)**				
1020	Effective Speaking	3	-	3
7040	Industrial Supervision and Management	3	-	3
7440	Plant Layout	3	4	4
7441	Quality Control	3	2	3
7035	Computer Applications	3	2	3
2293	Physics III - Electromagnetic Wave	3	2	3
		18	10	19
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	3
■ **Fifth School Term (April & June)**				
1010	Technical Writing	3	-	3
1512	Micro-Economics	3	-	3
15	Non-tech Elective	3	-	3
7451	Industrial Engineering Project (Rec. Elec.)	2	5	3
7450	Production Cost and Control	3	-	3
7452	Industrial Hygiene Measurement	1	4	2
7	Technical Elective	-	-	3
		15	9	20
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	3
				107

Recommended Technical Electives

7145	Statics & Strength of Materials I
7152	Hydraulics & Pneumatics II
7147	Tool, Jig, & Fixture
7114	Machine Processes II
7731	Digital Systems I

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Manufacturing Engineering Technology

Of the many engineering disciplines, Manufacturing Engineering is the newest and most vital in solving the world's productivity problem. Today as never before, industry depends on the Manufacturing Engineer to start the wheels of production turning. The manufacturing process begins with a concept, usually a mental picture of a needed product. The process ends with parts flowing off a production line. In between lies the industrial function called "manufacturing engineering." Its role is to develop the production process whereby the designer's concept is translated into manufactured goods at the lowest possible cost. Positions open to a Manufacturing Engineer are process engineering, tool engineering, standards, plant engineering, administration and control and research.

CTC's Manufacturing Engineering program has two options: machine and welding. The Machining Option concentrates on the operation of all machines in manufacturing with emphasis on drilling, lathes and numerical control. The Welding Option concentrates on the different techniques of modern welding and includes a strong background in materials.

Manufacturing Engineering-Machining Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7111	Engineering Materials	3	2	3
7010	Engineering Graphics I	2	4	3
7103	Machine Processes	1	4	2
7402	Manufacturing Processes	3	-	3
7000	Engineering Orientation	1	-	1
		17	10	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
2291	Physics I - Kinematics/Dynamics	3	2	3
7011	Engineering Graphics II	2	4	3
7114	Machine Processes II	2	4	3
7113	Material Processes & Fabrication	2	4	3
		16	14	19
■ Second Co-op Term				
9402	Cooperative Employment	1	40	2
■ Third School Term (June & September)				
*11	Engineering Math III	4	-	4
2292	Physics II - Mechanics & Heat	3	2	3
7035	Computer Applications	3	2	3
1512	Micro-Economics	3	-	3
7144	Systems Development-N.C.	1	2	2
7430	Time and Motion Study	3	2	3
		17	8	18
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term (November & January)				
1010	Technical Writing	3	-	3
7704	Basic Industrial Electricity	3	2	3
7132	Hydraulics and Pneumatics	3	2	3
1021	Human Relations	3	-	3
7441	Quality Control	3	2	3
2293	Physics III - Electromagnetic Wave	3	2	3
		18	8	18
■ Fourth Co-op Term				
9404	Cooperative Employment	1	40	3
■ Fifth School Term (April & June)				
1020	Effective Speaking	3	-	3
15	Non-tech Elective	3	-	3
7145	Statics & Strength of Materials	3	2	3
7153	Production Methods, Cost and Control	3	2	3
7040	Industrial Management and Supervision	3	-	3
7147	Tool, Jig, and Fixture	3	4	4
		18	8	19
■ Fifth Co-op Term				
9405	Cooperative Employment	1	40	3
				106

Recommended Technical Electives

7140	Strength of Materials II
7152	Hydraulics & Pneumatics II
7330	Fiber Reinforced Plastics
7501	H.V.A.C. Plant Maintenance
7121	Metallurgy of Materials

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Manufacturing Engineering-Welding Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7111	Engineering Materials	3	2	3
7000	Engineering Orientation	1	-	1
7010	Engineering Graphics I	2	4	3
7402	Manufacturing Processes	3	-	3
7810	Welding Processes & Techniques I	3	3	3
		19	9	20
■ First Co-op Term				
9401	Cooperative Employment	1	40	2
■ Second School Term (January & April)				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
2291	Physics I - Kinematics/Dynamics	3	2	3
7820	Welding Processes II (ARC)	3	3	4
7704	Basic Industrial Electricity	3	2	3
		16	7	17
■ Second Co-op Term				
9402	Cooperative Employment	1	40	2
■ Third School Term (June & September)				
*11	Engineering Math III	4	-	4
2292	Physics II - Mechanics & Heat	3	2	3
1512	Micro-Economics	3	-	3
7035	Computer Applications	3	2	3
7017	Steel Fabrication	2	2	3
7830	Welding Processing III (Inert Gas)	3	3	4
		18	9	20
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term (November & January)				
1010	Technical Writing	3	-	3
1021	Human Relations	3	-	3
2293	Physics III - Electromagnetic Wave	3	2	3
7121	Metallurgy of Materials	3	2	3
7145	Statics & Strength of Materials	3	2	3
7840	Welding Processes IV	3	3	4
		18	9	19

■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1020 Effective Speaking	3	-	3
15 Non-tech Elective	3	-	3
7441 Quality Control	3	2	3
7040 Industrial Management & Supervision	3	-	3
7158 Manufacturing Methods & Estimation	3	4	4
7 Tech Elective	-	-	3
	15	6	19
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			108

Recommended Technical Electives

7140 Strength of Materials II
7132 Hydraulics and Pneumatics I
7430 Time and Motion Study
7147 Tool, Jig, & Fixture

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Mechanical Design Technology

The Mechanical Design program prepares the student for careers that range from detail drafting to layout and design of mechanical systems, and from numerical control programming to field service of machine tools. After graduation, and with experience, graduates are now holding responsible supervision jobs in design offices. Others have gone on to complete a four year baccalaureate degree program.

Industry looks for people with knowledge of scientific theory and with mathematical skills to help solve technical problems that arise in many areas of design and manufacturing. The co-op experience helps provide the practical experience to go with the theory which adds to a graduate's employability.

A student prepares for the Mechanical Design field by completing a curriculum which places emphasis on mathematics, science and technical subjects. Science and technical courses are taught with laboratory experiences of measurement, observation and report writing. The "hands-on" laboratory experience becomes part of a student's skill and knowledge.

Basic and non-technical subjects in the curriculum are required by the Ohio Board of Regents for graduation, and as preparation for work towards an advanced degree. The technical or core subjects are the result of decisions reached by an advisory board and the College staff with knowledge of the skills and theory graduates need to be employed in the Cincinnati area.

A graduate in Mechanical Design can answer job ads which say, ". . . designing machines that involve cams, gears, linkages . . .," or ". . . work from design sketches of an engineer . . .," or ". . . recommend design changes . . .," or ". . . develop a layout from rough sketches . . ."

Mechanical Design Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September & November)			
1001 Communication Skills	3	-	3
*11 Engineering Math I	4	-	4
2291 Physics I - Kinematics/Dynamics	3	2	3
7010 Engineering Graphics I	2	4	3
7704 Basic Industrial Electricity	3	2	3
7100 Mechanical Drives & Linkages	3	-	3
7000 Engineering Orientation	1	-	1
	19	8	20
■ First Co-op Term			
9401 Cooperative Employment	1	40	2
■ Second School Term (January & April)			
1002 Communication Skills II	3	-	3
*11 Engineering Math II	4	-	4
7011 Engineering Graphics II	2	4	3
7103 Machine Processes	1	4	2
7111 Engineering Materials	3	2	3
2292 Physics II - Mechanics & Heat	3	2	3
	16	12	18
■ Second Co-op Term			
9402 Cooperative Employment	1	40	2
■ Third School Term (June & September)			
*11 Engineering Math III	4	-	4
7030 Intro. to Computer Programming	3	2	3
1021 Human Relations	3	-	3
7130 Statics	3	2	3
7013 Engineering Graphics (Descriptive Geometry)	2	2	3
7142 Mechanisms Analysis	3	2	3
	18	8	19
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3
■ Fourth School Term (November & January)			
1020 Effective Speaking	3	-	3
2293 Physics III - Electromagnetic Wave	3	2	3
15 Non-tech Elective	3	-	3
7140 Strength of Materials	4	2	4
7132 Hydraulics & Pneumatics I	3	2	3
7144 Systems Development - NC	1	2	2
	17	8	18
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April & June)			
1010 Technical Writing	3	-	3
1512 Micro-Economics	3	-	3
7150 Machine Design	4	3	5
7151 Tool Engineering Design	3	2	3
7152 Hydraulics & Pneumatics II	1	2	2
7 Technical Elective	-	-	3
	14	7	19
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	3
			107

Recommended Technical Electives

7040	Industrial Management & Supervision
7402	Manufacturing Processes
7113	Material Process & Fabrication
7153	Production Methods, Cost & Control
7731	Digital Systems I

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Plastics Engineering Technology

Few industries offer career opportunities which compare to those in Plastics. While the average industry the past several decades has been expanding annually at a rate of about 4.5 percent, the Plastics industry has recorded spectacular annual growth rates of twelve to fourteen percent. The volume of plastics produced is expected to exceed that of iron and steel by the 1980's. Two hundred and fifty thousand more employees will be needed in the Plastics field in the Seventies. Three of every five firms in the industry say they need graduates of associate degree programs.

Plastics is a forward-looking industry. The state-of-the-art has been advanced rapidly in response to the increasing demands of the market. Appliances, electrical and electronic devices, packaging, automobiles, aircraft—these and countless other products have been improved through the use of plastics.

Plastics, then, offers exciting challenges to those with ambition, talent and imagination.

The curriculum in Plastics Technology as offered by the Cincinnati Technical College is designed to provide the student with the necessary technical background in plastics materials, testing and fabrication by means of various manufacturing processes. Regular classroom instruction is supplemented by laboratory experiments and site training.

Plastics technologists trained in this curriculum will have an excellent background suitable for application to positions in the materials, equipment and fabrication areas of industries concerned with plastics.

Plastics Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term (September & November)**				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7111	Engineering Materials	3	2	3
7010	Engineering Graphics I	2	4	3
7402	Manufacturing Processes	3	-	3
7311	Thermo-Forming Methods	3	2	3
7000	Engineering Orientation	1	-	1
		19	8	20
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	2
■ **Second School Term (January & April)**				
1002	Communication Skills II	3	-	3
*11	Engineering Math II	4	-	4
7310	Compression & Transfer Castings	3	2	3
7011	Engineering Graphics II	2	4	3
7132	Hydraulics & Pneumatics I	3	2	3
2291	Physics I - Kinematics/Dynamics	3	2	3
		18	10	19
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	2
■ **Third School Term (June & September)**				
*11	Engineering Math III	4	-	4
1512	Micro-Economics	3	-	3
2292	Physics II - Mechanics & Heat	3	2	3
7704	Basic Industrial Electricity	3	2	3
7320	Injection & Extrusion Molding	3	4	4
7103	Machine Processes	1	4	2
		17	12	19
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term (November & January)**				
1010	Technical Writing	3	-	3
15	Non-tech Elective	3	-	3
7035	Computer Applications	3	2	3
2293	Physics III - Electromagnetic Wave	3	2	3
7144	Systems Development - NC	1	2	2
7342	Product, Mold & Tool Design	2	4	3
7040	Industrial Supervision and Management	3	-	3
		18	10	20
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	3
■ **Fifth School Term (April & June)**				
1020	Effective Speaking	3	-	3
1021	Human Relations	3	-	3
7441	Quality Control	3	2	3
7145	Statics & Strength of Materials	3	2	3
7353	Fiber Reinforced Plastics and Laminates	3	4	4
7354	Foams	2	2	3
		17	10	19
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	3
				110

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence of 3 courses which is more compatible to their level of experience and aptitude.

Engineering Certificate Programs

The objective of the certificate programs is to provide a logical course of study which leads toward entry level qualifications in specific career areas. These one-year programs are all designed to apply toward a related associate degree program.

Through past experience the Engineering Division has learned that many people who attend college are also working full or part-time (day or evening). Often times the idea of attending college for two or more years to obtain the associate degree seems unattractive. By selecting a sequence of courses as suggested in CTC's certificate programs,

students may continue to work at their present jobs while taking courses (day or evening) in preparation for their career changes and/or advancement.

Upon completion of the certificate programs the student receives a certificate indicating completion of that program. The courses in the certificate program are directly transferrable to a related associate degree program if the student elects to go on for the associate degree.

In the term preceding the one in which the student intends to complete the certificate program, the student is required to complete a petition which announces the intention to complete the program. This petition may be obtained and filed with the Engineering Division Coordinator for Academic Affairs.

Air Conditioning Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7510	Elements of Refrigeration	4	2	5
7701	Electrical Fundamentals I	3	2	3
		16	8	18
■ Second Term				
*11	Engineering Math II	4	-	4
15	Non-tech Elective	3	-	3
2221	Technical Physics I	3	2	3
7016	Engineering Graphics (Sheet Metal Layout)	2	2	3
7520	Elements of Heating	3	2	3
7702	Electrical Fundamentals II	3	2	3
		18	8	19
■ Third Term				
1010	Technical Writing	3	-	3
7521	Sheet Metal Installation Techniques	2	2	3
7530	Air Conditioning Principles I	3	2	3
7552	Air Conditioning Controls	3	2	3
7531	Air Conditoning Applications	3	2	3
		14	8	15
				52

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Drafting Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7100	Mechanical Drives & Linkages	3	-	3
7704	Basic Industrial Electricity	3	2	3
		15	6	16
■ Second Term				
*11	Engineering Math II	4	-	4
15	Non-tech Elective	3	-	3
2291	Physics I - Kinematics/Dynamics	3	2	3
7011	Engineering Graphics II	2	4	3
7132	Hydraulics & Pneumatics	3	2	3
		15	8	16
■ Third Term				
1010	Technical Writing	3	-	3
2292	Physics II - Mechanics & Heat	3	2	3
7012	Engineering Graphics III	2	4	3
7111	Engineering Materials	3	2	3
7151	Tool Engineering Design	3	2	3
7	Technical Elective	3	-	3
		14	10	18
				50

Recommended Technical Electives

7031	Introduction to Computer Programming
7402	Manufacturing Processes
7040	Industrial Supervision & Management

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Machine Tool & Processes Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7100	Mechanical Drives & Linkages	3	-	3
7103	Machine Processes I	1	4	2
7704	Basic Industrial Electricity	3	2	3
		16	10	18
■ Second Term				
*11	Engineering Math II	4	-	4
15	Non-tech Elective	3	-	3
2221	Technical Physics I	3	2	3
7114	Machine Processes II	2	4	3
7402	Manufacturing Processes	3	-	3
		15	6	16
■ Third Term				
1010	Technical Writing	3	-	3
7040	Industrial Mgmt. & Supervision	3	-	3
7111	Engineering Materials	3	2	3
7144	Systems Development - NC	1	2	2
7153	Production Methods, Cost & Control	3	2	3
7	Technical Elective	3	-	3
		13	6	17
				51

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Plant Engineering Services Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7005	Blueprint Reading & Sketching	2	2	3
7501	HVAC-Principles & Applications I	3	2	3
7701	Electrical Fundamentals I	3	2	3
		15	6	16
■ Second Term				
*11	Engineering Math II	4	-	4
1021	Human Relations	3	-	3
22	Physics	3	2	3
7132	Hydraulics & Pneumatics I	3	2	3
7702	Electrical Fundamentals II	3	2	3
7	Technical Elective	-	-	3
		16	6	19
■ Third Term				
1010	Technical Writing	3	-	3
7040	Industrial Mgmt. & Supervision	3	-	3
7152	Hydraulics & Pneumatics II	1	2	2
7758	Industrial Motors & Controls	3	2	3
7	Technical Elective	-	-	3
7	Technical Elective	-	-	3
		10	4	17
				52

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Welding Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	Communication Skills I	3	-	3
*11	Engineering Math I	4	-	4
7010	Engineering Graphics I	2	4	3
7111	Engineering Materials	3	2	3
7704	Basic Industrial Electricity	3	2	3
7810	Welding Processes & Techniques I	3	3	3
		18	11	19
■ Second Term				
*11	Engineering Math II	4	-	4
15	Non-tech Elective	3	-	3
2221	Technical Physics I	3	2	3
7017	Steel Fabrication	2	2	3
7820	Welding Processes II (Arc)	3	3	4
		15	7	17
■ Third Term				
1010	Technical Writing	3	-	3
7040	Industrial Supervision & Management	3	-	3
7830	Welding Processes III (Inert Gas)	3	3	4
7840	Welding Processes IV	3	3	4
7	Technical Elective	-	-	3
		12	6	17
				53

* A competency-based math test will be administered to all entering Engineering Technology students. Its purpose is to start students into a math sequence which is more compatible to their level of experience and aptitude.

Physical Science and Mathematics Division

Division faculty have been selected for their dedication and academic preparation to fulfill the two major functions of the division:

- teaching the principles of physics, chemistry and mathematics considered basic for successful study in a science dependent field such as engineering technology, allied health or technical business services
- providing in-depth instruction in the applied sciences leading the student to a career in either technical laboratory and materials testing or laser-electro-optic systems.

It is important to note that course recommendations in physical science and mathematics at CTC are determined by the readiness of each student. Readiness is determined during the admissions process through testing and an interview. Faculty are chosen for their ability to communicate effectively with students, for their knowledge of subject matter as well as for their experiences in business and industry. As a result, the chances for student success in physics, chemistry and mathematics are greatly enhanced.

Physics, chemistry and mathematics are, of necessity and tradition, laboratory sciences. Many students cannot know without doing. Actual observation and manipulation allow physical laws, concepts and hypotheses to take on real meaning in the mind of the student. The science division therefore places much emphasis on the laboratory. Care is taken to ensure all laboratories are well supplied with equipment. The laboratory experiences offered point the way for the student, assisting he or she in organizing an attack on the problem, and then encouraging the student to use his or her own ingenuity and thought in carrying the investigation to a conclusion and, finally, in preparing a report of the findings.

For the student who relates strongly to the applied sciences, skilled faculty are proud to offer degree programs focusing on the latest information and techniques leading to careers in technical laboratory and materials testing services or in the dynamic new field of laser-electro-optic systems.

Laser/Optics Technology

Laser/optics are some of the fastest growing tools used in modern industry. The laser is a unique source of radiation capable of delivering an intense, coherent electromagnetic field. Since the first lasing in 1960 the laser has proven to be an effective tool in numerous industrial applications. High power solid state and gas lasers can be effectively used to cut, trim, weld, drill and scribe an infinite number of materials for an almost infinite number of applications.

The following are just a few of the industries using lasers: building construction, surveying, medical treatment,

materials processing, measurement and testing, garment, military and space systems, pollution monitors, data processing, communications, research and holography. The usefulness of the laser and its rapid acceptance as an industrial tool have created a shortage of technicians trained in this field.

CTC's Laser/Optics program, the first in Ohio and one of the few programs in the country, trains students to meet this shortage. Students are instructed on laser theory, optics, laser devices, components and applications as well as physics, mathematics and communication skills.

Graduates of the Laser/Optics program are qualified to work as technicians in any of the numerous industries or research laboratories making use of laser/optics.

Laser/Optics Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September)			
1001 Communication Skills I	3	-	3
1191 Algebra and Trig I	4	-	4
2248 Geometrical Optics	3	2	4
2251 Laser Theory I	3	2	4
2291 Physics I - Kinematics/Dynamics	3	2	3
	16	6	18
■ First Co-op Term (November)			
9401 Cooperative Employment	1	40	2
■ Second School Term (January)			
1002 Communication Skills II	3	-	3
1192 Algebra and Trig II	4	-	4
15 Non-Tech Elective	3	-	3
2252 Laser Theory II	3	2	4
7710 D.C. Circuits	6	4	5
	19	6	19
■ Second Co-op Term (April)			
9402 Cooperative Employment	1	40	2
■ Third School Term (June)			
1179 Technical Statistics	4	-	4
1193 Functions and Calculus	4	-	4
2249 Wave Optics	3	2	4
7103 Machine Processes	1	4	2
7720 A.C. Circuits	6	4	5
	18	10	19
■ Third Co-op Term (September)			
9403 Cooperative Employment	1	40	3
■ Fourth School Term (November)			
1010 Technical Writing	3	-	3
1194 Differential & Integral Calculus	4	-	4
15 Non-Tech Elective	3	-	3
2253 Laser-Optic Components	3	2	4
2254 Laser-Optic Devices	3	2	4
	16	4	18
■ Fourth Co-op Term (January)			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April)			
1020 Effective Speaking	3	-	3
15 Non-Tech Elective	3	-	3
1772 Programming Technical Mathematics	3	2	3
2255 Laser Applications	4	2	5
2256 Laser-Optic Measurements	3	4	5
	16	8	19
■ Fifth Co-op Term (June)			
9405 Cooperative Employment	1	40	3
			106

Scientific Measurement and Testing Technology

The Scientific Measurement and Testing Technology is an educational and training program designed to prepare a person to work as a laboratory technician in a scientific or industrial laboratory in which the physical properties of materials are measured.

Classroom, laboratory and normally cooperative employment experiences give each student education and training for working with mechanical, electrical, chemical, optical and thermal systems as these systems apply to the measurement and testing of materials.

The program prepares the successful student for possible employment in laboratories designed for quality control, research, product development, monitoring and materials testing in such varied industries as the automotive, aviation, beverage, chemical, cosmetic, detergent, fertilizer, food processing, glass, graphics, packaging, paint, paper, petroleum, plastics, rubber, soap, steel and the textile industry.

Courses in engineering graphics, computer programming, communication skills and social sciences augment the courses in mathematics, physical sciences and technical instrumentation to give the student technician the background needed to be a member of an effective technical team.

Working as a well-prepared laboratory technician includes the applying of concepts from mathematics and the laboratory sciences to the planning and execution of tests and to the taking, recording, compiling and reporting of measurement data.

Scientific Measurement & Testing Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term (September)			
1191 Algebra and Trig I	4	-	4
2210 Chemistry	3	2	4
2291 Physics I - Kinematics/Dynamics	3	2	3
7010 Engineering Graphics I	2	4	3
7708 Electrical Fundamentals & Devices	3	4	5
	15	12	19
■ First Co-op Term (November)			
9401 Cooperative Employment	1	40	2
■ Second School Term (January)			
1002 Communication Skills II	3	-	3
1192 Algebra and Trig II	4	-	4
1007 Research & Logic	3	-	3
2276 Science of Materials	3	2	3
2277 Analytical Chemistry	3	3	4
2292 Physics II - Mechanics & Heat	3	2	3
	19	7	20

■ Second Co-op Term (April)			
9402 Cooperative Employment	1	40	2
■ Third School Term (June)			
1179 Technical Statistics	4	-	4
1007 Research & Logic	3	-	3
1772 Programming Technical Mathematics	3	2	3
2278 Organic Chemistry	3	3	4
2280 Instrumentation & Measurement	3	2	3
2293 Physics III - Electromagnetic Waves	3	2	3
	19	9	20
■ Third Co-op Term (September)			
9403 Cooperative Employment	1	40	3
■ Fourth School Term (November)			
1010 Technical Writing	3	-	3
1193 Functions & Introduction to Calculus	4	-	4
2281 Materials Testing	3	4	5
2294 Physics IV - Atoms & Nuclear	3	2	3
7441 Quality Control	3	2	3
	16	8	18
■ Fourth Co-op Term (January)			
9404 Cooperative Employment	1	40	3
■ Fifth School Term (April)			
1020 Effective Speaking	3	-	3
1194 Differential & Integral Calculus	4	-	4
1007 Research & Logic	3	-	3
15 Non-Tech Elective	3	-	3
2285 Analysis of Materials Seminar	3	4	5
7 Tech-Elective	3	2	3
	19	6	21
■ Fifth Co-op Term (June)			
9405 Cooperative Employment	1	40	3
			111

Associate of Individualized Study

The Cincinnati Technical College has been offering career education since its inception in 1966.

As the College has increased in enrollment and in its involvement with the community, it has expanded its offerings from the four original programs to 41 programs and options today. Even with this expansion of offerings it has not been possible to satisfy fully the individual career preparation or course advancement needs of many who have applied.

To maximize the College's ability to meet particular career education needs, CTC offers the Associate of Individualized Study program. This program allows for the consideration of total individual educational needs and, in cooperation with career consultants from the business/industrial community, provides planning for an A.I.S. program to respond to those needs.

Who Should Apply

The A.I.S. program will be attractive to anyone whose career education objectives cannot readily be met through one of the more structured associate degree programs offered by the College. In order to be admitted the applicant must meet the following requirements:

1. Submit written justification for admission to this degree program in preference to one of the other associate degree programs and options available at the College.

2. Demonstrate a level of maturity and motivation which gives promise of success in handling the responsibilities inherent in such a program.

3. Satisfy the general admissions requirements of the Cincinnati Technical College.

4. Demonstrate at least minimal academic aptitude by completing a minimum of six quarter college credit hours with an average of "C" or better at either CTC or another recognized institution of higher education.

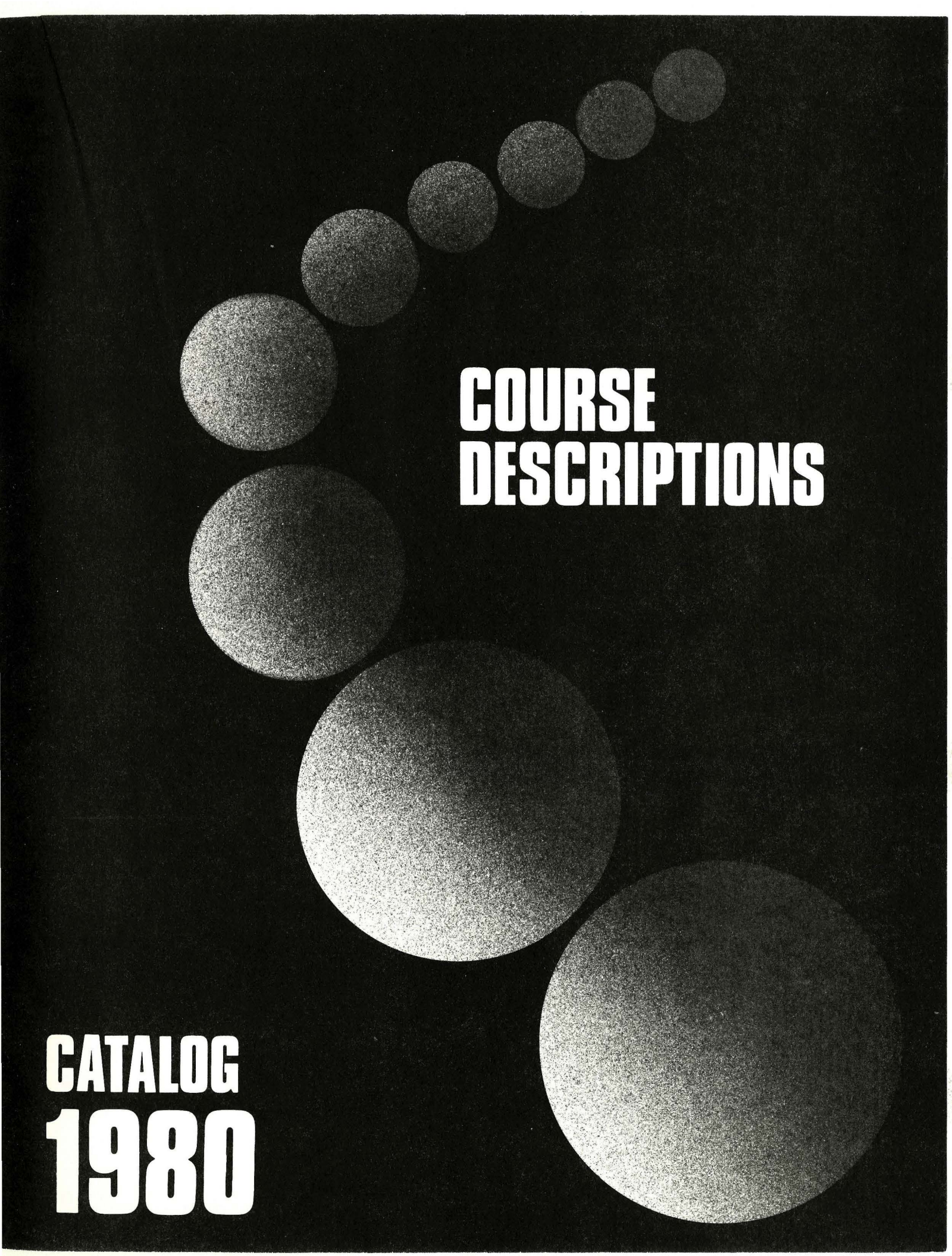
5. Declare candidacy for the program at such time as the minimum six quarter college credit hours have been accumulated.

6. At the time of candidacy, plan an acceptable curriculum which must meet the approval of the A.I.S. Approval Committee.

