Cincinnati Technical College

CATALOG/HANDBOOK

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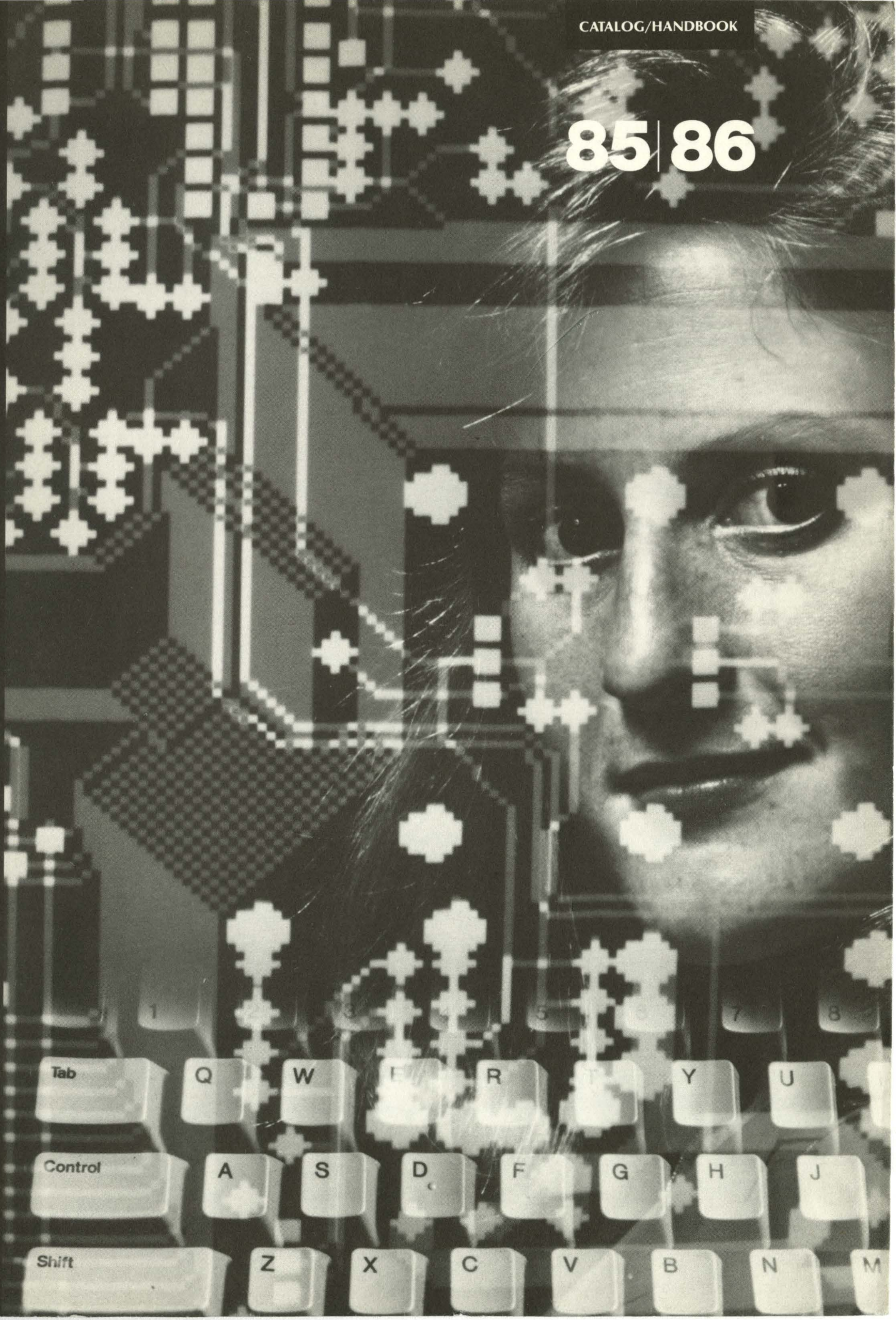

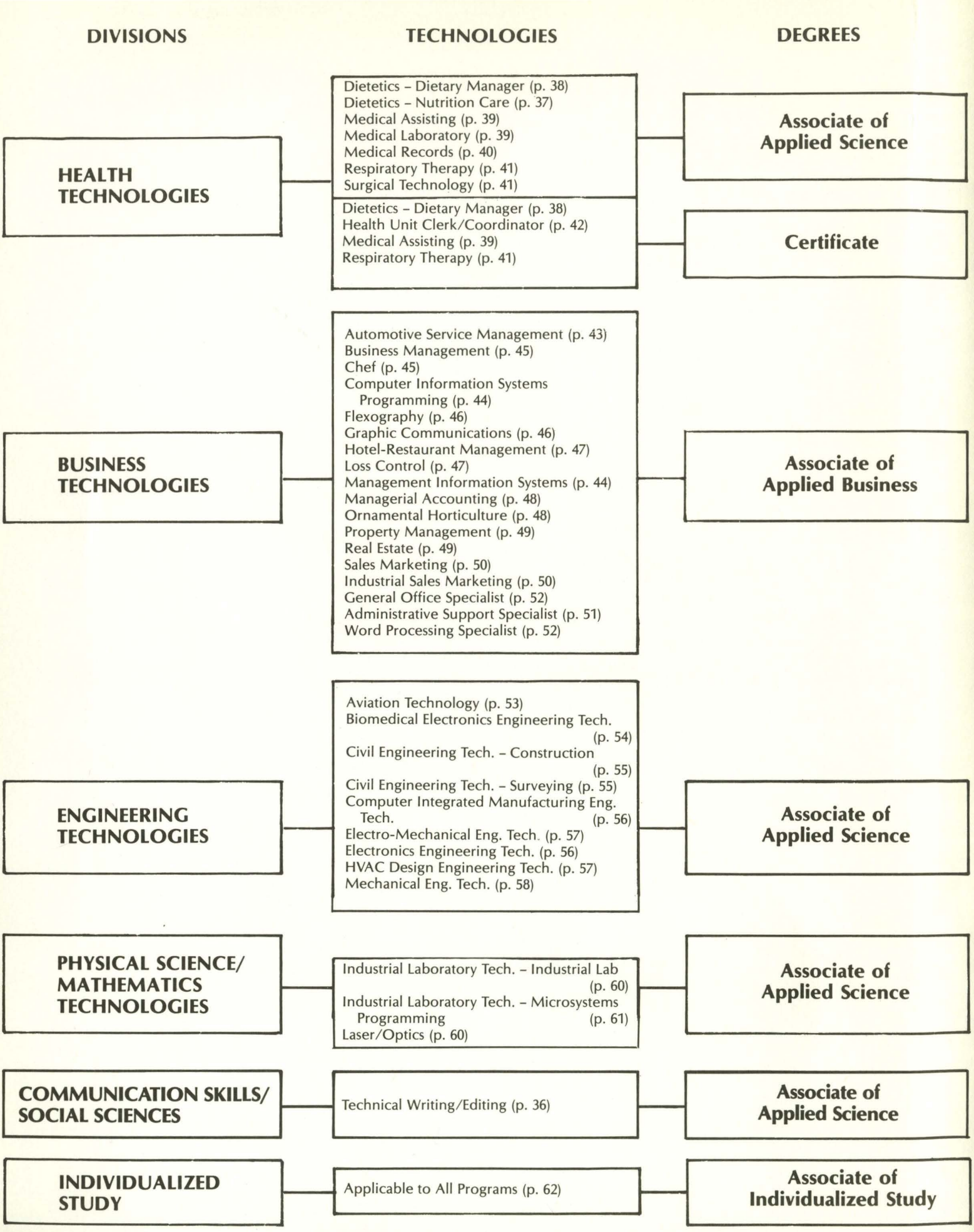
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1985-1986
Cincinnati Technical College
Catalog/Handbook

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All statements in this publication are announcements of present policy only and are subject to change at any time without prior notice. They are not to be regarded as offers to contract.

Cincinnati Technical College does not discriminate on the basis of race, age, color, handicap, national origin or sex in the admission of students or in any activity conducted by the Cincinnati Technical College.

Cincinnati Technical College is an equal opportunity institution.

Cincinnati Technical College
3520 Central Parkway
Cincinnati, Ohio 45223
(513) 559-1520
Admissions Office 559-1537

1985-1986
Cincinnati Technical College
Catalog/Handbook

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Cincinnati Technical College
3520 Central Parkway
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Executive Assistant ..... Clarke J Robinson
Institutional Development ..... Dr John L Henderson
Development ..... Johnnie F Boggio
Athletics & Activities ..... John E Hurley
OTTO ..... Jo Ellen Seik
Roger Jansen
Public Information & Publications ..... Michele M. Imhoff
Production Operations ..... Elizabeth Bradley
Affirmative Action. Human Resources &
Staff Development ..... Eleanor Bonner
Executive Assistant ..... Davie Cooper

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Executive Assistant ..... Theresa Johnson
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Clerical Assistant ..... Karen Keller
Registrar ..... Eugene Wieland
Learning Resource Center ..... James H Horton
Information Services ..... Debbie Tucker
Thelma Barnes
Duane Gardner
William Shaw
Technical Services ..... Rose von Volborth
Marianne Cramer
Media Services ..... Dave Evans
Ben Duke

Office of Finance & Business Affairs
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Purchasing ..... Kathleen Austing
Controller ..... Herb Bom
Accountants ..... Harry Bradley
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Cashier ..... Linda Cole
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Counselors ..... Naomi Cain
Janice Lewis
Executive Assistant ..... Sharon Waters
Facilities ..... Dale McCarthy
Facilities Services ..... Leonard Bidwell

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Counseling Services ..... John Wagner
Linda Meador
Diane Stump
Veterans ..... Yolanda Lawrence
Assistant ..... Amy Hoferer
Donna Scofield
Educational Relations ..... Miriam Carle

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Karl vonKampen
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Richard Brown
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Neal Hils
Clyde Kobberdahl

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Lou Owsley
Len Penn
Lloyd Pitman
Rick Sefton
Swanya Smith
Russell Sprinkle
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Charles Jonas
Air Conditioning ..... James Farrer
Aviation ..... Tony Rinck
Biomedical Engineering Tech ..... Michael Carroll
Civil Engineering Tech ..... Paul DeNu
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Electro-Mechanical Eng Tech ..... Ray DiPilla
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Mechanical Engineering Tech ..... Terry Brown
Instructors ..... Vince DeVol
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Don Meyer
Bill Mullins
LaVerne Winkle

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Executive Assistant ..... Claudia Straughn
Assistant Dean ..... Dr Tom Kober
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Olivia Watts
Medical Laboratory ..... Ed Knepp
Carolyn Laemmle
Medical Records ..... Rosemary Clark
Mary LaValle
Respiratory Therapy ..... Bob Eveslage
Sally Blocher
Surgical Technology ..... Jeannine Denson
Judith Spraley
Instructors ..... Ron Davidson
Jude Norton

Physical Sciences/Mathematics Technologies
Dean ..... Thomas Stark
Executive Assistant ..... Faye McCreadie
Industrial Laboratory Technology ..... Jerry Froehlich
Microsystems Programming Technology ..... Douglas Bennett
Laser/Optics Technology ..... Dr. Prem Barta
Instructors ..... Terrence Huge
Frank Iacobucci
John Lalley
Lawrence Pucke
Rodney Rupp
Ralph Schlueter
Thomas Stark
William Tulloss
Adjunct Faculty ..... Michael Barney
Martha Brosz
Robert Duffy
Linda Ford
Linda Hoog
Joan Jackson
Robert Moon
Alice Portune
Edward Sunderhaus
Richard Swanson
Jerome Weber

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Dean ..... Thomas Stark
Executive Assistant ..... Faye McCreadie
Assistant Dean ..... Catherine Wiesner
Writing Center Manager ..... John Battistone
Instructors ..... John Battistone
Elmer Flamm
Marcus Green
James Hassan
Harry Heink
Marcha Hunley-Belanger
Mike Jones
Mary Lee Keller
Daniel Mellinger
Timothy Nolan
Catherine Wiesner
Kim Ziegel
Lawrence Ziegler
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Patricia H. Hope
Joseph Libis, Jr.
Kenneth Suer
Mary C. Williamson

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Counselor ..... Sharon Davis
Instructors ..... Grace A Davis
Edward A Hirsch
Janice L Hoeweler
Linda Knepp
Ellen R Layne
Hope Page Lieberman
James Marcotte
Kathleen Resnick
Cyra D Sanborn

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Management Information Service
Director Computer Systems Programming & Operations ..... Vicki J Candella
System Programmer/Analyst ..... Regina Ford
Programmer/Analyst ..... Tere Hargrove
Rob Newell
Randy Woodall
Computer Operator/Problem Coordinator ..... Ronald Young
Computer Operator ..... Joy Sunderman

GENERAL INFORMATION

CENERAL INFORMATION

Mission of the Cincinnati Technical College

We believe that Cincinnati Technical College makes an important contribution to the technical status, economic growth, and social well-being of the Tri-State Area. We believe that to continue to serve the community the College must be willing to modify, adapt, and create technical programs that meet the ever-changing needs of students, business, industry, and the professional community. We believe that it is the College's role to help students to learn to think independently, to value logical and tested conclusions, to develop problem solving abilities, to communicate well, and to function effectively with other people. We believe in the dignity and worth of the individual and therefore provide educational opportunities for students regardless of age, economic or social background, or enrollment status. We believe that for continued growth we must display the ability to be creative, to look to the future as well as the past, to strive for excellence, and to exhibit leadership in the expansion of technical knowledge and skills through the achievements of the faculty and the students. We hope to develop in our students the desire to continue their education throughout their lives.

The College has a vital and distinctive mission to perform in addressing the educational and economic needs of the Tri-State Area. The College seeks to implement its philosophy by providing:

A. Education featuring a combination of theory and practice primarily through appropriate classroom, laboratory, and cooperative/clinical education experiences.
B. Technical associate degree education programs that lead to entry or advanced level employment for graduates.
C. Certificate programs, specialized training, and adult continuing education opportunities of less than one-year duration.
D. Services and educational experiences to assist students in determining and reaching their educational objectives.
E. Opportunities for students to develop the skills needed to enter and succeed in technical education programs.
F. Technical, science, and general education courses that can be applied toward four-year degree programs.

The College endeavors to provide leadership and services in the promotion of technical and cooperative education.

Technical Education

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. 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.

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.

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 twenty years or so as a result of federal, state and local initiatives.

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 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.

The College is offering 39 associate degree programs and majors and four certificate programs in 1985-86. 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.

Outcomes of Cincinnati Technical College's Co-op Plan

Cincinnati Technical College, with regard to its mission and philosophy, has developed a co-op education plan of combining solid academic and technical education with alternating terms of work experience. The following are the outcomes of the plan as they affect the student, the College and the community.

Outcomes for the Student

(1) Financial — Most full-time students are able to earn money while gaining work experience. These co-op earnings enable many students to help finance their education. Also, the work experience the students receive offers the opportunity for better positions and better pay upon graduation.
(2) Educational — Students support what they learn in class with "real life" work experience. These two learning situations complement each other.
(3) Career clarification — The technical classwork and on-the-job experience help the students focus on particular career areas and decide if those areas are appropriate for them.
(4) Social and emotional — Students develop maturity by experiencing a responsible position in the real world with support and guidance to insure that learning takes place.

Outcomes for the College

(1) Comprehension of employment needs — The efforts by the College to establish co-op jobs and place graduates have enabled the College to be more sensitive to the needs of the area.
(2) Utilization of the physical plant — The alternating work experience terms enable the College to double its student capacity and make more efficient year-round use of the physical plant.
(3) Employment involvement — Employers actually become directly involved in the educational process of the College through the co-op plan. They also share in the cost of education by providing on-the-job training.
(4) Faculty awareness — Faculty stay current on activities in their field through contact with industry.

Outcomes for the Community

(1) Supply of technicians — The College's programs create a needed supply of trained, experienced technicians for the employment community. This factor makes the area attractive for business development.
(2) Economic gain — Increased earning potential of the graduates benefits the community in terms of productivity, taxes paid and contributions made.
(3) Citizen productivity — Graduates enter the workforce with well-clarified career goals and experience which enable them to be more productive and motivated workers.
(4) Industrial staffing — Employers have the opportunity to train and observe co-op students and to evaluate their suitability for full-time employment before they make the commitment to hire full-time.

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.

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.

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.

In 1972 the name of the Institute was changed to Cincinnati Technical College, in accordance with state statute. On June 27, 1974, the phase out of the high school was completed and the College made the final payment to the Cincinnati Public Schools.

In its nineteen 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 past year it enrolled 4000 students in 45 degree and certificate programs and options; has a staff of 220 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 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

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. The Consortium Officers are located at Cincinnati Technical College. 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 Records Office for information.

Members of the Consortium are The Art Academy of Cincinnati, The Athenaeum of Ohio, Chatfield College, Cincinnati Technical College, College of Mount St. Joseph on the Ohio, Hebrew Union College—Jewish Institute of Religion, Miami University, Northern Kentucky University, St. Thomas Institute, Thomas More College, University of Cincinnati, and Xavier University.

Reserve Officers Training Corps

Cincinnati Technical College is an affiliate of the University of Cincinnati's Air Force ROTC program and is a contact point for the Army ROTC program at the University of Cincinnati. A matriculating student (one accepted into a program) may cross-enroll in General Military Training (GMT) courses at the University of Cincinnati and Xavier University through Cincinnati Technical College.

Two volunteer Reserve Officer Training Corps are maintained in cooperation with the United States government. The Army and Air Force instruct GMT course classes on the main campuses of the above mentioned institutions. Enrollment in these classes entails no service obligation. Books and uniforms for these courses are provided free to the student.

Also, there are two programs within each branch. The four-year program is for the student who will go on to a four-year institution after graduation from Cincinnati Technical College. The student would attend classes and drill periods on the host campus while attending regular classes on campus at Cincinnati Technical College. The two-year program is for the veteran who will be continuing after graduation from Cincinnati Technical College to earn his or her bachelors degree. The veteran would apply for this program during his or her fourth in-school term at Cincinnati Technical College. If selected, the student would enter upon graduation from Cincinnati Technical College.

Details may be obtained from the Veterans Affairs Office, room 157.

ARMY ROTC

ADMISSIONS & FEES

Admissions Information

Application for Admission

Apply early! Each year some programs are filled by early spring. (Applicants for these filled programs may be placed on a waiting list.)

To apply, follow these steps carefully:

1. The applicant should complete an application and return it with the $20 application fee to Cincinnati Technical College.
2. He or she should have a copy of his or her high school transcript and college transcript, if applicable, sent directly to the College's Records Office. (With a GED, the applicant should submit a copy of scores.)
3. The applicant should take the admissions test.
4. After the applicant's file is complete and has been reviewed by the program coordinator, the applicant will be notified as to the admission interview status.
5. The applicant should call the Admissions Office for an interview appointment.
6. He or she should pay the $30 matriculation fee as directed in the acceptance letter and return the Acceptance of Offer of Admission form.

NOTE:

- Apply early! Some programs are filled by March 1 each year.
- Both the $20 application fee and the $30 matriculation fee are non-refundable.
- The applicant will be notified by mail or when he or she calls the Admissions Office to make an interview appointment whether he or she is required to take the mathematics placement test, the communication skills placement test or developmental education tests.
- The applicant must complete the admission process at least three weeks prior to the initial term of registration in order to be assured of registering with a program major. This is most important if the student expects to use any form of financial aid or veterans benefits.

Matriculation Fee

A $30 matriculation fee is payable when an applicant receives an offer of admission. Payment of the fee when due assures the applicant of a place in the program and is considered as evidence of good faith that the student will register.

The fee 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.

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.

International Applicants

International applicants must follow the prescribed application procedures as set forth on this page. In addition, all applicants not in the United States must submit TOEFL examination results.

A Declaration and Certification of Finances must be submitted to the College before a Certificate of Eligibility (Form I-20) will be authorized. Likewise, an international student must submit a $2000 deposit prior to the issuance of the I-20 form. This deposit will be credited to the individual's account and used for the payment of tuition, fees and books only. All other expenses, room, board, transportation and incidential expenses, must be provided by the student. In order to facilitate enrollment, an international student should contact the International Student Advisor.

Admissions 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. The test takes about 4 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. Contact the Admissions Records Office to request that a test waiver be processed.

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 is less than one-half 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 14 for complete explanation of residency determination.)

Fees are non-refundable other than the Instructional Fee.

Fees and Charges

Resident Status	Instructional Fee		General Fee[2]		Cost per Credit Hour
State of Ohio Resident	$27	+	$3	=	$30
Out-of-State Resident	$45	+	$3	=	$48

Other Charges:

Application Fee	$20
Matriculation Fee (Payable upon notification of acceptance)	$30
*Credit By Examination Fee per course (prior to enrollment in course)	$25
Graduation Cap, Gown, Invitations	Purchased in Bookstore
Late Registration:	
(1st day after the beginning date of the term)	$10
(2nd day after the beginning date of the term)	$20
(3rd day after the beginning date of the term)	$30
Partial Payment of Fees	$10
Transcript Fee	$ 2
Vehicle Registration Fee, per term, lower lot	$ 7
Campus Parking Permit Fee, per term	$25
Check Fee (check returned by the bank)	$10
Part-time Registration	$ 5
Identification Card	$ 1
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.

[2] **The General Fee finances non-instructional services to students for which instructional subsidies cannot be used.**

Co-op Employment

Three (3) credit hours for approved cooperative work experience are granted for terms 1, 2, and 3, and two (2) credit hours for terms 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 is $300 per year.

Senior Citizens

Senior citizens may register free of charge to audit courses as space is available. Regular tuition will be charged to those senior citizens who wish to receive credit for courses. They must pay tuition as well as fees for all non-credit courses. (An eligible senior citizen is one who is sixty years of age or older and who has resided in Ohio for at least one year prior to registering.)

Refunds

1. Fees are not refundable including the $30 matriculation fee. 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 college student transaction 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 has 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 total withdrawal is the date recorded on the student transaction form when it is signed by the student and coordinator. Tuition refunds for total withdrawal, 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. Students must process an Add/Drop transaction form.

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

RESIDENCE OF STUDENTS

3333-1-10 **Ohio Student Residency for State Subsidy and Tuition Surcharge Purposes**

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. Intent and Authority.

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.
2. This rule is adopted pursuant to chapter 119. of the Revised Code, and under the authority conferred upon the Ohio Board of Regents by section 3333.31 of the Revised Code.

B. Definitions

For purposes of this rule:

1. A "resident of Ohio for all other legal purposes" shall mean any person who maintains a twelve-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 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.
4. For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, "domicile" is a person's permanent place of abode; there must exist a demonstrated intent to live permanently in Ohio, and a legal ability under federal and state law to reside permanently in the state. For the purpose of this policy, only one domicile may be maintained at a given time.
5. For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, an individual's immigration status will not preclude an individual from obtaining resident status if that individual has the current legal status to remain permanently in the United States.

C. Residency for subsidy and tuition surcharge purposes

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

1. A dependent student, at least one of whose parents or legal guardian has been a resident of the State of Ohio for all other legal purposes for twelve consecutive months or more immediately preceding the enrollment of such student in an institution of higher education.
2. A person who has been a resident of Ohio for the purpose of this rule for at least twelve consecutive months immediately preceding his or her enrollment in an institution of higher education and who is not receiving, and has not directly or indirectly received in the preceding twelve consecutive months, financial support from persons or entities who are not residents of Ohio for all other legal purposes.

D. Additional criteria which may be considered in determining residency for the purpose may include but are not limited to the following:

1. Criteria evidencing residency:
   a. If a person is subject to tax liability under section 5747.02 of the Revised Code;
   b. If a person qualifies to vote in Ohio;
   c. If a person is eligible to receive state welfare benefits;
   d. If a person has an Ohio driver's license and/or car registration.
2. Criteria evidencing lack of residency
   a. If a person is a resident of or intends to be a resident of another state or nation for the purpose of tax liability, voting, receipt of welfare benefits, or student loan benefits (if the student qualified for that loan program by being a resident of that state or nation);
   b. If a person is a resident or intends to be a resident of another state or nation for any purpose other than tax liability, voting, or receipt of welfare benefits (see paragraph (D) (2) (a) of this rule).

E. Exceptions to the general rule of residency for subsidy and tuition surcharge purposes:

1. A person who is living and is gainfuly employed on a full-time or part-time and self-sustaining basis in Ohio and who is pursuing a part-time program of instruction at an institution of higher education shall be considered a resident 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. 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.
4. A person who is transferred by his employer beyond the territorial limits of the fifty states of the United States and the District of Columbia 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 as long as such person has fulfilled his or her tax liability to the state of Ohio for at least the tax year preceding enrollment.
5. A person who has been employed as a migrant worker in the State of Ohio and his or her dependents shall be considered a resident for these purposes provided such person has worked in Ohio at least four months during each of the three years preceding the proposed enrollment.

F. Procedures

1. A dependent person classified as a resident of Ohio for these purposes and who is enrolled in an institution of higher education when his or her parents or legal guardian removes their residency from the State of Ohio shall continue to be considered a resident during continuous full-time enrollment and until his or her completion of any one academic degree program.
2. In considering residency, removal of the student or the student's parents or legal guardian from Ohio shall not, during a period of twelve months following such removal, constitute relinquishment of Ohio residency status otherwise established under paragraph (C) (1) or (C) (2) of this rule.
3. Any person once classified as a nonresident, upon the completion of twelve consecutive months of residency, must apply to the institution he or she attends for reclassification as a resident of Ohio for these purposes if such person in fact wants to be reclassified as a resident. Should such person present clear and convincing proof that no part of his or her financial support is or in the preceding twelve consecutive months has 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 documentation regarding the sources of a student's actual financial support.
4. 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.
5. Any institution 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 his or her Ohio residency for purposes of this rule. Such an 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 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 office of the Dean of Student Services. The completed form and documentation of one year residency in Ohio should be presented to the Dean for consideration and evaluation. The Vice President for Finance makes the final determination.

ACADEMICS, POLICIES & PROCEDURES

ACADEMICS' POLICIES & PROCEDURES

Graduation Requirements

To qualify for the associate degree, a student must declare a major, fulfill the program requirements as identified at the time of matriculation, and attain at least a 2.0 core grade point average (GPA) and a 2.0 cumulative GPA. It is the student's responsibility to successfully complete the courses necessary for graduation. A transfer student must complete at Cincinnati Technical College at least 50 percent of the total non-co-op/non-clinical credit hours required by his or her program and maintain a 2.0 core GPA and a 2.0 cumulative GPA.

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 communications, 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 3 courses (9 credit hours) from at least 2 of the 4 areas: psychology, economics, sociology, and government relations.

To qualify for a certificate, a matriculated student must fulfill the program requirements as identified at the time of matriculation, and attain at least a 2.0 core grade point average (GPA) and 2.0 cumulative GPA. It is the student's responsibility to successfully complete the courses necessary for graduation. A transfer student must complete at Cincinnati Technical College at least 50 percent of the total non-co-op/non-clinical credit hours required by his or her program and maintain a 2.0 core GPA and a 2.0 cumulative GPA.

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 requirements approved by the division dean, provided the student's credits which are over two years old are evaluated as current by the student's coordinator.

Graduation Petition (A Graduation Requirement)

Any matriculated student may file a graduation petition if he or she has earned and/or transferred in a combined total of seventy (70) credit hours towards an associate degree and a combined total of forty (40) credit hours towards a certificate. The petition must be filed in the Registrar's Office twenty (20) weeks prior to the date of completed course work.

Petititon Filing Time Frame	Term Degree Requirement Completed
May 21-July 9, 1985	September, 1985
August 14-September 16, 1985	November, 1985
October 23-November 22, 1985	January, 1986
January 10-February 10, 1986	April, 1986
March 19-April 21, 1986	June, 1986

Participation in Commencement

The following defines which students may participate in the September commencement ceremonies:

Students who have satisfactorily completed all requirements for a certificate or degree during the preceding five terms and who have not opted to participate in commencement under the following condition:

*Students needing more than nine credit hours (including co-op) who can complete all degree or certificate requirements during the September term may participate based on the following:

1. Students register and pay for all remaining courses by the close of advance payment date and present a paid registration receipt to the Vice President for Academic Affairs
2. The Vice President for Academic Affairs approves the student's participation

*Students in this category will be noted in the program to complete their program as scheduled at the end of the September Term. Students will not, at commencement, be eligible for honors

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 degree 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

Academic Probation and Dismissal

"Academic Probation" means that a student has not maintained the required TGPA. Such a student is given a period during which the student has the opportunity to meet the required standards or be subject to academic dismissal from the program.

A full-time student (12 credit hours or more per term) shall be on academic probation when the student's term total grade point average (TGPA) is 1.0 or below.

A student shall be on academic probation when the student's total grade point average or core average falls below the average listed for the following designated levels:

Credit Levels	Total Credit Hours Attempted	TGPA*	Core GPA
I	18 through 35	1.75	**N.A.
II	36 through 53	2.00	2.00
III	54 through 71	2.00	2.00
IV	72 and over	2.00	2.00

*Non-degree credit hours wil not be calculated in the TGPA.
**Note: The core GPA is not considered at credit level I.

A student not maintaining the above cumulative averages will be placed on academic probation. Each student placed on academic probation will be officially notified in writing of this status and be given an opportunity to respond to the notification.

A student designated as on academic probation is subject to the following:

- the student may not enroll for more than twelve (12) credit hours or four (4) courses without the permission of the student's program coordinator/faculty advisor.
- the student may not be eligible to enroll for cooperative education or clinical experience directed practice without the permission of the program coordinator.
- a student placed on academic probation will be subject to academic dismissal from the program if the student does not attain the appropriate GPA upon entering the next credit level. The student is then notified by letter of pending dismissal from the program and given an opportunity to arrange for a student hearing to request an extension of the probationary period.

Reinstatement Following Academic Dismissal

A student academically dismissed from a program will be eligible to apply for reinstatement one calendar year after the date on the letter of academic dismissal. In order to be reinstated into the program from which the student was dismissed, a student must submit a request in written form to the appropriate division dean. Final permission will be decided by the division dean.

Academic Appeals Procedure

A procedure allowing a student to appeal academic decisions is on file in the Office of the Vice President for Academic Affairs.

Grades and Credit Earned

Grading System

The following system is used to record student achievement or status in each subject:

Grade	Quality	Points Per Credit Hour
A	Excellent	4
B	Good	3
C	Average	2
D	Poor	1
F	Failing	0
I	Incomplete	Not Computed
W	Withdrawal	Not Computed
X	Audit	Not Computed
K	Transfer Credit	Not Computed
S	Satisfactory	Not Computed
U	Unsatisfactory	Not Computed
IP	In Progress	Not Computed
N	No Grade Reported	Not Computed
AC	Advanced Placement Program Credit	Not Computed
CL	CLEP Credit	Not Computed
EC	CTC Proficiency Examination Credit	Not Computed
EX	Work Experience Credit	Not Computed
VO	Vocational Teacher Referral Credit	Not Computed

If a course is repeated, only the highest grade is computed in the calculation of the TGPA. If a student earns the same grade upon repeating a course, only one grade will be computed in the calculation of the TGPA.

Incomplete (I)

When circumstances beyond the control of the student prevent the completion of course requirements during the quarter, an "I" (Incomplete) is recorded until the final grade is established. An "I" can be assigned only when a student makes arrangements for subsequently fulfilling the course requirements with the instructor prior to the end of the term. The work must be completed by Friday of the fifth week of the term following that in which the grade of "I" was assigned. Otherwise, a final grade of "F" is automatically recorded.

In Progress (IP)

An instructor of a self-paced course may assign a grade of "IP" (In Progress) to a student who has been unable to complete all of the modules within the normal ten weeks. The student will then be allowed until the last day of the following term to complete the course. Students should not register for the same course during the following term. If the "IP" is not removed within the additional term, a grade of "F" will be recorded.

No Grade Reported (N)

An "N" grade is administratively assigned in those instances in which no final grades have been reported for the courses to the Records Offices.

Course Withdrawal (W)

A student desiring to withdraw from a course may do so at any time up to the last two weeks of classes of a term and will receive a grade of "W" for the course. The student must initiate and inform the Records Office of writing in the intent to with-draw. The date of the withdrawal will be the date the notice is received in the Records Office. A grade of "F" is assigned as the final grade in a course if a student discontinues attendance without officially dropping the course.

Audit (X)

A student must initiate and inform the Registrar's Office in writing that he or she is taking a class for audit.

A student who audits a course should understand that the course is for information purposes only and that no college credit may be earned or later claimed for the course audited. Class attendance, completing assignments, taking exams, etc. are the prerogatives of the student in an audit course. Regular tuition is charged for audit registration.

A student may not request a transfer from "credit" to "audit" or vice versa, after completion of the second week of the academic term.

Transfer of Credit (K)

(A minimum of 50 percent of the total non-co-op/non-clinical credit hours required by the program curriculum must be earned at Cincinnati Technical College).

A matriculated student desiring 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 the student has received a grade of "C" or better will be considered for credit provided they were earned at an accredited institution of post-secondary education listed by the American Council of Education and if they are evaluated as current by the student's coordinator/faculty advisor.

A matriculated student should apply for a credit transfer 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 make the request to the coordinator before the end of the first week of the term. After the CTC Transfer of Credit Form is completed and is approved by the division dean, the student will receive a copy of the approved credits.

Advanced Standing Credit

(A minimum of 50 percent of the total non-co-op/non-clinical credit hours required by the program curriculum must be earned at Cincinnati Technical College.)