Final approval of an A.I.S. program must be granted by the Associate of Individualized Study Review Committee. (This committee consists of division deans and the Director of the A.I.S. program.)

All advising will be coordinated by an assigned A.I.S. advisor. The applicant will receive counsel from professionals in business/industry and appropriate members of the CTC staff.

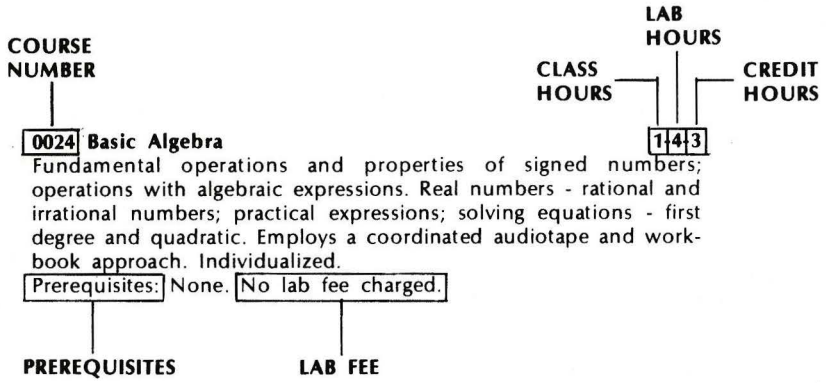
For additional information on the Associate of Individualized Study program contact the Director of the A.I.S. program.


COURSE
DESCRIPTIONS
CATALOG
1980

1980 CATALOG

COURSE DESCRIPTIONS

Understanding Course Descriptions



Course Number: identifying code for each course in a curriculum.

Class Hours: number of hours per week of lecture or individualized instruction.

Lab Hours: number of hours per week in laboratory instruction. Lab hours are usually in addition to class hours.

Credit Hours: academic credit awarded for successful completion of the course.

Prerequisites: any course(s) which must be successfully completed before a student may enroll in the course.

Co-requisites: any course(s) which must be taken at the same time or at a previous time as the course listed.

Lab Fees: a fee in addition to the regular tuition which covers the cost of laboratory supplies for a particular course. A listing of current lab fees is available in the division offices.

0009 Interpersonal Communication **3-2-3**
This course is designed to help a student become self-directed, to become aware of the role of assertion in the communication process, to improve interpersonal and organizational skills and to develop as a mature, articulate self-assured person.
Prerequisites: None. No lab fee charged.

0010 College Reading Skills **1-4-3**
Instruction and practice to develop flexibility in reading, improve vocabulary, and sharpen comprehension. Diagnostic and prescriptive testing; individualized; multi-media.
Prerequisites: None. No lab fee charged.

0011 Technical Reading Skills **3-2-3**
A course to prepare students for the technical reading required in college. Content is drawn from texts and periodicals which pertain to the technologies and attention is given to the unique vocabulary and style.
Prerequisites: None. No lab fee charged.

0012 Fundamentals of English **1-4-3**
Introduction to the basic forms of written communication; application of basic grammar and punctuation principles; remediation in spelling, if needed. Individualized instruction assignments for each student determined by diagnostic testing.
Prerequisites: None. No lab fee charged.

0014 College Study Skills **1-4-3**
Course is designed to assist student in analysis and improvement of his approach to study. Strong emphasis on reading comprehension, development of flexible reading speed, and reading textbooks. Effective techniques for listening, note taking, and examinations are also given.
Prerequisites: None. No lab fee charged.

0022 Essentials of Mathematics **1-4-3**
A review of mathematical principles and computations. Individualized instruction and practice in the fundamental skills of mathematics. Assignments determined by diagnostic testing. Basic topics available: whole numbers; common fractions; decimals; percent; metric system.
Prerequisites: None. No lab fee charged.

0024 Basic Algebra **1-4-3**
Fundamental operations and properties of signed numbers; operations with algebraic expressions. Real numbers - rational and irrational numbers; practical expressions; solving equations - first degree and quadratic. Employs a coordinated audio tape and workbook approach. Individualized.
Prerequisites: None. No lab fee charged.

0026 Fundamentals of Business Math **1-4-3**
Structure of the number system with business applications. Whole numbers, equations, fractions, decimals, percent, percentage, ratio, proportion, measurements (U.S. and metic), measures of central tendency. Individualized with audio tapes, text and film strips.
Prerequisites: None. No lab fee charged

0035 General Science **3-2-3**
An introductory science course which provides a background for future studies in chemistry, biology, and physics. The course is a blend of content and process; students follow the scientific method of observation, hypothesis, demonstrations and activities, and testing.
Prerequisites: None. No lab fee charged.

1001 Communication Skills I **3-0-3**
Syntax, the composition of clear and effective sentences and paragraphs, usage, and the development of a basic technical vocabulary.
Prerequisites: None. No lab fee charged.

1002 Communication Skills II **3-0-3**
Usage especially pronouns, verbs, adjectives, and adverbs; the composition of a theme; the standard use of certain punctuation marks; research techniques.
Prerequisites: 1001. No lab fee charged.

1007 Research and Logic **3-0-3**
Organization and development of expository and descriptive writing. Elementary principles of research techniques, logical and fallacious reasoning, and the library research paper.
Prerequisites: 1001, 1002. No lab fee charged.

1009 Business English **3-0-3**
Current practices in business communication; accuracy is stressed in the areas of grammar, mechanics, usage, spelling, and syntax.
Prerequisites: 1001. No lab fee charged.

1010 Technical Writing **3-0-3**
The principles and practices of various types of business correspondence including the letter of application and resume; audience analysis; visuals; informal and formal technical reports.
Prerequisites: 1001, 1003 or 1002 and 1007. No lab fee charged.

1011 Business Communications **3-0-3**
The principles and practices of the more common types of business correspondence; informal and formal business reports; development of style.
Prerequisites: 1001, 1002 & 1007 or 1003. No lab fee charged.

1020 Effective Speaking **3-0-3**
The preparation and delivery of various types of speeches including oral reports; effective listening techniques; audience participation is required.
Prerequisites: None. No lab fee charged.

1021 Human Relations **3-0-3**
Applies psychological principles to everyday life. These applications help students understand themselves better, change their behaviors, and enhance their interpersonal relationships. The students must participate in structured experiences.
Prerequisites: None. No lab fee charged.

1099 Special Problems in Communication Skills **Var-Var-Var**
Individual study and special projects pertaining to the particular technology that the student is enrolled in. Open to students wishing advanced standing, independent study, and/or research. This course is arranged with the Instructor with the approval of the Dean of the Division.
Prerequisites: Six hours in Communication Skills. No lab fee charged.

1100 Math Placement Test **0-1-4**
The student who registers for this test will take a basic mathematics skills test. The results of the test will enable the Math/Science faculty to make the proper course recommendation for each student. Following the test, students will be advised to take either 1170, 1171, 1191 or 1192 mathematics. The final decision ultimately lies with each student. There is no extra fee for this service and the 4 credit hour tuition will be credited to the course selected.
Prerequisites: None. No lab fee charged.

1101 Business Mathematics I **4-0-4**
Proficiency in the fundamental skills of mathematics as applied to business. Emphasis will be placed on payroll procedures, business and financial reports, presentation of business data, computing of interest for money and banking, and an introduction to the metric system. In the medical program, it deals with mathematics as related to drug dosages and solutions, slide rule, basic ledger mathematics and statistical calculations including mode, mean, median and percentages.
Prerequisites: None. No lab fee charged.

1102 Business Mathematics II **4-0-4**
Application of mathematics to trade discounts, markons, commissions, installment charges, freight expenses, corporate earnings, stocks and bonds, insurance taxes, loans, and data processing systems of billing and inventory.
Prerequisites: 1101. No lab fee charged.

1103 Mathematics of Finance **4-0-4**
Application of mathematical concepts to business activities: bank records, financial charges (including "Truth in Lending" legislation), payrolls and taxes, financial statements and inventories, statistics and computers. (Students who test out of 1101 Business Mathematics will take this course.) completion of this course plus 4 elective credit hours will satisfy graduation requirements of 1101 and 1102.
Prerequisites: None. No lab fee charged.

1104 Financial and Statistical Analysis **4-0-4**
Application of statistical analysis as related to business and an in-depth study of the mathematical analysis of business financial information in decision making.
Prerequisites: None. No lab fee charged.

1130 Overview of Mathematics **4-0-4**
Structure of the number system with business application. Whole numbers, fractions, integers, rational numbers, decimals, percent, scientific notation, exponents, variables, irrational numbers, tabulation of statistical data, measurement, metric system, sets.
Prerequisites: None. No lab fee charged.

1131 College Algebra **4-0-4**
This course is the first of a four-term sequence of math courses which together provide a basic, supportive math course for all students in the Business Technologies.
Prerequisites: None. No lab fee charged.

1132 Business Statistics **4-0-4**
Practical business application of statistics to business problems. Student develops the ability to construct, use, and interpret tables, charts, frequency distribution; determines measures of central tendency and dispersion. The course acquaints the student with the theory and applications of probability and stresses the importance of statistics in decision making.
Prerequisites: Algebra. No lab fee charged.

1134 Fortran Programming **3-2-3**
The optimizing blocking factors used for both magnetic tape and magnetic disk. Introduction to linear programming and forecasting. The discussions of searching lists and sorting techniques. Fortran language is used as a problem-solving tool.
Prerequisites: None. Lab fee charged.

1135 Business Calculus **4-0-4**
Introductory calculus with applications in business decisions and probability theory. Develop skill in finding derivatives and integrals.
Prerequisites: None. No lab fee charged.

1150 Health Math **4-0-4**
Fundamental skills of mathematics as applied to the Allied Health profession: interpretation of data and calculations, decimals, fractions, ratios and proportions, percents; measurement calculations and conversions: English, metric, S.I., Apothecary, household, temperature, medical dosages, concentrations, etc.
Prerequisites: None. No lab fee charged.

1151 Science Math I **4-0-4**
Arithmetic calculations: accuracy, precision, signed numbers, decimals, scientific notation, empirical data, dimensional unit conversions, proportions, formulas. Linear algebra. Quadratic formula. Right triangle Trigonometry. Logarithms. Statistics. Applications selected from chemical and physical topics: length, area, volume, density, specific gravity, mole, molarity, normality, PH, pOH, atomic weights, force vectors and bone/muscle structure, traction, light and optics, refraction, radioactive half life, half layer value, etc. Students should expect to use scientific calculators.
Prerequisites: None. No lab fee charged.

1170 Introduction to Technical Mathematics **4-0-4**
Calculations using signed numbers, decimals, roots, powers, scientific notation, empirical data, dimensional unit conversions, proporations, formulas. Manipulation of formulas and equations. Reading and using various measuring devices. Deciphering angular and parallel relationships. Using geometric and trigonometric relationships. Applications using the tools of many Engineering Technologies: diagrams, for-

mulas, graphics, meters, micrometers, calipers, etc. Students should expect to purchase a scientific calculator for the second half of the course.
Prerequisites: None. No lab fee charged.

1171 Technical Math I **4-0-4**
Order of calculation, scientific notation, rounding off, measurement conversions, formula and equation manipulation, ratio and proportion, direct and inverse variation, area and volume calculation, simultaneous equations, similar triangles and right triangle trigonometry. Application of Ohm's Law, pulley and gear speed ratios, horsepower, torque, tapers, components of forces, etc. Students in this sequence should expect to use a scientific calculator.
Prerequisites: None. No lab fee charged.

1172 Technical Math II **4-0-4**
Logarithmic and exponential functions, Law of Sines, Law of Cosines, complex number operations, the quadratic equation, force and phasor systems, applications include concepts from 1171, Kirchoff's Laws, mechanical systems in equilibrium, density, specific gravity, area and volume viewed as functions of dimensions, radian-degree conversions, interpolation of tabular data, etc.
Prerequisites: 1171. No lab fee charged.

1173 Technical Math III **4-0-4**
Introduction to Analytic Geometry, manipulation and graphical analysis of trigonometric, logarithmic, quadratic, power functions, etc. Three dimensional functions and figures, Statistics, Introduction to Boolean Algebra (optional). Applications using Gas Laws, power ratio/decibel conversions, A.C./D.C. circuit analysis, empirical data analysis.
Prerequisites: 1171, 1172. No lab fee charged.

1179 Technical Statistics **4-0-4**
Organization of data including mean, mode, median, standard deviation, Chebyshev's Theorem and Z-Scores; measurement of uncertainty and the analysis of uncertainty principles utilizing experimental data; estimating the mean and choosing sample size; testing statistical hypotheses, experimental data relationships including curve-fitting and regression techniques; conditional probability and independent events; the analysis of variance and non-parametric tests.
Prerequisites: None. No lab fee charged.

1191 Algebra and Trigonometry I **4-0-4**
Order of calculations, meaning of equations, trigonometric ratios, oblique triangle trig, geometric design, equation manipulation, exponents and roots, simultaneous linear equations, simultaneous second degree equations. Some applications using series and parallel circuits, forces on mechanical systems. Students enrolled in this course should expect to utilize an electronic calculator having Scientific Notation, Trig and Log functions.
Prerequisites: None. No lab fee charged.

1192 Algebra and Trigonometry II **4-0-4**
Common logarithms and natural logarithms, exponential equations, Trigonometic graphs, identities and equations, direct and inverse variation, quadratics, complex numbers, introduction to Boolean Algebra. Applications to power conversions, radian-degree conversions, pulley and gear speed-ratios, vibrations, resolutions of logic networks. Students enrolled in this course should expect to utilize an electronic calculator having Scientific Notation, Trig and Log functions.
Prerequisites: 1191. No lab fee charged.

1193 Functions and Introduction to Calculus **4-0-4**
Graphs of first and second degree functions, empirical curve fitting, introductions to statistics, limit concept, derivatives. Some applications using analysis of dimensions, heat, time, etc., maxima and minima. Students enrolled in this course should expect to utilize an electronic calculator having Scientific Notation, Trig and Log functions.
Prerequisites: 1191, 1192. No lab fee charged.

1194 Differential and Integral Calculus **4-0-4**
Derivatives, differentials, integrals, techniques of integration, volumes, introduction to differential equations. Applied calculus with emphasis upon applications in mechanical and electrical fields. Students enrolled in this course should expect to utilize an electronic calculator having Scientific Notation, Trig and Log functions.
Prerequisites: 1191, 1192, 1193. No lab fee charged.

1201 Private Police Officer Training Course **3-10-6**
This complete 120-hour training course fulfills the requirements for certification for Peace Officers Training Council for Private Security Police.
Prerequisites: None. Lab fee charged.

1202 First Aid **5-3-6**
First-aid instruction including Red Cross Multi-Media Standard First-Aid course, first-aid training for Instructors' Certification, advanced first-aid training dealing with the muscles, circulatory and respiratory systems.
Prerequisites: None. Lab fee charged.

1204 Personnel Security Systems **2-3-3**
All areas to be secured require organization of system, manpower and equipment. This course describes types of physical equipment needed to provide security in three lines of defense.
Prerequisites: None. No lab fee charged.

1205 Criminal Interrogation **3-0-3**
This course is an indepth study of proper interrogation procedures designed to gather information from persons.
Prerequisites: None. No lab fee charged.

1208 Criminal Law I **4-0-4**
Criminal procedure deals with the scope of all criminal rules and their applicability as established by the state of Ohio. Procedures and options of criminal justice.
Prerequisites: None. No lab fee charged.

1209 Criminal Law II **4-0-4**
This course covers all areas dealing with Ohio codes and statutes (H.B. 511).
Prerequisites: None. No lab fee charged.

1210 Introduction to Loss Control & Security Administration **3-0-3**
An overview of the significance of security and loss prevention programs in areas of industrial business and government complexes. Review of examples of effective loss control programs in existance; a study of career opportunities in the field, personnel requirements, standards, and current renumeration levels.
Prerequisites: None. No lab fee charged.

1211 Industrial Security **3-0-3**
A study of every area of industrial security . . . to recognize and prevent threats to key industry from violence, sabotage, and espionage.
Prerequisites: None. No lab fee charged.

1213 Hospital Security **3-0-3**
Develop a concept of security in the health care environment and provide sufficient operational details to make possible the establishment of a protection system or the refinement of existing systems.
Prerequisites: None. No lab fee charged.

1216 Security Administration I **3-0-3**
A study of security problem: Loss prevention to increase a business profit; areas covered include shoplifting, robbery, burglary, forgery and identification, apprehension and prosecution of people.
Prerequisites: None. No lab fee charged.

1217 Security Administration II **3-0-3**
An analysis of special internal problem areas, particularly employee theft.
Prerequisites: None. No lab fee charged.

1220 Fundamentals of Fire Protection **3-0-3**
This course deals primarily with fires, fire fighting equipment, and how to properly use or apply this equipment . . . setting up fire brigades, train, and use them.
Prerequisites: None. Lab fee charged.

1224 Fundamentals of Fire Prevention **3-2-3**
Organization and function of the fire prevention organization; chemistry of fire; inspections, surveying and mapping procedures, recognition of fire hazards, engineering a solution of the hazards, enforcement of the solution. Public relations as affected by fire prevention efforts.
Prerequisites: 1220. Lab fee charged.

1230 Safety Management **3-0-3**
Organization of safety and accident prevention programs. Study of leading causes of business and industrial accidents. The principles of cause analysis and scientific accident prevention.
Prerequisites: None. No lab fee charged.

1233 Emergency Planning **3-0-3**
Principles governing the development of emergency plans. Problems encountered in planning for emergencies and implementing such plans. Procedures for plan development. Procedures for plan implementation. Emergencies to be covered include: bomb threat, fire, explosion, storm, riot, strike violence.
Prerequisites: None. No lab fee charged.

1234 O.S.H.A. I (Occupational Safety and Health Act) **3-0-3**
To familiarize the student with the functions, terminology, and procedures of the Occupational, Safety and Health Act.
Prerequisites: None. No lab fee charged.

1235 O.S.H.A. II (Occupational Safety Health Act) **3-0-3**
A study of the Federal Register.
Prerequisites: None. No lab fee charged.

1236 Vehicle Safety **3-0-3**
A study and analysis of the problems and practices of motor fleet and industrial vehicle safety programming and hazardous situation, such as tow motors, trucks, and forklifts.
Prerequisites: None. No lab fee charged.

1237 Safety Training Methods and Techniques **2-3-3**
To equip the student with proper techniques for teaching employees, supervisors or upper-level managers who are concerned with the development of in-depth training programs. To equip the student with communication skills and the management functions of safety.
Prerequisites: None. No lab fee charged.

1238 Ergonomics **3-0-3**
The scientific approach to problems of design and construction of machines vs. man's human factors engineering. The stress of machines on the human body.
Prerequisites: None. No lab fee charged.

1240 Directed Case Study **3-0-3**
An analysis of criminal court decisions; these decisions must be reduced to a written brief by student.
Prerequisites: 1208, 1209. No lab fee charged.

1401 Layout and Design **2-0-2**
Principles of printing design and art work. Conventional layout, modern layout, type design, color usage, scaling photographs and art work, copy preparation for camera, newspaper layouts, designing folders, broadsides and booklets.
Prerequisites: None. Lab fee charged.

1402 Typography **2-6-4**
History of the alphabet; evolution and development of movable type. Methods of type setting - hand and machine composition. Copyfitting of text matter to space allocation. Basic requirements of hot metal, punched tape for cold composition (photographic and strikeon composition), hot metal and cold type display for composition.
Prerequisites: None. Lab fee charged.

1405 Proofreading and Copy Preparation **2-0-2**
Checking the typesetter's work; use of special symbols to mark changes, corrections, additions, or eliminations. How to check copy for errors. Duties of the proofreader and the copyholder. Reference books for the proofreader. Rules of syllabication or words. Acquiring speed and accuracy in proofreading.
Prerequisites: None. No lab fee charged.

1410 Machine Composition and Newspaper Designing **1-9-4**
An extended study of various typesetting machines, both magnetic tape controlled and punched tape controlled, utilizing hot metal machines. Analysis, evaluation and recommendations based on individual research in order to select the best methods for a particular kind of work. The basic operations of manually operated machines are also investigated. Fundamentals & techniques of sound newspaper designing are presented through general problems of page size, news head selection, from page make-up, illustration, etc.
Prerequisites: 1402. Lab fee charged.

1415 Graphic Arts Processes **2-0-2**
Development and evaluation of printing devices. Graphic arts processes in use today — letterpress, gravure, flexographic, offset and silk screen presses: newspaper and rotary presses. How they work, and the kinds of work for which they were designed.
Prerequisites: None. No lab fee charged.

1419 Survey of Printing Inks **3-0-3**
This course is about ink technology as it is divided into physical makeup; how its integral parts affect color, drying properites, subrates, cost, time; how the many printing processes use inks to each advantage.
Prerequisites: None. No lab fee charged.

1421 Cold Type Process **1-9-4**
Classification of cold type devices — hand assembled paper or plastic alphabets, dry transfer fonts; keyboard text — on paper machines; keyboarded phototypesetting; photo-lettered displays. Principles and operation of various keyboards. The use of electronics. computers, and tape operated controls.
Prerequisites: 1402. Lab fee charged.

1428 Management Survey **3-0-3**
Use of the production board in control — planning a job and following through all phases of production. Methods of hiring and firing.
Prerequisites: None. No lab fee charged.

1430 Presswork **1-9-4**
Survey and justification studies of press equipment to assist in suggesting capital expenditures for future growth and replacement cycles for letterpress, offset, and flexographic systems. Press usage and depreciation methods, replacement policies.
Prerequisites: 1410. Lab fee charged.

1440 Offset Press Operation **2-13-5**
Techniques of operation and control, study of various moistening systems, comparison of wet and dry forms of lithography. Plate comparisons to include wipe on, presensitized, albumin surface, deep etch, bi-metal, tri-metal, dycril and other synthetics, grained and grainless. Understanding the required adjustments necessary for top quality printing. Use of pressroom and quality control equipment.
Prerequisites: None. Lab fee charged.

1449 Estimating Preparation **2-3-3**
This course is designed to cover those areas in estimating in printing that require the attention of math; ie, paper, copyfitting, weight, of metal, ink, spoilage, and camera calibrations.
Prerequisites: None. No lab fee charged.

1450 Estimating **2-3-3**
Determine jobs costs; elements of job costs - Labor, materials, burden, profit and markup. Characteristics and types of paper; paper sizes; selection and purchase of paper; determining proper cuts from mill size sheets; use of manufacturers' catalogues and price books.
Prerequisites: 1449. No lab fee charged.

1460 Bindery Method/Procedures **2-3-3**
Drilling, stitching and cutting. Investigations into the more complex operations of page imposition, automatic signature assembly and book finishing. Automatic tape operated cutters demonstrated and explained. Automatic folders with pile feed and continuous feed.
Prerequisites: None. Lab fee charged.

1480 Photolithography I **2-3-3**
Types and uses of photo-copy and process camera. General and special uses of films. Uses of precise measuring darkroom instruments. Darkroom techniques. Making line and half-tone negatives. Comparing and making single color proofs. Simple stripping.
Prerequisites: None. Lab fee charged.

1481 Photolithography II **2-3-3**
Follow-up of Photolithography I using advanced techniques. Making color separations and color proofs. Stripping techniques related to multi-color jobs.
Prerequisites: 1480. Lab fee charged.

1505 The Inner World of The Person **3-0-3**
This course presents psychology as the science of understanding behavior. Topics covered are: methods of psychological research, the biological bases of behavior, perception, learning, memory and language; motivation, and emotions.
Prerequisites: None. No lab fee charged.

1506 The External World of The Person **3-0-3**
This course discusses the development and growth of people; the personality; the maladjusted patterns of behavior; psychotherapy; social psychology; and applied psychology in terms of business, industry, education, and consumerism.
Prerequisites: 1501 recommended. No lab fee charged.

1512 Micro-Economics **3-0-3**
This course will introduce the fundamental economic problem of scarcity and provide a brief over-view of the macro-system. The primary focus will be on demand and supply analysis within individual markets, price determination, analysis of cost, forecasting, and economic decision making in the firm.
Prerequisites: None. No lab fee charged.

1513 Macro-Economics **3-0-3**
This course will introduce the basic economic problem of scarcity and provide an over-view of the micro-system. The primary focus of the course will be on an analysis of price level, inflation and unemployment, the role of government in monetary and fiscal policy, and analysis of aggregate income, consumption, savings and investment.
Prerequisites: None. No lab fee charged.

1521 Introduction to Sociology **3-0-3**
A look at sociology as a young science occupied with classifying and defining group behavior. Emphasis will be placed on the basic institutions necessary to the processes of socialization and acculturalization.
Prerequisites: None. No lab fee charged.

1522 Social Problems **3-0-3**
This course will focus on current social problems such as deviance, inequality, and population. Various analytical frameworks will be investigated within which the social problem can be understood.
Prerequisites: None. No lab fee charged.

1531 Introduction to Political Science **3-0-3**
A survey of the nature of political science; its various branches; methods of analysis used; basic characteristics and problems of government and politics; the theories and practices which describe and explain man's behavior in the national and international community.
Prerequisites: None. No lab fee charged.

1535 Labor Management Relations **3-0-3**
Origin and development of the labor movement. State and federal labor laws and regulations. Collective bargaining practices and procedures today. Issues and problems in negotiation of contracts.
Prerequisites: None. No lab fee charged.

1537 Ethics **3-3-0**
This course will stress the natural law and what is included in the area of Ethics. Business, medical, and industrial practices will be considered in the light of the natural law.
Prerequisites: None. No lab fee charged.

1599 Special Problems in Social Science **Var-Var-Var**
Individual study and special projects pertaining to the particular technology that the student is enrolled in. Open to students wishing advanced standing, independent study, and/or research. This course is arranged with the Instructor with the approval of the Dean of the Division.
Prerequisites: Six Credit Hours in Social Science. No lab fee charged.

1701 Introduction to Data Processing Programming **1-9-4**
An overview of the entire field of data processing with an emphasis on programming functions.
Prerequisites: None. No lab fee charged.

1711 Introduction to Data Management Computer Operations **4-6-6**
An overview of the entire field of data processing with emphasis on the field of Data Management. Instruction in the operational function of key-operated equipment and introduction to the computer. Laboratory work will reinforce these principles.
Prerequisites: None. No lab fee charged.

1712 Data Entry Systems **4-6-6**
Instruction is given in the operation of card-punch, key-tape, and key-disc equipment. Laboratory work will reinforce the instruction.
Prerequisites: None. Lab fee charged.

1721 Programming: Logic & Methods **2-3-3**
The course is designed to give the student initial exposure to programming logic methods, flowcharting, and documentation methodology. It should prepare the student for subsequent programming classes and actual programming problem assignments which might be encountered in the field.
Prerequisites: 1701. Lab fee charged.

1722 Basic & Assembler Language Programming **2-3-3**
The full range of assembly language instructions and coding techniques are introduced with programs written using auxiliary storage, interrupt processing and table processing. All programs are tested and thoroughly documented. Program linkage and operating systems are introduced.
Prerequisites: 1701, 1721. Lab fee charged.

1731 Peripheral-Equipment Operations **3-7-5**
Instruction is given in the operating procedures of both on-line and off-line equipment. Laboratory work will reinforce the above instruction by providing exposure to normal operator maintenance functions.
Prerequisites: 1711. Lab fee charged.

1741 Operating Systems **2-3-3**
The standard functions of supervisory routines, including intro-run control, I/O control, multiprogramming and service routines, are discussed and explained. Job control languages are introduced with exercises.
Prerequisites: 1701. Lab fee charged.

1741A Operating Systems **4-6-6**
Designed for those students who have elected the Data Management program. Greater emphasis is placed on the functions of an operating system in this program. The student is required to demonstrate advanced techniques in operating a computer under Operating Systems.
Prerequisites: 1711, 1731. Lab fee charged.

1742 Cobol Programming I **3-7-5**
COBOL programming with emphasis on American National Standard compatibility. The student will write several programs ranging from basic to complex using punched card, magnetic tape, and sequential disc files.
Prerequisites: 1721. Lab fee charged.

1752 Real-Time Systems & Data Communications I **2-3-3**
The Systems Analysis student will enter into man-machine interactions through a teleprocessing based on data processing system. Topics will include tele-communications hardware and the appropriate (related) programming languages. Emphasis will be placed on the current time-sharing language(s). Also stressed will be problem-solving techniques requiring the use of remote terminals, inquiry-response techniques, and time-sharing techniques.
Prerequisites: 1762. Lab fee charged.

1761 Introduction to RPG II (BDP) **3-7-5**
Beginning level course for the programming major student. Topics covered include processing of sequential files and generating typical business reports.
Prerequisites: 1701, 1721. Lab fee charged.

1761A Introduction to COBOL (BDM) **1-9-4**
A beginning level course in COBOL programming for the student with limited programming background. Sequential file concepts on various peripherals are covered using typical business applications.
Prerequisites: 1711, 1773. Lab fee charged.

1762 COBOL Programming II **4-6-6**
Advanced COBOL techniques using randomly processed disc files. The student is taught to access indexed-sequential and direct-access files using keys and algorithms.
Prerequisites: 1742. Lab fee charged.

1763 Systems Analysis and Design **3-7-5**
A complete methodology of analyzing and designing computer oriented information processing systems is presented. Instruction and exercises cover data collecting, data structure, file structure and design, input editing and volume consideration, processing requirements, output formats, real time and time sharing systems.
Prerequisites: 1701, 1721. No lab fee charged.

1772 Programming Technical Mathematics **3-2-3**
Terminology and basic concepts of automation. Introduction to Fortran programming and its application to the applied sciences. Laboratory experience in writing programs.
Prerequisites: None. Lab fee charged.

1773 Data Preparation and Control **2-1-2**
Instruction is given in the efficient coding and editing of source documents and use of desk controls applied to data processing documents. Input-output control functions are emphasized. Laboratory work will reinforce above instruction.
Prerequisites: 1711. No lab fee charged.

1781 Advanced RPG II **2-3-3**
A business application oriented course for the business data processing student with emphasis on advanced programming techniques using RPG II. Topics include table handling, ISAM and file handling.
Prerequisites: 1701, 1721, 1761. Lab fee charged.

1781A Introduction to RPG II **3-7-5**
Beginning level course to familiarize the business data management student with the basic tools and techniques used for writing simple programs in RPG II. Topics covered include processing of sequential card files to produce a variety of business application reports.
Prerequisites: 1711, 1773. Lab fee charged.

1782 Installation Management **3-0-3**
Instruction in basic management principles leads to detailed analysis of the data processing environment and effective methods of managing it.
Prerequisites: None. No lab fee charged.

1783 Research Project **2-3-3**
Independent research is conducted by each student. The only limitations applied are that the research must be directly related to data processing and must not concern itself directly with any other material covered by the curriculum.
Prerequisites: None. No lab fee charged.

1798 Survey of Data Processing **2-1-2**
Terminology and basic concepts of data processing with emphasis on the application of the electronic computer system.
Prerequisites: None. No lab fee charged.

1799 Survey of Data Processing **4-1-4**
Introduction to the three principal data processing systems; manual, unit record, and electronic computer, with practical applications.
Prerequisites: None. No lab fee charged.

1804 Risk & Insurance **3-0-3**
The concept of risk in the business enterprise, the need for insurance protection against risks in area of property and liability, casualty, fire, life and health. Fundamentals of insurance contracts and selection of insurers.
Prerequisites: None. No lab fee charged.

1810 Principles of Salesmanship **3-0-3**
Analysis of the general principles and techniques of effective. Principles and problems that include background information a salesman needs, and analysis of the selling process.
Prerequisites: None. No lab fee charged.

1811 Introduction to Salesmanship **4-0-4**
Provides broad preparation in the principles and practices of professional selling. Also helps to round out the education for those students whose major interest is in some other area of marketing.
Prerequisites: None. No lab fee charged.

1812 Salesmanship II **2-0-2**
Study of the selling process. A point by point observation of the steps of a sale and on introduction to industrial and wholesale selling.
Prerequisites: None. No lab fee charged.

1813 Industrial Sales **4-0-4**
Emphasis on salesmanship fundamentals as they apply to industrial selling. Discuss company, customer and product knowledge; the selling formulas and techniques and building of goodwill; confidence in self, product and company.
Prerequisites: None. No lab fee charged.

1814 Case Studies Industrial Sales **4-1-4**
A course concentrating on the analysis of cases involved in various selling situations. Cases will involve an analysis of sales marketing areas including consumer behavior, product strategy, distribution, promotional and pricing strategy.
Prerequisites: Completion of 1846, 1847, 1813, 1817 or by permission of coordinator. No lab fee charged.

1815 Audiovisual Sales Techniques **2-3-3**
Planning and executing sales presentations using audiovisual media. Emphasis is placed on video camera/playback equipment and other equipment sight and sound.
Prerequisites: None. Lab fee charged.

1817 Industrial Purchasing **4-0-4**
Analysis of buyer behavior in terms of the way a company views the market. Review techniques which influence institutional buyers, industrial buyers, the purchasing agent and consumers. Review difference in department buyer and purchasing agent.
Prerequisites: Completion of 1846, 1847, 1813 or by permission of coordinator. No lab fee charged.

1820 Sales Management **4-0-4**
A study of the many and varied duties and responsibilities of the sales manager including selection of sales personnel, leadership, records, and reports, training, motivation, as well as the sales function in the structure of the company.
Prerequisites: None. No lab fee charged.

1823 Business Law I **3-0-3**
Treatment of fundamental principles of business law, including contracts, negotiable instruments, and agencies.
Prerequisites: None. No lab fee charged.

1824 Business Law II **3-0-3**
A continuation of Business Law I with a treatment of government regulation, trust, and insurance.
Prerequisites: 1823. No lab fee charged.

1832 Personnel Management **3-0-3**
A broad overview, of the traditional functions of a personnel office, such as job evaluation, recruitment, interviewing, training, employee and union relations, employee services, and of specific concepts concerning human relations and organizational behavior.
Prerequisites: 2926. No lab fee charged.

1836 Principles of Wholesaling **4-0-4**
A comprehensive analysis of the wholesaling function and guidance in the treatment of practical difficulties that arise in the course of applying textbook principles to operational situations.
Prerequisites: None. No lab fee charged.

1840 Retail Merchandising & Operations **4-0-4**
Presents a meaningful and realistic body of information about the complex and dynamic field of merchandising and operations as it pertains to retailing.
Prerequisites: Completion of 1845 or by permission of coordinator. No lab fee charged.

1842 Advertising and Display **2-3-3**
Advertising media and their effects upon business. Practical applications of display theories as they relate to window and internal displays. Display and its relation to interior decorating and design.
Prerequisites: None. Lab fee charged.

1845 Principles of Retailing **4-0-4**
Introduces students to the field of retailing and provides the technical and theoretical knowledge necessary for retail mid-management employment. Case studies are introduced to give the students practical operating experiences.
Prerequisites: None. No lab fee charged.

1846 Industrial Product Marketing I **4-0-4**
Study of the nature and characteristics of industrial markets, procedures involved in industrial purchases and sales, psychology in industrial buying, distribution channels, and service policies and operating plans.
Prerequisites: None. No lab fee charged.

1847 Industrial Product Marketing II **4-0-4**
Techniques for pricing industrial products and services; product line planning; product policy, short-range and long-range planning; market research and development.
Prerequisites: Completion of 1846 or by permission of coordinator. No lab fee charged.

1850 Computerized Business Applications **2-3-3**
The computer as a management tool. Accounts Receivable, Accounts Payable, Inventory Control, Payroll, Accounting Statements, and other business application models are studied using the medium-sized computer. Other Topics include Hardware and Data Controls.
Prerequisites: 2912. Lab fee charged.

1851 Auditing **4-1-4**
Auditing techniques and procedures for computer based accounting. Topics include review of internal control; preparation of audit programs, flowcharts and working papers; internal auditing.
Prerequisites: 2913. No lab fee charged.

1999 Special Problem Seminar **Var-Var-Var**
Individual study and special projects pertaining to the particular technology that the student is enrolled in. Open to fourth and fifth term students, by special arrangement with the Coordinator and Division Dean.
Prerequisites: None. No lab fee charged.

2000 Industrial Hygiene Recognition **3-0-3**
Recognition of environmental factors and stresses which influence health.
Prerequisites: None. No lab fee charged.

2009 Industrial Safety **3-0-3**
Hazard recognition, on-the-job training techniques, planning safety programs, motivation methods and human relations training will prepare the first-line supervisor to be the indispensable link between top management and the work force.
Prerequisites: None. No lab fee charged.

2010 Industrial Hygiene Measurements **2-3-3**
Gas and vapor calculations and sampling, sampling for particulars, air flow measurements and quality standards, toxic concentrations. To include: area ventilation heat stress, noise characteristics, electromagnetic energy measurements and illumination.
Prerequisites: 2000. Lab fee charged.

2011 Industrial Hygiene Control **3-1-3**
General methods of controlling environmental factors and stresses which influence health.
Prerequisites: None. No lab fee charged.

2199 Special Problems Seminar **Var-Var-Var**
Individual and independent study and special projects pertaining to the particular technology in which the student is enrolled. Open to fourth and fifth term students, by special arrangement with the Coordinator and Division Dean.
Prerequisites: None. No lab fee charged.

2200 Basic Chemistry **2-3-3**
An introductory course for the student who did not have high school chemistry or whose background in chemistry is weak. This course includes application of the basic mathematics and units of measurement needed in chemistry. Topics covered include properties, structure and chemical classifications of matter, use of symbols, formulas and equations, chemical bonding, properties of acids, bases, salts and solutions, naming of acids, bases and salts, radioactivity, and organic chemistry.
Prerequisites: or Corequisities: 1150 or 1170 or Equivalent. Lab Fee Charged.

2209 Technical Chemistry Survey **3-2-4**
Substances, pure and impure; chemical bonding; crystals; chemical reactions; acids and bases; oxidation and reduction; polymer formation.
Prerequisites: None. Lab fee charged.

2210 Inorganic Chemistry **3-2-4**
This is a short course in the theory of inorganic chemistry integrated with related laboratory techniques for the laboratory technician. Eye goggles required, laboratory apron or laboratory coat suggested.
Prerequisites: 1150 or 1170 or the equivalent thereof. Lab fee charged.

2221 Technical Physics I **3-2-3**
Fundamental principles of heat and elecricity treated with emphasis on heat, electronic theory, circuits and instruments with special application to everyday devices such as the motor vehicle. Students enrolled in this course should expect to spend at least two hours per week gaining actual hands-on laboratory experience.
Prerequisites: None. Lab fee charged.

2222 Technical Physics II **3-2-3**
Fundamental principles of mechanics, treated with emphasis on the kinematics and dynamics of machines and fluids with special application to everyday devices such as the motor vehicles. Students enrolled in this course should expect to spend at least two hours per week gaining hands-on laboratory experience.
Prerequisites: None. Lab fee charged.

2231 Fundamentals of Inorganic Chemistry **3-2-4**
The first course of a three-course sequence aimed at increasing the background knowledge of chemistry for those interested in licensure in the allied health field. The structure and properties of matter, changes in matter, chemical bonding, chemical reactions, equilibrium.
Prerequisites: 1151 or its equivalent. Lab fee charged.

2232 Fundamentals of Organic Chemistry **3-2-4**
The second course of a three-course sequence aimed at increasing the background knowledge of chemistry for those interested in licensure in the allied health field. Organic chemistry as related to the study of biochemistry — carbon bonding; saturated, unsaturated and aromatic hydrocarbons; alcohols, phenols, aldehydes, ketones, acids, amines.
Prerequisites or Corequisite: 2231 or its equivalent. Lab fee charged.

2233 Fundamentals of Biochemistry **3-2-4**
The third course of a three-course sequence aimed at increasing the background knowledge of chemistry for those interested in licensure in the allied health field. Biochemistry — carbohydrates, amino acids, proteins, lipids, vitamins, enzymes, metabolism, body fluids.
Prerequisites: 2232 or its equivalent. Lab fee charged.

2244 Allied Health Physics **3-2-3**
Selected topics as applied to the Allied Health professions. Pressure, forces and addition of vector quantities pertaining to biological systems; Properties of waves, including frequency, wavelength, speed, amplitude, reflection, and refraction; Optical instruments, including basic principles of geometric optics; Atomic spectra and spectroscopic techniques; Electromagnetic radiation, including basic sources and detection schemes of IR, UV, visible, X-Ray, and gamma radiation; Fundamental nuclear particles and applications of nuclear techniques both as diagnostic and therapeutic tools; Fundamentals of basic electricity, including current, resistance, simple DC circuits, potentiometer, transformer, and simple amplifier circuits; simple schematics, and basic components of various medical instruments.
Prerequisites: 1151. Lab fee charged.

2245 Allied Health Physics II **3-2-3**
Selected topics from those not covered in course 2244.
Prerequisites: 2244. Lab fee charged.

2248 Geometrical Optics **3-2-4**
Reflection and refraction of light, ray tracing techniques, imaging with a single lens, types of lenses, lens equation, simple optical systems.
Prerequisites: None. Lab fee charged.

2249 Wave Optics **3-2-4**
Light as an electromagnetic wave, absorption, scattering, interference diffraction, holography and polarization.
Prerequisites: 2248. Lab fee charged.

2251 Laser Theory I **3-2-4**
Elements of a LASER, operation of helium-neon gas LASER, LASER physics, optical cavities, properties of LASER light, survey of LASER systems.
Prerequisites: None. Lab fee charged.

2252 Laser Theory II **3-2-4**
Ion Gas Lasers, Molecular Gas Lasers, CW and Pulsed Solid Lasers, Organic Dye Lasers, Semiconductor Lasers.
Prerequisites: 2251. Lab fee charged.

2253 Laser-Optic Components **3-2-4**
Optical tables and benches, components support, properties and uses of filters, optical windows, beamsplitters, etalons, mirrors, lenses and polarizers, gratings, and non-linear materials.
Prerequisites: 2248, 2249. Lab fee charged.

2254 Laser-Optics Devices **3-2-4**
Use of photodetectors, calorimeters and LASER power meters, oscilloscope instrumentation, electro-optic Q-switching, LASER modulation, rotating prisms, use of LASER collimators and autocollimators spatial filters and beam expanders.
Prerequisites: 2248, 2249, 2251, 2252. Lab fee charged.

2255 Laser Applications **4-2-4**
LASER material processing, cutting, drilling and welding, air polution monitoring with LASERS, data processing and data display, optical memories, holographic non-destructive testing, medical applications of LASERS, optical communication systems.
Prerequisites: None. Lab fee charged.

2256 Laser-Optic Measurements **3-4-5**
Wavelength, dispersion and refractive index measurements, use of monochromators and spectrophotometers, use of Fabry-Perot, Michelson, Twyman-Green and Mach-Zehnder interferometers.
Prerequisites: 2248, 2249. Lab fee charged.

2257 Laser Seminar **3-0-3**
Discussion of current developments in lasers, optics and laser/optic systems.
Prerequisites: None. No lab fee charged.

2258 Laser Projects **0-6-4**
Construction and testing of a LASER, optical or electro-optic devices such as a helium-neon LASER, CW pumped Nd Yag Laser, Co_2 LASER, optical powermeter, autocollimator, LED communications link, maintaining a laboratory notebook.
Prerequisites: 2248 through 2257. Lab fee charged.

2261 Printing Science I (Chemistry) **3-2-3**
Concepts of chemistry related to production procedures, converting raw materials to finished product in the graphic communication field. Students enrolled in this course should expect to spend at least two hours per week gaining actual hands-on laboratory experience.
Prerequisites: None. Lab fee charged.

2262 Printing Science II (Physics) **3-2-3**
Fundamental principles of mechanics, heat, color and electricity with special applications to the field of graphic communications. Students enrolled in this course should expect to spend at least 2 hours per week gaining actual hands-on laboratory experience.
Prerequisites: None. Lab fee charged.

2270 Introductory Laboratory Science **3-2-3**
Fundamentals of Physics; laboratory procedures; the controlled experiment; methods of measurement; techniques of data collection and analysis; interpretation of experimental results.
Prerequisites: 1170 or 1150. Lab fee charged.

2276 Science of Materials 3-2-3
Study of the principles basic to the physical properties of materials; examination of materials; techniques of testing materials. Students enrolled in this course should expect to spend at least two hours per week gaining actual hands-on laboratory experience.
Prerequisites: None. Lab fee charged.

2277 Analytical Chemistry 3-3-4
This is a short course in the theory of qualitative and quantitative analytical chemistry integrated with related laboratory techniques for the laboratory technician. Eye goggles required, laboratory apron or laboratory coat suggested.
Prerequisites: 2210 & 1191 or the equivalent. Lab fee charged.

2278 Organic Chemistry 3-3-4
This is a short course in the theory of organic chemistry integrated with related laboratory techniques for the laboratory technician. Eye goggles required, laboratory apron or laboratory coat suggested.
Prerequisites: 2210 or its equivalent. Lab fee charged.

2280 Instrumentation and Measurement 3-2-3
Applied black-box instrumentation including transducer elements, signal amplification, electronic data collection, with analog and digital data telemetry.
Prerequisites: 7708 and either 2276 or 7111. Lab fee charged.

2281 Materials Testing 3-4-5
An application of instrumentation devices and techniques to the determination of the chemical and physical properties of matter.
Prerequisites: 1193, 2276, 2277, 2278, 2280. Lab fee charged.

2285 Analysis of Materials Seminar 3-4-5
An application of measurement and testing technology to the conception, development, design and completion of an approved project to include the recording, compilation and reporting of project data.
Prerequisites: 1179, 2281. Lab fee charged.

2291 Physics I—Kinematics and Dynamics 3-2-3
Measurement techniques; functions and scaling; kinematics; velocity vectors; motion near the earth; laws of force and motion; work; energy; power; impulse; momentum; machines; conservation of energy and momentum.
Prerequisites: None. Lab fee charged.

2292 Physics II—Mechanics and Heat 3-2-3
Translational equilibrium; center of gravity; moments of forces; force analysis of structures; beams; trusses; booms; shear; elasticity; friction as a force; structure of matter; density; pressure; temperature scales; expansion; molecular energy; specific heat; change of state; heat of combustion; heat energy.
Prerequisites:2291. Lab fee charged.

2293 Physics III—Electromagnetic Waves 3-2-3
Electromagnetic Radiation with emphasis on the Wave Nature; Basic Wave properties; The Electromagnetic Spectrum with emphasis on the Visible Region, Refraction; Fundamentals of Geometric Optics, Simple Optical Instruments; Diffraction; Spectral Analysis and Color; Vision, and the Eye; The Inverse Square Law and the Nature of the Fundamental Forces.
Prerequisites: 2291. Lab fee charged.

2294 Physics IV—Atomic and Nuclear 3-2-3
Relativity, and the relativistic changes in space, time, and mass; Mechanics of the Electron and its relationship to the field of Electronics; Electron Energies, and their relationship to Electromagnetic Radiation; Plansk's Radiation, the Hydrogen Atom; the Compton Effect, Photoelectric Effect, and other related Atomic Phenomena. The Nucleus and its Structure, Mass Defect, and Binding Energy Radioactivity, and Modes of Decay; Half-Life, and Carbon 14 Dating, Fission, Fusion, Reactors and Power Generation; The Biological Effects of Nuclear Radiation.
Prerequisites: 2291. Lab fee charged.

2501 Automotive Technology I 5-10-8
Principles of the internal combustion engine. Repair and rebuilding modern automotive engines, inciuding valves, rings, bearings, cooling and lubrication systems. Emphasis on the proper use of hand tools and special equipment.
Prerequisites: None. No lab fee charged.

2502 Automotive Technology II 5-10-8
Principles of carburetion; cleaning, rebuilding and adjusting representative types of carburetors and other fuel components. Fundamentals of auto electrics; construction, operation and repair of the electrical system, including batteries, ignition, starting, generating and accessory circuits.
Prerequisites: None. No lab fee charged.

2503 Automotive Technology III 2-8-4
Fundamentals and repair of the automobile chassis; includes suspension, braking system, steering and ventilation systems. Emphasis on the use of special equipment used to measure, repair and adjust these units.
Prerequisites: None. No lab fee charged.

2504 Automotive Technology IV 2-8-4
A study of the design, construction, operation and servicing of automotive drive line components. These components include clutches, transmissions, rear axles and differentials.
Prerequisites: None. No lab fee charged.

2505 Automotive Technology V 5-10-8
Automotive service and trouble-shooting. Procedures and techniques for diagnosing and repairing electrical, engine and carburetion problems. The latest types of automotive testing equipment are studied together with standard repair procedures as practiced in the modern automotive shop. Work will be performed on live equipment.
Prerequisites: None. No lab fee charged.

2510 Automotive Management I 2-3-3
Organization, design, lay-out, administration and operation of an automobile dealership, trucking company or automotive leasing operation. Recruiting, hiring and retaining personnel.
Prerequisites: None. No lab fee charged.

2511 Automotive Management II 2-3-3
A continuation of Automotive Management I. Engineering traffic flow, building parts and accessory sales, customer relations, measuring local parts and accessory market. Service selling and automotive warranties.
Prerequisites: None. No lab fee charged.

2801 Introduction to Restaurant Management 2-6-3
History, objectives, economics, scope and social importance of the industry. Emphasis on sanitation and safety techniques in the kitchen with lab experience. Students in the Chef Apprenticeship Program may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2802 Restaurant Management II 2-6-3
Factors determining food choices, food nutrition needed in each stage of life. Nutritive value of food selection to meet economic, nutritive and social needs. In addition, complete kitchen layout and design including lab experience. Students in the Chef Apprenticeship Program may elect to take OJT in lieu of lab.
Prerequisites: 2801. Lab fee charged.

2803 Restaurant Management III 2-6-3
Detailed menu planning, design and development with emphasis on costing and pricing including lab experience. Students in the Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: 2801. Lab fee charged.

2804 Restaurant Management IV 2-6-3
First-line supervisor: selection and training qualified personnel for management positions in a restaurant including lab experience.

Students in the Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: 2801. Lab fee charged.

2805 Restaurant Management V **2-6-3**
Guidance and development of employees including discipline, handling complaints and grievances, job satisfaction and morale, and lab experience. Students in the Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: 2801. Lab fee charged.

2806 Beverage Management **2-1-2**
Studies of actual situations, pricing and profit, beverage personnel job descriptions, terms, merchandising, liquor laws in relation to hospitality refreshments.
Prerequisites: None. No lab fee charged.

2811 Introduction to Hotel-Motel Management **3-0-3**
A study of the various departments within the framework of private clubs, hotels, and motels, available vocational opportunities, and a look at the future.
Prerequisites: None. No lab fee charged.

2812 Hotel-Motel Management II **3-0-3**
Study of front office management and operation with emphasis on the use of various front office equipment, supplies, and procedures, including registration, rates, hotel racks, charge and credit.
Prerequisites: None. No lab fee charged.

2813 Hotel-Motel Management III **3-0-3**
Studies in housekeeping and its administration, control of supplies, sanitation, cleaning techniques, decoration, equipment and related subjects.
Prerequisites: None. No lab fee charged.

2814 Hotel-Motel Management IV **3-0-3**
A study of sanitation, safety, and maintenance of hotel operations, including landscaping, swimming pool maintenance, sewage disposal, laundry, water treatment, and management functions of chief engineer.
Prerequisites: None. No lab fee charged.

2815 Hotel-Motel Management V **3-0-3**
A study of the nature of management: planning, organizing, controlling, standards and appraising, communications, motivations, and decision making in the hotel industry.
Prerequisites: None. No lab fee charged.

2821 Sales Techniques **2-0-2**
Establishing a sales department and sales personnel for the hotel-motel-restaurant industry, their purposes and goals. An analysis of your prospects, competition, your company or organization and yourself.
Prerequisites: None. No lab fee charged.

2822 Fundamentals of Food Preparation I **2-6-3**
Through lecture and laboratory work this course provides breakfast food preparation (eggs, fritters, omelettes, pancakes, etc.), good practices in personal cleanliness and safety and sanitary food handling, and food cost calculation. Chef Apprenticeship students may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2823 Food Preparation II **2-6-3**
Through lecture and laboratory work this course provides for fundamental food preparation and the development of cooking techniques, emphasizing breakfast foods and baking techniques; an awareness of control and cost of supplies and menu planning. Chef Apprenticeship students may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2824 Food Preparation III **2-6-3**
This course provides through lecture and laboratory work for the development of cooking techniques — meat preparation (roasting, broiling, butchering), cake decorating and pastry; students acquire knowledge about food production systems — planning and writing menus; and the prevention of food spoilage and contamination. Students in Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2825 Food Preparation IV **2-6-3**
This course emphasizes through lecture and laboratory work quality food preparation of salads, soups, vegetables, cold meats and fried foods; ice carving; and development of relationships between time, labor, equipment and food costs. Students in Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2826 Food Preparation V **2-6-3**
Through lecture and laboratory work students learn food preparation — with emphasis on broiling, stewing, braising and sauteeing; managerial duties and responsibilities in controlling food quality and costs are stressed. Chef apprenticeship students may elect to take OJT in lieu of lab.
Prerequisites: None. Lab fee charged.

2901 Principles of Marketing I **2-1-2**
Details the principles and functions of marketing. The essential concepts of competition, demand, and the structure of distribution. The roles of marketing management and the marketing executive are emphasized.
Prerequisites: None. No lab fee charged.

2902 Principles of Marketing II **2-1-2**
The analysis, interpretation, application, and forecasting of research findings in marketing management. The case study method is used in relating these techniques to actual marketing problems.
Prerequisites: 2901 or permission of coordinator. No lab fee charged.

2904 Office Management **3-0-3**
Administrative management and organization of office departments; methods used in selection and training of office personnel, office planning and layout, cost controls, types and uses of office appliances, office forms, and an analysis of office procedures.
Prerequisites: 1832. No lab fee charged.

2905 Money & Banking **3-0-3**
The processes of modern banking, including capital, deposits, loans, investments, and reserves. Credit expansion and contraction. The operation of the Federal Reserve Systems.
Prerequisites: None. No lab fee charged.

2906 Credits & Collections **3-0-3**
Sources of credit information, understanding credit and alternatives to successful collections including procedures of small claims courts, bankruptcy and court settlements. Study of types of credit, analyzing credit and computation of the dollar cost of credit, aging accounts receivable, telephone collections, collection letters and personal contact collections, including repossession procedures.
Prerequisites: 2960. No lab fee charged.

2907 Introduction to Marketing **4-0-4**
For students who take only a first course and for those who elect to major in the discipline. Teaches the fundamentals of marketing in an interesting, challenging, and rewarding way. Focuses on key concepts of marketing.
Prerequisites: None. No lab fee charged.

2908 Case Studies In Marketing **4-1-4**
Case studies of companies—some strategies that failed along with those that succeeded. Teaches students to make decisions based on facts given to achieve company goals.
Prerequisites: Completion of 2907 or by permission of coordinator. No lab fee charged.

2910 Accounting For Service Enterprises **3-2-3**
Principles and practices of basic accounting for the student who is

required to complete only one term of accounting. Includes recording, and accumulating financial events, preparation of statements, adjustments and cash and banking procedures. Limited to a study of service enterprises. Does NOT satisfy the requirement for course #2912.
Prerequisites: None. Lab fee charged.

2911 Principles of Accounting I **3-2-3**
Principles and practices of basic accounting, including journalizing, posting, adjusting accounts, preparing financial statements, cash and banking procedures, and a study of the uses of special journals with practical applications as they relate to each program.
Prerequisites: None. Lab fee charged.

2912 Principles of Accounting II **3-2-3**
A continuation of Principles of Accounting I. The uses of subsidiary ledgers, classified financial statements, and payroll accounting and associated payroll tax returns are studied. Practical accounting problems as they relate to everyday business are discussed as part of daily class routines.
Prerequisites: 2911. Lab fee charged.

2913 Principles Of Accounting III **3-2-3**
The more advanced aspects of accounting principles are reviewed. Topics include: partnership, corporations, earnings per share, retained earnings, dividends, bonds and investments, working capital, financial position, and analysis of financial statements.
Prerequisites: 2912. Lab fee charged.

2914 Cost Accounting I **3-2-3**
Nature and purpose of cost accounting. Accounting and control procedures for materials, labor and manufacturing overhead. Cost effects of fixed and variable costs. Predetermining departmental overhead rates.
Prerequisites: 2913. No lab fee charged.

2915 Cost Accounting II **3-2-3**
Job order cost system and process cost system, standard cost accounting. Setting cost standards, variance analysis. Direct costing, accounting for scrap and spoilage. Managerial use of cost data.
Prerequisites: 2914. No lab fee charged.

2917 Tax Accounting **3-2-3**
Nature of income taxes and their relationship to accounting. Income tax withholding, FICA tax, requirements for filing income tax return, study of the individual tax return, adjustments to income, itemized deductions, exemptions, and supporting tax schedules and forms.
Prerequisites: None. No lab fee charged.

2918 Managerial Accounting **3-0-3**
Determining cost and revenue relationships for management, managerial uses of quantitative techniques and financial statement analysis in managerial decision making.
Prerequisites: 2913. No lab fee charged.

2919 Intermediate Accounting **3-2-3**
Preparation and analysis of accounting statements; special problems in accounting for current, plant, investment, and intangible assets, for liabilities and for corporate net worth; and funds and reserves.
Prerequisites: None. No lab fee charged.

2920 Business Principles **4-0-4**
A study of the nature of business, forms of business ownership, production problems and financing, forecasting, budgeting, governmental regulation of business, business personnel practices, the security markets and financial news.
Prerequisites: None. No lab fee charged.

2921 Introduction To Business I **2-0-2**
A broad concept of business and the development of an awareness of the economic framework which constitutes our capitalistic system.
Prerequisites: None. No lab fee charged.

2922 Introduction To Business II **2-0-2**
Personnel functions, methods of finance, controls for decision making, and the legal and regulatory environment of business.
Prerequisites: None. No lab fee charged.