Advanced standing credit may be earned in the following ways and substitutes for taking the course at CTC:

- **Credit Through Proficiency Examinations**
  - External Exams (AP or CL)
    Proficiency examinations are offered by national testing services such as the Advanced Placement Program (APP) of the College Entrance Examination Board and the College Level Examination Program (CLEP). Only courses which can be substituted for courses in the curriculum to be followed at CTC can be accepted. A score of "3" or better must have been earned in each such course. No fee is charged at CTC for this service.
  - CTC Exams (EC)
    Proficiency examinations are offered by each of the

academic divisions at CTC. Such exams may be taken prior to or after enrollment in a specific course. If a student has already enrolled in a course and wishes to take a proficiency exam to receive credit, the student can obtain a request form in the Registrar's Office and submit it to the appropriate division before the completion of the second week of the academic term. The tuition payment will cover the cost of the examination. However, if a student fails the exam and must continue in the course, a $5.00 fee will be charged.

If a student wishes to take the proficiency exam prior to enrolling in a course, the student must contact the respective division dean. A $25 fee is charged for the examination.

- **Credit Through Documented Valid Academic or Work Experience (EX)**
  Each academic division will evaluate documentation which either:
  - indicates course content and hours such as that provided by military programs, industrial programs and hospital programs, or
  - 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.
- **Credit Through Senior Vocational Teacher Referral (VO)**
  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 Schools, Warren County Joint Vocational School and West Clermont County Career Center can earn credit for 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 earn credit by this means are advised to inquire about the articulation program with their coordinator. No charge is made for the courses for which credit is received.

Other Academic Policies

Registration

A student 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.

An enrolled student pre-registers for classes during his or her current term in preparation of the next term and/or the alternate term if the student will be out on co-op. (Please refer to the Calendar Section for dates of pre-registration, billing and payment due.)

The student must make or arrange tuition payments at least one week prior to the beginning of the term. A student who fails to make payments before the start of on-line registration cannot be assured of class schedules consistent with his or her planned program curriculum.

A matriculated student 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.

Late Registration

Academic — The last day to add or register for a course is the fifth day of the term for courses meeting during the day, Monday through Friday. However, students wishing to add or register for a course after the third day of the term **MUST HAVE written permission** by the instructor. Failure to obtain said permission would prohibit a student from registering for that particular course.

The last day to register or add an evening or Saturday course shall be the fifth day of the term (or first Saturday). However, students wishing to add or register for class after the first meeting **MUST HAVE written permission** of the instructor or the division dean responsible for the course. Failure to obtain said permission would prohibit a student from registering for the particular course.

Co-op Work Experience — The last day to add or register for co-op is the tenth working day from the start of the term.

Administrative Withdrawal

A matriculated student who fails to enroll for three (3) consecutive terms will be administratively withdrawn. In such a case, the student must re-apply for admission to a program and will be subject to re-evaluation and to any change of degree requirements during his or her absence.

Re-Entry

Any student who registers at CTC after an absence of five (5) or more calendar years may petition to have all courses in which her or she received a grade of "D" or "F" removed from the calculation of his or her Total Grade Point Average (TGPA) and his or her core Grade Point Average (GPA). The original course grade will continue to be shown on the transcript even though it is not calculated in the TGPA or GPA. Courses which are removed from the calculation of the TGPA or the core GPA under this policy must be repeated to fulfill graduation requirements. Petitions must be submitted to the appropriate academic division dean. Remaining courses must be reviewed for appropriate current content as required by the academic policies of the College.

Off-Campus Credits

Credit for courses earned at another institution by a matriculated student who is currently enrolled at CTC can be applied toward the degree only with the prior approval of the program coordinator and academic dean or designee. The form for Permission to Register for Off-Campus Credit at a member institution of the Greater Cincinnati Consortium of Colleges and Universities can be obtained in the Registrar's Office. The form must be complete prior to registering for the course.

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 of 3.5 or greater in the term and must have completed 12 or more credit hours in that term.

Changing Technologies

Students transferring from one technology to another must secure written approval from the coordinator/faculty advisor and academic dean for acceptance into the alternate program.

Only courses which are applicable to the new program curriculum will be computed in the student's TGPA and core average.

Cooperative Education Program

The College's rapid growth and development is due, in part, to the institution's strong commitment to cooperative education. The co-op experience is an integral part of those programs which offer co-op courses as part of their curriculums. The co-op program is vital to the strength and continued success of the College.

Co-op Requirements

Matriculated students attending Cincinnati Technical College may meet their associate degree co-op requirements by one of three ways:

1. Participating in CTC's full co-op program, in which students alternate full-time terms in the classroom with full-time terms of co-op employment.
2. Attending classes on a half-day schedule for ten consecutive terms and co-oping in a half-time (or longer) position.
3. Pursuing a totally academic program. However, the total number of required credit hours, including co-op credit hours, must be completed. Academic courses and/or work experience may be substituted in lieu of co-op credits with divisional approval.

Co-op Credit Through Documented Valid Work Experience

Valid work experience may be used in lieu of co-op courses provided the student has already demonstrated through successful work experience those skills or competencies which are the desired end-product of one or more co-op courses the applicant would ordinarily take in the Cincinnati Technical College program curriculum.

One to thirteen co-op credits can be awarded for documented work experience. Students must provide evidence of both time and quality of experience; e.g., portfolio, references, etc. **This credit must be applied for and granted by the first co-op term. Only work experience which can be documented prior to enrollment at Cincinnati Technical College can be submitted for credit. A single fee of $25 will be charged.**

Academic Requirements

A student desiring co-op credit must maintain the required grade point average as stated in the College catalog (see academic probation and dismissal). Students must also demonstrate satisfactory proficiency in core courses or other requisite courses.

If the student does not maintain the required G.P.A., the student will not be eligible to enroll in co-op courses or clinical experiences/directed practice without the permission of the program coordinator.

Co-op Experience

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

The employer is solely responsible for decisions regarding hiring, retention, dismissal, promotion or demotion of a co-op.

Experience indicates that when a student decides to quit school for full-time employment with a co-op employer, this decision is usually regretted in the long run by both employer and student. Neither student or 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-type jobs as a second choice; and in C-type jobs as the third choice. However, it should be recognized that both B-type and C-type jobs have many values. The work experience gained in B or C-type jobs prepares the student for occupational advancement and helps the student mature emotionally, socially, and educationally.

College Policies

Equal Opportunity

Cincinnati Technical Colege is committed to a policy of equal educational opportunities for all persons regardless of race, sex, age, handicap, or national origin. This policy is adopted as a matter of law and as a matter of educational policy consistent with the goals and purposes of the College.

The College shall also adhere to a policy of equal employment opportunity and affirmative action to end any illegal pattern of discrimination and to overcome the effects of past discrimination.

Conduct Policy

3357:4-1-98 Conduct of students, staff, faculty and visitors.

(A) Behavior contrary to civil law and/or behavior which interferes with the College's maintenance of order or its educational process is forbidden. Such behavior may result in disciplinary action including, but not limited to disciplinary probation, suspension, dismissal, expulsion, withholding of transcripts or other appropriate action.

(B) The decision as to whether a specific kind of behavior is a violation will rest with the administration. Following are specific but not exclusive examples of behavior prohibited by this section.

(1) Deliberate destruction of, damage to, malicious misuse of, or abuse of College property.

(2) Assault or battery upon another person while on College owned or controlled property.

(3) Theft of property of the College or any private individual which is physically located on College owned or controlled property.

(4) Forgery or alteration of any College identification card, parking permits, or records or information storage systems.

(5) Plagiarism or any behavior involving academic dishonesty.

(6) Illegal manufacture, sale, possession, or use, of

alcoholic beverages, narcotics, marijuana, hypnotics, sedatives, tranquilizers, stimulants, hallucinogens or similar controlled substances.

(7) Obstruction or disruption of teaching, research, administration, disciplinary procedures or other College activities.

(8) Participation in or organization of any demonstration, or unauthorized activity which interputs the functions of the College or interferes with the rights of other members of the College community.

(9) Unauthorized entry into or use of College facilities, either buildings or grounds.

(10) Illegal or unauthorized possession or use of firearms, fireworks, explosives, dangerous chemicals or other weapons on College owned or controlled property.

(11) Deliberate disobedience of or resistence to identified College authorities acting in accordance with College policy.

(12) Drunkenness or gambling on College owned or controlled property.

(13) More than three parking violations per academic term.

(14) Disorderly conduct on College owned or controlled property.

(15) Sexual and other forms of harassment prohibited by state or federal law.

Effective: May 1, 1978
Promulgated under: Chapter 111.15 of the Revised Code. Rule amplifies Chapter 3345.21 of the Revised Code. Revised October, 1982.

Student Hearing

3357:4-52 Right to fact finding hearing.

(A) When an allegation is made that a student, member of the faculty, or staff member has violated the provisions of rule 3357:4-01-98 of the Ohio Administrative Code, "Regulation of behavior of students, staff, faculty and visitors", the involved party shall be so advised, in writing, and shall be given an opportunity to acknowledge or deny the accusation.

(B) When such an allegation is denied, the involved party shall be, upon written demand to the affirmative action officer, afforded the right to a fact finding hearing to determine the truth of the allegation.

(C) Upon receipt of written demand for a fact finding hearing, the affirmative action officer for the college, or such other individual as the administration shall designate, shall notify the involved party, in writing, as to the time and place of the hearing, not to be less than five working days from the date of such notification.

(D) Such notice shall advise the involved party of his or her right to be represented by counsel of his or her own choosing, legal or other, and shall contain a copy of the fact finding hearing procedure.

When a student is in disciplinary difficulty, a faculty/staff committee shall be convened by the Director of Affirmative Action or a designate.

The student and all members of the committee shall be informed of the alleged violation and a mutually agreeable meeting time will be set. The student has a right to choose an advisor to be present at the hearing.

The committee will hear the evidence, reach a decision and make appropriate recommendations to the appropriate Vice President who will then make a final recommendation. The student has the right to appeal the decision within three (3) working days to the President.

Student Grievance Procedures

Cincinnati Technical College has established grievance procedures to address the rights of students. A complete copy of the procedures can be obtained from the Office of Affirmative Action:

Ms. Eleanor Bonner, Director
Affirmative Action and Human Resources
Room 139

Grievance Procedure

Step 1 — The employee discusses the grievance with his or her immediate supervisor(s). Students should discuss problems with their instructor or faculty advisor at this step.

Step 2 — If the problem is not resolved at Step 1, a written grievance statement should be submitted to the Director of Affirmative Action and Human Resources. A Grievance Response form with a copy of the grievance statement shall be forwarded to the person against whom the complaint is made.

The Affirmative Action Officer will then schedule a meeting within five (5) days with both parties to seek an equitable resolution. This meeting will be chaired by a chief officer of the division or a designee who shall also respond in writing to the grievant.

Step 3 — If the complaint is not resloved at Step 2, the grievant may request a fact-finding hearing under the provisions of 3357:4-52.

Sexual Harassment

Cincinnati Technical College affirms its commitment to ensuring an environment for all employees and students which is fair, humane and respectful - an environment which supports and rewards employee and student performance on the basis of relevant considerations such as ability and effort. Behaviors which inappropriately assert sexuality as relevant to employee or student performance are damaging to this environment.

Title VII of the Civil Rights Act of 1969 and Title IX of the Educational Amendments of 1972 as interpreted by Federal Regulation prohibit sexual harassment.

Definition

Sexual favors may not be required explicitly or implicitly as a term or condition of an individual's employment or student status. The submission to or rejection of sexual favors may not be used as a basis for employment or educational decisions. Sexual conduct which has the purpose or effect of unnecessarily interfering with an individual's work or student performance or creating an intimidating, hostile or offensive working or educational environment is prohibited.

Such conduct may include:

- verbal harassment or abuse
- subtle pressure for sexual activity
- sexist remarks about a woman's or man's clothing, body, or sexual activities
- unnecessary touching, patting, or pinching
- leering or ogling of a woman's or man's body
- constant brushing against a woman's or man's body
- demanding sexual favors accompanied by implied or overt threats concerning one's job, grades, letters of recommendation, etc.
- physical assault

Schedule of Classes

Classes are scheduled between 7:00 a.m. and 10:00 p.m. The full-time load will include five to six hours of instruction per day and twelve (12) credit hours per term.

In the event of adverse weather conditions, it may be necessary to announce a delayed schedule for the day. **The College will rarely close completely.**

Local radio and TV stations will begin announcing CTC's operating status no later than 6:15 a.m. on the day involved.

If an announcement is made that CTC will be operating on a delayed basis the following will be in effect for daytime courses:

NORMAL TIME	DELAYED TIME
7:00 - 7:50	8:00 - 8:50
8:00 - 8:50	9:00 - 9:50
9:00 - 9:50	10:00 - 10:50
10:00 - 10:50	11:00 - 11:50
11:00 - 11:50	12:00 - 12:50
12:00 - 12:50	1:00 - 1:50
1:00 - 1:50	2:00 - 2:50
2:00 - 2:50	3:00 - 3:50
3:00 - 3:50	4:00 - 4:50

The status of evening classes will be handled by a separate announcement.

Absences

Each student is expected to attend all classes as scheduled. The instructor may or may not require a student to explain absences, but will avoid rigid classification of absences as "excused" or "unexcused." "Excused" absences for official school functions are the exceptions.

On co-op and clinical placements the employer may have specific guidelines regarding absences, which the student must follow.

Make-Up

The privilege of making up missed assignments, quizzes, tests, exams, etc. is not automatic.

When a student fails to provide evidence and show good cause for being afforded make-up privileges, a course instructor does not have to permit or grant make-up privileges for:

a. failure to turn in assignments when due
b. being absent when quizzes, tests or exams were administered.

In all cases of request for make-up privileges, the burden of proof as to the legitimacy of the reason(s) rests with the student.

The course instructor has the discretion of determining the form and content of documentation of the reason(s) needed as long as the criteria used are reasonable, standard and uniformly applied in all cases of like circumstances.

Grade Reports

It is the student's responsibility to check the grade report form and take the necessary steps to assure accuracy. Errors or omissions in grade reports should be reported to the student's coordinator or the course instructor.

Transcripts

Upon completion of a Request for Transcript Form obtainable in the Records Office, an official transcript of a student's academic record will be forwarded to any employer or educational institution.

The first transcript is free, each additional transcript is $2.00. Please allow five working days for processing transcripts.

Faculty Office Hours

All College faculty maintain office hours. Students should check with each instructor, or the secretary in the instructor's office area, for appointments.

I.D. Cards

Each student is required to obtain a card showing identity as a student of Cincinnati Technical College. The card is extremely valuable and should be carried at all times. It may be used for admission to certain social functions, the library, pool, gymnasium, voting in campus elections, anything dealing with the Consortium of Colleges and also any other purposes which may be designated by the administration, or various other departments or organizations. I.D. cards are not transferable and are to be presented to any College official upon request. The cost of the card is $1.00.

Release of Information

A student's record contains information which is classified as confidential or public. At CTC, the following data are public information.

1. Name
2. Address
3. Birthday (verify only)
4. Honors/Deans List
5. Technology/Division
6. Co-op Employer
7. Current Course Schedule
8. Full or Part Time Status
9. Parents' Name and Address
10. Dates of Attendance
11. Telephone Number

Public information will be used for releases to newpapers, television and radio.

All other information is confidential and will be released only upon the receipt of written permission from the student or for legitimate College purposes, or as otherwise required by law.

Photographs and/or films of students for promotional and recruitment purposes are taken throughout the school year. Students who do not wish to be included in these visuals must inform the Director of Public Information prior to photographing and/or filming.

Personal Telephone Messages

Personal telephone messages can be accepted only in the event of an extreme emergency. Students are asked to their parents and friends of this restriction. Office telephones are provided for College business only. Public telephones are located in the main lobby, student activity center and cafeteria.

STUDENT SERVICES

STUDENT SERVICES

Student 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 Services staff include coun-seling, financial aids and veterans affairs.

Counseling

The Office of Counseling Services maintains a professional staff to assist students. All sessions are confidential and free of charge to all students.

The following services are provided by the counseling staff:

Counseling — counsel students regarding personal, social, or academic problems or concerns.

Career Counseling — help students and potential students with career decisions and concerns through testing, individual conferences and/or career development course work.

Admissions Advising — advise students regarding general admissions; assist students in choosing programs; and refer students to program coordinators.

Educational Transfer Counseling — assist students interested in continuing their education at other colleges or universities.

International Students — provide admissions, immigration and naturalization assistance.

Special Assistance — provide assistance to students with special needs, and students in special programs, i.e., Job Corps and CETA.

Information — provide students with information regarding College policies, health insurance, housing, etc.

If a situation develops which the staff feels unprepared to handle, the student will be referred to an appropriate professional.

The Office of Counseling Services is located in room 157. Office hours are 8:00 a.m. to 8:00 p.m. Monday through Thursday, and until 5:00 p.m. on Friday.

Living Accommodations

CTC 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 facilites, contact the Office of Admissions and Counseling.

Veterans

Cincinnati Technical College has a Veterans' Affairs coordinator to aid persons attending school on V.A. benefits. The Veterans' Affairs personnel will help students with official paperwork and information regarding benefits. All degree pro-grams at Cincinnati Technical College are fully approved by the State Approving Agency for Veterans Training. Upon being accepted by CTC, veterans should contact the Admissions and Counseling Office for full information concerning applica-tion for Veterans' Educational Benefits.

Tutorial services can be arranged 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 Admissions and Counseling 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.

Financial Aid

The purpose of Cincinnati Technical College's financial aid award is to provide financial assistance to those qualified students who, without such aid, would be unable to attend college.

Financial Aid is intended to supplement the student's resources enabling the student to better concentrate on studies. It is not intended to provide a steady source of income on which the student must rely to meet living expenses.

All students must be fully accepted by the College into a degree or certain certificate granting programs before financial aid can be awarded.

The Award Year

The financial aid award year begins with the June Term and extends through the April Term.

Students are notified of their aid award via the Award Notification Letter. If the student accepts the aid award, the Award Letter must be signed and submitted to the Financial Aid Office within two weeks of receipt.

Procedures for Applying for Financial Aid include —

a. Apply for admission to Cincinnati Technical College
b. File an institutional application for financial aid
c. File a Financial Aid Form (FAF)
d. Ohio residents file an application with the Ohio Board of Regents for an Ohio Instructional Grant

Deadlines — All applications for financial aid should be completed by March 15 to receive full consideration for all forms of financial aid. Applications completed after March should not expect consideration for campus-based funds.

Federal programs available include:

PELL GRANT— The **Pell Grant** is available to full-time and half-time undergraduate students. It is a grant that does not have to be repaid. The amount of the grant varies for each student.

Supplemental Educational Opportunity Grant (SEOG) — The SEOG program is for students of exceptional financial need who, without the grant, would be unable to continue their education. The Supplemental Educational Opportunity Grant cannot be less than $200 a year.

National Direct Student Loan (NDSL) — The NDSL is for students who are enrolled at least half-time and who need a loan to meet their education expenses.

Money advanced under the NDSL Program represents federal funds in the form of a LOAN, and must be repaid in accordance with the terms of the NDSL Promissory Note. The rate of interest charged on the loan will be five percent (5%) and repayment period will begin six (6) months after the student leaves the College.

College Work-Study — The purpose of Cincinnati Technical College's federally-funded College Work-Study program is to provide meaningful employment to any eligible student as part of a financial aid package to help defray educational expenses and to serve as an educational tool to increase the student's job skills and enhance career opportunities.

Cincinnati Technical College arranges jobs on-campus and off-campus with a public or non-profit agency.

In arranging a job and determing how many hours a week a student may work, these things are taken into account: (1) **need** (2) **class schedule** and **academic progress.** Students are paid at least minimum wage.

CWS students may not work more than forty hours per week.

Guaranteed Student Loan Program/Federally Insured Student Loan — The GSL, or FISL enables the student to borrow directly from a bank, credit union, savings and loan association, or other participating lender who is willing to make the educational loan. The loan is guaranteed by a state or private non-profit agency, or insured by the federal government.

The **maximum** a dependent student may borrow as an undergraduate is $2,500 a year. An independent student may borrow $3000 a year. The interest for new borrowers is eight percent (8%).

The loan must be repaid. Payments normally begin six months after graduation or withdrawal from school.

Other Financial Aid Programs

Ohio Instructional Grant (OIG) — The OIG is a state grant program which can only be used for tuition and fees. Students must apply to the Ohio Board of Regents, and carry a minimum of 12 credit hours to receive an OIG grant.

State of Ohio Scholarship Programs

Ohio Academic Scholarship Program — This program is funded by the State of Ohio to assist undergraduate students who exhibit exceptional academic ability. High school students who are residents of Ohio and who plan to attend an approved Ohio institution of high learning on a full-time basis (twelve credits or more per term) may apply. Recipients are chosen by the Board of Regents on the basis of grade point average and performance on a competitive examination. These scholarships are awarded in the amount of $1000 per year for four years of undergraduate education.

Ohio War Orphans Scholarship — This program is funded by the State of Ohio to aid dependents of veterans of the armed services who died or were disabled during their period of service. Applicants must be residents of the State of Ohio who are enrolled full-time (twelve credits or more per term) as undergraduate students. Eligibility is determined by the Board of Regents on the basis of need. Awards cover the cost of instructional and general fees for four years of study. More detailed information and applications are available from the Ohio Board of Regents.

National Guard Scholarship Program — This program is funded by the State of Ohio to assist persons who enlist in the Ohio National Guard after September 1, 1977 for at least six years. Awards are determined by the Board of Regents and cover the cost of instructional and general fees. Eligible guardsman should contact the Adjutant General's office to apply for this program.

Institutional Aid Programs

Cincinnati Technical College aid programs include academic and need-based scholarships and emergency student loans and grants.

CTC Scholarship Program — In 1980, the CTC Scholarship program was established by the Office of Resource Development. The purpose of the program is to acknowledge and reward high academic achievement by helping deserving students remove some of the financial barriers they face while pursuing technical education. CTC awards both academic and need-based scholarships. Eligibility requirements include:

1. Applicants must meet priority deadline of **April 1;**
2. Applicants must be U.S. citizens;
3. Applicants must be fully accepted and matriculated into a certificate or degree program.
4. Applicants must be ranked in the upper 20 percent of their high school graduating classes and/or have a minimum GPA of 3.0 on a 4.0 scale or have earned a minimum of 12 credit hours at CTC with a minimum 3.0 TGPA and 3.0 core average if applicable;
5. Need-based applicants must have on file in the Financial Aid Office a CTC Financial Aid Application and a completed Confidential Financial Statement.

Application deadline date is April 1, and all recipients must reapply each year.

Emergency Aid Programs — Cincinnati Technical College acknowledges the concerns and needs for additional emergency student assistance programs. It is the College's policy to attempt to assist the student body in meeting educational costs which may delay enrollment.

The Emergency Student Loan Program (CINTECH, LINKS and Avon) are designed to serve as an institutional short-term loan with emphasis on repayment within ninety (90) days. The program will provide emergency assistance for tuition, fees, books and supplies and should be administered as such. For those students who meet eligibility requirements, awards will be made upon the availability of funds.

The maximum CINTECH and Avon loan amount is $200 and the maximum LINKS loan is $100 with repayment within ninety (90) days at a six (6) percent interest rate.

The Emergency Student Grant Program, LINKS, is an institutionally administered program drawing its funds from the contributions of the LINKS Organization. This program is designed to help students with extreme emergency financial needs. Grants are awarded at a maximum of fifty dollars ($50) and do not require repayment.

Emergency Aid Eligibility Requirements

1. Student must be a U.S. citizen or an eligible non-citizen.
2. Student must be fully enrolled at least half-time and accepted into an eligible program.
3. Student must be making satisfactory progress as defined in CTC's catalog.
4. Student must not be in default on an NDSL, GSL or PLUS Loan or any institutional loan.

Methods of Disbursement and Refund of Aid

The Financial Aid Office will authorize aid funds (excluding College Work-Study) to be charged to the appropriate fund control accounts by the Office of Business and Finance. This authorization takes place by the end of the fourth week of each term. The Office of Business and Finance will apply the authorization of aid to the student's institutional charges with priority first given to tuition and fees. When all institutional charges have been paid, CTC's Office of Business and Finance will disburse the remaining balance of aid (excluding College Work-Study and OIG) directly to the student. This disbursement occurs on the Friday of the fifth week of each term. It is disbursed by check and proper student identification is required by the Cashier.

Students who participate in the College Work-Study Program are paid every two weeks through the College's payroll system. Time cards must be submitted in a timely fashion. Late time cards will cause a delay in payment. Proper student identification is required.

Cincinnati Technical College's refund policy for students withdrawing or dropping credit hours is outlined in this catalog on page ?. Federal regulations require a proportionate refund of federal student aid funds (programs sponsored by the U.S. Dept. of Education). The federal formula used to determine the portion of the fee to be refunded as applied to federal student aid is as follows:

$$\frac{\text{total amount of federal student aid funds (excluding employment) awarded for the payment period}}{\text{total amount of aid (excluding employment) awarded for the payment period}}$$

Cincinnati Technical College will refund back to the U.S. Dept. of Education's federal aid programs using the following priority distribution: 1) National Direct Student Loan, 2) Supplemental Educational Opportunity Grant, 3) Pell Grant and 4) Guaranteed Student Loan.

Other refund distribution priority is as follows: 1) state grants/scholarship programs, 2) institutional scholarships and 3) emergency student loans.

Rights and Responsibilities Governing Receipt of Financial Aid

The following information is provided in compliance with federal regulations.

Student's Rights

1. All students have the right to know what financial aid programs are available at CTC, and the deadlines for submitting applications for each program.

2. Each student has the right to know how his or her need is determined (including tuition, books, fees and personal expenses), and what resources are used in the calculation of need. If awarded, how the award has been "packaged", and how his or her aid will be distributed.

3. Each financial aid student has the right to know how much of his or her need has not been met by the College.

4. If not awarded, each student has the right to be notified by mail with the stated reason(s) for denial of aid.

5. Each financial aid student has the right to know what portion of his or her aid must be repaid, the interest rate and payback procedures, and what portion is grant aid.

6. All students have the right to know the College's refund policy and how it effects their financial aid packages.

7. All students have the right to know what the College's Satisfactory Progress policy is.

Student Responsibilities

1. All aid applicants have the responsibility of meeting application deadlines for filing, providing correct information on financial aid application forms, and returning all documentation, verification and corrections as requested by the Financial Aid Office.

2. Each student is responsible for reading, understanding and accepting responsibility for all agreements which are signed.

3. All financial aid recipients must notify the Financial Aid Office of any other resources of aid which they are receiving, including any part-time employment or income benefits.

4. All financial aid recipients must notify the Financial Aid Office of any changes as they occur, including change of full- or part-time status, technology, family circumstances, address, etc.

5. All financial aid recipients are responsible for course withdrawal and any repayment of funds if applicable.

6. All students who are awarded any type of loan are responsible for arranging pre-loan counseling, an entrance interview and an exit interview.

AID WHICH IS IN THE FORM OF A LOAN WILL NOT BE ISSUED WITHOUT THE SIGNING BY THE STUDENT OF A PROMISSORY NOTE.

7. All students who are awarded a CWS award are responsible for attending a JOB-PLACEMENT seminar, and signing a CWS work agreement.

8. All students have the responsibility of understanding and complying with the College's Standards of Satisfactory Progress.

Satisfactory Progress

All CTC students, including financial aid recipients, must maintain satisfactory academic progress as stated in the CTC catalog. In addition, financial aid recipients must carry to full successful completion 60 percent of the credits for which they have registered each term. The monitoring of satisafactory progress will be done on a term basis. Students will be notified when they fall below the minimum standards. Three consecutive terms in which the student does not meet minimum standards will result in termination of aid.

Course Withdrawals

Students who register for 12 credit hours but withdraw from courses could be liable to repay the overaward.

Pell Grant Program

Students who wish to receive their Pell disbursement during their co-op terms must first properly register for co-op credit. In addition, the student must have a financial aid co-op verification form on file in the Financial Aid Office by the second week of the co-op term.

College Work Study

Students awarded College Work-Study must contact the Financial Aid Office regarding job placement. College Work-Study is not a grant or a loan. Students must work for the dollars awarded. Students are only permitted to work 20 hours per week while attending classes. All on-campus employment must be cleared through the Financial Aid Office. Failure to do so could result in a reduction of the award or the student's liability for overpayment of funds.

National Direct Student Loan

All National Direct Student Loan recipients must sign a promissory note in the Financial Aid Office before the loan and the award become official. Additionally, all advancements on the total loan must be signed for prior to the beginning of each term. All NDSL awards must be repaid.

Other Aid

Financial aid recipients must notify the Financial Aid Office of any other sources of aid. All employment earnings must be reported. This includes co-op earnings or other part-time employment not reported on the student's financial aid application.

Notification of Changes

All aid recipients must notify the Financial Aid Office of the following changes, as they occur: change of term, change of credit hour load, change of technology, or change in family circumstances which may affect the recipient's eligibility. The Financial Aid Office should be notified of address changes, or change of family name (marriage) within one week of the change.

Registration

Financial aid recipients must follow the regular registration process by taking a copy of the award letter and the registration form to the cashier for proof of payment.

Please Note: If a student defaults on unpaid tuition, the Cincinnati Technical College has the right to dismiss that student for financial deficiency and take legal action against that student and/or co-signer to satisfy the outstanding balance. If a student withdraws or leaves the College, that student and/or co-signer are still financially responsible for all unpaid tuition and fees.

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

Student Activities

Student Senate

One student and an alternate are chosen from each technology. Officers are elected by the Senate for each of the two student sections.

All CTC students are encouraged to attend Senate meetings. The Senate is involved in all student activities and act as a liaison between students and the administration.

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 intercollegiate sports program.

On the horizon at Cincinnati Tech is an expanding athletic program in both men's and women's sports. At the present time CTC offers intercollegiate men's basketball.

In basketball the Tigers are a member of Region XII of the NJCAA and the Ohio Junior College Athletic Conference and play a very competitive junior college schedule.

Along with the intercollegiate 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.

VIP Association

This is a volunteer organization of students who act as hosts or hostesses, serve as tour guides, usher at Commencement and participate in a variety of activities as their schedules permit. All students with a 2.5 TGPA are eligible and can apply by contacting Miriam Pizzuto in room 156.

Student Organizations

Students are encouraged to join organizations for designed special interests. Business Technology students can apply for membership in the Office Education Association (OEA). There are others such as the Society for Manufacturing Engineers (SME), the Junior Food Service Executive Association (JFSEA) and the Junior Litho Club. For additional information check with the Student Senate Office or program coordinator.

Alumni Association

The students at Cincinnati Tech have always displayed a special type of loyalty and support.

Upon graduation, many continue to support the school's philosophy of cooperative career education and the traditions established in CTC's brief history.

Following the school's fourth graduating class the graduates of CTC formed the Cincinnati Technical College Alumni Association in early 1972. The association was organized to promote the general welfare of the College and to create and maintain an active interest among the alumni in extending the influence of the College. The association also provides a means of perpetuating friendships among alumni and in the future will aid the College in providing facilities to meet the educational needs of society.

Facilities

Use of College Facilities

Students presenting College I.D. cards may use such facilities as the gymnasium, natatorium, weight room, library, student center, meeting rooms, etc. Such use is restricted to hours set aside for student use for freetime recreation. These hours will not conflict with previously scheduled events, and may be subject to change because of short term scheduling of intramurals, athletics, community use, etc.

Students or student groups may lease on-campus facilities through the Office of the Director of Student Activities.

Learning Resource Center

The Learning Resource Center includes the Johnnie Mae Berry Library and the Instructional Media Center. The LRC is open from 7:30 a.m. to 9:30 p.m. Monday through Thursday and from 7:30 a.m. to 4:30 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 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.

All students enrolled in the Cincinnati Technical College are encouraged to use the Learning Resource Center. Please observe the following rules and regulations:

Quiet Zones — An atmosphere of quietness conducive to good study habits shall prevail.

Group Study — Students who wish to study together must use the rooms set aside for group study.

Smoking, Eating & Drinking — Smoking is not permitted. Neither food nor drink may be brought into the Center.

Inspection — Upon leaving, all bags, briefcases and parcels are subject to inspection.

Proper Charging — No books may be taken from the LRC without being charged out and signed for at the Circulation Desk.

Overdues — Fines — No books will be issued students who repeatedly keep books overtime. A fine of $.10 per day is charged for each circulation book kept overtime. Reserve books are charged ten cents an hour if not returned by 8 a.m. the following morning on school days.

Lost Books — Lost or damaged books must be paid for by the borrower. A $5.00 processing fee will be added to the cost.

Circulation Policies and Procedures

To Borrow a Book — To borrow a book a student presents his or her I.D. card. The Librarian or Assistant will stamp the DUE DATE on the card beside the borrower's signature and on the book's DATE DUE SLIP letting the student know when the book is to be returned.

Length of Loan — Circulating Books may be kept three weeks. They may be renewed if there are no requests for them. **Reserve Books** circulate according to faculty members' instructions who place them on reserve. **Overnight Reserve Books** which are used during the day may be checked out after 3 p.m. and must be returned by 8 a.m. the following school day.

Restricted Materials — Closed Reserve Books, Periodicals, and Reference Books may not be charged out and may be used only in the LRC.

Return of Books — Library books must be returned to the Circulation Desk by the borrower on or before the DATE DUE. Each borrower is responsible for all books signed out.

Book Depository — The Book Drop is located to the right of the Main Entrance. It is to be used for book returns when the Learning Resource Center is CLOSED.