2924 Principles Of Management I **5-0-2**
Formal and informal organizational structures including line and staff relationships indicating authority and responsibility.
Prerequisites: None. No lab fee charged.

2926 Principles Of Management **3-0-3**
Meaning, scope, and place of management functions; study of formal and informal organizational structures including line and staff relationships indicating authority and responsibility. Introduction to organization for management in government, business, institutions.
Prerequisites: None. No lab fee charged.

2927 Principles Of Management II **3-0-3**
Staffing, the psychological areas of management with a study of procuring, processing, appraising, and compensating executives. Direction: a study of leadership motivation. Control: Budgeting, auditing, evaluation, reporting, securing adequate return on invested capital. Insurance coverage, losses.
Prerequisite: 2926. No lab fee charged.

2928 Hotel-Motel Accounting **3-0-3**
Capital expenditures for fixed assets of a hotel or motel, prepayments and deferrals of income and expense, analysis of accounts receivables and uncollectibles, break-even analysis related to room occupancy, purpose of the night audit, and the uniform account classification prevailing in the hotel-motel industry.
Prerequisites: None. No lab fee charged.

2929 Audit Procedures and Operations **3-0-3**
Practical operating procedures of the NCR 4200 in performing the night audit. Operation of posting machines and peripheral office equipment.
Prerequisites: None. No lab fee charged.

2930 Hotel-Motel Case Studies **3-0-3**
Case studies involving the hotel industry which include daily operations, reports, analysis of income statements, and audit of cashier reports.
Prerequisites: 2928. No lab fee charged.

2931 On-Site Property Management I **3-1-3**
Practical methods for successful management of property at the on-site level. This course encompasses management systems and philosophies, property administration, merchandising and renting, formal and informal communications, legal ramifications of managing apartments.
Prerequisites: None. No lab fee charged.

2932 On-Site Property Management II **3-1-3**
Continuation of course #2931, practical methods for successful management of property at the on-site level. Encompasses interior, exterior, mechanical and grounds maintenance, budgeting, accounting, financial reports, insurance, purchasing and resident coordination.
Prerequisites: 2931. No lab fee charged.

2933 Executive Level Property Management I **3-1-3**
Techniques for successful management of property at the executive level. This course encompasses investment objectives, use of data and statistics, analysis of regions, neighborhoods and markets, financial analysis and methods, budgeting, cash flow projection, economics of alternatives, developing and managing apartments, offices, shopping centers condominiums and cooperatives, and developing the management plan.
Prerequisites: None. No lab fee charged.

2934 Executive Level Property Management II **3-1-3**
This course is a continuation of course #2933, techniques for successful management of property at the executive level. It en-

compasses the objectives of ownership, forms of ownership, real estate finance methods, valuation of property, present value theory, depreciation and tax considerations, cash flow projections and the management plan.
Prerequisites: 2933. No lab fee charged.

2935 Property Management Case Study **3-0-3**
A case study utilizing a property in the Cincinnati area on which the student will develop a complete management plan. The student is allowed to utilize in a real management situation all the techniques and skills of property management developed in courses 2931, 2932, 2933, and 2934, and to apply them in the form of a management plan created by the student for a specific property.
Prerequisites: 2933 and 2934. No lab fee charged.

2940 Real Estate Sales **3-0-3**
Listing real estate. The exclusive listing. Listing goals and aids. Classified advertising. Qualifying buyers. Financing. Showing the property. The purchase contract. Obtaining and presenting the offer. Creative salesmanship.
Prerequisites: 2951. No lab fee charged.

2945 Residential Construction **3-0-3**
This course is a "bricks and mortar" course for the non-constructionist; topics covered will include site work and concrete; building structure to the roof; finishing trades and scheduling; cost estimating; and the lender and the appraiser.
Prerequisites: None. No lab fee charged.

2951 Real Estate Principles & Practices **3-0-3**
An introduction to real estate economics; principles of contracts, financing, brokerage, appraisal. This course is required by the state of Ohio prior to taking the sales license exam.
Prerequisites: None. No lab fee charged.

2952 Real Estate Brokerage **3-0-3**
Introduction to the operation of a real estate brokerage: office management; selecting, training, and retaining sales personnel; marketing and advertising; and expansion.
Prerequisites: 2951, 2953. No lab fee charge.

2953 Real Estate Law **3-0-3**
Law of agency as applied to real estate, law of fixtures, estates including leases. Conveyancing of real estate, the sales contract, the mortgage, deeds and recording. Real estate brokers and managers, license laws of Ohio. Zoning, cooperatives, and condominiums. This course is required by the state of Ohio prior to taking the sales license exam.
Prerequisites: None. No lab fee charged.

2954 Real Estate Finance **3-0-3**
A study of financing real estate including major instruments, mortgage market, financial institutions, government influence, evaluation and risk in lending, and amortization and present value of future income streams. Required by state of Ohio prior to taking brokers license exam.
Prerequisites: 2951, 2953. No lab fee charged.

2955 Real Estate Appraisal I — Residential **3-0-3**
Methodology of appraising: residential property. Theory of appraisal techniques. The three basic approaches of appraising: market comparison, cost of replacement, and income capitalization. Required by the state of Ohio prior to taking the broker's license exam.
Prerequisites: None. No lab fee charged.

2956 Real Estate Appraisal II—Income-Producing Properties **3-0-3**
Comprehensive analysis of theory and practical application of preparing an appraisal on investment property. Appraisal techniques unique in the area of income-producing properties. A term case study project is assigned providing practical experience in utilizing the income approach.
Prerequisites: 2955. No lab fee charged.

2957 Real Estate Seminar: Special Topics **3-0-3**
Issues and problems facing the real estate industry. Case studies discussed.
Prerequisites: 2951, 2953. No lab fee charged.

2960 Principles of Finance **3-0-3**
Study of consumer finance, small business and large business finance, including scheduling, transporting and flow of goods.
Prerequisites: 2905. No lab fee charged.

3001 Typewriting I **1-4-2**
A beginning course in typewriting including keyboard mastery, machine parts, introduction to the business letter, and simple tabulation exercises.
Prerequisites: None. Lab fee charged.

3002 Typewriting II **1-4-2**
Brief review of keyboard and techniques; intensified drills on improvement of speed and accuracy; progress through business letters, forms, and tabulation.
Prerequisites: Minimum grade of "C" in Typewriting I or permission from coordinator. Lab fee charged.

3003 Typewriting III **1-4-2**
The development of skills, knowledge, and techniques applicable to typewriting. Opportunity is provided for the student to experience situation in which problem solving is necessary, advanced typing problems and techniques. Knowledge and skills involved in production typewriting.
Prerequisites: Minimum grade of "C" in Typewriting II or permission from coordinator. Lab fee charged.

3004 Typewriting IV **1-4-2**
Application of the basic processes of typewriting. The adaptation of job-analysis data to letter writing, manuscripts, forms, duplication, statistical tabulation, reports, legal documents, and rough draft material.
Prerequisites: Minimum grade of "C" in Typewriting III or permission from coordinator. Lab fee charged.

3005 Administrative Typewriting **1-4-2**
An introduction to touch typewriting with problem-solving emphasis on business correspondence, tabulation, telegrams, and the special typing assignments encountered in administrative positions.
Prerequisites: None. Lab fee charged.

3010 Shorthand I - Gregg **4-1-4**
Designed for those students who have had no previous shorthand training. Gregg Shorthand with emphasis on rapid reading of plate material and mastery of principles of theory including brief forms. An introduction to writing shorthand and transcribing on the typewriter from shorthand notes.
Prerequisites: None. No lab fee charged.

3011 Shorthand I - Century 21 **4-1-4**
Designed for those students who have had no previous shorthand training. Century 21 Shorthand, with emphasis on rapid reading of plate material and mastery of principles of theory including speed forms. An introduction to writing shorthand and transcribing on the typewriter from shorthand notes.
Prerequisites: None. No lab fee charged.

3012 Shorthand II - Century 21 **4-1-4**
A continuation of Shorthand I, Century 21 and/or designed for those students who have had previous shorthand training who can pass a two-minute, 60 words per minute take. A continuation of principles from 3011 and an introduction to dictation from unfamiliar material. Emphasis is on speed development.
Prerequisites: Minimum grade of "C" in 3011 or by permission of the coordinator. Lab fee charged.

3013 Shorthand III - Gregg & C21 **4-1-4**
An advanced course designed for those students who have had previous Gregg or Century 21 shorthand training. Emphasis is on speed development from both familiar and unfamiliar material.
Prerequisites: Minimum grade of "C" in 3012 or 3020 or by permission of the coordinator. Lab fee charged.

3014 Transcription I - Gregg & C21 **2-8-4**
A continuation of the study of Gregg and Century 21 shorthand fundamentals and a development of transcription skill. Emphasis is on the development of mailable transcription, with a review of punctuation and spelling.
Prerequisites: Minimum grade of "C" in 3013 or 3029 or by permission of the coordinator. Lab fee charged.

3015 Transcription II - Gregg & C21 **2-8-4**
Continuation of 3014. Emphasis is on mailable transcription. Integration of office-style dictation and the mailable letter to meet office standards.
Prerequisites: Minimum grade of "C" in 3014 or by permission of the coordinator. Lab fee charged.

3016 Legal Term & Transcription I Gregg & C21 **2-8-4**
Stress is on development of legal vocabulary and transcription of legal shorthand dictation, and machine transcription. Latin and French root words are studied as legal shorthand vocabulary is increased. Polishing of techniques regarding preparation of legal instruments and documents.
Prerequisites: Minimum grade of "C" in 3013 or 3029 or by permission of the coordinator. Lab fee charged.

3017 Legal Terms & Transcription II Gregg & C21 **2-8-4**
Continuation of 3016.
Prequisites: 3016 with grade of "C" or better or by permission of the coordinator. Lab fee charged.

3020 Shorthand II - Gregg **4-1-4**
A continuation of Shorthand I - Gregg - and/or designed for those students who have had previous shorthand training who can pass a two-minute, 60 words per minute take. A continuation of principles from 3010 and an introduction to dictation from unfamiliar material. Emphasis is on speed development.
Prerequisites: Minimum grade of "C" in 3010 or by permission of the coordinator. Lab fee charged.

3021 Office Procedures **3-0-3**
An introduction to the training and development of personality qualities essential to the office worker and the development of principles and procedures fundamental to basic office duties and activities.
Prerequisites: None. No lab fee charged.

3022 Office Machines **2-3-3**
A general survey of the techniques, processes, operations and applications of business and office machines. Machines included are memories, MTST's, composer, printing and electronic calculators mimeographine and spirit duplicator.
Prerequisites: 3011. Lab fee charged.

3023 Machine Transcription **3-0-3**
A survey course to introduce the student to transcribing machines and to the techniques of machine transcription.
Prerequisites: None. No lab fee charged.

3024 Secretarial Procedures **3-0-3**
Business information applicable to office employment. Emphasis on important responsibilities of the office worker pertaining to business communications, travel, meetings, reference and preparation of reports.
Prerequisites: 3021. No lab fee charged.

3025 Legal Secretarial Procedures I **1-4-2**
Among topics to be studied are legal correspondence and filing, judicial procedures, law books and other reference materials, introductory research techniques, probate procedures, civil suits, public relations, and seeking, keeping or changing jobs.
Prerequisites: Shorthand III or IV with a grade of "C" or better, 1823. Lab fee charged.

3027 Office Practicum **2-3-3**
Designed for the student who has elected to follow the General Secretarial Curriculum. Each student's program is to be individually designed to further develop the necessary skills required to secure a position in his chosen field, including basic office routines, human relations, and individual responsibilities.
Prerequisites: None. No lab fee charged.

3028 Secretarial Practicum **3-7-5**
An intensive course in secretarial practicum emphasizing the area of business that is of particular interest to the student. Each student's program is to be individually designed to provide an opportunity to strengthen those areas where he may need additional training as well as to provide realistic practice in his chosen field, including decision-making responsibility, creative work, and human relations.
Prerequisites: 3027. No lab fee charged.

3029 Shorthand IV - Gregg & C21 **4-1-4**
Designed for those students who enter the program with advanced standing and who are placed in advanced shorthand. Emphasis is on speed development from both familiar and unfamiliar material and development of mailable transcription.
Prerequisites: Minimum grade of "C" in 3013 or by permission of the coordinator. Lab fee charged.

3032 Records Management **3-0-3**
A foundation in the methods and systems of storing and retrieving information. The course includes the principles governing what records to keep, how to store them, and how to apply the criteria for determining the disposition and retention of records.
Prerequisites: None. No lab fee charged.

3045 Legal Research Projects I **2-8-4**
Individualized projects to equip the student with the techniques for law search and research.
Prerequisites: 1823 and permission of the coordinator. No lab fee charged.

3301 Principles of Maintenance I **3-2-3**
Principles of operation and maintenance of electrical and heating systems, kitchen appliances, plumbing and sewage systems. Survey of maintenance functions employed in maintaining apartment and office structures, including cleaning, painting, and the use of mechanical cleaning equipment.
Prerequisites: None. No lab fee charged.

3501 Horticulture Soils and Applications **6-0-6**
The study of soil texture, structure, organic matter, and plant nutrients as they are related to the use of lime, fertilizers, manures, peats, and soil conditioners to raise horticultural soils to high levels of production. An orientation course to provide field experience in the various phases of horticulture. Tools, materials. procedures, techniques, and standards of workmanship are described and demonstrated.
Prerequisites: None. No lab fee charged.

3502 Horticulture Science I **3-2-3**
To provide an elementary understanding of the fundamentals of plant growth, anatomy, taxonomy, reproduction and genetics.
Prerequisites: None. No lab fee charged.

3503 Horticultural Science II **3-2-3**
Fundamental concepts which apply to soils, fertilizers, herbicides and pesticides with emphasis given to ecological implications. Biochemical processes within living plants as they effect growth, health, commercial forms of reproduction and cultivation.
Prerequisites: None. No lab fee charged.

3504 Woody Plants I **2-3-3**
An introductory study of woody plants grown in nurseries for landscape purposes and, secondarily, of those found in arboretums, woodlands, and fields within the state and adjacent states. Emphasis is on deciduous shrubs and small trees, their identification, culture, uses, flowers and fruits, and ecological relationships.
Prerequisites: None. No lab fee charged.

3505 Herbaceous Plants I **2-3-3**
Classification, identification, and general cultural of perennials, bulbs, and roses commonly used in garden planting.
Prerequisites: None. No lab fee charged.

3506 Nursery Operation I **2-3-3**
An introduction to techniques and practices used in the commercial production of herbaceous perennials, ground covers, deciduous shrubs and trees, conifers, and broadleaf evergreens. Greenhouse and nursery procedures and practices are emphasized.
Prerequisites: None. Lab fee charged.

3507 Arboriculture **3-2-3**
A study of the commercial aboriculture business. The diagnosis and treatment of tree ills, study of principles and techniques used to protect trees from disease and damage, common insects, diseases, and standard control practices; pruning, removal, etc.
Prerequisites: None. No lab fee charged.

3508 Turf Grass Management I **3-0-3**
An introductory course about grasses, ground covers, and weeds including the elementary information and techniques on identification, installation, and care of equipment.
Prerequisites: None. Lab fee charged.

3509 Landscaping I **3-2-3**
A course in landscape development and appreciation. Elementary drawing, lettering and the principles of art for creative design are taught.
Prerequisites: None. No lab fee charged.

3510 Horticultural and Turfgrass Equipment **6-4-6**
A study of the operation and maintenance of equipment used in various horticultural enterprises, especially small gasoline engines; tractors, sprayers, chain saws, and various other equipment and hand tools are demonstrated with emphasis on safety and skill.
Prerequisites: None. Lab fee charged.

3511 Landscape Planning and Construction **3-2-3**
A study of landscape, nursery, and turf cost finding, contracts and specifications, and methods of estimating landscape and construction costs. Calculating areas and volumes and estimating plant qualities for horticultural projects is emphasized.
Prerequisites: None. Lab fee charged.

3512 Nursery Operation II **3-0-3**
A study emphasizing plant growth patterns and plant responses in relation to soils, water, fertility, planting techniques and spacing, top and root pruning, plus elaborations of previously taught concepts from nursery operation.
Prerequisites: None. Lab fee charged.

3513 Horticulture Science III **3-2-2**
A study of plant pests and diseases, methods of control and chemicals and equipment, used principally in greenhouses, plus additional plant identification and growing techniques.
Prerequisites: None. No lab fee charged.

3514 Garden Store Operations **2-3-3**
A study of the importance of garden store location and the management and operation of this type of business. Corsages, pieces for special ordering, advising and guiding customer choice, and sales techniques are covered.
Prerequisites: None. Lab fee charged.

3515 Woody Plants II **3-0-3**
A continuation of Woody Plants I, covering additional deciduous shrubs and trees. Emphasis is placed on broadleaved and narrow-leaved evergreens.
Prerequisites: None. No lab fee charged.

3516 Herbaceous Plants II **3-2-3**
A continuation of Herbaceous Plants I, with emphasis on annual and biennial flowers, and fall flowering perennials. Landscape use of herbaceous plants is studied and design and growth of flower borders is practiced.
Prerequisites: None. No lab fee charged.

3517 Turfgrass Management II **3-0-3**
A continuation of turfgrass management, including special and large-scale, specialized applications as in turf farms or golf courses.
Prerequisites: None. No lab fee charged.

3518 Landscaping II **3-2-3**
A continuation of Landscaping I, with progressively difficult problems. Emphasis is placed on basic details of landscape architectural construction. Grading, construction, planning and staking plants are studied and prepared as a part of the laboratory work. Drainage and irrigation factors are examined and utilized in plan development.
Prerequisites: None. No lab fee charged.

3519 Landscaping Contracts and Specifications **3-2-3**
A study of planting design, and plan presentations as done by nurseries. Typical plantings are examined in the field; model recommendations, cost estimates and performance contracts are studied and developed.
Prerequisites: None. No lab fee charged.

3521 Entomology and Plant Disease Control **3-2-2**
A study of the nature, structure, growth, habits and injurious effects of insects and related forms. The identification of common plant pests, diseases transmitted by insects and their injuries to plants. Insect and disease control measures and application equipment are also studied.
Prerequisites: None. Lab fee charged.

3522 Nursery Operation III **3-2-3**
A continuation of the study of commercial plant reproduction, dealing with programming plant production and nursery land use, as related to nursery layout in sections and blocks. Cost finding techniques, and establishing price and profits are studied.
Prerequisites: None. No lab fee charged.

4000 Medical Terminology **3-0-3**
Building a basic medical vocabulary through analysis, definition, spelling and pronunciation of medical terms. Emphasis on prefixes, suffixes, word roots and their combining forms. Development of a vocabulary in all medical and surgical specialities.
Prerequisites: None. No lab fee charged.

4001 Introduction to Health Care **3-0-3**
The purpose of this course is to acquaint students with an overall view of health care. Topics stressed will include history, organization, areas of specialization, roles and relationships, education, medical ethics, patient rights, health care economics and new trends and issues in health care.
Prerequisites: None. No lab fee charged.

4002 Community Health Services **2-0-2**
A survey of community structure, agencies and health care delivery within the community setting.
Prerequisites: None. No lab fee charged.

4005 Chemistry for Health Technology **3-2-4**
This is a course designed to review the fundamental concepts of basic chemistry and provide an introduction to organic and biochemistry. Laboratory experiences will provide an opportunity for the student to perform related procedures.
Prerequisites: High School Chemistry or Equivalent. Lab fee charged.

4007 Emergency Medical Procedures **1-2-2**
An introduction to basic first aid including: emergency care to the sick and injured, safety awareness and habits and prevention and treatment of sudden illness or accidental injury.
Prerequisites: None. Lab fee charged.

4009 General Microbiology **3-3-4**
Fundamental microbiology including microbial cell structure, metabolism, growth requirements and ecology. An introduction to principles of immunology and control of microorganisms. Prior courses in high school biology and chemistry are recommended.
Prerequisites: None. Lab fee charged.

4010 Human Biology **3-0-3**
An introduction to cell biology, genetics, anatomy and physiology. Fulfills high school biology requirement.
Prerequisites: None. No lab fee charged.

4011 General Anatomy **2-3-3**
Complements 4012 and 4013. General anatomical principles and gross and microscopic anatomy of the major organ systems. Laboratory is primarily dissection with comparison to human anatomy.
Prerequisites: High school biology or equivalent. Lab fee charged.

4012 Human Physiology I **3-2-4**
Normal physiology of the human body including the cell membrane, biological transport, excitable tissue, the nervous system, special senses, cardiovascular system, and the endocrine system. Lab experiences to complement and reinforce the concepts presented.
Prerequisites: High school chemistry. Lab fee charged.

4013 Human Physiology II **3-2-4**
Normal physiology of the human body including respiration, the renal system, acid-base balance, reproduction and the gastrointestinal system.
Prerequisites: 4012. Lab fee charged.

4014 Clinical Anatomy **2-3-3**
Human anatomy but with emphasis on anatomy important to surgical procedures and clinical diagnosis. Lab is primarily dissection with comparison to human anatomy.
Prerequisites: High school biology or equivalent. Lab fee charged.

4015 Clinical Physiology I **3-2-4**
Similar to 4012 with the addition of clinical correlation.
Prerequisites: 1 year college chemistry and 4014. Lab fee charged.

4016 Clinical Physiology II **3-2-4**
Similar to 4013 with the addition of clinical correlation.
Prerequisites: 4015. Lab fee charged.

4017 Pharmacology **5-0-5**
This course is designed to give the student a general overview of the science of pharmacology as it is employed in medical practice. General topics covering the course include: basic principles and terminology, modes of administration, mechanisms of action and the pharmacological actions of most classes of clinically useful pharmaceutical agents. Prior courses in high school biology and college chemistry recommended.
Prerequisites: None. No lab fee charged.

4020 Fundamentals of Pathophysiology **5-0-5**
An introduction to basic disease processes including necrosis, inflammation, repair, developmental abnormalities, neoplasia, immune disorders and infectious disease. The pathogenesis of representative diseases in each category will be discussed.
Prerequisites: 4013 or 4016. No lab fee charged.

4021 Pathology I **5-0-5**
A discussion of basic body responses to injury; i.e. necrosis, degeneration, inflammation, healing and repair, abnormalities of development and abnormalities of cell growth.
Prerequisites: 4012 or 4015. No lab fee charged.

4022 Pathology II **5-0-5**
A continuation of 4021 applying the concepts of basic body response to injury to understanding the pathogenesis of disease in individual organ systems. Systems to be covered include cardiovascular, respiratory, renal, hepatobiliary, genital, gastrointestinal and nervous.
Prerequisites: 4021. No lab fee charged.

4030 Technology of Education for Health **4-0-4**
Principles and techniques for planning, designing, producing, implementing and evaluating an instructional program. For health occupations students.
Prerequisites: None. No lab fee charged.

4031 Health Care Management **3-0-3**
Topics included in this course are management functions, organizational structure, line and staff relationships, position descriptions, job procedures, personnel evaluation, budgeting and general management techniques of health care institutions.
Prerequisites: None. No lab fee charged.

4050 Patient Care Skills **2-3-3**
Basic nursing principles including verbal and non-verbal communication, body mechanics, procedures for assisting patients to walk, patient positioning, general isolation procedures, use of restraints and vital signs. An introduction to services provided by the clinical lab is also presented.
Prerequisites: None. No lab fee charged.

4094 Workshops in Allied Health **3-0-3**
Consideration and study of selected issues and topics in the allied health area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4099 Special Studies - Allied Health **Var-Var-Var**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4101 Dietetic Technician Orientation **1-0-1**
The profession of Dietetics with its roles, mission and relationship to the health care team. The role of the Dietetic Technician as a paraprofessional in the Dietetics field is specifically explored.
Prerequisites: None. No lab fee charged.

4102 Normal Nutrition **4-0-4**
A basic introduction to the science of nutrition and the concept of the team approach in serving human needs. Fundamental study of food nutrients, their digestion and absorption, metabolism, and the relationship of food to development and maintenance of health.
Prerequisites: 4005. No lab fee charged.

4103 Nutrition & Food Preparation I **1-5-3**
The fundamentals of food preparation, including small and large equipment utilization, energy sources and food composition in relation to nutritional value. Laboratory includes selection, preparation and evaluation of beverages, cereal grains, legumes, dairy foods, fish and poultry. Course 4130 Introduction to Nutrition is strongly recommended as a prerequisite to this course.
Prerequisites: None. Lab fee charged.

4104 Nutrition & Food Preparation II **1-5-3**
Continuation of 4103 with laboratory devoted to selection, preparation, and evaluation of meats, fruits, vegetables, flour mixtures and desserts. Also included are preparation techniques for various age and ethnic groups.
Prerequisites: 4103. Lab fee charged.

4105 Human Growth & Development - Nutrition **4-0-4**
A study of human development from conception through maturity. Nutritional needs are directly correlated with normal growth patterns, taking into consideration the physiological, psychological and

sociological changes significant to each age group. Course 4130 Introduction to Nutrition is recommended as a prerequisite to this course.
Prerequisites: None. No lab fee charged.

4106 Nutrition in Disease **4-0-4**
An introduction to therapeutic nutrition, including the study of the pathological states of trauma and disease and their nutritional interrelationships, i.e. surgery, burns, diabetes. Also includes patient chart analysis, techniques for doing nutritional assessment, diet histories and diet instruction.
Prerequisites: 4105. No lab fee charged.

4107 Diet Therapy **4-0-4**
A continuation of Nutrition in Disease with an increased emphasis on application of diet therapy principles. Course includes a study of the pathological states and nutritional involvement of cardiovascular and renal disease, GI disorders, cancer, allergies and rehabilitative medicine.
Prerequisites: 4106. No lab fee charged.

4109 Dietetics Seminar **2-0-2**
Comprehensive examination of nutrition care knowledge. Evaluation of field experiences, job trends and opportunities, community resources and professional organizations.
Prerequisites: Completion of all Dietetic Technician Courses or in final term. No lab fee charged.

4111 Directed Practice I **0-5-1**
Initial exposure to the field of Dietetics. Nutrition care rotation in a health care facility parallel to didactics covered in Dietetic Technician Orientation.
Co-requisite: 4101. No lab fee charged.

4112 Directed Practice II **0-5-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Normal Nutrition.
Prerequisites: 4102, 4111. No lab fee charged.

4113 Directed Practice III **0-5-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Nutrition in Human Growth & Development.
Prerequisite: 4112. Co-requisite: 4105. No lab fee charged.

4114 Directed Practice IV **0-5-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Nutrition in Disease.
Prerequisites: 4113. Co-requisite: 4106. No lab fee charged.

4115 Directed Practice V **0-5-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Diet Therapy.
Prerequisites: 4114. Co-requisite: 4107. No lab fee charged.

4120 Dietetics Safety & Sanitation **2-0-2**
Course includes an intensive study of OSHA, state and local regulations regarding food service; sanitation and cleaning procedures for major equipment, cleaning schedules, environmental control techniques, fire safety procedure, disaster planning and employee inservice training.
Prerequisites: 4009. No lab fee charged.

4121 Meal Management **2-2-3**
Principles of menu planning and presentation for various age and societal groups. A study of food economics including major economic indicators, marketing trends and purchasing techniques. Course 4103 is recommended as a prerequisite to this course.
Prerequisites: None. No lab fee charged.

4122 Food Service Management I **2-3-3**
Introduction to institutional food service systems including layout and equipment, time management, flow patterns, inventory control, recipe standardization, product testing, menu costing and job procedure writing and analysis. Laboratory includes quantity food production, with the implementation of the preceding skills and the preparation and evaluation of modified menus.
Prerequisites: 4121. Lab fee charged.

4123 Food Service Management II **2-6-4**
Continuation of 4122 with emphasis on management skills, including work schedules, job descriptions, inventory control, and evaluation of food service operations and employees. Laboratory includes the implementation and complete operation of a small food service delivery system with cycle regular and modified menus.
Prerequisites: 4122. Lab fee charged.

4130 Introduction to Nutrition **3-0-3**
An introduction to nutrition for students with a minimal science background. Course includes basic nutrient composition, food sources, food legislation, foodborne illnesses, menu planning and relationship of diet to health and disease.
Prerequisites: None. No lab fee charged.

4131 Developmental Nutrition **4-0-4**
Nutritional science and its effect on human physiology with application to all population groups. Nutrient composition, digestion absorption and metabolism for normal and diseased states are studied. Didactics accompanied by practical application to developmental life stages.
Prerequisites: 4005 or high school chemistry. No lab fee charged.

4190 Dietetic Assistant Education I **3-4-4**
An introduction to the health field as it effects the dietetic professions and practices. An overview of normal nutrition including the nutrient groups, food sources, functions and deficiency symptoms, and the eating patterns of various age and ethnic groups. Directed Practice parallels course didactics.
Prerequisites: None. No lab fee charged.