Instructional Media Center

The Instructional Media Center 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.

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, calculators, various tools used in labs, etc.

Used books are purchased by the bookstore during the two week period prior to the start of each new academic term.

Books for which an exchange or refund is requested must be accompanied by the original receipt and presented to the College bookstore within one week after the beginning day of each term. If a student drops a course and wishes a refund within the established time frame, the student must show the bookstore personnel a copy of the drop/add form. Only books on approved technology booklists can be returned as used books and refunded accordingly.

Regular hours of the Bookstore are 9:30 a.m. to 4:00 p.m. Monday through Friday. During registration periods hours are extended.

Dining Facilities

There are two separate dining facilities to serve CTC students. They are:

The Stateroom — Students may purchase excellently prepared, full course hot lunches, as well as ala carte specialties.

The Stateroom is completely manned by students from the Hotel, Chef and Dietetics technologies. Serving days and times are scheduled on a term by term basis.

The Cafeteria on the third floor offers a wide selection of vending machines, drinks, foods, hot and cold — also a microwave oven. This area is open from 6:30 a.m. to 10:00 p.m. daily.

The Cafeteria is operated by Canteen, Inc.

Gymnasium

The gymnasium is open to "free play" from 8 a.m. to 5 p.m. Monday through Friday. Facilities available include volleyball, basketball, tumbling mats, footballs, soccer balls, and softball equipment. I.D.'s are required to acquire equipment.

Pool

The pool is open for free swimming Monday through Friday from 10:30 a.m. to 5:30 p.m.

Activities Center

This area features a game room with pool tables, ping pong, foose ball, pin ball, card tables, etc., a snack and lounge area. I.D.'s are required to use this facility. Hours - 8:00 a.m. - 4:30 p.m. & 5:30 p.m. - 8:30 p.m.

Activities Center, Pool, Gym Rules

1. Students using the center must have their CTC I.D. card and Drivers License and show them upon request.
2. Food and drink will **not** be allowed in the gym, exercise room or pool.
3. No smoking allowed in the gym, exercise room or pool.
4. **No** street clothes allowed in pool area.
5. No swimming suits allowed in other activities areas.
6. Students must present I.D. to lifeguard while using pool area.
7. Please place all cigarettes in ashtrays and all trash in trash containers.
8. I.D.'s must be presented to use equipment.
9. Loud or disruptive behavior will not be tolerated.
10. All students are encouraged to shower after activity.
11. Gym shoes must be worn when using the gymnasium. (Street shoes with soft soles are not permissible.)
12. It is recommended that gym clothes be worn when using the gymnasium.

Lounges

The main student lounge, located on the third floor, and the snack lounge area in the student activity center provide areas for students and faculty to gather between classes and discuss mutual interests, listen to music, or just relax. A food service and vending machines offering a large selection of food and drinks or snacks are available.

Facilities for the Handicapped

The College has renovated areas to make its facilities more accessible to handicapped students. Outdoor and indoor ramps, elevators and specially designed restroom facilities are available to assist any physically disabled person.

Lockers

The College has lockers available for use by students. Students must provide their own locks. CTC assumes no responsibility for any loss, theft or damage to lockers, locks or contents due to fire, trespassers, etc. Each year, at the end of the April Term, students must remove locks and contents from their lockers so that general cleaning and maintenance can be performed.

Parking & Traffic Regulations

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; The parking plans and rates are as follows:

1. **The Term Reserved Space Plan (TRS)**
   This plan permits a student to park in any of the four areas marked in yellow lines on campus. The TRS plan can be purchased for $25 per term. Those areas open to the TRS parking plan are the lower lot, some hilltop spaces, the gravel lot and the front and back drive.
2. **The Registered Vehicle Plan (RVP)**
   This plan permits a student to park in the stadium parking lot. The fee for this plan is $7 plus 50¢ per day.
3. **The Registered Vehicle (RVM) (Motorcycle)**
   The RVM plan permits students to park motorcycles on campus. Students must park motorcycles in the areas specifically marked. The fee for this plan is $10 per term.
4. Upper lot parking for night school will be 50¢ per car, per night, if paid at the guard house or a parking card can be purchased for $5 when a student registers. This card entitles the student to park for 13 nights. These cards will be punched upon entry by the gate attendant.
   Stadium parking for night school is 50¢ per car, per night, or students can purchase a $4 coupon book good for ten parking privileges.

Traffic Regulations

Traffic Regulations will be strictly enforced. Violators will face monetary fines and possible loss of parking privileges and/or transcript until fines are paid; also prevention from purchasing on-campus parking for future terms.

The following policies and procedures will be in effect on the first day of classes and will apply to all persons driving vehicles onto campus.

- One-way traffic is in effect up the entire front drive around A & B wings, and down the back exit drive.
- One-way traffic is also in effect across the front of the building going north around the back of F & G wings, (across from the gravel lot) continuing around the rear of building and down the exit drive.
- Only those students with current parking decals will be able to bring their vehicles on campus.

Parking regulations will be strictly enforced. Violators face monetary fines and possible loss of parking privileges and/or tow away for chronic offenders.

The following are violations and the fines that accompany them:

Parking

1.	Crosswalk	$ 3.00
2.	Blocking Driveway	5.00
3.	Parking in or blocking fire lane	10.00
4.	Overtime parking, limited parking area	2.00
5.	Disregarding posted signs: no stopping, no parking, loading, tow away zone	5.00
6.	Parking in a manner to use two stalls	5.00
7.	Parking disregarding painted curbs	3.00
8.	Parking outside permitted decal areas	3.00
9.	Parking in reserved area(s)	5.00

Moving

10.	Wrong direction on one-way street	15.00

Other

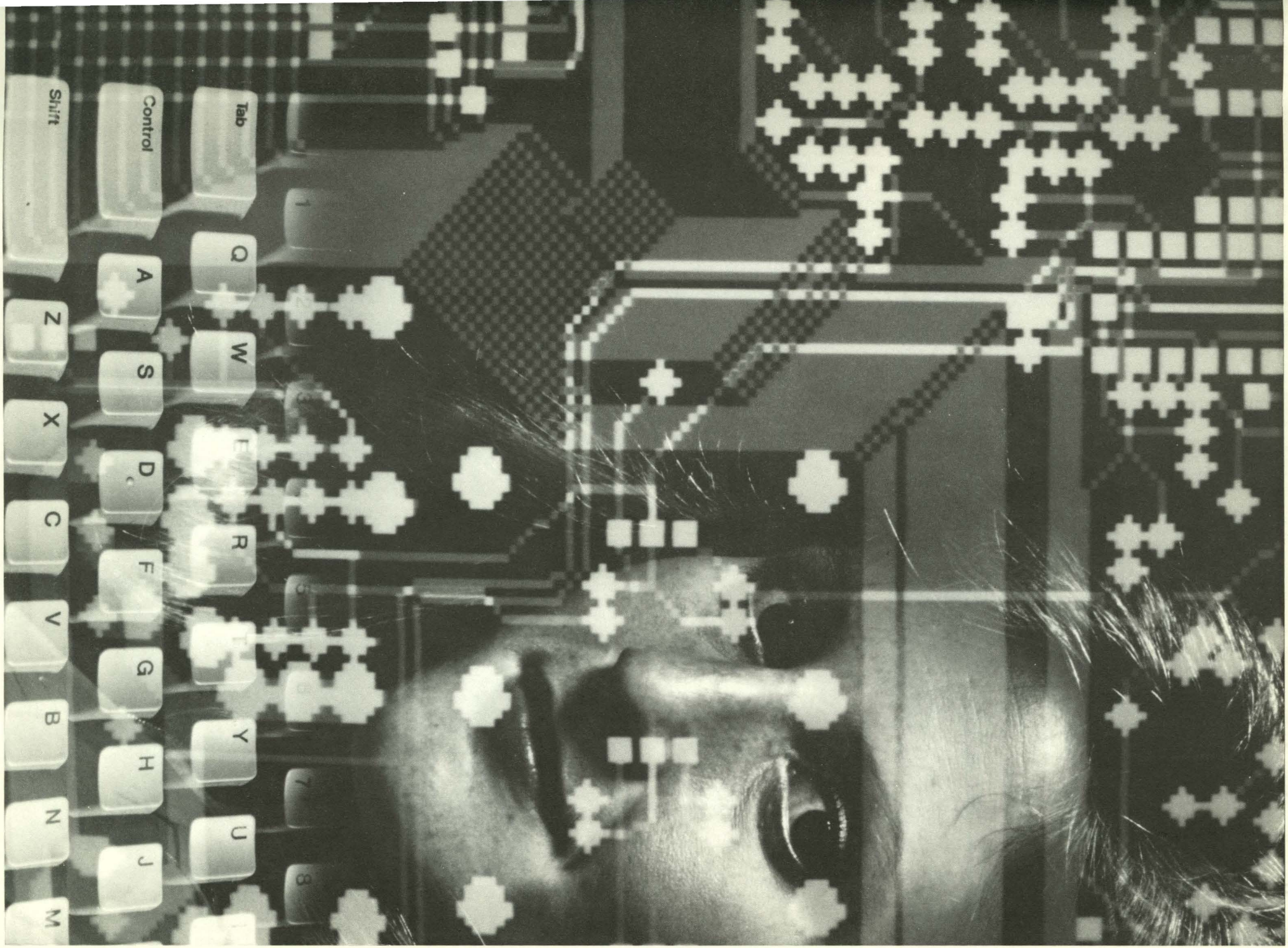
11.	No parking permit (decal) or not displayed	5.00
12.	Vehicle not registered	5.00
13.	Towing and impoundment	Cost
14.	Disregard of barricades	10.00
15.	Reproducing, altering or defacing a parking decal or permit Using a stolen or revoked permit or decal (Tow & Impound)	Cost
16.	Other	5.00

Failure to pay fines will result in the holding of transcripts until such fines are paid; also prevention from purchasing on-campus parking for future terms.

LOCK YOUR CAR

Cincinnati Technical College assumes no responsibility for any loss or theft of any automobile or any part thereof; or for any article left therein; or for any damage which may be caused by fire, trespassers, collision, etc

Parking & Traffic Regulations



ACADEMIC DIVISIONS, DEGREE & CERTIFICATE PROGRAMS

ACADEMIC DIVISIONS' DEGREE & CERTIFICATE PROGRAMS

Academic Divisions

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

Communication Skills/ Social Sciences Division

Philosophy of Communication Skills

The Communication Skills Division 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 Division 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 communications.
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.

The Writing Center

Individualized Courses—Currently, Communication Skills courses 1002, 1009, 1010 and 1011 are also offered on an individualized basis. Individualized courses being offered each term are designated by the letters IND.

Other Services—Instructors of Communication Skills staff The Writing Center to provide all students with help they need in any writing or other communication problems. Students can usually be accommodated on a "drop-in" basis or may request an appointment. For students uncertain of their communication skills level, assessment is available.

The Writing Center Hotline (559-1520, extension 133) answers questions about business communications, technical writing, grammar, punctuation, spelling, capitalization and work usage. The hours are 9:00 a.m. to 4:00 p.m., Monday through Friday.

Requirements

To qualify for the associate degree, a student must complete at least 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 communications, and 3 credit hours in oral communication. To complete the minimum requirements in the social sciences, a student will select a minimum of three courses (9 credit hours) from at least two of the four areas: psychology, economics, sociology and community relations. The following is a list of the courses which constitute each of the areas:

Communication Skills

Composition:
- 1001 English Composition I
- 1002 English Composition II
- 1007 Research and Argumentative Writing
- 1008 Composition: Science Fiction
- 1009 Business English

Technical Writing and Business Communications:
- 1010 Technical Writing
- 1011 Business Communications
- 1015 Technical Writing II
- 1017 Project Research
- 1018 Writing The Project Copy I

Oral Communication:
- 1020 Effective Speaking
- 1024 Group Dynamics and Problem Solving

Composition Classes Using Microcomputers

Some sections of selected composition classes are offered in a microcomputer lab. These classes contain the same material as other composition classes but allow students to compose and revise their assignments using word processing. Students interested in taking such a class are advised to have keyboarding skills and prior microcomputer experiences. Classes offered in microcomputer labs are indicated by the initials MIC after the course title.

Social Sciences

Psychology:
- 1502 Human Relations - Applied Psychology
- 1505 Introduction to Psychology: Internal World
- 1506 Introduction to Psychology: External World
- 1507 The Psychology of Color
- 1508 Child Psychology
- 1509 Psychology of Human Development - Adolescence through aging

Economics:
- 1512 Microeconomics
- 1513 Macroeconomics

Sociology:
- 1521 Introduction to Sociology
- 1523 Social Institutions
- 1527 Technology and Ethical Decisions
- 1525 Changing Roles for Men and Women
- 1524 Stress Management

Community Relations:
- 1531 Introduction to Political Science
- 1535 Introduction to Labor Management Relations
- 1539 Public Policy and the American Worker

New Associate Degree Program Technical Writing & Editing Technology (TWET)

Technical communications is comprised of such occupations as technical writers, editors and illustrators who put scientific or technical information into readily understandable language for a specific audience. Technical writers and editors research, write and edit tutorial and reference materials which meet their clients' specific needs. Along with their writing skills, they also use their knowledge of a technical subject area to convey this technical information to the people who will need or use it. Technical communications is the language of high technology and increasingly the language of a society based on the distribution of information. Students entering the Technical Writing/Editing program not only master the writing and editing skills required to enter the profession, but must also earn a minimum of twenty credit hours in one of three majors (mechanical/manufacturing engineering technology, electronics engineering technology or computer information systems programming).

Technical Writing & Editing Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Academic Term			
5001 Portfolio Development	1	2	2
1001 English Composition I	3	0	3
3005 Administrative Typewriting	2	3	3
xxxx Major Electives	___	___	6-9
			14-17
■ Second Academic Term			
1017 Project Research	3	3	4
1018 Writing the Project Copy I	2	5	4
1401 Layout and Design	3	0	3
3061 Word Information Processing I	1	4	3
xxxx Major Electives	___	___	3-7
			17-21
■ First Co-op Term			
9601 Cooperative Employment	1	40	3
■ Third Academic Term			
5010 Planning the Illustration	2	2	3
5040 Project Organization	2	3	3
1512 Microeconomics	3	0	3
3063 Word Information Processing II	1	4	3
xxxx Major Electives	___	___	3-7
			15-19
■ Second Co-op Term			
9602 Cooperative Employment	1	40	3
■ Fourth Academic Term			
5041 Editing the Project Copy I	2	2	3
5032 Writing the Project Copy II	2	5	4
1024 Group Dynamics	3	0	3
xxxx Major Electives	___	___	7
			17
■ Third Co-op Term			
9603 Cooperative Employment	1	40	3
■ Fifth Academic Term			
5051 Project Planning	3	1	3
5033 Writing the Project Copy III	2	5	4
5042 Editing the Project Copy II	2	2	3
5022 Technical Presentations	3	2	4
xxxx Major Electives	___	___	3-5
			17-19
■ Fourth Co-op Term			
9604 Cooperative Employment	1	40	2
■ Sixth Acadcmic Term			
5089 Conducting Project Review	1	6	3
xxxx Major Electives	___	___	9-12
			102-109

Program Majors & Non-Technical Electives

Electronics Engineering Technology

Major Electives
- 7008 Basic Engineering Drafting 2-4-3
- 7700 Electrical Concepts 3-2-3
- 7701 Electrical Fundamentals I 3-2-3
- 7030 Computer Programming BASIC 2-2-3
- 7702 Fundamentals II 4-2-4
- 7031 Computer Programming FORTRAN 2-2-3
- 7703 Electrical Troubleshooting 3-3-4
- 1191 Algebra & Trigonometry I 4-0-4
- 2221 Technical Physics I 1-4-3

Non-Technical Electives
- 10xx Communication Skills Elective 3-0-3
- 15xx Social Sciences Elective 3-0-3

Mechanical/Manufacturing Engineering Technology

Major Electives
- 7011 Engineering Drawing I 2-4-3
- 7160 Computer Aided Design/Drafting 2-2-3
- 7130 Engineering Mechanics 3-2-3
- 7132 Hydraulics & Pneumatics 4-2-4
- 7142 Mechanics Analysis & Design 3-2-3
- 7708 Electrical Fundamentals & Controls 3-3-4
- 1191 Algebra & Trigonometry I 4-0-4
- 1192 Algebra & Trigonometry II 4-0-4
- 2291 Physics I – Kinematics & Dynamics 3-2-3

Non-Technical Electives
- 10xx Communication Skills Elective 3-0-3
- 15xx Social Sciences Elective 3-0-3

Computer Information Systems Programming

Major Electives
- 1701 Introduction to Data Processing 3-0-3
- 1702 Introduction to BASIC Programming 2-3-3
- 1721 Programming Logic & Methods 2-3-3
- 1722 Advanced BASIC Programming 2-3-3
- 1742 COBOL Programming I 3-7-6
- 1763 Systems Analysis & Design 3-7-5
- 1765 COBOL Programming II 3-7-5
- 1131 Statistics 4-0-4
- 114x Math Elective 4-0-4

Non-Technical Electives
- 10xx Communication Skills Elective 3-0-3
- 15xx Social Sciences Elective 3-0-3

Developmental Education Program

The Developmental Education program consists of three component parts to assist students in preparing for 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.

Developmental Education courses are designed to develop specific minimum competencies in each subject area. The grades for courses numbered from 0001 to 0041 are based on achievement of the identified competencies. Only grades of A, B, IP and F are awarded in these courses. Each specific course has predefined criteria to earn a grade of A, B, IP or F.

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

The following courses are offered:

	Credits
#0001 English Grammar	4
#0002 College Spelling	3
#0003 Basic Writing I	4
#0004 Basic Writing II	4
#0007 Telephone Techniques	1
#0008 Oral Reports	2
#0010 College Reading I	4
#0011 College Reading II	4
#0012 Technical Reading I	4
#0013 Technical Reading II	4
#0014 College Study Skills	4
#0020 Basic Mathematics I	4
#0021 Basic Mathematics II	4
#0022 Essentials of Mathematics	6
#0024 Basic Algebra I	4
#0025 Basic Algebra II	4
#0030 Basic Concepts of Biology	4
#0031 Basic Concepts of Chemistry	4
#0040 Interpersonal Development	4
#0041 Interpersonal Communications	4

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.

Health Technologies Division

The Health Technologies 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.

Prerequisites for all programs are available at CTC.

Dietetic Programs

Cincinnati Technical College Dietetics programs train students in various aspects of health related food service and nutrition care.

Cincinnati Technical College offers one certificate and two associate degree options to meet a variety of career choices and employment opportunities. All programs include unpaid directed practice at area hospitals, health agencies and extended care facilities. Each program also includes paid cooperative experience.

Dietetic Technician – Nutrition Care

This program prepares the student to provide nutritional screening assessment and diet instruction to the patient/client under the supervision of a Registered Dietitian.

This includes data gathering from the patient's record and verbal history, preliminary assessment of nutritional status and the management of the nutritional care plan for patients/clients not at nutritional risk.

Successful completion of this program permits the student to become a member of the American Dietetic Association. This program is approved by the American Dietetic Association.

Dietetic Technician Nutrition Care Curriculum

	Hours Per Week Class	Lab	Credit Hours
First Term			
1001 Communication Skills	3	0	3
4000 Medical Terminology	3	1	3
4001 Introduction to Health Care System	2	0	2
4100 Fundamentals of Nutrition	4	0	4
4111 DT Orientation & Directed Practice I	1	3	1
4120 Food Management I	2	3	3
	15	7	16
Second Term			
1502 Human Relations-Applied Psychology	3	0	3
4102 Nutrition for the Life Cycle	4	0	4
4112 DT Directed Practice II	0	6	1
4121 Food Management II	2	6	4
4124 Food Service Sanitation Certificate	2	0	2
4133 Introduction to Food Science	3	2	4
	14	14	18
Third Term			
2231 Fundamentals of Inorganic Chemistry	3	2	4
4014 Anatomy & Physiology I	3	2	4
4030 Educational Techniques	1	3	2
4031 Health Care Management	3	0	3
4104 Clinical Nutrition I	4	0	4
4113 DT Directed Practice III	0	8	1
	14	15	18
Fourth Term			
9301 Cooperative Employment	1	40	3
Fifth Term			
10xx English Composition Elective	3	0	3
2232 Fundamentals of Organic Chemistry	3	2	4
4015 Anatomy & Physiology II	3	2	4
4106 Clinical Nutrition II	4	0	4
4114 DT Directed Practice IV	0	10	2
	13	14	17
Sixth Term			
9302 Cooperative Employment	1	40	3
Seventh Term			
102x Oral Communication Elective	3	0	3
2233 Fundamentals of Biochemistry	3	2	4
4016 Anatomy & Physiology III	3	2	4
4107 Clinical Nutrition III	4	0	4
4115 DT Directed Practice V	0	10	2
	13	14	17
Eighth Term			
9303 Cooperative Employment	1	40	3

■ **Ninth Term**				
101x	Technical Writing Elective	3	0	3
15xx	Social Science Elective	3	0	3
15xx	Social Science Elective	3	0	3
4108	Community Nutrition	4	0	4
4109	Dietetics Seminar	2	0	2
4116	DT Directed Practice VI	0	8	1
		15	8	16
*4117	D.T.N.C. Homecare D.P.	0	5	1
				112

*To be scheduled by the program director during the second year.

English Composition Electives: 1002. 1007. 1008. 1009. 1010
Oral Communication Electives: 1020. 1024
Technical Writing Electives: 1010. 1015

Recommended Social Sciences Electives:
Group 1 - Psychology: 1505. 1506. 1508. 1509
Group 2 - Economics: 1512. 1513
Group 3 - Sociology: 1521. 1523. 1525. 1527
Group 4 - Government: 1531. 1535

Dietetic Certificate - Food Dietary Manager

This program prepares students to perform supervisory functions in health care facilities. These may include tray line supervision, employee scheduling, inventory control and other duties as assigned.

The student who wishes to pursue the Dietetic Technician - Food Service Management program must complete this certificate in good standing. This program is approved by the Dietary Association.

Dietetic Certificate Curriculum Food Systems Management

		Hours Per Week Class	Lab	Credit Hours
■ **First Term**				
1001	English Composition I	3	0	3
4000	Medical Terminology	3	1	3
4001	Introduction to Health Care System	2	0	2
4100	Fundamentals of Nutrition	4	0	4
4111	DT Orientation & Directed Practice I	1	3	1
4120	Food Management I	2	3	3
		15	7	16
■ **Second Term**				
1502	Human Relations - Applied Pyschology	3	0	3
4102	Nutrition for the Life Cycle	4	0	4
4112	DT Directed Practice II	0	6	1
4121	Food Management II	2	6	4
4124	Food Service Sanitation Certificate	2	0	2
4133	Food Science	3	2	4
		14	14	18
■ **Third Term (Food Management)**				
4030	Educational Techniques	3	0	3
4031	Health Care Management	3	0	3
4105	Introduction to Clinical Nutrition	4	0	4
4122	Introduction to Food Systems	2	3	3
4125	Quantity Food Production	2	3	3
4143	Food Service Management Directed Practice III	0	8	1
4147	Dietetic Manager Seminar	1	8	1
		15	22	18
■ **Fourth Term**				
9301	Cooperative Employment (taken in April or June depending on entry date)	1	40	3
				55

Dietetic Technician (A.A.S.) - Food Systems Management

The Dietetic Technician Food Systems Management will prepare graduates to enhance and extend the functions of the health care food service systems Management and Extended Care Dietitians. The program will train technicians in areas of menu writing and management, human resources management, quantity food procurement, control and preparation, and time and systems management.

Dietetic Technician Food Systems Management (Second Year Curriculum)

		Hours Per Week Class	Lab	Credit Hours
■ **First Term**				
10xx	English Composition Elective	3	0	3
1539	Public Policy & The American Worker	3	0	3
1850	Computerized Business Applications	2	3	3
2911	Principles of Accounting I	3	2	3
4123	Institutional Menu Planning	1	2	2
4144	Food Service Management Directed Practive IV	2	8	3
		14	15	17
■ **Second Term**				
9302	Cooperative Employment	1	40	3
■ **Third Term**				
102x	Oral Communications Elective	3	0	3
15xx	Social Sciences Elective	3	0	3
2903	Survey of Marketing	3	0	3
2912	Principles of Accounting II	3	2	3
4126	Records & Cost Control	2	0	2
4145	Food Service Management Directed Practice V	2	8	3
		16	10	17
■ **Fourth Term**				
9303	Cooperative Employment	1	40	3
■ **Fifth Term**				
101x	Technical Writing Elective	3	0	3
4061	Contemporary Helath Care Issues	3	0	3
4109	Dietetics Seminar	2	0	2
4127	Institutional Food Service. Equipment. Layout & Planning	2	3	3
4128	Food Service & Catering	2	3	3
4146	Food Service Management Directed Practice VI	2	8	3
		14	14	17
				57
Total lst & 2nd years				112

English Composition Electives: 1002. 1007. 1008. 1009. 1010
Oral Communication Electives: 1020. 1024
Technical Writing Electives: 1010. 1015

Recommended Social Sciences Electives:
Group 1 -Psychology: 1505. 1506. 1508. 1509
Group 2 - Economics: 1512. 1513
Group 3 - Sociology: 1521. 1523. 1525. 1527
Group 4 - Government: 1531. 1535

Dietetic Certificate Evening Program

The Dietetic Certificate program can be completed primarily in the evening. Course schedules for the evening plan can be obtained from the program director.

Articulation with Mt. St. Joseph College

The Dietetic Technician A.A.S. program has a formal articulation agreement with the College of Mount St. Joseph Dietetics program. This agreement enables graduates to apply all of their credits toward a Bachelor of Science degree in

Dietetics. Any student interested in pursuing an advanced degree should see the program director for information and counseling.

Medical Assistant Technology (MA)

The Medical Assistant program trains students to work in physicians' offices providing patient care and performing administrative tasks. Administrative tasks include filing, scheduling appointments, handling correspondence, maintaining patient records and reports, and processing insurance forms. Clinical duties involve recording of histories, taking vital signs, preparing patients for examinations, giving injections and performing routine tests.

The Medical Assistant program offers two options: students must complete the first year for a technical certificate and then may elect to continue through the second year for an associate degree. Students in either option must complete supervised clinical practices or externships to develop competencies in the skills needed by the Medical Assistant. Students receive no monetary reimbursement for these experiences.

CTC's Medical Assistant program is accredited by the American Medical Association's Committee of Allied Health Education and Accreditation (CAHEA) in collaboration with the American Association of Medical Assistants (AAMA).

Upon successful completion of the program, graduates are eligible to take the Certified Medical Assistant Examination given by the AAMA.

Medical Assistant Technology Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
First Term				
4000	Introduction to Medical Terminology	3	1	3
4041	Integrated Science I	3	2	4
4200	Orientation to Medical Assisting	3	0	3
4201	Medical Office Practice	2	3	3
4202	Clinical Procedures I	2	3	3
		13	9	16
Second Term				
1009	Business English	3	0	3
3061	Word/Information Processing I	1	4	3
4042	Integrated Science II	3	2	4
4203	Clinical Procedures II	2	3	3
4204	Medical Laboratory Procedures I	2	3	3
		11	12	16
Third Term				
4211	Medical Assisting Clinical Experience I	0	20	3
Fourth Term				
3055	Medical Office Transcription	1	3	2
4007	Emergency Medical Procedures	1	2	2
4043	Integrated Science III	3	2	4
4205	Medical Laboratory Procedures II	2	3	3
4208	Insurance and Patient Records	2	2	3
		9	12	14
Fifth Term				
1502	Human Relations - Applied Pyschology	3	0	3
2909	Office Accounting I	2	3	3
*4209	Medical Assistant Seminar	2	4	3
4212	Medical Assisting Clinical Experience II	0	20	3
		7	27	15
				61

*indicates course which is not required if continuing on for second year of program.

Medical Assistant Technology Second-Year Curriculum

		Hours Per Week Class	Lab	Credit Hours
First Term				
100x	English Composition Elective	3	0	3
1024	Group Dynamics & Problem Solving	3	0	3
15xx	Social Sciences Elective	3	0	3
4131	Developmental Nutrition	4	0	4
4206	Medical Laboratory Procedures III	2	3	3
		15	3	16
Second Term				
1010	Technical Writing I	3	0	3
1527	Technology & Ethical Decisions	3	0	3
4001	Introduction to Health Care Systems	2	0	2
4224	Advanced Clinical Procedures	2	3	3
4408	Advanced Medical Terminology	3	0	3
		13	3	14
Third Term				
4213	Medical Assisting Clinical Experience III	0	20	3
Fourth Term				
15xx	Social Sciences Elective	3	0	3
1509	Psychology of Human Development - Adolescence through Aging	3	0	3
4031	Health Care Management	3	0	3
4209	Medical Assistant Seminar	2	4	3
		11	4	12
				45
Total 1st & 2nd years				106

English Composition Electives: 1002, 1007, 1008, 1009, 1010
Social Sciences Electives: 1505, 1506, 1508, 1521, 1523, 1525

Medical Laboratory Technician (MLT)

Medical Laboratory Technicians work closely with physicians. They provide much of the information needed by physicians to diagnose and treat patients. They work in the laboratories of hospitals, clinics, research centers and industry. In biochemistry, hematology, microbiology and blood bank laboratories they form a vital part of the health care team.

Medical laboratory technicians employed in a laboratory, a 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 the serology department they examine specimens for antibodies against various diseases.

The Medical Laboratory Technician program is an associate degree program which includes two terms of unpaid clinical laboratory experience and two terms of paid cooperative employment. The program is accredited by the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association in cooperation with the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Successful completion of the curriculum enables a student to apply to take a national certification exam. Graduates may apply to the American Society for Clinical Pathology Board of

Registry Examination to obtain certification as a Medical Laboratory Technician, MLT (ASCP), or to the National Certification Agency for Medical Laboratory Personnel to obtain certification as a Clinical Laboratory Technician, CLT (NCA).

Medical Laboratory Technician Curriculum

	Hours Per Week Class	Lab	Credit Hours
First Term			
1001 English Composition I	3	0	3
11xx Mathematic Elective	4	0	4
2231 Fundamentals of Inorganic Chemistry	3	2	4
4014 Anatomy and Physiology I	3	2	4
4301 Basic Laboratory Techniques	1	3	2
	14	7	17
Second Term			
2232 Fundamentals of Organic Chemistry	3	2	4
4015 Anatomy and Physiology II	3	2	4
4302 Basic Hematology & Urinalysis	4	6	6
4350 Orientation to the Clinical Lab	1	9	2
	11	19	16
Third Term			
2233 Fundamentals of Biochemistry	3	2	4
4016 Anatomy and Physiology III	3	2	4
4304 Clinical Chemistry	4	6	6
	10	10	14
Fourth Term			
15xx Social Sciences Elective	3	0	3
4001 Introduction to Health	2	0	2
4023 Immunology	3	0	3
4315 Laboratory Practicum I	0	12	4
	8	12	12
Fifth Term			
4353 ML Clinical Experience	1	40	6
Sixth Term			
10xx English Composition Elective	3	0	3
15xx Social Sciences Elective	3	0	3
4009 General Microbiology	3	3	4
4305 Blood Bank - Serology	4	6	6
	13	9	16
Seventh Term			
9302 Cooperative Employment	1	40	3
Eighth Term			
102x Oral Communication Elective	3	0	3
15xx Social Sciences Elective	3	0	3
4306 Clinical Microbiology	4	6	6
	10	6	12
Ninth Term			
9303 Cooperative Employment	1	40	3
Tenth Term			
101x Technical Writing Elective	3	0	3
4020 Fundamentals of Pathophysiology	5	0	5
4316 Laboratory Practicum II	0	12	4
	8	12	12
			111

English Composition Electives: 1002. 1007. 1008. 1009. 1010
Oral Communication Electives: 1020. 1024
Technical Writing Electives: 1010. 1015

Recommeded Social Sciences Electives
Group 1 - Psychology: 1502. 1505. 1506. 1508. 1509
Group 2 - Economics: 1512. 1513
Group 3 - Sociology: 1521. 1522. 1523. 1525. 1527
Group 4 - Goverment: 1531. 1535. 1537. 1539
(A total of 3 courses. At least 2 groups must be represented.)

Recommended Mathematic Electives:
1131. 1153. 1154 or 1191 based on placement test results and decision of program coordinator

Medical Record Technology (MRT)

CTC's program is accredited by the Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Council on Education of the American Medical Record Association. (COE-AMRA)

Medical Record Technicians are responsible for preparing, analyzing and preserving health information in hospitals, clinics, nursing homes, insurance companies and health maintenance organizations.

Students spend every other term in paid cooperative education experience.

Graduates are eligible to take the National Accreditation Examination of the American Medical Record Association for the designation A.R.T. (Accredited Record Technician).