4191 Dietetic Assistant Education II **3-4-4**
Menu writing for various groups, implementation of elementary diet therapy rationale and procedures. Sanitation, safety and disaster planning. Directed Practice parallels course didactics.
Prerequisites: 4190. No lab fee charged.

4192 Dietetic Assistant Education III **3-4-4**
Food mathematics as it relates to food preparation, portion control and cost control. Preparation of all major categories of food. Food systems. Directed Practice parallels course didactics.
Prerequisites: 4191. No lab fee charged.

4193 Dietetic Assistant Education IV **3-4-4**
Records for food purchasing, inventory control, employment and evaluations. Supervisory techniques and problem solving. Directed Practice parallels course didactics.
Prerequisites: 4192. No lab fee charged.

4194 Workshop in Dietetics **3-0-3**
Consideration and study of selected issues and topics in the dietetics area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4195 Dietetic Assistant Education V **3-4-4**
Growth and development through the life cycle, including nutritional, physical, psychological and social development needs of all age groups. Consumer economics as it applies to assessment and implementation of family food purchasing, storage and preparation techniques. (Directed Practice parallels course didactics).
Prerequisites: 4190 and 4191. No lab fee charged.

4196 Dietetic Assistant Education VI **3-4-4**
Principles of interviewing to obtain specific nutritional assessment data from consumers or patients. Simple dietary analysis and recommendations, using standard formats and terminology. Principles needed for the presentation of consumer nutritional programs including demonstration and evaluation techniques. (Directed Practice parallels course didactics).
Prerequisites: 4190 and 4191. No lab fee charged.

4199 Special Studies-Dietetics **Var-Var-Var-**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4201 Medical Office Practice **2-8-4**
Fundamentals of patient reception, appointment making, mail handling, telephone techniques, inventory procedures, care of equipment and supplies, medical-legal realtionships of the medical office and the assistant's responsibility.
Prerequisites: None. Lab fee charged.

4202 Clinical Assisting I **2-8-4**
Fundamentals of patient preparation, history taking, positioning, draping, taking and recording the vital signs, assisting the physician with the examinations, caring for the physician's bag, caring for the examination room before and after a patient.
Prerequisites: None. Lab fee charged.

4203 Clinical Assisting II **2-8-4**
Fundamentals of preparing and administering medications, assisting the specialists, patient preparation for the specialty examination, basic first aid for the medical office, sterilization techniques and methods.
Prerequisites: 4202. Lab fee charged.

4204 Medical Procedures I **2-8-4**
Study of laboratory procedures for the medical office including basic hematology, urinalysis, pregnancy testing, cultures, biopsies, pap smears, sedimentation rates, wet mounts.
Prerequisites: 4005. Lab fee charged.

4205 Medical Procedures II **2-8-4**
Continuation of Medical Laboratory Procedures I, with emphasis on chemical lab testing, x-ray safety and procedures, physio-therapy, electrocardiography, basic pulmonary studies.
Prerequisites: 4204. Lab fee charged.

4208 Insurance & Patient Records **2-2-3**
Fundamental principles of intitiating, maintaining, keeping patient records in the doctor's office; filing and indexing of records; retention of records; private, government and group insurance programs; completion of insurance forms.
Prerequisites: None. Lab fee charged.

4209 Medical Assistant Seminar **0-5-2**
Preparation of the student for the certification examination. Topics to be presented by the students enrolled in the class, guest speakers taken from practicing professionals.
Prerequisites: Students who take this course must be in their last term of Medical Assisting. No lab fee charged.

4211 Medical Assisting Clinical Experience I **0-20-3**
Clinical practice in the physician's office, health centers and clinics, hospital out-patient departments, performing functions related to medical assisting. The student will spend an equal number of hours in clinical and administrative assisting.
Prerequisites: None. No lab fee charged.

4212 Medical Assisting Clinical Experience II **0-20-3**
Clincial practice in the physician's office, health centers and clinics, hospital out-patient departments, performing functions related to medical assisting. The student will spend an equal number of hours in clinical and administrative assisting.
Prerequisites: None. No lab fee charged.

4290 Basic Eletrocardiography **3-0-3**
Introduction to principles of electrocardiography. Designed to aquaint the participants with taking EKG's patient preparation, mounting and filing, cardiac anatomy and electrophysiology, recognizing and correcting distortion problems and special patients and problems with the EKG. Practical experience in taking EKG's included.
Prerequisites: None. No lab fee charged.

4291 Advanced Electrocardiography **3-0-3**
Advanced course in electrocardiography with emphasis on recognizing arrhythmias. Review of basic EKG principles and cardiac anatomy. Emphasis on measurement and calculation of EKG patterns for determining variation in heart patterns. (Dysrhythmias).
Prerequisites: Basic EKG (4290) or experience. No lab fee charged.

4294 Workshops in Medical Assisting **3-0-3**
Consideration and study of selected issues and topics in the medical assisting area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4299 Special Studies - Medical Assisting **Var-Var-Var**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4301 Basic Laboratory Techniques **1-3-2**
Instruction in the use and maintenance of laboratory equipment, including the microscope, spectrophotometer and centrifuges. Discussion of laboratory safety, quality control. Instruction in basic techniques such as blood drawing and pipetting also included.
Prerequisites: None. Lab fee charged.

4302 Basic Hematology & Urinalysis **4-6-6**
Study of theory of blood cell production and routine hematologic procedures, to include the complete bood count, erythrocyte sedimentation rate, reticulocyte and platelet counts. The routine urinalysis with microscopic examination of sediment is also included.
Prerequisites: Taken concurrent with or subsequent to 4301. Lab fee charged.

4303 Immunology **3-0-3**
Discussion of the basic physiology of the immune system; study of principles of routine techniques for serological testing. Briet introduction to immune disorders and tissue transplants.
Prerequisites: None. No lab fee charged.

4304 Clinical Chemistry **4-3-5**
Study of theory and procedures of routine manual and automated chemical laboratory procedures, their quality control and use of related instrumentation.
Prerequisites: 4005 and 4301. Lab fee charged.

4305 Blood Bank - Serology **4-6-6**
A study of blood banking procedures and theory including the inheritance of blood group determinants and donor procedures. Also includes a study of serology. Performance of routine typing, crossmatching, antibody screening, cell panels and routine serologic procedures.
Prerequisites: 4301. and 4303. Lab fee charged.

4306 Clinical Microbiology **4-3-5**
Study of diagnostic microbiology including isolation, identification of bacteria, use of media, aerobic and anaerobic culturing techniques and preparation and staining of slides. Includes parasitology and mycology.
Prerequisites: 4009. Lab fee charged.

4307 Hematology II **2-3-3**
Advanced hematology including study of anemia, leukemias, hemoglobinpathies and other blood dyscrasias. Instruction in the theory of coagulation and special hematologic procedures.
Prerequisites: 4302 and 4311. Lab fee charged.

4309 Medical Laboratory Seminar **5-0-5**
Review of the various departments of the clinical laboratory. Discussion of current developments in the medical laboratory. Includes a registry type comprehensive examination.
Prerequisites: Completion of all MLT courses. No lab fee charged.

4311 Clinical Application I - Hematology & Urinalysis 0-6-2
Laboratory practice in routine hematology, including PT's and PTT's and urinalysis. The practicum will stress workload organization, record keeping, quality control, routine maintenance and troubleshooting of related instrumentations.
Prerequisites: Must be concurrent with or subsequent to 4302. Lab fee charged.

4312 Clinical Applications II - Clinical Chemistry 0-6-2
Laboratory experience in performance of routine manual and automated procedures in clinical chemistry. Emphasis on workload organization, record keeping, quality control, routine maintenance and troubleshooting for related instrumentation.
Prerequisites: Must be taken concurrent with or subsequent to 4304. Lab fee charged.

4313 Clinical Application III - Blood Bank - Serology 0-6-2
Laboratory practice in routine Blood Banking and Serology. The practicum will stress workload organization, record keeping and quality control.
Prerequisites: Must be taken concurrent with or subsequent to 4305. Lab fee charged.

4314 Clinical Application IV - Clinical Microbiology 0-6-2
Practical experience in routine clinical microbiology procedures. The practicum will stress workload organization, record keeping and quality control applied to the Microbiology lab.
Prerequisites: Must be taken concurrent with or subsequent to 4306. Lab fee charged.

4351 Clincial Experience I 1-24-4
Students are assigned to a clinical laboratory where previously learned theories and procedures are applied to a patient-oriented atmosphere. Students also attend a one hour weekly seminar session on campus, relating to the clinical experience.
Prerequisites: 4311. No lab fee charged.

4352 Clinical Experience II 1-24-4
Continuation of 4351 and including the application of theories and procedures learned in 4304 and 4312. Students also attend a one-hour weekly seminar session on campus relating to the clinical experience.
Prerequisites: 4312. No lab fee charged.

4394 Workshops in Medical Laboratory 3-0-3
Consideration and study of selected issues and topics in the medical laboratory area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4399 Special Studies-Medical Laboratory Var-Var-Var
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4400 Medical Terminology & Transcription 3-10-6
(Advanced Medical Terminology and Medical Transcription) Medical terminology related to diseases and operations encountered in transcription of history and physical examinations, discharge summaries, operative reports, laboratory, x-ray, pathology and autopsy reports. Transcription from modern dictation machines of histories and physicals, x-ray, pathology, operative and autopsy reports and discharge summaries.
Prerequisites: Typing ability of 40 words per minute and 4000. Lab fee charged.

4401 Medical Record Science I 3-4-4
(Introduction to Medical Record Technology and Case Record Analysis) The history of advances in medicine and medical education, hospitals and the profession of Medical Records, organization and functions of Medical Record Department; Roles of RRA and ART; admitting office procedures and numbering and filing systems.
Prerequisites: None. Lab fee charged.

4402 Medical Record Science II 3-2-4
Coding according to ICD-9-CM. Introduction to other classification systems including SNDO, SNOP, CPT, DSM-11 and Cancer Registry and Manual of Tumor Nomenclature and Coding.
Prerequisites: 4000 and 4401. Lab fee charged.

4403 Medical Record Science III 3-2-4
(Health Statistics) Statistical procedures including calculations of daily census, monthly census and percentages. Analysis of reports including simple narration of comparative data. Vital statistics including preparation of birth and death certificates and reporting of communicable diseases. Health data retrieval.
Prerequisites: 4401. Lab fee charged.

4404 Medical Record Science IV 3-0-3
The medical record as a legal document; confidential communication, consents and authorizations for release of medical information, preparation and presentation of the record in court; microfilming and record retention; record keeping in nursing homes and intermediate care facilities including Medicare and Medicaid Laws and J.C.A.H. standards.
Prerequisites: 4401. No lab fee charged.

4409 Medical Record Seminar 3-0-3
Review of medical record science courses, anatomy and physiology, and terminology in preparation for the Accrediation Examination.
Prerequisites: 4401, 4402, 4403, 4404. No lab fee charged.

4411 Medical Record Directed Practice I 0-12-2
Practice in the hospital medical records department performing the following: admission procedures, preparation of master index cards, maintenance of patient index, correlation of records, filing procedures, preparation of medical-legal correspondence.
Prerequisites: None. No lab fee charged.

4412 Medical Record Directed Practice II 0-16-3
Practice in the hospital medical records department performing the following: proper assembling of the discharge records, daily analysis, coding of the diseases, operations and procedures by ICD-9-CM, abstracting medical data for computer input.
Prerequisites: None. No lab fee charged.

4413 Medical Record Directed Practice III 0-12-2
Practice in hospital medical record departments performing the following: preparation of statistical reports, compiling data for PSRO, including utilization review and medical audit, experience with health records in clinics and nursing homes, and directed experience in supervision.
Prerequisites: None. No lab fee charged.

4441 Medical Terminology & Transcription I 2-5-4
(Advanced Medical Terminology and Medical Transcription). Medical terminology related to diseases and operations encountered in transcription of history and physical examination, x-rays, operative and pathology reports. Transcription from modern dictation machines of histories and physicals, x-ray, operative and pathology reports.
Prerequisites: Typing ability of 40 words per minute and 4000. No lab fee charged.

4442 Medical Terminology & Transcription II 2-5-4
Medical terminology related to diseases and operations encountered in transcription of discharge summaries, autopsies; specialized terminology encountered in Ear, Nose, and Throat, Psychiatry, Respiratory, Genitourinary, Gastrointestinal, Cardiovascular, Neurology, Obstetrics-Gynecology, and Plastic and Reconstructive Surgery transcription. Transcription from modern dictation machines of discharge summaries, autopsies, and medical speciality transcription.
Prerequisites: 4441. No lab fee charged.

4494 Workshops in Medical Records 3-0-3
Consideration and study of selected issues and topics in the medical records area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4499 Special Studies-Medical Records **Var-Var-Var**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration; the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4501 Introduction to Surgery **6-2-7**
This course addresses all aspects of operating room function including: environment, transport, sterilization, skin preparation, care and preparation of supplies, O.R. team members, aseptic technique, instrumentation, scrubbing and circulating responsibilities, weights and measures, and anesthesia. Includes the use of simulated O.R. lab.
Prerequisites: None. Lab fee charged.

4502 Medical/Surgical Operative Procedures I **8-2-9**
Instruction in operative procedures including: General Surgery, Gynecology, Plastic Surgery, Orthopedic Surgery, Urology, Neurosurgery, Thoracic Surgery, Cardiovascular Surgery, Oral Surgery, Opthalmology, Otorhinolaryngology and burns.
Prerequisites: 4501. Lab fee charged.

4503 Medical/Surgical Operative Procedures II **10-0-10**
This course is a continuation of course 4502, plus: evaluation of previous 20 week clinical experience, review for certification examination, pathology and pharmacology.
Prerequisites: 4502. No lab fee charged.

4511 Operating Room Technician Clinical Experience I **0-8-2**
Practice in hospital O.R. environment which would include: orientation to O.R., proper attire, scrubbing, gowning and gloving, opening sterile packs, observing surgical procedures and assisting doctors with procedures in animal lab.
Prerequisites: None. No lab fee charged.

4512 Operating Room Technician Clinical Experience II **0-8-2**
Continuation of course 4511 - Clinical Experience 1.
Prerequisites: 4511. No lab fee charged.

4513 Operating Room Technician Clinical Experience III **0-8-2**
Exposes the clinically experienced O.R.T. student to all aspects of surgery including pre-operative, operative and post-operative care of the surgical patient.
Prerequisites: 4512. No lab fee charged.

4521 Operating Room Technician Clinical Practice I **1-35-6**
Students assigned to a hospital operating room, supervised by an adjunct faculty O.R. coordinator and coordinator of college. Students also attend a one hour weekly seminar session on campus relating to the field experience.
Prerequisites: None. No lab fee charged.

4522 Operating Room Technician Clinical Practice II **1-35-6**
Continuation of 4521 accompanied with a one hour weekly seminar on campus relating to the field experience.
Prerequisites: 4521. No lab fee charged.

4594 Workshops in Surgical Technology **3-0-3**
Consideration and study of selected issues and topics in the surgical technology area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4599 Special Studies-Operating Room Technician **Var-Var-Var**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

4701 Respiratory Therapy Science I **3-0-3**
History of and introduction to the field of Respiratory Therapy. Introduction to respiratory therapy equipment.
Prerequisites: Acceptance into RT program. No lab fee charged.

4702 Respiratory Therapy Science II **2-3-3**
Respiratory therapy equipment and procedures with emphasis on recognition, assembly and function of equipment used in IPPB, 0_2 and aerosol therapy and chest physiotherapy. Pharmacology applicable to respiratory therapy procedures is treated. Pediatric applications will also be discussed.
Prerequisites: 4701. Lab fee charged.

4703 Respiratory Therapy Science III **3-2-4**
The first part of the course is an introduction to general clinical medicine with emphasis on pulmonary disease. This course is intended to acquaint the student with disease processes which will be encountered in the patient setting. The second part of the course introduces continuous mechanical ventilation with emphasis on recognition, assembly and function of equipment and routine monitoring under supervision. Pediatric applications will be discussed.
Prerequisites: 4702. Lab fee charged.

4704 Respiratory Therapy Science IV **3-2-4**
A continuation of 4703. Additional emphasis is placed upon clinical assessment of patients on mechanical ventilators.
Prerequisites: 4703. Lab fee charged.

4705 Respiratory Therapy Science V **3-2-4**
Pulmonary function testing at the bedside and in the laboratory. Emphasis is placed on the theory of pulmonary measurement, equipment and application of test results to patient care. Theory, design and application of pulmonary rehabilitation techniques is introduced.
Prerequisites: 4704. Lab fee charged.

4706 Respiratory Therapy Science VI **2-2-3**
Respiratory care for the critically ill patient. Invasive and non-invasive monitoring techniques, patient assessment and evaluation also discussed.
Prerequisites: Acceptance into Respiratory Therapist Program or special permission. Lab fee charged.

4707 Respiratory Therapy Science VII **3-0-3**
An in-depth study of neonatal and pediatric cardiopulmonary diseases and their treatment. Identification and care of the high risk newborn discussed.
Prerequisites: 4706. No lab fee charged.

4711 Respiratory Therapy Clinical Practice I **0-10-2**
An introduction to the hospital environment with practical application of 0^2 delivery apparatus, cleaning, disinfection, sterilization, and airway management.
Prerequisites: 4701. No lab fee charged.

4712 Respiratory Therapy Clinical Practice II **0-10-2**
Practical application of IPPB, humidity, aerosol therapy, chest physiotherapy and incentive spirometry. Pulmonary function testing is demonstrated.
Prerequisites: 4711. No lab fee charged.

4713 Respiratory Therapy Clinical Practice III **0-30-5**
A continuation of 4712. Neonatal applications are also treated.
Prerequisites: 4712. No lab fee charged.

4714 Respiratory Therapy Clinical Practice IV **0-30-5**
A continuation of 4713 with emphasis on patients on mechanical ventilators.
Prerequisites: 4713. No lab fee charged.

4715 Respiratory Therapy Clinical Practice V **0-12-2**
Application of advanced respiratory care techniques. Emphasis on patients in the critical care setting.
Prerequisites: 4706. No lab fee charged.

4716 Respiratory Therapy Clinical Practice VI **0-24-4**
A continuation of 4715 with neonatal experience. Application of basic supervision and training techniques included.
Prerequisites: 4707 and 4715. No lab fee charged.

4720 Cardiopulmonary Anatomy & Physiology **3-2-4**
Detailed anatomy and physiology of the respiratory and circulatory systems. Emphasis is placed on those topics relevant to respiratory therapy; i.e., ventilation, diffusion, 0_2 and CO_2 transport, red cell physiology, EKG and neonatal cardiopulmonary anatomy and physiology, renal physiology and acid-base balance.
Prerequisites: None. Lab fee charged.

4721 Respiratory Therapy Supervision & Education **2-0-2**
Basic theories and techniques of supervision and education in relation to respiratory therapy. An introduction to lower and middle management techniques, and planning and implementation of hospital educational and training programs.
Prerequisites: None. No lab fee charged.

4723 Respiratory Therapy Seminar **1-2-2**
Student presentation of case reports and library research to their peers. Practice in NBRT testing techniques also provided.
Prerequisites: None. No lab fee charged.

4794 Workshops in Respiratory Therapy **3-0-3**
Consideration and study of selected issues and topics in the respiratory therapy area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4799 Special Studies - Respiratory Therapy **Var-Var-Var**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carried on outside the classroom. Before registration, the student must have the plan of study approved by a supervising faculty member and the Dean of Allied Health.
Prerequisites: Varies. No lab fee charged.

7000 Engineering Orientation **1-0-1**
Designed to familiarize the engineering student with the operations and employment of the Engineering Division, his career field, employment trends and cooperative employment responsibilities. Topics to include: academic requirements, program option, recommended and non-technical electives, etc. Required for all incoming freshmen during their first term in school. Waiver of this requirement because of special circumstances such as re-entry students, transfer students, etc. can be obtained from the student's coordinator, academic advisor, or the Director of Internal Divisional Affairs.
Prerequisites: None. No lab fee charged.

7005 Basic Blueprint Reading and Sketching **2-2-3**
Provides a working knowledge of blueprint reading and shop sketching with special application and emphasis for different technologies. Technical terminology is defined and applied in a logical sequence for each new principle.
Prerequisites: None. Lab fee charged.

7009 Engineering Graphics (Aviation) **1-4-2**
Read drawings, symbols and schematic diagrams. Draw sketches of repairs and alterations. Apply blueprint information. Use graphs and charts. Identify and select AN hardware.
Prerequisites: None. No lab fee charged.

7010 Engineering Graphics I **2-4-3**
Techniques and functions of drafting. Use of technical terms, modern drafting equipment, sections, multi-view projection and basic reference materials. Development of individual skills and techniques.
Prerequisites: 1170. Corequisite: 1171. Lab fee charged.

7011 Engineering Grpahics II **2-4-3**
Advanced study in field drawing. Includes: gears, cams, working drawings, piping, electrical, etc.
Prerequisites: 7010. Lab fee charged.

7012 Engineering Graphics III **2-4-3**
Principles of design sketching, design drawings, layout drafting, detailing from layout drawings, etc. Emphasis on continued development of skills. Designed primarily for the non-coop student.
Prerequisites: 7011. Lab fee charged.

7013 Engineering Graphics (Descriptive Geometry) **2-2-3**
Graphic analysis of space positions involving points, lines, planes, connectors and a combination of these. Practical design problems stressed with analytical verification where applicable.
Prerequisites: 7011, 1191. Lab fee charged.

7016 Engineering Graphics (Sheet Metal Layout) **2-2-3**
Straight line, parallel line and radial line developments; triangulations and intersections; layout measurements and fabrication of sheet metal.
Prerequisites: 7010. No lab fee charged.

7017 Steel Fabrication (Graphics) **2-2-3**
The theory and practice of developing working drawings of steel fabrication and construction design consideration. Emphasis on weld symbol interpretation. Principles of layout of plate metals.
Prerequisites: 7010, 7113. Lab fee charged.

7018 Engineering Graphics (Electrical) **1-3-2**
Provides a drawing knowledge of the basic electrical diagrams to include schematic diagrams, single line diagrams, conduit layouts, pictorial assembly drawings, architectural drawings and riser diagrams.
Prerequisites: 7010. Lab fee charged.

7024 Civil Engineering Graphics I **2-4-3**
Construction drawings to include: floor plan layout, elevations, section views and typical architectural details, structural system detailing (Wood, Concrete, Steel). Emphasis on construction materials and their uses in the building industry.
Co-requisites: 7910. Lab fee charged.

7025 Civil Engineering Graphics II **1-4-2**
Techniques and function of drafting. Use of drafting equipment. Development of individual skills and techniques, with emphasis on surveying related drawings, profiles, cross sections, contour maps, plats and abstracts.
Prerequisites: 7024. No lab fee charged.

7030 Introduction To Computer Programming (Basic) **3-2-3**
Principles of programming, flow charting and coding in Basic language. Lecture and lab problems to show applications in Engineering design calculations, automatic control, design optimization, quality control and Engineering planning.
Prerequisites: 1171 or 1191. Lab fee charged.

7031 Introduction To Computer Programming (Fortran) **3-2-3**
Principles of programming, flow charting and coding in Fortran language. Lecture and lab problems to show applications in Engineering design calculations, automatic control, design optimization, quality control and Engineering planning.
Prerequisites: 1171 or 1191. Lab fee charged.

7032 Introduction to Computer Programming (Civil) **3-2-3**
Terminology and basic concepts of automation, introduction to Fortran programming with applications in surveying and construction. Exposure to Cogo Software and programmable calculators.
Prerequisites: 7920, 2292. No lab fee charged.

7035 Computer Applications 3-2-3
Covers the use of the computer as a tool to solve problems related to the engineering fields. Plant layout, surveying, circuit analysis, materials management and inventories, etc. are examples of areas which may be considered. Course will also cover an introduction into basic or Fortran programming.
Prerequisites: 1171 or 1191. No lab fee charged.

7040 Industrial Supervision & Management 3-0-3
Analysis of the structure of industrial organizations with emphasis on the responsibilities of a supervisor and the production team. Covers employee's responsibilities within the corporate structure.
Prerequisites: None. No lab fee charged.

7100 Mechanical Drives and Linkages 3-0-3
A study of basic mechanical components such as gears, bearings, pulleys, belts, chains, sprockets. Mechanical principles and application of these devices and mechanical systems employing them. Also to include: cams, cam followers, levers and linkages. The combination of drives and linkages to form complex mechanical systems.
Prerequisites: None. No lab fee charged.

7102 Machine & Hand Tool Laboratory 1-4-3
Principles and processes which underlie the use of hand tools, cutting tools, portable equipment and accessories, measuring devices and gauges. Emphasis placed on developing sound trade judgement, safe work habits, and correct work procedures.
Prerequisites: None. Lab fee charged.

7103 Machine Processes I 1-4-2
An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes in our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming.
Prerequisites: None. Lab fee charged.

7110 Engineering Lab 2-3-3
Laboratory problems. Performance tests conducted on various machines as studied in hydraulics, thermodynamics, strength of materials, etc. Open to second year students.
Prerequisites: 7132 or 7140. No lab fee charged.

7111 Engineering Materials 3-2-3
Study of the science of materials as related to the physical properties of metallic and non-metallic materials. Material application, heat treatment and specifications. Special emphasis on the relationship of stress to strain. Limited emphasis — thru demonstrations and lab experiences — on material testing procedures as a means of verifying various types of stress-strain limits. Also includes Poisson's Ratio, thermal strain, rigidity, etc.
Co-requisites: 1191 or 1171. Lab fee charged.

7113 Materials Processes & Fabrication 2-4-3
Designed to acquaint the student with the various methods available to join different materials. Special emphasis on metals, plastics, and rubber compounds joining to insure permanent bonding to required engineering specifications.
Prerequisites: 7111. Lab fee charged.

7114 Machine Processes II 2-4-3
A continuation of machine processes I — Emphasis on grinding & milling. To include turning, boring, electrical discharge, etc.
Prerequisites: 7103. Lab fee charged.

7115 Metal Joining I 4-4-4
Introduces the student to joining of metals - based on fusion, diffusion, chemical and mechanical procedures. Primary emphasis upon lab experience in arc and gas welding.
Prerequisites: None. Lab fee charged.

7121 Metallurgy of Materials 3-2-3
To include structure and property of metals. Covers the fields of extractive and physical properties. Course work includes studies of crystal formation, grain structure, hot and cold working, heat treatment, and control of mechanical properties.
Prerequisites: None. No lab fee charged.

7123 Materials Selection 1-2-2
Emphasis upon selection of a material for a particular end product. Based on prior knowledge of production and processing methods to stress properties and cost of such materials. Details regarding procurement of starting materials, processing steps and specifications are formulated.
Prerequisites: 7402. No lab fee charged.

7125 Metal Joining II 2-5-3
Continuation of 7115. More lab experience in gas and arc welding, resistance welding, brazing and soldering. Joint design, stresses in welds, codes, standards, inspection, testing, and the economics of joining methods are considered.
Prerequisites: 7115. Lab fee charged.

7130 Statics (Mechanical) 3-2-3
A review of the basic principles of the simple coplanar force systems. To include; moments and couples, equilibrium, etc. Specific emphasis on; trusses, frames, space force systems, friction, centroids and centers of gravity, moments of inertia, transfer formula, radius of gyration, etc.
Prerequisites: 1192, 2292. No lab fee charged.

7132 Hydraulics and Pneumatics I 3-2-3
Basic principles of hydraulics and pneumatics. Distribution and control. Application of fluid mechanics, including pressure, density and viscosity. Basic physical laws governing fluids and gases. Application in design circuits and systems.
Prerequisites: 1191, 2291. No lab fee charged.

7135 Industrial Fluid Power Systems 4-4-4
Basic principles of hydraulics and pneumatics. Covers the generation, distribution and control of fluid power. Applications in fluid mechianics includes pumps, flow, pressures and directional valves. An in-depth study of hydraulic and pneumatic symbols and circuitry. A comprehensive study in fundamental concepts of servohydraulics, air logic and control systems.
Prerequisites: 1191, 7731, 2291. No lab fee charged.

7140 Strength of Materials 4-2-4
Effects of forces & stresses on materials in various forms and configurations found in engineering and mechanical construction. Topics of study to include simple, torsional and bending stresses, combined stresses, deflection, columns, (Eulers equation), continuous beam (three moments theorem), etc.
Prerequisites: 7111, 7130. No lab fee charged.

7142 Mechanisms Analysis and Design 3-2-3
Mathematical and drafting room solutions of problems involving the kinematics that govern mechanisms and the interaction of their components. Study of the motions, velocities, and acceleration of mechanism. Cam analysis and design with particular emphasis on pressure angles and follower motions. Also a study of the many types of gears and gear trains.
Prerequisites: 1192, 2291. No lab fee charged.

7144 Systems Development-Numerical Control 1-2-2
Introduction to automated or numerical control equipment. Emphasis on tape control systems - writing of programs and lab experience in implementing these programs - machine tool and graphic applications.
Prerequisites: 7103, 1191. Lab fee charged.