Medical Record Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
First Term			
1001 English Composition I	3	0	3
4000 Medical Terminology	3	1	3
4001 Introduction To Health Care System	2	0	2
4014 Anatomy and Physiology I	3	2	4
4414 Record Science. Filing Systems & Record Analysis	4	3	5
	15	6	17
Second Term			
9301 Cooperative Employment	1	40	3
Third Term			
10xx English Composition Elective	3	0	3
4015 Anatomy and Physiology II	3	2	4
4400 Medical Word Processing	3	6	6
4408 Advanced Medical Terminology	3	0	3
4415 Legal Aspects of Records in Health Care Facilities	3	1	4
	15	9	20
Fourth Term			
9302 Cooperative Employment	1	40	3
Fifth Term			
102x Oral Communication Elective	3	0	3
4016 Anatomy and Physiology III	3	2	4
4031 Health Care Management	3	0	3
4416 Coding of Diagnoses. Operations and Procedures	5	5	7
	14	7	17
Sixth Term			
9303 Cooperative Employment	1	40	3
Seventh Term			
101x Technical Writing Elective	3	0	3
1502 Human Relations - Applied Psychology	3	0	3
15xx Social Sciences Elective	3	0	3
1850 Computer Business Application	2	3	3
4417 Medical Statistics and Record Abstracting	3	2	4
4428 Medical Record Directed Practice I	0	16	3
	14	21	19
Eighth Term			
9304 Cooperative Employment	1	40	2
Ninth Term			
15xx Social Sciences Elective	3	0	3
4020 Fundamentals of Pathophysiology	5	0	5
4409 Medical Record Seminar	3	0	3
4418 Tumor Registry, Utilization Review and Quality Assurance	4	0	4
4429 Medical Record Directed Practice II	0	16	3
	15	16	18
Tenth Term			
9305 Cooperative Employment	1	40	2
			104

English Composition Electives: 1002. 1007. 1008. 1009. 1010
Oral Communication Electives: 1020. 1024
Technical Writing Electives: 1010, 1015

Recommended Social Sciences Electives:
Group 1 - Psychology: 1502. 1505. 1506. 1508. 1509
Group 2 - Economics: 1512. 1513

Group 3 - Sociology: 1521, 1523, 1525, 1527
Group 4 - Government: 1531, 1535, 1539
Three courses from at least two groups.

Respiratory Therapy Technician/ Respiratory Therapist

Respiratory Therapy education at CTC consists of a one-year certificate program and an associate degree program.

Students are trained to administer gas therapy, humidity therapy, aerosol therapy and intermittant positive pressure breathing techniques. Graduates should be able to assist with long-term, continuous artificial ventilation and special diagnostic and therapeutic procedures.

The technician program is 15 months in duration and concludes with the awarding of a certificate. This program does not include paid cooperative education as students spend their time in course work and unpaid clinical experiences.

The certificate and associate degree programs are accredited by the American Medical Association's Committee of Allied Health Education and Accreditation in collaboration with the Joint Review Committee for Respiratory Therapy Education. Technician program graduates may apply for the certification examination administered by the National Board for Respiratory Care (NBRC). Candidates who complete these requirements are recognized as Certified Respiratory Therapy Technicians (CRTT).

Students may elect to continue into the second level of respiratory therapy education. This level, the Respiratory Therapist program, is a continuation of the first year, and graduates are granted an associate degree. The program does not include paid cooperative education. Graduates may apply for the registry examination administered by the NBRC for recognition as Registered Respiratory Therapists (RRT).

Respiratory Therapy Technician (RTC) Certificate Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term*			
11xx Math Elective	4	0	4
4001 Introduction to Health Care	2	0	2
4005 Chemistry for Health Technology	3	2	4
4007 Emergency Procedures	1	2	2
4014 Anatomy and Physiology I	3	2	4
	13	6	16
■ Second Term			
1001 English Composition I	3	0	3
4015 Anatomy and Physiology II	3	2	4
4701 RT Science I	3	2	4
4720 Cardiopulmonary Anatomy and Physiology	3	2	4
	12	6	15
■ Third Term			
4009 General Microbiology	3	3	4
4016 Anatomy and Physiology III	3	2	4
4702 RT Science II	2	3	3
4711 RT Clinical Practice I	0	10	2
	8	18	13
■ Fourth Term			
**10xx English Composition Elective	3	0	3
4018 Essentials of Pharmacology	3	0	3
4703 RT Science III	3	2	4
4712 RT Clinical Practice II	0	10	2
4718 Pulmonary Diseases	2	0	2
	11	12	14
■ Fifth Term			
**102x Oral Communication Elective	3	0	3
4704 RT Science IV	3	2	4
4713 RT Clinical Practice III	0	24	5
4719 Pulmonary Diseases	2	0	2
	8	26	14
■ Sixth Term			
**15xx Social Sciences Elective 1	3	0	3
4705 RT Science V	3	2	4
4714 RT Clinical Practicum I	0	32	4
	6	34	11
			83

*4000-Medical Terminology is recommended for the first term.
**Required for Therapist program only

Math Elective: 1131, 1151, 1171 or 1191
English Composition Electives: 1002, 1007, 1008, 1009, 1010
Oral Communication Electives: 1020, 1024

Social Sciences Electives:
See Therapist Program (second year)

Respiratory Therapy Technologist (RT) Second-Year Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term			
101x Technical Writing Elective	3	0	3
2244 Health Physics	3	2	3
4020 Fundamentals of Pathophysiology	5	0	5
4706 RT Science VI	3	2	4
	14	4	15
■ Second Term			
15xx Social Sciences Elective	3	0	3
15xx Social Sciences Elective	3	0	3
4715 RT Clinical Practice IV	0	12	2
4707 RT Science VII	3	0	3
	9	12	11
■ Third Term			
4716 RT Clinical Practicum II	0	24	3
4721 RT Supervision and Education	2	0	2
4723 RT Seminar	1	2	2
	3	26	7
			33
Total 1st & 2nd years			116

Technical Writing Electives: 1010, 1015

Recommended Social Sciences Electives:
Group 1 - Psychology: 1502, 1505, 1506, 1508, 1509
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1525, 1527
Group 4 - Government: 1531, 1535, 1539
Three courses from at least two groups.

Surgical Technology (ST)

A Surgical Technologist is a health care practitioner who assists with patient care and related services in the operating room. As a member of the surgical team the technician prepares sterile supplies and equipment for use in surgery and primarily functions in the scrub position during surgical procedures. Major responsibilities of the scrub position include creating a sterile operative field, handing instruments, sponges, sutures, etc. to the surgeon, as needed, during operative procedures and maintaining aseptic techniques.

The Surgical Technology program is an associate degree program and provides classroom and clinical training in general surgery and surgical specialties. During the second year of the program intensive clinical training, consisting of forty hours per week, for three consecutive terms, is required. The clinical terms provide students with practical learning opportunities. Students are not paid during these learning experiences.

Upon satisfactory completion of the curriculum, students are eligible for the National Certification Examination of the Association of Surgical Technologists for designation as a Certified Surgical Technologist (CST). A Certified Surgical Technologist may practice in any state within the USA.

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

Surgical Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
First Term				
4000	Medical Terminology	3	1	3
4001	Introduction to Health Care	2	0	2
4009	General Microbiology	3	3	4
4505	Introduction to Surgery I	4	0	4
10xx	English Composition Elective I	3	0	3
		15	4	16
Second Term				
4014	Anatomy & Physiology I	3	2	4
4408	Advanced Medical Terminology	3	0	3
4506	Introduction to Surgery II	5	0	5
10xx	English Composition Elective II	3	0	3
		14	2	15
Third Term				
1020	Effective Speaking	3	0	3
15xx	Social Sciences Elective	3	0	3
4015	Anatomy & Physiology II	3	2	4
4531	General Surgery I	4	0	4
4541	ST Surgery Lab	0	2	1
		13	4	15
Fourth Term				
15xx	Social Sciences Elective	3	0	3
4016	Anatomy & Physiology III	3	2	4
4018	Fundamentals of Pharmacology	3	0	3
4532	General Surgery II	4	0	4
4542	ST Clinical Experience I	0	5	2
		13	7	16
Fifth Term				
1010	Technical Writing I	3	0	3
15xx	Social Sciences Elective	3	0	3
4007	Emergency Medical Procedures	1	2	2
4533	Surgical Specialties I	4	0	4
4543	ST Clinical Experience II	0	5	2
		11	7	14
Sixth Term				
4031	Health Care Management	3	0	3
4534	Surgical Specialties II	4	0	4
4538	ST Seminar	3	0	3
4544	ST Clinical Experience III	0	5	2
		10	5	12
Seventh Term				
4551	ST Clinical Practice I	1	40	7
Eighth Term				
4552	ST Clinical Practice II	1	40	7
Ninth Term				
4553	ST Clinical Practice III	1	40	7
				109

English Composition Electives: 1001, 1002, 1007, 1008, 1010

Social Sciences Electives
(Nine credit hours from at least two elective groups)
Group 1 - Psychology: 1502, *1505, *1506, 1508, 1509
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: *1521, 1525, 1527
*Preferred

Special Offerings in Health Technologies

Unit Clerk/Coordinator Certificate Program

Unit clerks/coordinators are integral members of the health care team. They work in hospitals and nursing homes as managers of the non-clinical nursing tasks. Job duties include communications with the patients, public and other members of the health care team; maintenance of records, forms and lists; requisitioning of services and supplies; coordination of unit procedures; and general assistance with activities in the nursing unit. Unit clerks/coordinators must have good communications skills, human relations skills, be able to organize and prioritize and have an understanding of the legal and ethical implications of their job.

Unit clerk/coordinator training is a four term program. The first three terms consist of classes in Medical Terminology, Human Relations and Unit Clerking and are available in the evening. The last term is a five week clinical practice at a local hospital and is available in the day.

Unit Clerk Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
First Term				
4000	Medical Terminology	3	1	3
4001	Introduction To Health Care System	2	0	2
4270	Introduction To Unit Clerking	3	0	3
		8	1	8
Second Term				
3002	Typewriting II	2	3	3
4271	Unit Clerk Procedures I	2	4	4
4408	Advanced Medical Terminology	3	0	3
		7	7	10
Third Term				
1009	Business English	3	0	3
1502	Human Relations - Applied Psychology	3	0	3
4272	Unit Clerk Procedures II	2	4	4
		8	4	10
Fourth Term				
4273	Unit Clerk Procedures III	1	2	2
4280	Unit Clerk Practicum	0	20	4
		1	22	6
				34

Medical Transcriptionist

A Medical Transcriptionist is a person skilled in medical word processing.

Medical Transcriptionists are much in demand in the Medical Transcription or Central Dictation area of the medical records department in hospitals, clinics, physicians offices, neighborhood health centers, health departments, health maintenance organizations (HMO's), medical transcription companies, health insurance offices and medical research and teaching centers.

The Medical Transcriptionist is responsible for the prompt and accurate transcribing of history and physicals, x-ray reports, operative reports, pathology reports, consultations, discharge summaries and autopsies which become permanent records of medical, scientific and legal value. This individual is knowledgeable in medical terminology used in medical and surgical procedures, drugs, instruments and laboratory tests, and possesses excellent typing, spelling and grammatical skills.

Students wishing to earn a certificate of achievement in Medical Transcription must meet the following requirements: typing speed of 60-65 words per minute; a final grade of "A" or "B" in Basic Medical Terminology (4000); and a final grade of "A" or "B" in Medical Word Processing (4400, or 4441-4442). These courses are available at Cincinnati Technical College during the day or evening.

Electrocardiography Technician

Electrocardiograph (ECG or EKG) Technicians are responsible for performing electrocardiograms on patients with irregularities in heart action or on patients who need an ECG for a routine check up. The ECG Technician prepares the recording for analysis by the physician. Technicians must be able to recognize technical errors in the recording, correct them if possible, and be able

to call the physician's attention to any significant abnormalities. Some ECG Technicians also schedule appointments, type doctor's diagnoses, maintain files and care for equipment. ECG Technicians spend a lot of time moving from patient to patient and must have the physical dexterity to handle the equipment and the patient, and the stamina to endure long periods of time on their feet.

The Cincinnati Technical College program in electrocardiography meets the Essentials for an Approved Short Course ECG Technician Training program as published by the American Cardiology Technologists Association. This program is designed for students seeking basic entry-level skills in the field of cardiovascular technology. Completion of the program will qualify the student to function as an ECG Technician in the hospital, clinic or private physician's office.

Students completing the program will receive a certificate of achievement from Cincinnati Technical College.

The courses in the program are available in the evening. However, the clinical practice sessions (two weeks in length, 40 hours per week) are available only during the day.

Electrocardiography Technician Curriculum

	Hours Per Week Class	Lab	Credit Hours
First Term			
1502 Human Relations-Applied Psychology	3	0	3
4000 Introduction to Medical Terminology	3	1	3
	6	1	6
Second Term			
4290 Basic Electrocardiography	3	2	4
Third Term			
4291 Arrhythmia Recognition	3	0	3
4292 ECG Clinical Practice	0	20	1
	3	20	4
			14

Phlebotomy Certificate Training

Basic Phlebotomy (#4390)

Basic phlebotomy is a 50-hour course of lecture and lab covering terminology, anatomy and physiology appropriate to phlebotomy; phlebotomy techniques, and attitude and professionalism. The course is approved by the National Phlebotomy Association for continuing education credit.

Phlebotomy Clinical Practice (#4391)

This course consists of 100 hours of clinical practice of blood drawing in a local hospital. Students will be supervised by practicing phlebotomists employed by the hospital. A "C" or better in course #4390 is a prerequisite. Course #4391 is approved by the National Phlebotomy Association for continuing education units.

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 eighteen 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.

Credits earned in the degree programs are transferable. Articulation agreements have been established with The College of Mount St. Joseph, Thomas More College and Xavier University.

Automotive Service Management Technology (ASM)

Automotive Service Management students are instructed in automotive theory, repair and testing procedures, and practices, as well as management techniques while 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 qualified technicians or experienced managers.

Automotive Service Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
First School Term			
1001 English Composition I	3	0	3
1120 Introduction to Business Mathematics	4	0	4
2501 Automotive Technology I	5	10	8
7102 Machine & Hand Tool Laboratory	1	4	3
	13	14	18
First Co-op Term			
9201 Cooperative Employment	4	40	3
Second School Term			
1002 English Composition II	3	0	3
1170 Introduction to Technical Mathematics	4	0	4
2221 Technical Physics I	2	3	3
2502 Automotive Technology II	5	10	8
	14	13	18
Second Co-op Term			
9202 Cooperative Employment	4	40	3
Third School Term			
2909 Office Accounting I	3	2	3
2925 Business Principles	3	0	3
1512 Microeconomics	3	0	3
2222 Technical Physics II	2	3	3
2503 Automotive Technology III	2	8	5
2510 Automotive Management I	2	3	3
	15	16	20
Third Co-op Term			
9203 Cooperative Employment	4	40	3
Fourth School Term			
1010 Technical Writing I	3	0	3
1505 Introduction to Psychology: Internal World	3	0	3

1535 Introduction to Labor Management Relations	3	0	3
2504 Automotive Technology IV	2	8	5
2511 Automotive Management II	2	3	3
7810 Welding Skills	3	3	3
	16	14	20
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1020 Effective Speaking	3	0	3
1850 Computerized Business Applications	2	3	3
1823 Business Law I	3	0	3
2505 Automotive Technology V	5	10	8
2903 Survey of Marketing	3	0	3
	16	13	20
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			109

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

Management Information Systems

(Formerly Business Data Management Technology)

In the Management Information Systems program at Cincinnati Technical College, students learn the principles of both management and data processing. Management Information Systems training fills the need for personnel who can administer data processing operations.

Management Information Systems Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1140 Introduction to Linear Algebra	4	0	4
1701 Introduction to Data Processing	3	0	3
1711 Introduction to Computer Operations	2	3	3
1712 Data Entry Systems	2	3	3
2911 Principles of Accounting I	3	2	3
	17	8	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1141 Matrix Algebra	4	0	4
1731 Peripheral Equipment Operations	2	3	3
1732 Microcomputer Systems	3	0	3
2912 Principles of Accounting II	3	2	3
2925 Business Principles	3	0	3
	18	5	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1142 Probability & Introduction to Quantitative Analysis	4	0	4
1721 Programming Logic & Methods	2	3	3
1761 Introduction to RPG II	3	7	6
2913 Principles of Accounting III	3	2	3
15xx Social Sciences Elective	3	0	3
	15	12	19
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1010 Technical Writing I	3	0	3
1512 Microeconomics	3	0	3
1740 Operating Systems	2	3	3
1754 Data Communications	3	2	3
1823 Business Law I	3	0	3
2926 Principles of Management	3	0	3
	17	5	18
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1020 Effective Speaking	3	0	3
1502 Human Relations - Applied Psychology	3	0	3
1741 Operating Systems II	2	3	3
1742 COBOL Programming I	3	7	6
1771 Data Base Management Systems	3	2	3
2903 Survey of Marketing	3	0	3
	17	12	21
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			109

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

For 15xx electives refer to the 15xx series section in course descriptions. Electives subject to approval of program coordinator.

Computer Information Systems Programming

(Formerly Business Data Processing Technology)

The objective of the Computer Information Systems 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.