7145 Statics and Strength of Materials 3-2-3
A survey course intended for the non-design oriented student. Effects of forces and stresses on materials in various forms and configurations found in engineering and mechanical construction. Use of

mathematics in analyzing forces, stresses, moments and equilibrium by use of centroids and moments of inertia. Determination of dimensions and material specifications.
Prerequisites: 1192, 2292. No lab fee charged.

7146 Electromechanical Control I **4-6-5**
Covers the basic ideas incorporated in numerically controlled (NC) Machines. Introduction to transducer feedback systems. Analog control of levels, velocities, positions, etc. of output devices such as hydraulic actuators and D.C. drives. Servo-control techniques through the use of digital circuits. Topics to include: open and close loop systems, feedback, resolution accuracy, repeatability, transient response analysis, stabilization circuits, dampening, types of comparators, gray code encoders, leadscrew control, core memory applications and stepping motors.
Prerequisites: 7731, 7732, 7135. Lab fee charged.

7147 Tool, Jig & Fixture Design **3-4-4**
A course designed to acquaint the student with the production devices required in the manufacturing of finished products. Special emphasis toward designing the tools with the movements as short in distance as possible and of the lowest order of complexity, whereby operator fatigue, both physical and psychological, is kept to a minimum.
Prerequisites: 7402, 7114. No lab fee charged.

7150 Machine Design **4-3-5**
Principles of mechanics and strength of materials as applied to components of mechanisms and power trains as well as beams, pressure vessels, weldments, springs and other bodies under static load and dynamic loads. Shafts, gears, couplings, threaded units, and riveted constructions are treated in detail.
Prerequisites: 7140. No lab fee charged.

7151 Tool Engineering Design **3-2-3**
A study and analysis of cutting, forming, and drawing sheet metal, using modern tools and dies. Application of mathematics and mechanics to determine forces and stresses occurring in these metal working operations. Provides experience of designing a die to produce a simple sheet metal product. Also includes jig and fixture design.
Prerequisites: 7140. No lab fee charged.

7152 Hydraulics and Pneumatics II **1-2-2**
An in-depth study of hydraulic and pneumatic schematics and circuitry. A comprehensive study in the fundamental concepts of servo hydraulics, air logic and control systems, application in design circuits and systems.
Prerequisites: 7132. No lab fee charged.

7153 Production Methods, Cost & Control **3-2-3**
Consists primarily of planning a method or series of methods for the economic manufacture of a part or products to the specifications called for on the drawing. Special emphasis to be applied to production requisites of quality, materials, machine loads, accuracy, machinery, and drawing requirements. The use of analysis sheets, lists of machine tooling and machine capability charts to aid in establishing operation sequences.
Prerequisites: 7430, 7441. No lab fee charged.

7154 Numercial Control Compact 2 **2-3-3**
An in-depth course in Compact 2 computer language for numerical control of machine tools using computer assisted calculations and debugging. Emphasis placed on defining geometry of a part and tool motions required to machine a part. Course directly applicable to Mill & Drill.
Prerequisites: 1191, 7103, 7144 or a familiarity with machine tools and a basic knowledge of geometry and trigonometry. No lab fee charged.

7155 Machine & Product Design **4-6-4**
Application of principles of mechanics and strength of materials to design of machine elements. Dynamic loading condition. Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. To include a written technical report as well as all sketches, drawings, and specifications as required. Evaluation and critique of all problems by a selected group of Engineering Technology faculty members.
Prerequisites: 7010, 7140. No lab fee charged.

7156 Electromechanical Design **2-8-4**
A course intended to exercise the student's knowledge of electromechanical systems. It provides the time and opportunity for a student to work on the design, fabrication, assembly and troubleshooting of electro-mechanical devices and systems. The design is to include ideas covered in most of the student's previous core courses of study. The purpose is to promote independent study, initiative, and creativity by requiring the student to develop the design problem with minimal staff supervision.
Prerequisites: 7731, 7146. No lab fee charged.

7157 Electromechanical Controls II (Microprocesors) **2-8-4**
Continuation of 7146. Includes memories, RAM's, ROM's, PROMS, E-PROMS, etc. Microprocessors and microcomputers, architecture, CPU, bus structure, interrup and stack processing. Special emphasis in applications with PIA's.
Prerequsites: 7146 or 7741. No lab fee charged.

7158 Layout and Design Project **3-4-3**
Application and implementation of principles and procedures involved in following a metal fabrication project from its inception to the completed product. Only open to fourth and fifth term students.
Prerequsites: 7016, 7140. No lab fee charged.

7159 Manufacturing Methods & Estimation **3-4-4**
Starting with a part print, the student learns to select and plan the manufacturing processes and sequence to produce the part, taking into consideration quality, quantity, and cost. To incorporate process engineering techniques.
Prerequisites: 7402, 7113, 7830. No lab fee charged.

7199 Special Problems Seminar - Mechanical **Var-Var-Var**
Individual and independent study and special projects pertaining to the particular technology in which the student is enrolled. Open to fourth and fifth term students, by special arrangement with the Coordinator and Division Dean.
Prerequisites: Varies. No lab fee charged.

7301 Introduction to Plastic Processes **3-2-3**
An introductory survey course for the student who desires a brief but overall coverage of the major types of plastics and plastic processes. Includes the manufacturing techniques and principles of operation of injection, extrusion and vacuum forming equipment.
Prerequisites: None. No lab fee charged.

7310 Compression, Transfer, Casting **3-2-3**
Molding methods used for conversion of thermoset materials into useful products. Properties of thermosets, such as mechanical, physical, thermal, and test methods. Chemistry of thermoset polymers.
Prerequisites: None. Lab fee charged.

7311 Thermoforming Methods **3-2-3**
Special molding methods used to produce plastic articles from film and sheets by a variety of procedures, review of thermoplastic sheets and film materials and their properties.
Prerequisites: None. Lab fee charged.

7320 Injection and Extrusion Molding **3-4-4**
Molding methods used to convert thermoplastic-materials into designed products. Properties, materials evaluation, test methods chemistry of thermoplastic materials.
Prerequisites: None. Lab fee charged.

7330 Fiber Reinforced Plastics **2-4-3**
Comprehensive review of resin systems and fiber reinforcement for use in production of FRP products. Fabrication procedures. Comparative properties.
Prerequisites: None. Lab fee charged.

7342 Product, Mold & Tool Design **2-4-3**
Design of molds and tools for plastics processing. Emphasis on part design, and design of production aids such as tools, jigs and fixtures; for after finishing and quality control of molded and fabricated plastic products.
Prerequisites: 7310. No lab fee charged.

7353 Fiber Reinforced Plastics & Laminates **3-4-4**
Comprehensive review of resin systems and fiber reinforcement for use in production of FRP products. Materials and processes used to produce laminates by a variety of methods. Fabrication procedures. Comparative properties.
Prerequisites: 7111. Lab fee charged.

7354 Foams **2-2-3**
An in-depth study of the different varieties of plastic foams with special emphasis on their production and applications.
Prerequisites: None. Lab fee charged.

7402 Manufacturing Processes **3-0-3**
Survey of the fundamentals of manufacturing processes. Methods of manufacturing and fabricating metal and plastic parts. To include: power metallurgy, electrochemical, automatic metal working machines, welding, etc.
Prerequisites: None. No lab fee charged.

7409 Industrial Safety **1-2-2**
Study of industrial safety programs, safety codes and standards, compensation, and safety inspection. Survey of selected occupational health hazards; solvents, lead, asbestos, welding, heat, noise, etc. Typical industrial policies and facilities for accidents and injuries. Safety devices for equipment and safety education programs. Special emphasis given to "The Occupational Safery and Health Act" and its special reporting requirements.
Prerequisites: None. No lab fee charged.

7410 Materials Handling **3-2-3**
Project course with heavy emphasis on materials flow analysis. Examine material handling elements such as material characteristics, material classifications, unit load, packaging, bulk handling, containerization, selection of equipment, economics of a material handling plan or phased improvements; selected industry problems and trends are analyzed.
Prerequisites: None. Lab fee charged.

7430 Time and Motion Study **3-2-3**
Principles of motion economy, tools for motion study - to include: process and operation charts, the movie camera, stop watch, etc. Includes study and application of the basic principles used to develop better methods of performing work.
Prerequisites: None. Lab fee charged.

7440 Industrial Processes & Plant Layout **3-4-4**
Project course with emphasis on the most efficient arrangement of a production area and process arrangement to achieve effective utilization of space in manufacturing and service industries. Layout of aisles and use of cube space to include layouts for small and medium size design and the characteristics of industrial processes and how instrumentation is used for process control.
Prerequisites: None. Lab fee charged.

7441 Quality Control **3-2-3**
Application of statistics and probability to basic quality control problems. Survey of functions, responsibilities, structure, costs, reports, records, personnel and vendor-customer relationships in quality control. Sampling inspections, process control, and tests for significance.
Prerequisites: 1191. No lab fee charged.

7450 Production Cost and Control **3-0-3**
Development of cost estimation techniques, practical application of production cost theory, control of material and labor cost, overhead application, determination of time requirements, estimation of production costs and impact of production mix on costs. Product life cycle analysis.
Prerequisites: 7430, 7441. No lab fee charged.

7451 Industrial Engineering Project **2-5-3**
Application of theories developed in several industrial technology courses to selected general case problems - to provide practice in the integration of principles.
Prerequisites: 7430, 7440. Lab fee charged.

7452 Industrial Hygiene Measurements **1-4-2**
Calcualtions and sampling of air flow measurements and quality standards of heat, noise, gas and vapor volume, particulates and toxics. Analysis of effects of toxics, noise, heat, particulate concentrations. Includes area ventilation, heat stress, noise characteristics, electromagnetic energy measurements use of selected instrumentation to establish compliance with standards set by governmental and industry groups.
Prerequisites: 7409. Lab fee charged.

7501 H.V.A.C. - Plant Maintenance **3-2-3**
An introduction to the thermodynamic laws pertaining to refrigeration. The refrigeration cycle, operations, maintenance and trouble-shooting of components including water towers, condensers, water treatment and refrigerants, copper pipe and tubing sizing, flaring, swaging, and soldering. Pump maintenance procedures, inspection and overhaul. Operation of boilers, oil burners, gas furnaces and heaters. General plant maintenance procedures.
Prerequisites: None. Lab fee charged.

7510 Elements of Refrigeration **4-2-5**
Introduction to the field and terminology of Refrigeration. Topics to include the basic laws of refrigeration, heat, and the methods of heat transfer, use and care of servicing tools, equipment, tubing, and fittings, compressors, refrigerants, temperature controls, special testing and service equipment. Laboratory sessions provide experience in basic service procedures.
Corequisites: 1171 or 1191. No lab fee charged.

7520 Elements of Heating **3-2-3**
Introduction to gas and oil furnaces and heat pumps. Topics include the fabrication, trouble-shooting and servicing of these heating devices.
Prerequisites: 7510, 7701. No lab fee charged.

7530 Air Conditioning Principles I **3-2-3**
Study of cooling towers, evaporative condensers, water treatment, air cooled condensers, refrigeration safety devices, crankcase heaters, water chillers, and pumps. Laboratory experience to emphasize equipment, maintenance and trouble-shooting procedures. Introductory sheet metal layout and fabrication.
Prerequisites: 7510, 7701. Lab fee charged.

7531 Air Conditioning Applications **3-2-3**
A survey of commercial and industrial applications of heating, refrigeration and air conditioning; ventilation; food preservation and storage; industrial processing; low temperature applications; comfort air conditioning applied to transportation vehicles, etc. The requirements, limitations and standards involved in the many applications are investigated.
Prerequisites: 7520. Lab fee charged.

7532 Sheet Metal Installation Techniques **2-2-3**
A study of some of the more common problems encountered during installation and modifications, particularly the mechanical and field fabrication problems involved in duct work, piping, and electrical work. Introduction to the use of sheet metal tools, edges, seams, locks, etc.
Prerequisites: 7510. Corequisite: 7016. No lab fee charged.

7540 Air Conditioning Principles II **5-2-5**
Psychrometrics, heat transfer and fluid handling equipment. Fans and fan laws, centrifugal water pumps, sizing of piping and duct work, procedures for determining building heat losses, and methods of

rating and selecting equipment as presented in manufacturers's catalogs. Laboratory sessions provide detailed investigations of the operating characteristics of the equipment discussed in the theory courses.
Prerequsites: 7530. Lab fee charged.

7541 Air Conditioning Design I **3-4-4**
The application of air conditioning principles to design. Emphasis on selection of equipment, consideration of applicable codes, and functional handling of air conditioning design problems. In the laboratory sessions the student designates heating and cooling systems. Incorporated are design calcualtions, equipment selection and system layout.
Prerequisites: 7520. No lab fee charged.

7550 Air Conditioning Principles III **3-2-3**
An advanced study of refrigeration systems, especially of industrial equipment, thermodynamic principles, cycle analysis, operational and construction features, and system applications are covered. Specific subjects include low temperature systems such as cascade and two-state units, absorption systems, heat-pumps, centrifugal compressors and control systems. Procedures for sizing, selection and layout of refrigeration system components and piping.
Prerequisites: 7540. No lab fee charged.

7551 Air Conditioning Design II **3-7-5**
This subject involves the calculation of the conditioning load, system design and layout, equipmnet selection, and complete specifications for such applications as year-round comfort air conditioning systems, industrial processing plants, and special environment control units. Cold limitations, control requirements, humidity control, solar load calculations, human comfort and industrial conditioning problems are included.
Prerequisites: 7540, 7541, 7532. Corequisite: 7550. No lab fee charged.

7552 Air Conditioning Controls **3-2-3**
The theory and methods of controlling conditioned air systems. Types, functions and applications of controls for heating, cooling, humidity, and ventilation requirements. Laboratory sessions allow the student to make connection of systems components and simulate operational characteristics of electric, pneumatic and electronic control systems.
Prerequisistes: 7702, 7540. No lab fee charged.

7555 Hydronics & Pneumatics **1-2-2**
Fundamental concepts of fluids, including fluid laws and components. A study is made of thermodynamics and fluid flow as applied to the various components of air conditioning systems. Topics include thermodynamic properties of fluids such as air, steam and refrigerants.
Prerequisites: None. No lab fee charged.

7700 Electrical & Electronic Fundamentals **3-2-3**
Covers the general principles of electrical and electronic circuits and equipment and relates these principles to engineering applications. Particular consideration is given to electrical and electronic based instruments.
Prerequisites: None. No lab fee charged.

7701 Electrical Fundamentals I **3-2-3**
Introduces the basic laws of AC and DC electricity and their applications. In addition power distribution, magnetic principles, control system fundamentals, component testing and troubleshooting are covered.
Prerequisites: None. No lab fee charged.

7702 Electrical Fundamentals II **3-2-3**
A continuation of Electrical Fundamentals I. AC power factor, polyphase relationships, and control systems functions are examined in greater depth. Abilities of the student to plan, assist, and supervise electrical power, and control system installations, and modifications are developed.
Prerequisites: 7701. No lab fee charged.

7704 Basic Industrial Electricity **3-2-3**
A comprehensive introduction to applied electrical circuits; current, voltage, and resistance measurements; Ohms law in series and parallel circuits; magnetism, wiring practices; electrical energy and power; concepts of capacitance, inductance and transformers; AC and DC motor fundamentals; fundamentals of motor control; development, analysis and troubleshooting of motor control circuits; basic concepts of static control for non-electrical technology majors.
Prerequisites: None. No lab fee charged.

7708 Electrical Fundamentals and Devices **3-4-5**
Covers voltage, current, power, DC, AC, impedance, resistance, capacitance, inductance, series circuits, parallel circuits, time constants, use of multimeters, wave generators and oscilloscopes.
Prerequisites: None. Lab fee charged.

7710 D.C. Circuits **6-4-5**
Electricity. Ohm's Law. Resistors, conductors and insulators. Series circuits. Parallel circuits. Series-parallel circuits. Kirchoff's Law. Maximum power transfer. Loaded and unloaded voltage dividers. Network theorems. Loop current equations.
Prerequisites: Corequisites: 1191, 1171. No lab fee charged.

7720 A.C. Circuits **6-4-5**
Inductance; inductive resistance; inductive circuits; capacitance; capacitive reactance; capacitive circuits; RC and RL time constants; alternating-current circuits; resonance filters; transformers; transformer impedance matching.
Prerequisites: 7710. Corequisite: 1192. No lab fee charged.

7725 Electrical Lighting Design **3-0-3**
Basic principles of light and sight and the characteristics of light. Quantity and quality measurements of lighting. Recommended levels and distribution of illumination. Types of light sources, lamp design, operating and performance characteristics. Light control and luminaire design. Exterior and interior lighting methods and calculations. Industrial, commercial and office lighting. Energy management in lighting design.
Corequisite: 7720. No lab fee charged.

7730 Electronics I **5-5-5**
Semiconductory theory, pn junctions. Diode equivalent circuits. Rectifier circuits. Biopolar transistors. Transistor biasing circuits. AC equivalent circuits. Small signal amplifiers. Class A power amplifiers. Class B push-pull amplifiers.
Prerequisites: 7720. No lab fee charged.

7731 Digital Systems I **3-2-3**
Number systems, codes and review of Boolean Algebra. Logic families, logic simplification methods and implementation of logic equations using NAND and NOR gates and Flip-flops.
Prerequisites: 7720. Lab fee charged.

7732 Industrial Control Electronics **4-6-5**
Basic principles of the PN junction. Applications toward rectification, clipping and other wave shaping techniques. Principles, applications and selection of amplifiers, with an emphasis on operational amplifiers. Selection, calibration techniques and system operation of transducers; including position, pressure, flow, temperature, light, acceleration and velocity measurement.
Prerequisites: 7720. No lab fee charged.

7734 Electrical Machinery & Controls I **3-3-3**
Study of DC generator and motor principles, including selection, maintenance, and rating DC machinery. Manual and automatic starters and speed control. DC power supplies and drives.
Prerequisites: 7720. No lab fee charged.

7735 Electrical Machines **3-3-3**
DC generator and motor principles, torque and horsepower terminology, DC motor construction and characteristics. Polyphase induction motors, synchronous motors, single phase motors, motor selection.
Prerequisites: 7720. No lab fee charged.

7736 Electrical Wiring Design I **3-2-3**
AC and DC review, Power Factor, Transformers, Basic devices and circuits, devices, types and sizes of wires. Selection of proper wire size. Grounding conduit and box sizing, service entrance and branch circuits.
Prerequisites: 7720. No lab fee charged.

7738 Electrical Codes **1-2-2**
A study of the electrical codes applicable to electrical construction and equipment, including their coverage, limitations and interpretation.
Prerequisites: 7720. No lab fee charged.

7740 Electronics II **4-3-4**
Field-effect transistors. FET circuit analysis. Decibel and Miller's theorem. Frequency effects, integrated circuits. Negative feedback. Feedback oscillators. Frequency domain. Voltage regulation.
Prerequisites: 7730. No lab fee charged.

7741 Digital Systems II **3-4-3**
Continuation of 7731. Includes edge triggered circuitry; j-k flip-flops, Sync and Async counters, shift registers, clock circuits, monostable theory. Also incoders, decoders, multiplexing (time base) displays. Circuit design techniques using MSI IC's will be discussed.
Prerequisites: 7731. Lab fee charged.

7743 Communication Systems I **3-4-3**
RF amplifiers, oscillators, mixers, IF amplifiers, crystals, radiation and propagation of waves. Amplitude modulation, detectors, AM transmitters and receivers. Single-sideband techniques.
Prerequisites: 7730. No lab fee charged.

7744 Electrical Machinery & Controls II **3-3-4**
Study of AC generators and motors, including selection, maintenance, and rating AC machinery. Manual and automatic starters and speed control. Also includes digital controllers.
Prerequisites: 7734. No lab fee charged.

7745 Electrical Motor Control **4-2-4**
Control circuit diagrams; pilot devices and components; circuit construction; motor control requirements; protection; across the line starting; acceleration methods; speed control (variable & predetermined); sequencings, reversing, plugging, braking, and jogging; analysis of various circuits; troubleshooting; magnetic circuit design; static circuit design; commercial systems, and motor ratings, selection and maintenance.
Prerequisites: 7720, 7735. No lab fee charged.

7746 Electrical Wiring Design II **3-2-3**
Heating fundamentals, electrical heating design and calculations, motor wiring design, motor running overcurrent and short-circuit protection. Transformer ratings and selection. Lighting fundamentals, light sources, lighting design and calculations, special topics.
Prerequisites: 7734, 7736. No lab fee charged.

7747 Electrical Power Distribution **3-1-3**
Type of distribution, grounding systems, cable characteristics, power factor connection, BIL, short-circuit analysis.
Prerequisites: 7018, 7734, 7736. No lab fee charged.

7749 Biomedical Instrumentation I **3-2-3**
Transducer principle. Introduction to the commonly used transducers. Introduction to the man-instrument system. Courses of bioelectric potentials. Bio-potential electrodes. Biochemical transducers. Electrocardiography. Electroshygmomanometer. Magnetic blood flow meter. Cardiac output computer. Patient monitoring system. Surgical monitoring system. Internal and external pacemaker.
Prerequisites: 7731, 4012. No lab fee charged.

7750 Electronics III **3-3-4**
Differential and operational amplifiers, feedback amplifiers, PNPN devices, Discrete pulse and digital circuits, regulators, optoelectronics.
Prerequisites: 7740. No lab fee charged.

7751 Digital Systems III (Microprocessors) **4-3-5**
Continuation of 7741. Includes memories, ram's roms, proms, E proms, also ALU units with A/D and D/A conversions. Course continues with microprocessors, microcomputers, architecture, CPU, bus structure, interrup and stack processing. Application of microprocessor will be discussed interfacing with laboratory systems.
Prerequisites: 7741. Lab fee charged.

7752 Electronics Project **2-6-4**
Application project involving specifications, design, construction, testing, troubleshooting and formal report.
Prerequisites: 7751. No lab fee charged.

7753 Communication Systems II **4-4-4**
Antennas; transmission lines; microwave transmissions; FM transmitters and receivers. Black and white and color TV. Multiplexing.
Prerequisites: 7743 (Must be taken simultaneously with 7754). No lab fee charged.

7754 FCC License Preparation **3-0-2**
Preparation for FCC radio-telephone operators licenses. Technical and legal aspects.
Prerequisites: 7743 (Must be taken simultaneously in the same term with 7753.) No lab fee charged.

7755 Electrical Estimating **2-3-3**
The methods for estimating the cost of electrical systems in residential and commercial buildings. Introduction to the charts techniques which determine prices of installed equipment, variation of standard labor units.
Prerequisites: 7745, 7746, 7747. No lab fee charged.

7756 Circuit Protection
Faults characteristics, circuit grounding, short-circuit studies, fuses, circuit breakers, GFI, protective relays, applications.
Prerequisites: 7746, 7747, 7734. No lab fee charged.

7757 Electrical Maintenance **3-2-3**
Maintenance systems, records, insulation checks, AC and DC motor maintenance, motor controller problems, overcurrent and distribution equipment checks, bearings and batteries.
Prerequisites: 7735, 7746, 7747. No lab fee charged.

7758 Industrial Motors & Controls **3-2-3**
Fundamentals, applications and selection of DC and AC motors including speed torque characteristics, horsepower and efficiency calculations. Magnetic and static control circuits emphasizing equipment and personal protection, across the line starting acceleration methods, speed control, reversing, plugging, breaking, and jogging will be analyzed, constructed, designed, and diagnosed during improper operation.
Prerequisites: 7720. No lab fee charged.

7759 Biomedical Instrumentation II **3-4-4**
Digital blood gas analyzer. Termovision system, Ultrasonic system. Electroencephalographs. Instrumentation for sensory measurements. Instrumentation for the clinical laboratory. X-ray and radiosotope instrumentation. The Computer in biomedical instrumentation.
Prerequisites: 7749. No lab fee charged.

7760 Electrical Monitoring Systems **3-0-3**
A survey of intercom, fire alarm, smoke detection, and intrusion protection systems: how security and public address systems, closed circuit T.V., antenna systems, and clock synchronizers are integrated into the electrical design of modern construction. Especial attention will be placed on the new energy saving devices and systems which are prominent in contemporary structures, and on the latest innovations in solar energy, lighting sources, and the new energy code.
Prerequisites: none. No lab fee charged.

7761 Advanced Microprocessor Systems **3-3-4**
Design of Microprocessor systems with expansion of small systems to larger systems using bread boarding techniques. Hardware and soft-

ware troubleshooting of computer systems. Assembly language programming using resident and cross assembler techniques. Investigation of high order languages. Discussion of current mass storage devices. Students will also work on projects in their area of interest.
Prerequisites: 7751. Lab fee charged.

7799 Special Problems Seminar-Electrical Var-Var-Var
Individual study and special projects pertaining to the particular technology that the student is enrolled in. Open to fourth and fifth term students, by special arrangement with the coordinator and department chairman.
Prerequisites: None. No lab fee charged.

7810 Welding Processes & Techniques I 3-3-3
Basic gas welding. Safe and correct methods of assembling and operating of welding equipment. Introduces the student to joining of metals based on fusion, diffusion, chemical and mechanical methods. Specific laboratory work will involve the oxyacetylene cutting, heating, soldering, brazing, and welding skills.
Prerequisites: None. Lab fee charged.

7820 Welding Processes II (ARC) 3-3-4
The operation of AC transformers and DC motor generator arc welding sets. Studies are made of welding heats, polarities, and electrodes. Laboratory experience to include joining of copper, aluminum, carbon alloys, and magnesium. MIG welding and wires, theory and application is introduced.
Prerequisites: 7810. Lab fee charged.

7830 Welding Processes III (Tig Inert Gas) 3-3-4
Introduction and practical operation in the use of inert-gas-shield arc welding. Emphasis on tungsten inert gas (TIG) welding processes and the plasma arc welding process.
Prerequisites: 7820. Lab fee charged.

7840 Welding Processes IV 3-3-4
Special processes in welding. To include pipe welding, submerged arc welding, carbon arc guaging, resistance welding, etc.
Prerequisites: 7830. Lab fee charged.

7910 Surveying Measurements 2-4-3
Introductory course in field measurement techniques, with emphasis on units of measurement, field note format, instrument usage, differential leveling, 3-wire leveling, profiles, cross sections, taping, E.D.M. usage, horizontal and vertical angles, bearings and azimuths.
Corequisite: 1191. No lab fee charged.

7911 Construction Methods 3-1-3
Introduces the student to the various methods of construction. To include excavation and equipment foundation systems, and forming, floor-wall-roof framing systems. To also include the principles of reinforced concrete and methods of structural steel design.
Prerequisites: None. No lab fee charged.

7920 Surveying Calculations 4-2-3
Intermediate course in surveying calculations, with emphasis on traverse closures and adjustments, coordinate calculations, area determination by D.M.D. and coordinates, coordinate geometry, direct and inverse routines, stadia measurements, triangulation, slope staking, pipe layout, analysis of errors.
Prerequisites: 7910. No lab fee charged.

7930 Route Surveying 3-3-3
Advanced course in the elements of route surveying, with emphasis on; design and layout of horizontal curves, vertical curves, and spiral transition curves, calculation of super-elevation, use of the state plane coordinate system, with emphasis on Ohio, Kentucky, and Indiana.
Prerequisites: 7920. No lab fee charged.

7931 Light Construction 3-3-3
Forest products and their characteristics, carpentry, roofing, etc.; footings; foundations; bracing; retaining walls; construction material and methods; light-weight steel construction.
Prerequisites: 1192. No lab fee charged.

7934 Statics (Civil) 3-2-3
A continuation and application of principles of Physics to engineering analysis. Topics of instruction include force analysis of trusses, vector analysis of friction and hydrostatic pressure, and an introduction into the relation between stress and strain.
Prerequisites: 1192, 2292. No lab fee charged.

7940 Elements of Land Surveying 3-2-3
Advanced course in the elements of boundary surveys, with emphasis on: document research, deed descriptions, U.S. public lands survey system, Ohio land subdivisions, legal aspects of land surveys.
Prerequisites: 7920. Lab fee charged.

7941 Heavy Construction 3-2-3
Emphasis on commercial and industrial installations. To include multi-level structural installations, piles, cassions, and retaining walls. Construction materials and methods.
Corequisite: 7945. Lab fee charged.

7943 Estimation and Inspection 3-2-3
Development of skills in estimating amount and cost of labor and materials for various types of construction.
Prerequisites: 1191. No lab fee charged.

7944 Strength of Materials (Civil) 3-2-3
An introductory course in the application of engineering mechanics to analysis of Civil Engineering structures. Topics of instruction include analysis of connections, membrance stresses and beams. The concepts of centroids and moment of inertia are applied to design problems.
Prerequisites: 7934. No lab fee charged.

7945 Structural Design I 3-2-3
A design course in which the principles of engineering mechanics are applied to design of simple structures. Topics of instruction include space frames, beam analysis and columns.
Prerequisites: 7934. Lab fee charged.

7947 Drainage Control Systems 3-2-3
An introductory course in the design of drainage conduits for removal of storm runoff. Analysis of hydrologic problems by the rational method. Study of open channel hydraulics with application to highway drainage channels, median swales, culverts and gutters. Introductions to pipe network problems.
Prerequisites: None. No lab fee charged.

7948 Site Development 3-2-3
Analysis of the elements in site development, including subdivision and zoning regulations; construction of streets, gutters, water and sewerage systems and earthwork.
Prerequisites: 1192. No lab fee charged.

7950 Surveying Field Project 1-6-3
Specialized project utilizing fundamental theories and standard practices involved in surveying. To include courthouse research, field reconnaissance and measurements, resolution, platting and astronomic observations.
Prerequisites: 7930, 7940. No lab fee charged.

7952 Contracts and Specifications 3-0-3
Common usage and practice in law and preparation of contracts and specifications for construction work and engineering services.
Prerequisites: None. No lab fee charged.

7953 Construction Management and Operation 2-3-3
An analysis of a contractor's operation from the initial purchase of land to the completion of a project. Contractor's relationship with

the architect, engineer, client, and public agencies. Planning coordination, progress charts, and sub-contracts are emphasized.
Prerequisites: None. No lab fee charged.

7954 Structural Design II **2-4-3**
A design course in which the principles of engineering mechanics are applied to reinforced concrete structures. Topics of instruction include the ultimate strength concept of design, and an introduction to indeterminate frame analysis.
Prerequisites: 7944, 7945. No lab fee charged.

7955 Soils Engineering **2-3-3**
An introductory course in soils and foundation engineering. Topics of instruction include; soil classification, routine soil testing, slope stability, optimum compaction and footing design.
Prerequisites: 7944, 7945. Lab fee charged.

7957 Potable & Wastewater Treatment **3-1-3**
An introductory course in state of the art water treatment processes. Examination of treatment methods for control of water borne disease. Study of process alternatives in primary, secondary and advanced wastewater treatment. Care studies of industrial wastewater problems. Design alternatives for low flow wastewater treatment.
Prerequisites: 7947. No lab fee charged.

7980 Building and Support Codes **3-0-3**
Background material on which codes are founded and their legal basis. Testing procedures and evaluating laboratory analysis of construction materials are stressed. Emphasized Building Code and Standards, Mechanical Code, Plumbing Code, Housing Code, and National Electrical Code, General introduction to usage and development of Building Code and supporting codes.
Prerequisites: None. No lab fee charged.

7981 Plan Reading and Review **3-0-3**
Basic course in the reading of construction working drawings. Emphasis is placed on symbols used in the production of architectural, mechanical, and electrical drawings. Course includes interpretation of drawing details, sections, elevations, floor plans. Includes instruction on how to conduct nonstructural plan review of simple structures prior to issuance of permits.
Prerequisites: 7980. No lab fee charged.

7982 Fire and Life Safety **3-0-3**
A fundamental course designed to give the student a basic understanding of the provisions of the Building Code which relates to fire and life safety, such as exits, fire-resistive construction, sprinkler systems, alarm systems, occupancy separations, fire assemblies, etc.
Prerequisites: None. No lab fee charged.

7983 Techniques of Inspection & Public Relations **3-0-3**
An introductory course in building inspection with special reference to construction in the field as it relates to minimum standards and legal aspects of enforcement of building laws. Typical daily problems of field inspection are examined and evaluated in accordance with the appropriate building regulation. Includes elements of basic report writing for inspectors. Public relations as it relates to building inspection activities is emphasized.
Prerequisites: None. No lab fee charged.

7984 Engineering for Building Inspectors **3-0-3**
Simple engineering for field inspection, using applied algebra as a mathematical tool. Forces and simple stresses are examined and how they apply to less complex structural systems in light construction.
Prerequisites: 1171 or 1191. No lab fee charged.

7985 Structural Inspection of Concrete **3-0-3**
This course is designed to provide technical knowledge and background information to those inspectors seeking registration as City and County approved inspectors. Included in the course are reviews of basic inspector responsibilities and information in the field of aggregate production, batch plant operation, cement and admixtures, hauling and placing concrete, and quality control and testing procedures.
Prerequisites: 7980. No lab fee charged.

7986 Structural Inspection of Wood **3-0-3**
An introductory course in building inspection of wood structures covering simple wood framing, the requirements of the Building Code, as well as some wood frame design such as beams and shear diaphragms.
Prerequisites: 7980. No lab fee charged.

7999 Special Problems Seminar - Civil Engineering Var-Var-Var
Individual and independent and special projects pertaining to Civil Engineering Technology. Open to fourth and fifth term students, by special arrangement with Academic Advisor and the Dean.
Prerequisites: None. No lab fee charged.

8100 Aircraft Orientation **3-2-3**
Perform aircraft pre-flight inspection. Learn to use a pre-flight check list, inspecting all components of an aircraft. Learn to perform ground engine run-up and flight control movement check and taxi procedure.
Corequisites: 1171, 1191. No lab fee charged.

8101 Welding Processes **1-4-2**
To include soldering, brazing and gas arc-welding steel. Fabrication of tubular structures, soldering of stainless steel, welding stainless steel and aluminums, magnesium and titanium. Inspect and check welds.
Prerequisites: None. Lab fee charged.

8102 Machine and Hand Tools **1-4-3**
Identify and select aircraft hardware and materials. Fabricate and install rigid and flexible fluid lines and fittings.
Prerequisites: None. Lab fee charged.

8103 Basic Aerodynamics & FAA Regulations **3-2-3**
List, thrust and drag. Stability of aircraft. Effects of balance. Write descriptions of aircraft condition and work performed. Complete required maintenance forms, records and inspections reports. Select and use FAA and manufacturer's aircraft maintenance specifications, data sheets, manuals, and publications, and related Federal Aviation Regulations. Exercise technician privileges within the limitations prescribed by FAR 65.
Corequisites: 1171. No lab fee charged.

8110 Aircraft Fuels and Fuel Systems **1-4-2**
Inspect, check and repair pressure fueling, transfer, defueling, and fuel dump systems. Repair of fuel systems components. Inspect, check, service, troubleshoot, and repair aircraft fuel systems. Inspect, check, service, trouble-shoot, and repair powerplant fuel systems.
Prerequisites: 8102. No lab fee charged.

8120 Airframe Structures **5-5-5**
Identifying of wood defects, inspect wood structures, service and repair wood structures, fabric and fiberglass covering materials. Trim, lettering and touch-up paint; cleaning and corrosion controls, inspect and identify defects.
Prerequisites: 8100. No lab fee charged.

8121 Airframe Hydraulic and Pneumatic Systems **1-4-2**
Repair hydraulic and pneumatic power system components. Inspect, check, service, trouble-shoot and repair hydraulic and pneumatic power systems.
Prerequisites: 8102. No lab fee charged.

8122 Materials and Processes **2-3-3**
Identify and select aircraft hardware and materials. Perform precision measurements. Perform penetrate, chemical etching, and magnetic particle inspections. Identify and select appropriate non-destructive testing methods. Perform basic heat-treating processes. Inspect and check welds.
Prerequisites: 8102, 2291. Lab fee charged.

8130 Airframe Systems, Hydraulic and Pneumatic Landing Gears **3-7-5**
Inspect, check, service and repair landing gear. Retraction systems, shockstruts, brakes, wheels, tires and steering systems. Inspect, check and service of warning systems of anti-skid electrical brakes. Controls, landing gear position indicating and warning systems.
Prerequisites: 8121. No lab fee charged.

8131 Airframe Structures, Sheet Metal **3-7-4**
Install special rivets and fasteners. Inspect bonded structures. Inspect and repair plastics, honeycomb and laminated structures. Inspect and repair sheet metal structures. Hand form, layout, bends sheet metal and install conventional rivets. Flush riveting. N.A.G.A. riveting, high-shear rivets, cherry lock rivets.
Prerequisites: 8103, 1172. Corequisite: 7009. Lab fee charged.

8140 Aircraft Electrical Systems **5-5-5**
Repair aircraft electrical system components. Install, check and service airframe electrical wiring, controls, switches, indicators, and protective devices. Inspect check, trouble-shoot, service, and repair alternating current and direct current electrical systems. Service compound and shunt generators, alternators, starters, and starter-generators. Check and adjust generating output regulation. Repair and/or replace fuses, circuit-breaker, switches, high and low tension wiring, terminals and terminal blocks, magnetic switches and transformers.
Prerequisites: 8131, 7704. No lab fee charged.

8141 Aircraft Instrument, Communications and Navigation, and Utility Systems **5-5-5**
Installation, marking, swinging of instruments. Testing of pilot and static air systems and filter systems. Install and check pressure, vacuum, mechanical instruments. Inspect, check, and service autopilot, approach control and communication and navigation systems. Inspect and repair antenna and electronic equipment. Inspect, check and service speed and take-off warning system electrical brake controls, anti-skid system and carbon monoxide detection system. Inspect, check and service ice and rain control system. Inspect, check, trouble-shoot, service and repair landing gear position and warning system and aircraft fire detection and extinguishing systems.
Prerequisites: 8120. No lab fee charged.

8142 Flightline Maintenance I **1-4-2**
Identify and select cleaning materials, perform cleaning and corrosion control, protect battery compartment. Move aircraft employing hand signals and tie down aircraft. Perform airframe and powerplant conformity and airworthiness inspection.
Prerequisites: 8110, 8121, 7704. No lab fee charged.

8150 Aircraft Electrical Generating Systems **3-2-3**
Direct current and alternating current generation. Study of theory of operation disassembly, overhaul and installation. Adjustment of regulators and trouble-shooting the system.
Prerequisites: 8110, 8131. No lab fee charged.

8151 Airframe Assembly & Rigging **3-7-5**
Rig fixed-wing aircraft. Rig rotary-wing aircraft. Assemble, balance and rig aircraft and control surface. Using inspection forms, perform a 100 hour inspection. Perform check of aircraft pertaining to specifications and A.D. note compliance. Make repairs and adjustments found to be necessary during inspecton. Check and perform weight and balance of aircraft.
Prerequisites: 8131. Lab fee charged.

8152 Flightline Maintenance II **2-3-3**
Identify and select cleaning materials, perform cleaning and corrosion control. Perform powerplant conformity and airworthiness inspection.
Prerequisites: 8142. No lab fee charged.

8160 Powerplant Theory, Reciprocating **5-5-5**
Introduction to the design, manufacture, overhaul and repair of piston and engines and their installation. Overhaul of an opposed engine. Inspect and repair a 14-cylinder or larger radial piston engine.
Prerequisites: 8122, 2291. Lab fee charged.

8161 Powerplant Lubrication **3-2-3**
Identify and select proper lubricants. Inspect, check, service, troubleshoot and repair powerplants lubrication systems.
Prerequisites: 2293. Corequisite: 8160. No lab fee charged.

8162 Propellers **3-2-3**
Inspect, check, service and repair propeller synchronizing and ice control systems. Identify and select propeller lubricants. Balance propellers. Repair propeller control system components. Inspect, check, service and repair fixed pitch constant speed and feathering propellers and propeller governing systems. Install, troubleshoot, and repair engine exhaust systems.
Prerequisites: 8100, 8103, 2291. No lab fee charged.

8170 Powerplant Theory, Turbine **5-5-5**
Introduction to the design, manufacture, overhaul and repair of turbine engines and their installation. Inspect, check, service, trouble-shoot and repair turbine engine installation, fuel control and ignition systems.
Prerequisites: 8160. No lab fee charged.

8171 Fuel Metering Systems **3-2-3**
Inspect, check, service, trouble-shoot and repair reciprocating fuel injection systems.
Prerequisites: 8160. No lab fee charged.

8172 Ignition Systems **5-5-5**
Overhaul magneto and ignition harness. Repair engine ignition system components. Inspect, check, service, trouble-shoot and repair powerplant ignition systems.
Prerequisites: 8160. Lab fee charged.

8180 Turbine Powerplant Systems Components **6-4-6**
Introduction to the design, function, repair and servicing of turbine fuel controllers. Practice of installation of control units and trimming of turbine fuel control units. Practice of adjustment of idle speed, and use of charts to turbine air inlet and exhaust systems.
Prerequisites: 8170. No lab fee charged.

8181 Powerplant Carburetor Fuel System **6-4-6**
Inspect, check and service water injection systems. Overhaul a carburetor. Repair fuel metering components. Inspect, check, service, trouble-shoot and repair reciprocating carburetor systems and induction manifolds. Repair engine cooling system components. Inspect, check, trouble-shoot, service and repair engine cooling system.
Prerequisites: 8171. No lab fee charged.

8182 Airframe and Powerplant Comprehensive **3-2-3**
A comprehensive study and review of all the required subjects and subject material preparing the student for the Comprehensive Examination; demonstrating the proficiency required to be awarded the degree and be named a candidate for the Federal Aviation Agency Maintenance Technician License.
Prerequisites: None. No lab fee charged.

9000 Career Development **2-0-2**
A small group, self development approach to career choice and development. This course will help the student to gain better self-understanding through the exploration of personal interests and aptitudes as they relate to career demands. The student will acquire skills in communications, establishing career goals and making decisions. Emphasis on job seeking techniques, the job application, the resume, the interview. Activities will include testing, group interaction exercises, guest lectures, and review of pertinent literature.
Prerequisites: None. Lab fee charged.

9201, 9202, 9203, 9204, 9205 Cooperative Employment
2-3 Credit Hours Each Term
Usually on an alternating term basis, the Business student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term, the student ideally is able to assume more responsibility and perform higher level duties on the

job because of what he or she has learned from the previous term(s) of employment and the added knowledge and skills acquired in each school term. Participation in a cooperative employment seminar and related instructional assignments equivalent to thirty (30) to forty (40) class hours per term is required to earn co-op credit.
Prerequisites: None. No lab fee charged.

9301, 9302, 9303, 9304, 9305 Cooperative Employment 2-3 Credit Hours

Usually on an alternating term basis, the Allied Health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term, the student ideally is able to assume more responsibiltiy and perform higher level duties on the job because of what he or she has learned from the previous term(s) of employment and the added knowledge and skills acquired in each school term. Participation in a cooperative employment seminar and related instructional assignments equivalent to five to ten class hours per term is required to earn co-op credit.
Prerequisites: None. No lab fee charged.

9311, 9312, 9313, 9314, 9315 Clinical Cooperative Education 2-3 Credit Hours

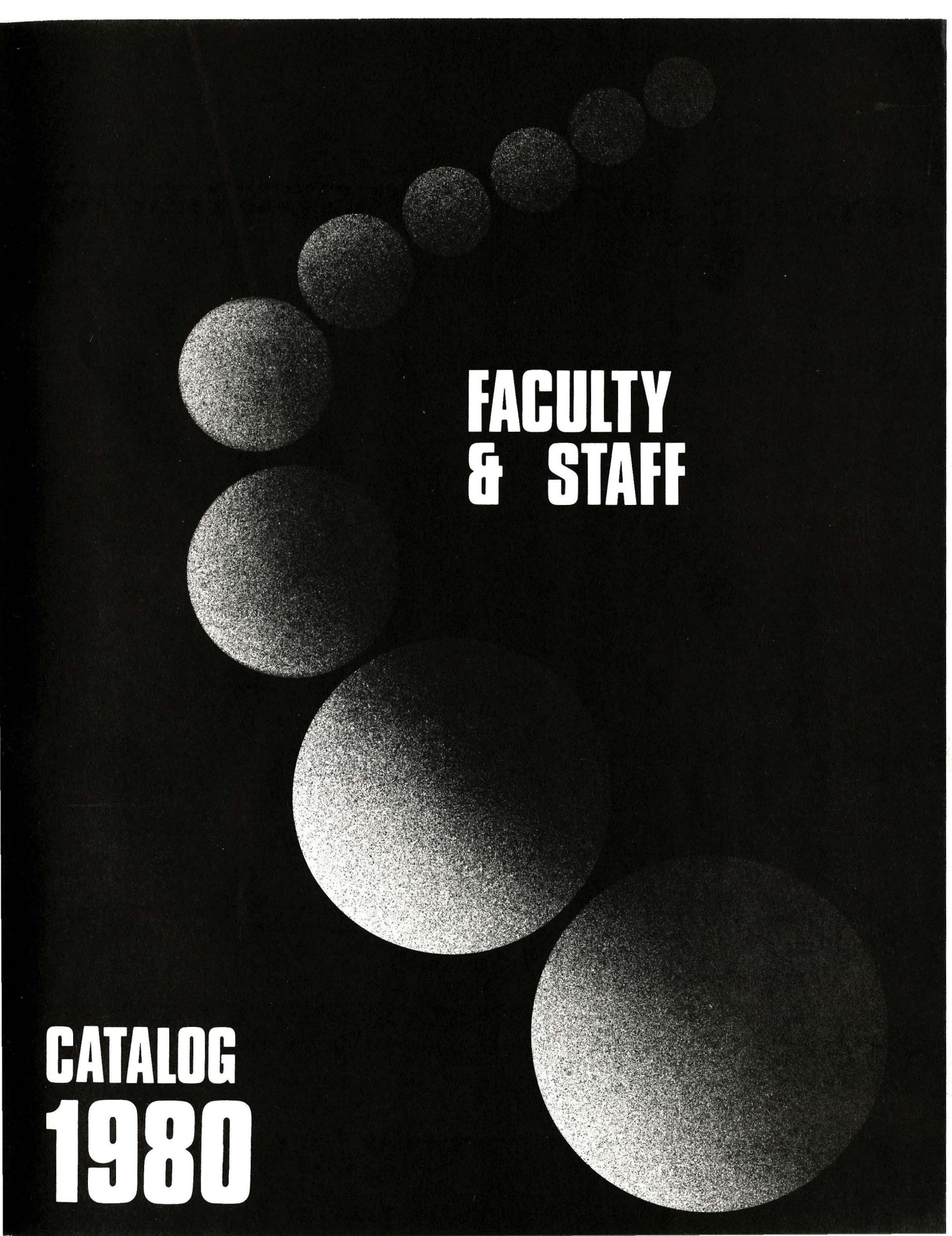
The Allied Health student is placed in a clinical experience that relates to his or her program. This affords the student the opportunity to make practical application of the knowledge and skills acquired in the didactic phase of the program. With each succeeding clinical cooperative education the student is able to assume more responsibiltiy and perform higher level duties in the clinical experience because of what he or she has learned from the previous term(s) of experience and the added knowledge and skills acquired in each college term. In order to have credit toward programs, students, upon completion of the course, must successfully complete a proficiency examination or must document having met the course requirements related to each technology area. Participation in a clinical cooperative education seminar and related instructional assignments equivalent to five to ten class hours per term is required to earn co-op credit.
Prerequisites: None. No lab fee charged.

9401, 9402, 9403, 9404, 9405 Cooperative Employment 2-3 Credit Hours

Usually on an alternating term basis, the Engineering student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term, the student ideally is able to assume more responsiblitiy and perform higher level duties on the job because of what he or she has learned from the previous term(s) of employment and the added knowledge and skills acquired in each school term. Participation in a cooperative employment seminar and related instructional assignments equivalent to five to ten class hours per term is required to earn co-op credit.
Prerequisites: None. No lab fee charged.

9501, 9502, 9503, 9504 Cooperative Employment 2-3 Credit Hours

Usually on an alternating term basis, the Ornamental Horticulture student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term the student ideally is able to assume more responsibility and perform higher level duties on the job because of what he or she has learned from the previous term(s) of employment and the added knowledge and skills acquired in each school term. Participation in a cooperative employment seminar and related instructional assignments equivalent to thirty (30) to forty (40) class hours per term is required to earn co-op credit.
Prerequisites: None. No lab fee charged.


FACULTY
& STAFF
CATALOG
1980

1980 CATALOG

FACULTY & STAFF

Board of Trustees

Floyd Black ..... Attorney
Alice P. Bruckmann ..... Civic Leader
Werner E. Donath, M.D. ..... St. Francis Hospital
Ruth M. Edwards ..... Attorney
Ora Gordon ..... Real Estate Salesperson
Rev. Herman Kenning..... Council on The Aging & Retired
Wayne F. Wilke .... Attorney and Treasurer of Hamilton County

Administrative Council

Frederick B. Schlimn ..... President
Charles E. Warman..... Senior Vice President for Community Relations and Community Services
David C. Ballinger..... Vice President for Academic and Student Affairs
A. Wayne Vaughn..... Vice President for Finance and Business Affairs
Eleanor V. Bonner ..... Director of Personnel and Affirmative Action
James E. Johnson .. Director of Management Information Systems and Data Processing
Ann I. Rasche .. Assistant to the President for Research, Planning and Special Projects

Faculty and Staff

Kathleen P. Austing .... Supervisor of Student Data Base
Craig J. Ballard .... Director of Grants Development and Alumni Affairs
A.A.S., Cincinnati Technical College
B.A., University of Kentucky
David C. Ballinger..... Vice President for Academic and Student Affairs
B.A., Ohio State University
M.P.H., University of Michigan
Thelma Barnes ..... Library Assistant
B.S., Alabama State University
Marc Baskind..... Instructor, Communication Skills/Social Science Division
B.A., Washington University
M.A., Indiana University
Prem Batra .. Coordinator, Physical Science/Mathematics Division
M.S., University of Cincinnati
PH.D., University of Cincinnati
Carmen Battistone .... Instructor, Communication Skills/ Social Science Division
B.S., Kent State University
M.Ed., Xavier University
Leonard Bidwell..... Facilities Services Manager
A.A.S., Cincinnati Technical College
Johnnie F. Boggio..... Director of Development
A.B., University of Kentucky
M.Ed., University of Florida
Herbert A. Bom ..... Controller
B.S., Southeast Missouri State University
Stewart Bonem ..... Instructor, Business Division
B.S., Miami University
M.B.A., Miami Universtiy
Eleanor V. Bonner .Director of Personnel/Affirmative Action
B.S., Hampton Institute
Stephen M. Bove ..... Instructor, Engineering Division
A.A.S., Cincinnati Technical College
M.A. Michigan University
Richard D. Brown ..... Instructor, Business Division
B.S., Franklin University
M.Ed., University of Cincinnati
Sharon S. Brown .....Director of Business Technologies
B.S., University of Cincinnati
M.Ed., University of Cincinnati
J. Terry Brown ..... Coordinator, Engineering Division
B.S., University of Cincinnati
M.Ed., Universtiy of Cincinnati
Evelyn Burke.....Clerical Assistant, Extended Services
Naomi R. Cain ..... Payroll Accounting Clerk
Paul R. Callahan .... Director of Extended Services/A.I.S.
B.S., University of Cincinnati
M.Ed., Xavier University
Connie L. Campbell ..... Coordinator, Business Division
Business Education, Campbellsville College
B.S., Eastern Kentucky University
M.A., University of Cincinnati
Vicki J. Candella ..... Director of Data Processing
A.A.B., Cincinnati Technical College
Michael T. Carroll ..... Instructor, Engineering Division
A.A.S., Cincinnati Technical College
Dan Cayse .....Director of Business Technologies
B.S., University of Cincinnati
M.B.A., University of Cincinnati
Anne E. Charles .....Director of Business Technologies
B.B.A., University of Cincinnati
M.Ed., University of Cincinnati
Rosemary Clark ..... Coordinator, Allied Health Division
B.A., Edgecliff College
M.A., Xavier University
R.R.A. Certification, St. Louis University
Eileen Coffe..... Coordinator, Allied Health Division
B.S., University of Manitoba
R.D., University of Michigan
Linda Cole ..... Cashier
A.A.B., Cincinnati Technical College
Randall J. Corgan ..... Coordinator, Business Division
A.A.S., University of Cincinnati
B.S., University of Cincinnati
M.Ed., University of Cincinnati
M.B.A., Xavier University
Robert W. Craigo ..... Dean, Engineering Division
B.S., West Institute Technology
M.S., University of Cincinnati
Marianne Cramer ..... Library Technician
B.A., College of Mount St. Joseph
Ronald A. Davidson ... Instructor, Allied Health Division
B.S., University of Cincinnati
Paul A. DeNu ..... Coordinator, Engineering Division
B.S., University of Cincinnati
M.S., Purdue University
Joseph Derickson, Jr. .....Coordinator, Business Division
B.B.A., Eastern Kentucky University
Vincent J. DeVol .... Coordinator, Engineering Division
Certificate, Parks College of St. Louis University
Air Frame and Power Plant Technician License
Designated Mechanic Examiner of Air Frame and Power-plant Ratings
Reginangelo A. DiPilla Coordinator, Engineering Division
B.S., Parks College of St. Louis University
M.S., Air Force Institute of Technology
Theresa C. Ehlman ..... Executive Assistant, Admissions

Robert V. Elmer ..... Coordinator, Business Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Sue Erftenbeck ..... Scheduling Assistant, Instructional Support Services

David M. Evans ..... Instructional Media Technician
A.A.S., Cincinnati Technical College

Drexanne Evers ..... Director, Real Estate Academy
B.A., Ohio State University

Robert W. Eveslage . Coordinator, Allied Health Division
B.S., University of Cincinnati
M.S., Indiana University

James A. Farrer ..... Coordinator, Engineering Division
A.E., Southern Technical Institute
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Elmer C. Flamm..... Instructor, Communication Skills/ Social Science Division
A.B., Xavier University
M.Ed., Xavier University

Jerry A. Froehlich ..... Coordinator, Physical Science/ Mathematics Division
A.S., Ohio College of Applied Science
B.S., University of Cincinnati
M.Ed., Xavier University

Hal G. Funk. .Divisional Coordinator, Engineering Division
B.S., Ohio State University
M.Ed., University of Cincinnati

Annie Ruth Galloway ..... Instructor, Business Division
B.S., Bowling Green State University
M.Ed., Bowling Green State University

Duane C. Gardner ..... Library Assistant Reader Services
B.A., Eastern Kentucky University

Terrence J. Glenn .... Dean, Communication Skills/Social Science Division
B.S., Xavier University
M.Ed., Xavier University

Gary A. Graff ..... Coordinator, Engineering Division
A.A.S., Cincinnati Technical College
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Marcus Green ... Instructor, Communication Skills/Social Science Division
B.S., University of Cincinnati

Sandy Haddix ..... Programmer/Analyst
A.A.B., Cincinnati Technical College

Karen Hamilton .... Clerical Assistant, Admissions Office

Treva Hanseman ..... Executive Assistant, Instructional Support Services
A.A.B., Cincinnati Technical College

Frederick A. Hartzel ..... Coordinator, Business Division
A.A.S., Paul Smith College
Teaching Certificate, University of Cincinnati

Elizabeth C. Hattemer ..... Director of Developmental Education
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Harry R. Heink .. Instructor, Communication Skills/Social Science Division
A.B., Eastern Kentucky State University
M.Ed., Xavier University

Richard E. Hendrix ..... Coordinator, Business Division
B.S., Bowling Green State University
M.Ed., Xavier University

Danny O. Hill ..... Coordinator, Business Division
A.S., University of Cincinnati
B.A., University of Cincinnati
M.Ed., University of Cincinnati

Emma Hill ..... Clerical Assistant, Financial Aid

Sharon L. Honaker ..... Executive Assistant, Student Support Services
B.A., University of Cincinnati

James H. Horton..... Director of Learning Resources
B.S., Indiana State University
M.S., Indiana State University

Clifford R. House ..... Instructor, Communication Skills/ Social Science Division
B.A., Fairmont State College
M.Ed., Xavier University

John H. Hubbard ..... Coordinator, Engineering Division
B.S.C.E., Tufts University
M.S., University of Pittsburgh

John E. Hurley..Director of Athletics and Student Activities
B.S., Bowling Green University
M.S., Ohio University

Frank A. Iacobucci..... Instructor, Physical Science/ Mathematics Division
B.S., United States Military Academy
M.Ed., Xavier University

Michele M. Imhoff ..... Director of Public Information
B.S., Boston University

G. Kay Jacks ..... Director of Fianancial Aid
B.S., University of Arkansas
M.A., Xavier University

Melanie Jackson ..... Counselor/College Work-Study Coordinator, Financial Aid
A.A.B., Cincinnati Technical College

Judd H. James ..... Coordinator, Engineering Division
B.S.M.E., University of Cincinnati

James E. Johnson .... Director, Management Information Systems/Data Processing
B.S., Florida Southern College
M.Ed., Rutgers University

Charles L. Jonas ..... Divisional Coordinator, Engineering Division
B.S., Ball State
M.Ed., University of Cincinnati

Carolyn Jones ..... Assistant Registrar
A.A.B., Cincinnati Technical College

Michael H. Jones. . .Instructor, Communication Skills/Social Science Division
B.F.A., University of Cincinnati

Theresa K. Jones ... Executive Assistant, Extended Services
A.A.B., Cincinnati Technical College

Geraldine M. Kaminski ..... Dean, Instructional Support Services
B.S., University of Dayton
M.T.S., Catholic University of America
D.A., Catholic University of America

Joseph N. Keenan ..... Coordinator, Business Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Mary Lee Keller ... Instructor, Communication Skills/Social Science Division
B.A., Edgecliff College

Paul W. Kinzie ..... Coordinator, Business Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Walter J. Klayer ..... Coordinator, Engineering Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Edward P. Knepp ... Coordinator, Allied Health Division
B.S., Ohio University
C. E. Kobberdahl ..... Instructor, Business Division
B.S.C., University of North Dakota
M.Ed., University of Cincinnati
Thomas E. Kober ... Coordinator, Allied Health Division
B.A., Earlham College
M.S., University of Cincinnati
Ph.D., University of Cincinnati
Jerry A. Krismer ..... Coordinator, Business Division
B.A., University of Cincinnati
B.S., University of Cincinnati
M.Ed., University of Cincinnati
John Krismer ..... Coordinator, Business Division
B.S., University of Cincinnati
B.A., University of Cincinnati
Marianne Krismer ... Coordinator, Allied Health Division
B.S., Edgecliff College
M.Ed., University of Cincinnati
Irvin C. Kuehn ..... Instructor, Business Division
B.S., Eastern Kentucky University
M.A., Eastern Kentucky University
Carolyn Laemmle ... Coordinator, Allied Health Division
B.A., Edgecliff College
John Lalley ..... Instructor, Physical Science/Mathematics Division
B.S., Thomas More College
Mary C. LaVallee .... Coordinator, Allied Health Division
B.A., Edgecliff College
Claudia C. Lawrence .. Executive Assistant, Allied Health Division
Yolanda C. Lawrence ..... Coordinator, Veterans Affairs
A.A.S., Northwood Institute
David Wayne Lee ..... Coordinator, Business Division
B.S., Franklin University
Albert G. Leicht ..... Coordinator, Business Division
B.S., West Virginia Institute of Technology
M.S., South Dakota State University
Joe R. Lower ..... Coordinator, Business Division
B.S., Ohio State University
M.A., Ohio State University
Susan E. Madsen ..... Media Assistant
B.A., University of Cincinnati
Linda S. Maloney ..... Instructor, Engineering Division
A.A.S., Cincinnati Technical College
James Marcotte ..... Instructional Specialist, Developmental Education
A.A.S., Purdue University
B.S., Indiana State University
M.Ed., University of Cincinnati
Kathlyn L. Mayer ..... Admissions Counselor
B.S., Mt. St. Joseph College
Dale McCarthy..... Director of Facilities
A.A.S., Cincinnati Technical College
Michael V. McKibben. .Director of Admissions and Records
B.A., Ohio University
M.Ed., University of Cincinnati
Linda D. Meador ..... Counselor
B.S., Tuskegee Institute
M.A., Tuskegee Institute
Daniel Mellinger ..... Instructor, Communication Skills/ Social Science Division
A.B., University of Tennessee
M.Ed., University of Cincinnati
Don Meyer ..... Coordinator, Engineering Division
B.S.I.E., University of Cincinnati
Judith A. Meyer..... Coordinator, Allied Health Division
B.S.N., Mount St. Joseph College
Tom Miller ..... Coordinator, Business Division
B.S., West Virginia Institute of Technology
Katye L. Mindhardt ..... Instructor, Business Division
A.A.S., University of Cincinnati
B.S., University of Cincinnati
M.Ed., University of Cincinnati
Deborah V. Moltz .. Coordinator, Allied Health Division
Nursing Diploma, Baptist Hospital School of Nursing, Tennessee
Mary J. Mueller ..... Bookstore Manager
A.A.B., Cincinnati Technical College
Billy D. Mullins ..... Coordinator, Engineering Division
B.S.E.E., University of Kentucky
Walter R. Murray, Jr. .... Dean, Student Support Services
B.A., Vanderbilt University
M.M., Vanderbilt University
Michael H. Nakoff ..... Coordinator, Business Division
B.S., University of Cincinnati
Timothy D., Nolan ..... Director of Staff Development
A.B., Xavier University
Jude J. Norton ..... Coordinator, Allied Health Division
A.A.S., Cincinnati Technical College
B.A., Northern Kentucky University
M.S., University of Cincinnati
Vasil Ognenoff ..... Coordinator, Business Division
B.S., Indiana University
Louis E. Owsley ..... Dean, Business Division
B.S. Xavier University
Leonard R. Penn ..... Instructor, Business Division
B.A., University of Cincinnati
M.Ed., Xavier University
Verale W. Phillips ..... Coordinator, Business Division
A.S., University of Cincinnati
B.S., University of Cincinnati
M.B.A., Xavier University
Certificate in Data Processing, Institute for Certification of Computer Professionals
Certificate in Data Education, Certification Council
Lloyd L. Pitman, Jr. ..... Instructor, Business Division
B.S., University of Cincinnati
M.Ed., Xavier University
Miriam Pizzuto ..... Coordinator, Educational Relations
Lawrence E. Pucke ..... Instructor, Physical Science/ Mathematics Division
B.S., Xavier University
M.Ed., Xavier University
Herman Randell ..... Instructor, Physical Science/ Mathematics Division
B.A., Northwestern Louisana State University
M.A., Washington University
Ann I. Rasche .... Assistant to the President for Research Planning and Special Projects
B.A., College of Mount St. Joseph
B.Ed., University of Cincinnati
M.Ed., University of Cincinnati
William G. Rhein ..... Coordinator, Engineering Division
B.S.I.M., University of Cincinnati
M.B.A., University of Cincinnati
H. Anthony Rinck .... Coordinator, Engineering Division
M.Ed., Xavier University
D.M.E., Xavier University
Pat Robbins ..... Executive Assistant, Engineering Division

Clarke J. Robinson, Jr ..... Executive Assistant, Community Relations/Services Division
B.M., Oberlin College
M.M., University of Cincinnati

Carol Ann Roth ..... Financial Services Manager

Marian Rothert ..... Manager, President's Office

Rod Rupp ..... Instructor, Physical Science/Mathematics Division
B.S., University of Cincinnati
B.Ed., University of Cincinnati

Tim Rush-Ossenbeck . Coordinator, Engineering Division
B.S., University of Cincinnati

Ralph W. Sanders ..... Coordinator, Engineering Division

Roger H. Schaller ..... Coordinator, Engineering Division
A.A.S., Cincinnati Technical College
B.S., Wisconsin State Universtiy

Frederick B. Schlimm ..... President
B.S., Xavier University
M.Ed., Xavier University

Ralph Schlueter ..... Coordinator, Physical Science/ Mathematics Division
B.S., Xavier University
M.Ed., Xavier University

Joseph B. Schutte ..... Programmer/Analyst
A.A.S., Cincinnati Technical College

Martha Schoenberger ... Supervisor, Graphic Arts Center
A.A.B., Cincinnati Technical College

J. Richard Sefton ..... Coordinator, Business Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Swanya d'Andre Smith ..... Counseling Assistant

Robert E. Speckert. . .Director of Cooperative Education and Public Relations, Engineering Division
A.A.S., Cincinnati Technical College
B.S., Miami University

Thomas J. Stark .... Dean, Physical Science/Mathematics Division
B.S.., Xavier University
M.Ed., Xavier University

V. Kenneth Steidley ... Coordinator, Engineering Division
B.S., Northeast Missouri State University

Brigetta Stewart ..... Coordinator, Business Division
Certified Protection Personnel, American Society for Industrial Security

Susan Kaye Stogner ..... Executive Assistant, Physical Science/Mathematics Division
Executive Secretarial, Southern Ohio College
A.A.S., Cincinnati Technical College

Ken Stoll ..... Director of Academic Affairs, Engineering Division
B.S., Miami University
M.Ed., University of Cincinnati

Richard H. Strait ..... Instructor, Engineering Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Carl Sulek ..... Coordinator, Business Division
B.S., Ohio University
M.Ed., University of Cincinnati

Eddy N. Swearingen ..... Plant Engineer

Joseph L. Theisen ..... Coordinator, Business Division
L.L.B., LaSalle University

William S. Tulloss ..... Instructor, Physical Science/ Mathematics Division
B.E.E., Ohio State University
M.S.E.E., Ohio State University
M.S., Xavier University

Nancy B. Turner ..... Coordinator, Business Division
A.B., University of Kentucky
M.Ed., University of Cincinnati

Clayton Van Camp ... Coordinator, Engineering Division
A.A.S., Ohio College of Applied Science

Teresa S. Van De Ryt.. Executive Assistant, Business Division
A.A.B., Cincinnati Technical College

A. Wayne Vaughn ..... Vice President, Finance and Business Affairs
B.S., Miami University
B.A., Miami University

Karl N. VonKampen ..... Coordinator, Business Division
B.S., Bradley University
M.S., Bradley University

Peter A. von Volborth ..... Library Assistant Reader/ Technical Services
B.A., University of Cincinnati

Rose O. von Volborth ... Assistant Director of Technical Services, Library
B.A., University of Cincinnati
M.A., University of Cincinnati

John P. Wagner ..... Director of Counseling Services
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Nancy Walters ..... Coordinator, Allied Health Division
A.B., Lindenwood College

Gary Walton ..... Instructor, Business Division
A.A.S., Cincinnati Technical College
B.S., University of Cincinnati

Charles E. Warman ..... Senior Vice President, Community Relations and Community Services
B.Ed., University of Cincinnati
M.Ed., Xavier University

Olivia Watts ..... Coordinator, Allied Health Division
B.S.N., University of Cincinnati

Gary Webster ..... Instructor, Engineering Division
B.S.E.E., Ohio State University

Eugene T. Wieland ..... Business Manager
B.B.A., University of Cincinnati
M.B.A., Indiana University

Catherine R. Wiesner .. Instructor, Communication Skills/ Social Science Division
A.B., Miami University
M.A., Miami University

LaVerne Winkle ..... Coordinator, Engineering Division
B.S.E.E., University of Cincinnati

Judith Wright ..... Clerical Assistant, Staff Development, Media & Developmental Education
A.A.B., Cincinnati Technical College

Walter W. Wyatt ..... Coordinator, Business Division
B.S., Ohio State University

Kim T. Ziegel .... Instructor, Communication Skills/Social Science Division
B.A., Columbia University
M.A., Indiana University
M.Ph., Yale University

Lawrence Ziegler ..... Instructor, Communication Skills/ Social Science Division
A.B., Athenaeum of Ohio
M.Ed., Xavier University

Sylvia Zins ..... Needs Analysis/Systems Coordinator, Financial Aid

Professional Advisory Committees

General Advisory Committee
Ronald L. Buckley ..... Deer Park Suede & Leather Goods, Inc.
Calvin H. Conliffe ..... General Electric Company
Ralph Estes ..... Sales Marketing Executives Assn.
George E. Jaeger ..... Cincinnati Milacron, Inc.
Mamie Earl Sells ..... Assistant to Mayor Bobbie Sterne
Jerry Stoeckle ..... Hamilton County Treasurers Office

Small Business Advisory Committee
Cecil Boatright ..... Small Business Administration
Max Boehm ..... American Technology, Inc.
Robert Goering ..... Attorney, Wilke & Goering
Edward Hamann ..... Hamann, Herking & Assoc., Inc.
Ted Hattemer ..... Stanley A. Stein Real Estate
Bob Herking ..... Hamann, Herking & Assoc., Inc.
Robert Hood ..... Greater Cincinnati Chamber of Commerce
Morris Moore ..... Small Business Administration
Herb Schaffer ..... M & I Associates, Inc.
Pauline Strayhorne ..... Major Federal Savings & Loan Assn.
Norman Tillar..... Service Corps of Retired Executives

Educational Relations Advisory Committee
Hildegard Babbs ..... Glen Este High School
Betty Brown ..... Scarlet Oaks Career Development Center
Greg Burwinkle ..... Newport Catholic High School
Thomas Bushman ..... Elder High School
Robert Castelli ..... McAuley High School
Mary Ann Jervis ..... Oak Hills High School
Evelyn Mercer ..... Forest Park High School
Virginia Meyer ..... Princeton High School
Steven Skurow ..... Withrow High School
Margaret Smith ..... Bellevue High School

Air Conditioning (Climate Control) Technology
Sheldon Braun, Jr. ..... National Heating Company
Thomas Eppans ..... King Heating & Air Conditioning Company
Paul Koch ..... Technical Services, Inc.
Frank Lienhart..... 20th Century Air Conditioning Company
Clifford Rybolt ..... Rybolt Heating Company

Automotive Service Management Technology
Robert Behler ..... Behler Oldsmobile
Thomas Lipps ..... CTC Graduate
Clifford Metzger ..... Buick Motor Division
Al A. Nagele ..... Independent Garage Owner
Lenny Pugh ..... Superior Chevrolet
Irwin Sobul ..... Feld Truck Leasing
Carl Tedesco ..... Cincinnati Automobile Dealers Association

Aviation Technology
Joseph Babas ..... Avionics Incorporated
Hank Butkiewicz ..... General Electric Company
Richard Elliot .....
Louis Glos ..... Co-op Aircraft Service
Steve Hanifin ..... Servair Incorporated
William Hogan ..... Hamilton Airport, Inc.
Eric Kornau ..... Fischer Industries
A. E. Langhorst ..... Evendale Technical School
Barry Pruss ..... East West Helicopter
James Sievers ..... Chemed Corporation
Richard Wartinger ..... Flightways
Dennis Wolter ..... Aircraft Paint & Upholstery Company

Biomedical Electronics Technology
Walter Bordett ..... Jewish Hospital
Bill Bross ..... Liebel Flarsheim Company
W. Morton Caldwell .... Veterans Administration Medical Center
Neil Edwards ..... General Hospital & College of Medicine, UC
James Magrish ..... College of Medicine, UC
Edgar Miller ..... Christ Hospital
Darrell Neuhausel ..... Bethesda Hospital
Elmer Nielsen ..... Good Samaritan Hospital
Ed Songen ..... Liebel Flarsheim Company
Jerry Steel ..... Providence Hospital
Monica E. Tindall .... Medical Systems Division, General Electric

Business Management & Managerial Accounting Technologies
Eugene Adams ..... David J. Joseph Company
Bruce Ballinger ..... Haskins and Sells
Joyce H. Cooper ..... CTC Student
Daniel Crowe ..... Queen City Suburban Press, Inc.
Walter Flynn ..... Central Trust Company
Norman Hartleb ..... Sub-Zero Manufacturing
Paul J. Imwalle ..... Federal Home Loan Bank
Patricia Lentz ..... CTC Student
James M. Partin ..... English Woods Market
Louis Perrino ..... Southwestern Publishing Company
Marvin E. Walker ..... Blue Cross of Southwestern Ohio
Margaret Whitledge ..... Tresler Oil Company

Civil Engineering (Building Construction) Technology
Carey Fitzpatrick ..... Crest Communities, Inc.
Richard Goettle ..... Goettle Construction Company
Bill Minielli, Jr. ..... Minielli Construction Company
Dale Schneider ..... H. C. Nutting Company
Matthew Schultze .....
David Swedes ..... Hummel Building Company
Jack White ..... KZF & Associates

Civil Engineering (Building Inspection) Technology
Ralph Balslin ..... Amberley Village
Ralph Leibing ..... Hamilton County
Richard Lehman ..... City of Norwood
Jack Morgan ..... City of Blue Ash
Stanley Schulte ..... Frank Messer & Son Construction Co.
Harvey Wilbekin ..... City of Cincinnati

Civil Engineering (Surveying) Technology
Robert L. Adler ..... Punshon Engineering Company
Bruce Carter ..... Robert W. Piper & Assoc.
William R. Foster ..... Butler County Engineer
Terry Kohler ..... KZF
Buford Payne ..... Payne Van Hart & Assoc.
Robert W. Piper ..... Robert W. Piper & Assoc.
Jim Viox ..... Viox & Viox
William Viox ..... Viox & Viox

Data Processing & Data Management Technologies
James Arriens ..... Monsanto Chemical Company
Jerry Burton ..... Champion International
Peter Griffiths ..... Systems Support Associates
C. T. Hall ..... Cincinnati Gas & Electric Company
Wayne McDonough ..... French Bauer Dairies
Robert Nieberding ..... Interocean Insurance Company
Lee Ransick ..... Ohio National Life Insurance Company
James Repasky ..... Drackett Company
Dr. Gretchen Van Meer ..... U.C. Medical Center
James Windsor ..... CinCom Systems

Dietetics Technology
Dale Conn ..... Clifton Care Nursing Home
Pat Esterman ..... Cincinnati Health Department
Carolyn Haessig ..... University of Cincinnati
Sister Anita Howe ..... U.C. Lipid Clinic
Mike McKechnie ..... Greater Cincinnati Nutrition Council
Lucille McMullen ..... Volunteer
Deborah Peters ..... CTC Student
Melda Schmidt ..... Edgecliff College
Marcelle Stone ..... St. Francis Hospital
Ann Wolf ..... Consultant

Electrical Power Technology
Leo Grosser ..... Hixson Inc.
Hubert A. Kahler ..... H. A. Kahler Company
Richard F. Lang ..... Westinghouse Electric Company
Roy McGuire ..... Camargo & Associates
Ronald F. Schapp ..... Bussman Manufacturing

Electro-Mechanical Technology
Greg Goetz ..... Cincinnati Milacron
John Howison ..... CTC Student
James T. Mettey ..... Cincinnati Electronics
Jerry Osterbrock ..... Cincinnati Milacron
Paul Wagner ..... Siemens-Allis

Electronics & Communications Electronics Technologies
Paul Ackerman ..... Cincinnati Word Processing
Bruce Corso ..... Corporate Equipment Company
Vern Dahl ..... Cincinnati Electro Systems
Dan Garrett ..... Cincinnati Milacron
Paul Houillion ..... Ohmart Corporation
Glenn Massey ..... Hunkar Laboratories, Inc.
Bill Stross ..... Metcut Research Associates, Inc.
Dick Vance ..... Nutone Division of Scovill Mfg.

Graphic Communications Technology
Kenneth Boyle ..... Taft High School
Mel Brower ..... Melbro Color Service
Tom Giver ..... Volts-Thomas Printing Company
Edgar Kobman ..... Gibson Greeting Card Company
Ron Schlensker ..... Typeco
Hal Sterne ..... S. Rosenthal Company
James Wermes ..... Gibson Greeting Card Company
Robert Zsachau ..... S. Rosenthal Company

Hotel-Motel-Restaurant Management & Executive Chef Technologies
Bill Carr ..... ARA Services, Inc.
Bill Eilers ..... Kings Island Inn
Earl Hatt ..... Quality Inns
Dorothy Larsson ..... Cincinnati Milacron
Jeff Ruby .... Holiday Inn; Winegardner-Hammons Operations, Inc.
Thomas Trimpe ..... IGA-English Woods Market
Roy Wash ..... Cincinnati Gas & Electric Company

Industrial Engineering Technology
Fred Brinkmiller ..... Siemens-Allis Corporation
Donald Combs ..... Ilsco Corporation
Norman D. Day ..... Senco Products Inc.
William Ensminger ..... Ceemco, Inc.
Richard Evans ..... Cincinnati Gas & Electric Company
Mark G. Fenner ..... CTC Graduate
Paul L. Green ..... Dover Corporation-OPW Division
Daniel Huston ..... Senco Products Inc.
Roger Kelly ..... U.S. Shoe Corporation
Paul L. Kiefer ..... Kenner Products
William Luggen ..... Cincinnati Milacron
Paul Termuhlen ..... Mercy Hospital
Robert Turner ..... Nutone Corporation
Richard S. Wayman ..... Gibson Greeting Card Inc.

Laser/Optics Technology
Tom Apple ..... Systems Research
Richard Davidson ..... Laser Plane, Inc.
Paul Diles ..... Techmet, Inc.
Mike Heglin ..... General Electric Company
Niels Krag ..... Hughes Aircraft Company
Dr. John C. Lang ..... Procter & Gamble
Gene Moss ..... NIOSH
Norman Neal ..... Cincinnati Milacron
Dr. Gary Neiheisel ..... Armco Steel Corporation
Lou Williams ..... Cincinnati Electronics

Loss Control Technology
Capt. Thomas R. Ammann ... Cincinnati/Hamilton County Regional Police Academy Director
Stanley Carle ..... The John Shillito Company
Joseph Cohen ..... Allied Security
James Dickerson ..... Ohio Safety Security
Ronald Heineman ..... Frisch Incorporated
Don Huesman ..... Cincinnati Milacron
Elmer Reis ..... Hamilton County Sheriff's Office
Herb Rhodes ..... Swallens Incorporated
Mike Rolf ..... American Alarm
Henry Sandman ..... University of Cincinnati
Ed Schneuer ..... Cincinnati Fire Department
James Stauder ..... Armco Steel
Michael Theisen ..... Children's Hospital Medical Center
Daniel Wolfangle ..... Hamilton County Sheriff's Office

Manufacturing Technology
Gerald Bogen ..... Siemens-Allis
Ron Fibbe ..... Kirk & Blum
Frank Gorsler ..... General Electric
Howard Joseph ..... Weir Kilby Division of L.B. Foster
Tom Moon ..... Cincinnati Milacron
Robert Turner ..... Nutone
Gary Vories ..... Senco Products
Fred Wilking ..... Dover Corp.-OPW Division

Measurement & Testing Technology
Bob Aylesworth ..... Emery Industries
Joseph Coombs ..... Procter & Gamble
Dave Foulkes ..... Sun Chemical Company
Bob Glodowski .....
Charles Haynes ..... General Electric Company
Paul Jurewich ..... Stress Analysis, Inc.
Walter Strohm ..... Monsanto Corporation

Mechanical Design Technology
Art Baldock ..... Xtec Corp.
V. Bidlingmeyer ..... Young & Bertke Company
Phil Cappel ..... Bishopric Products Company
George Harperinck ..... E. W. Buschman Company
Greg Hauck ..... Little Design
Werner Jessen ..... Alexander and Associates
Marvin Jester ..... Kintech Services, Inc.
Mason Keen ..... Senco Products Inc.
Dr. Richard Kegg ..... Cincinnati Milacron
Don Mathias ..... Lukenheimer Company
Paul Neiumeuer ..... Access Corp.
Dan Thee ..... Xomox Corp.

Medical Assistant Technology
William Galligan ..... Academy of Medicine
Lynne Hair, R.N. ..... Mt. Auburn Health Center
Richard Jubelirer, M.D. .....
Tina Kyrios, M.A. .....
E. Teresa Miller, R.N. ..... Health Maintenance Plan
Lee Moeller, R.N. ..... Health Maintenance Plan
Marsha Phirman, M.A. .....
Marian Profitt, M.A. .....
Barbara Quallen, M.A. .....
Shiela Stuckey, M.A. .....
June Vaught, M.A. .....
Cynthia Wright, M.A. .....

Medical Laboratory Technology
Genevieve Alexander ..... Booth Memorial Hospital
Elaine Bolden ..... Veterans Administration Hospital
Lois Bonner ..... Shriners Burns Institute
Harold Cook ..... Cincinnati Health Department
Teresa Disher ..... Clermont County Hospital
Werner Donath, M.D. ..... St. Francis Hospital
Paul Laemmle ..... Deaconess Hospital
James Twitty ..... Dearborn County Hospital
Robert Uhl ..... St. Francis Hospital
Cathy Yoshikawa ..... Drake Memorial Hospital

Medical Record Technology

Esther Benford, ART ..... Bethesda Hospital
Evelyn Carter, RRA ..... Jewish Hospital
Ann Coomes, RRA ..... St. Elizabeth Hospital
Frances Glaser, R.N. ..... Summit Nursing Home
Jane Lach, RRA ..... St. Francis Hospital
Bonnie Morgan, ART ..... Ft. Hamilton-Hughes Hospital
Richard Squire ..... Jewish Hospital
Steven Uhlein ..... Medco Review Organization

Ornamental Horticulture Technology

Dick Allison ..... Allison Landscaping
Bob Bartel ..... Greater Cincinnati Airport
Robert Davis ..... Hamilton County Extension Service
Edward Friedhoff ..... Spring Grove Cemetery
Jerry Neidert ..... Neidert's Landscaping
Joseph T. Obermeyer ..... Natorp's
Laura Roth ..... Krohn Conservatory
Thomas Smith ..... Spring Grove Cemetery

Plastics Technology

Frank Backscheider ..... Recto Molded Products, Inc.
Harold Colwell ..... CTC Graduate
Robert Sherman ..... Society of the Plastic Industry

Real Estate & Property Management Technologies

C. Barry Barnhorn ..... Barnhorn Realtors
Dave Coletta ..... Hague Realtors
Drexanne Evers ..... Drexsells, Inc.
Ann Franks ..... Robers Gold Key Realtors
Edward T. Hamann ..... Hamann, Herking & Associates, Inc.
E. Michael Holbrook ..... Sibcy, Inc. Realtors
Ed McBride ..... Arthur Rubloff & Co.
Charles McLean ..... Home Builders Association of Greater Cincinnati
Steve Oyler ..... Parchman & Oyler Realtors
Paul Wesselkamper ..... Signature Realtors
Eunice Younkers ..... Theodore Mayer & Brothers Realtors

Respiratory Therapy Technology

Edna H. Caywood ..... Health Careers Association of Greater Cincinnati
Kimbal L. Dabe ..... Children's Hospital Medical Center
Joe Fiorini ..... Bethesda Hospital
Paul E. Foldes, M.D. ..... Good Samaritan Hospital
Dr. Lyle A. Gray ..... Northern Kentucky University
Donald K. Hawley, M.D. .....
William Scheyer ..... Bethesda Hospital
Ann Tollner ..... Good Samaritan Hospital
Donald C. Vogel ..... Southwestern Ohio Lung Association
Richard Williams ..... Bethesda Hospital
Joseph Zawadzki ..... Jewish Hospital

Safety/Risk Management Technology

Dave Bertke ..... Cincinnati Milacron
Bruce Crutcher ..... Cincinnati Chamber of Commerce
Pete Eberle ..... Senco Products
Paul J. Schmid ..... Cincinnati Milacron
Bruce Snyder ..... Good Samaritan Hospital
Bill Webb ..... Christ Hospital
Larry Wilson ..... Senco Products

Sales Marketing & Industrial Sales Marketing Technologies

Mark Braunstein ..... Elder-Beerman
Ralph Estes ..... Sales Marketing Executives Assn.
Bob Flannery ..... American Cyanamid
W. James Foken ..... The John Shillito Company
Abdul Robb ..... Service Merchandise
Alice Roy ..... CTC Graduate
Herbert P. Schaffer, Sr. ..... M & I Associates, Inc.
Ken Sheppard .....
Ruth Van Gorden ..... Merten Company
John Waddell ..... DuBois Chemicals
Steve Wolf ..... CTC Graduate

Secretarial Technologies

Richard Adams ..... Southwestern Publishing Company
William Clark ..... City of Cincinnati
Pamela Herrle ..... Procter & Gamble
Elaine Jacobs ..... Fifth Third Bank
William Mulvey ..... Lyons & Fries, Attorneys
John Roth ..... City of Cincinnati
Edith Schnelle ..... The Ohio Knife Company
Ginny Wood ..... General Electric Corporation

Surgical Technology

Barb Craig, R.N. ..... Providence Hospital
Connie Rein Hadley, C.S.T. .....
David Niehaus, S.A. ..... Good Samaritan Hospital
Lois Richter, R.N. ..... Christ Hospital
Sue Riestenberg ..... CTC Student
Shirley Suddeth, C.S.T. ..... Providence Hospital
Claire Ulm ..... CTC Student

INDEX

CATALOG
1980

1980 CATALOG

INDEX

Academic Calendar
1980

November Term (1979)

Nov. 12	Classes begin
Nov. 22,23	Thanksgiving Recess—No classes, offices closed
Dec. 24-Jan. 1	Winter Recess—No classes
Dec. 24,25	Offices closed
Dec. 31-Jan. 1	Offices closed
Jan. 2	Classes resume
Jan. 18	Classes end

January Term (1980)

Jan. 21	Martin Luther King Day—No classes, offices closed
Jan. 22	Classes begin
Feb. 18	Presidents' Day—No classes, offices closed
March 27	Classes end
March 28	No classes, offices open

April Term (1980)

March 31	Classes begin
April 4	Good Friday—No classes, offices closed
May 26	Memorial Day—No classes, offices closed
June 4	Classes end
June 5-23	Summer Recess—No classes, offices open

June Term (1980)

June 24	Classes begin
July 4	Independence Day—No classes, offices closed
Aug. 27	Classes end
Aug. 28,29	No classes, offices open

September Term (1980)

Sept. 1	Labor Day—No classes, offices closed
Sept. 2	No classes, offices open
Sept. 3	Classes begin
Nov. 6	Classes end
Nov. 7	No classes, offices closed (Veteran's Day celebrated)

November Term (1980)

Nov. 10	Classes begin
Nov. 27, 28	Thanksgiving Recess—No classes, offices closed
Dec. 24-Jan. 2	Winter Recess—No classes
Dec. 24-26	Offices closed
Jan. 1	Offices closed
Jan. 2	Classes resume
Jan. 16	Classes end