Computer Information Systems Programming Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1140 Introduction to Linear Algebra	4	0	4
1701 Introduction to Data Processing	3	0	3
1505 Intro to Psychology: Internal World	3	0	3
1721 Programming Logic & Methods	2	3	3
2911 Principles of Accounting I	3	2	3
	18	5	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1141 Matrix Algebra	4	0	4
1722 Advanced Basic Programming	2	3	3
1761 Introduction to RPG II	3	7	6
2912 Principles of Accounting II	3	2	3
	15	12	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1142 Probability & Introduction to Quantitative Analysis	4	0	4
1512 Microeconomics	3	0	3
1742 COBOL Programming I	3	7	6
1781 Advanced RPG II	2	3	3
2913 Principles of Accounting III	3	2	3
	15	12	19
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1010 Technical Writing I	3	0	3
1754 Data Communications	3	2	3
1762 COBOL Programming II	3	7	5

1763 Systems Analysis & Design	3	7	5
2903 Survey of Marketing	3	0	3
	15	16	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1020 Effective Speaking	3	0	3
1739 Operating Systems	2	3	3
1752 Real Time Systems & Data Communications	2	3	3
1771 Data Base Management Systems	3	2	3
*15xx Social Sciences Elective	3	0	3
1823 Business Law I	3	0	3
2926 Principles of Management	3	0	3
	19	8	21
■ Fifth Co-op Term			
9205 Cooperative Employment	4	40	3
			110

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

*Electives subject to approval of program coordinator.

For 15xx electives refer to the 15xx series section in course descriptions. Electives subject to approval of program coordinator.

Business Management Technology (BM)

Business Management students receive a combination of business training and business experience by working with instructors experienced in management, personnel procedures, finance, accounting, sales, office organization, and related subjects. Learning experiences are provided through guest lecturers, case studies and modern visual presentations.

Business Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1121 Business Mathematics	4	0	4
2901 Principles of Marketing I	3	0	3
2911 Principles of Accounting I	3	2	3
2925 Business Principles	3	0	3
3001 Typewriting I OR	2	3	3
*1850 Computerized Business Applications	2	3	3
	18	5	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1122 Financial Analysis	4	0	4
2926 Principles of Management	3	0	3
1810 Principles of Salesmanship	3	0	3
2902 Principles of Marketing II	3	0	3
2912 Principles of Accounting II	3	2	3
	19	2	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1007 Research & Argumentative Writing	3	0	3
1832 Personnel Management	3	0	3
1850 Computerized Business Applications OR	2	3	3
1732 Microcomputer Systems	3	0	3
2905 Money & Banking	3	0	3
2913 Principles of Accounting III	3	2	3
1512 Microeconomics	3	0	3
	17/18	5/2	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1011 Business Communications	3	0	3
1535 Introduction to Labor/Management Relations	3	0	3
1823 Business Law I	3	0	3
2917 Federal Taxation I	2	3	3
2960 Principles of Finance	3	0	3
2970 Management Theory and Practice	3	0	3
	17	3	18
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
102x Communication Elective	3	0	3
15xx Social Sciences Elective	3	0	3
1804 Risk and Insurance	3	0	3
1824 Business Law II	3	0	3
2921 Managerial Accounting	3	0	3
2975 Case Studies in Management	3	0	3
	18	0	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			105

*Course 1850 is a prerequisite for course 1732.

Social Sciences Electives may be taken from:
1502 Human Relations-Applied Psychology
1505 Introduction to Psychology: Internal World
1521 Introduction to Sociology
1539 Public Policy and the American Worker

Communication Elective may be taken from:
1020 Effective Speaking
1024 Group Dynamics and Problem Solving

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

Chef Technology (CH)

The Chef Technology program leads to the awarding of an associate degree. Students will be train in all aspects of Culinary Arts including soups, sauces, butchery, vegetable cookery, meat and fish cookery, pastry, hors d'oeuvres, ice and tallow carving, garde manager and all other fields of culinary management.

The program is accredited by the American Culinary Federation and The City and Guilds of London Institute.

Chef Technology Curriculum

	Hour Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1120 Introduction to Business Mathematics OR	4	0	4
1121 Business Mathematics			
2801 Food & Beverage Sanitation. Safety. Service	3	0	3
2822 Chef Basic Cookery I	2	4	3
2827 Butchery and Fish Management	2	4	3
2911 Principles of Accounting I	3	2	3
	17	10	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1121 Business Mathematics OR	4	0	4
1122 Financial Analysis			
2802 Food & Beverage Cost Controls	2	4	3
2823 Chef Basic Cookery II	2	4	3
2912 Principles of Accounting II	3	2	3
2925 Business Principles	3	0	3
	17	10	19

■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1521 Introduction to Sociology	3	0	3
2803 Menu Production Purchasing	2	4	3
2824 Chef Advance Cookery I	2	4	3
2928 Hotel-Restaurant Accounting	3	0	3
4130 Introduction to Nutrition	3	0	3
4133 Food Science	3	2	4
	16	10	19
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1020 Effective Speaking	3	0	3
1502 Human Relation-Applied Psychology	3	0	3
1512 Microeconomics	3	0	3
1850 Computerized Business Application	2	3	3
2825 Pastry & Confectionary	4	8	6
	15	11	18
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1011 Business Communications	3	0	3
1825 Hotel Law	3	0	3
2821 Sales Techniques	3	0	3
2805 Food & Beverage Supervision	3	0	3
2826 Classical Cookery	4	8	6
	16	8	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			106

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

Graphic Communications Technology (GC)

At CTC modern computerized typesetting equipment, letterpress and offset presses, screen printing, ancillary equipment are combined with experienced instructors to provide a quality graphic arts program.

Although students study all of the major modern graphic arts processes, the scope of the program is not limited to the development of craftsmanship. The Graphic Communications program also provides mid-management training as well as technical knowledge.

Flexography is a new option of the Graphic Communications program. Flexography is used to print on plastic, corrugated boxes and pressure sensitive labels. Students will become familiar with delicate halftone and color Process printing, laser etched continuous print cylinders and photopolymer coated cylinder.

Graphic Communications Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1170 Introduction to Technical Mathematics	4	0	4
1401 Layout and Design	3	0	3
1403 Advertising Typography	2	6	4
1415 Graphic Arts Processes	2	3	3
2925 Business Principles	3	0	3
	17	9	20
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term (January & April)			
1002 English Composition II	3	0	3
1421 Cold Type Process	1	9	4
1460 Bindery Method/Procedures	2	3	3
1512 Microeconomics	3	0	3
1850 Computerized Business Applications	2	3	3
1449 Estimating Preparation	2	3	3
	13	18	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1020 Effective Speaking	3	0	3
1450 Estimating	2	3	3
1429 Screen Printing	1	9	4
1502 Human Relations - Applied Psychology	3	0	3
1810 Principles of Salesmanship	3	0	3
2263 Physical Science for Graphic Communications	3	4	5
	15	16	21
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1007 Research and Argumentative Writing	3	0	3
1419 Survey of Printing Inks	3	0	3
1430 Presswork	1	9	4
1480 Photolithography I	2	3	3
1823 Business Law I	3	0	3
2909 Office Accounting I	3	2	3
	15	14	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1010 Technical Writing I	3	0	3
1428 Management Survey	3	0	3
1440 Offset Press Operation	2	13	6
1481 Photolithography II	2	3	3
1521 Introduction to Sociology	3	0	3
	13	16	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			110

Flexography Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1170 Introduction to Technical Mathematics	4	0	4
1401 Layout and Design	3	0	3
1403 Advertising Typography	2	6	4
1415 Graphics Arts Processes	2	3	3
2925 Business Principles	3	0	3
	17	9	20
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1421 Cold Type Process	1	9	4
1449 Estimating Preparation	2	3	3
1460 Bindery Method/Procedures	2	3	3
1512 Microeconomics	3	0	3
1850 Computerized Business Applications	2	3	3
	13	18	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1020 Effective Speaking	3	0	3
1429 Screen Printing	1	9	4
1450 Estimating	2	3	3
1502 Human Relations-Applied Psychology	3	0	3
1810 Principles of Salesmanship	3	0	3
2263 Physical Science for Graphic Communications	3	4	5
	15	16	21

■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1007 Research and Argumentative Writing	3	0	3
1419 Survey of Printing Inks	3	0	3
1430 Relief Presswork I	1	9	4
1482 Flexo Photography	2	3	3
1823 Business Law I	3	0	3
2909 Office Accounting I	3	2	3
	15	14	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1010 Technical Writing I	3	0	3
1428 Management Survey	3	0	3
1431 Relief Presswork II	2	13	6
1481 Photolithography II	2	3	3
1521 Introduction to Sociology	3	0	3
	13	16	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			110

Hotel-Restaurant Management Technology (HR)

CTC's Hotel-Motel-Restaurant Management students receive comprehensive knowledge of all the departments and operations found in the hospitality industry. Students are involved early in these fields through paid cooperative work experience so they can set their goals on the type of career they wish to follow in the industry.

Hotel-Restaurant Management Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1120 Introduction to Business Mathematics	4	0	4
2801 Food & Beverage Sanitation, Safety & Service	3	6	3
2811 Introduction to Hotel Management	3	0	3
2911 Principles of Accounting I	3	2	3
2925 Business Principles	3	0	3
	19	8	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1121 Business Mathematics	4	0	4
2802 Food & Beverage Cost Controls	2	4	3
2812 Hotel Front Office and Night Audit Procedures	3	2	3
2912 Principles of Accounting II	3	2	3
1502 Human Relations - Applied Psychology	3	0	3
	18	8	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1011 Business Communications	3	0	3
2803 Menu Production & Purchasing	2	4	3
2813 Hotel Executive Housekeeping	3	2	3
2815 Principles & Practices of Hotel Management	3	0	3
2928 Hotel-Restaurant Accounting	3	0	3
4130 Introduction to Nutrition	3	0	3
	17	6	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1512 Microeconomics	3	0	3
1850 Computerized Business Applications	2	3	3
2804 Catering Banquet Beverage Mgmt.	3	0	3
2814 Hotel Maintenance Management	3	0	3
1521 Introduction to Sociology	3	0	3
4133 Food Science	3	2	4
	17	5	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1020 Effective Speaking	3	0	3
2807 Basic Foods for Hotel Restaurants	2	4	3
1825 Hotel Law I	3	0	3
2805 Food & Beverage Supervision	3	0	3
2821 Sales Techniques	3	0	3
2930 Hotel-Restaurant Case Studies	3	0	3
	17	4	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			106

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Loss Control - Security Technology (LC)

CTC's Loss Control program is one of the first of its kind in the country. The curriculum was established in collaboration with the tri-state chapter of the American Society of Industrial Security. The program offers classroom instruction and practical training requirements of private security practitioners.

Because of the nature of co-op work schedules, the student can attend classes during the day or evening.

Loss Control Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
September			
1201 Private Police Officer's Training Course	4	8	8
1210 Introduction to Loss Control and Security Administration	3	0	3
November			
1001 English Composition I	3	0	3
1216 Security Administration I	3	0	3
2926 Principles of Management	3	0	3
	16	8	20
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
January			
1002 English Composition II	3	0	3
1220 Fundamentals of Fire Protection	3	0	3
1217 Security Administration II	3	0	3
April			
1120 Introduction to Business Mathematics	4	0	4
1211 Industrial Security	3	0	3
2927 Security Management	3	0	3
	19	0	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
June			
1020 Effective Speaking	3	0	3
1121 Business Mathematics	4	0	4
1203 Security Investigation	3	0	3
September			
1010 Technical Writing I	3	0	3
1208 Criminal Law I	3	0	3

1230 Safety Management	3	0	3
	19	0	19

■ Third Co-op Term

9203 Cooperative Employment	4	40	3

■ Fourth School Term

November

1024 Group Dynamics & Problem Solving OR	3	0	3
1502 Human Relations - Applied Psychology	3	0	3
1204 Personnel Security Systems	2	3	3
1209 Criminal Law II	3	0	3

January

1535 Labor Management Relations	3	0	3
1823 Business Law I	3	0	3
2909 Office Accounting I	3	2	3
	17	5	18

■ Fourth Co-op Term

9204 Cooperative Employment	3	40	2

■ Fifth School Term

April

1205 Criminal Interrogation	3	0	3
1505 Introduction to Psychology: Inner World	3	0	3
1850 Computerized Business Application	2	3	3

June

1506 Introduction to Psychology: External World	3	0	3
1521 Introduction to Sociology	3	0	3
2903 Survey of Marketing	3	0	3
	17	3	18

■ Fifth Co-op Term

9205 Cooperative Employment	3	40	2
			107

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

Managerial Accounting Technology (MG)

Managerial Accounting, for those with a high degree of skill in accounting, provides knowledge of business fundamentals and an understanding of accounting skills, and how these systems are applied in small and large businesses and in industrial systems.

In addition to preparation in managerial, financial and tax accounting, students will be given a sound background in administrative skills and management philosophy.

Managerial Accounting Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1121 Business Mathematics	4	0	4
1804 Risk and Insurance	3	0	3
2911 Principles of Accounting I	3	2	3
2925 Business Principles	3	0	3
1850 Computerized Business Applications	2	3	3
	18	5	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
100x English Composition Elective	3	0	3
1122 Financial Analysis	4	0	4
1861 Electronic Spreadsheets	2	2	3
1823 Business Law I	3	0	3
2917 Federal Taxation I	2	3	3
2912 Principles of Accounting II	3	2	3
	17	7	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1007 Research & Argumentative Writing	3	0	3
1512 Microeconomics	3	0	3
1824 Business Law II	3	0	3
2913 Principles of Accounting III	3	2	3
2914 Cost Accounting I	2	3	3
2926 Principles of Management	3	0	3
	17	5	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1011 Business Communications	3	0	3
15xx Social Science Elective	3	0	3
1732 Microcomputer Systems	3	0	3
2903 Survey of Marketing	3	0	3
2915 Cost Accounting II	2	3	3
2919 Intermediate Accounting	2	3	3
	16	6	18
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
102x Speech Elective	3	0	3
15xx Social Science Elective	3	0	3
1851 Auditing	4	1	4
2920 Intermediate Accounting II	2	3	3
2944 Accounting Information Systems	3	0	3
2960 Principles of Finance	3	0	3
	18	4	19
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			106

Composition Electives: 1002, 1008, 1009
Oral Communication Electives: 1020, 1024
Social Sciences Electives: 1502, 1505, 1506, 1508, 1509
Sociology: 1521, 1523, 1527, 1525

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

Ornamental Horticulture Technology

The Ornamental Horticulture program prepares students for positions in the Landscape Horticulture industry. Hands-on lab experiences are blended with classroom teaching to provide students with the skill and knowledge necessary to excel in this growing field.

Because of the unique seasonal employment requirements of horticulturally related jobs, this program follows a different co-op schedule. Ornamental Horticulture students spend two consecutive terms (during the growing season) in cooperative employment during each of the two years in the program.

Ornamental Horticulture (OH) Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term – Sept.			
1001 English Composition I	3	0	3
117x OR 119x - Technical Mathematics Elective	4	0	4
1502 Human Relations - Applied Psychology	3	0	3
3502 Horticulture Science	2	2	3
3504 Woody Plant Materials I	2	3	3
3500 Orientation to Horticulture Occupations	1	0	1
	15	5	17
■ Second School Term – Nov.			
1002 English Composition II	3	0	3
22xx Chemistry Elective	3	2	4
2925 Business Principles	3	0	3
3510 Horticultural & Turf Equipment	2	3	3
3532 Landscape Maintenance	2	3	3
	13	8	16

■ Third School Term – Jan.				
15xx	Social Sciences Elective	3	0	3
3501	Soils and Plant Nutrition	3	0	3
2909	Office Accounting I	3	2	3
3509	Principles of Landscape Design	2	3	3
3528	Greenhouse Management	2	3	3
3530	Horticulture Seminar I	1	1	1
		14	9	16
■ First Co-op Term – April				
9501	Cooperative Employment	1	40	3
■ Fourth School Term – June				
102x	Speech Elective	3	0	3
2909	Office Accounting I	3	2	3
3505	Herbaceous Plant Materials	2	2	3
3508	Turfgrass Management	2	3	3
3511	Landscape Construction	1	5	3
		10	12	15
■ Second Co-op Term – Sept.				
9502	Cooperative Employment	1	40	3
■ Fifth School Term – Nov.				
1010	Technical Writing I	3	0	3
151x	Economics Elective	3	0	3
1850	Computerized Business Applications	2	3	3
2926	Principles of Management	3	0	3
3506	Nursery Management	2	2	3
3515	Woody Plant Materials II	2	3	3
		15	8	18
■ Sixth School Term – Jan.				
1810	Principles of Salesmanship	3	0	3
1823	Business Law I	3	0	3
3507	Arboriculture	2	3	3
3518	Advanced Landscape Design	2	3	3
3519	Landscape Contracts & Specifications	3	0	3
3531	Horticulture Seminar II	1	1	1
		14	7	16
■ Third Co-op Term – April				
9503	Cooperative Employment	1	40	2
■ Fourth Co-op Term – June				
9504	Cooperative Employment	1	40	2
				108

Property Management Technology (PM)

CTC was the first college in the country to offer an associate degree in Property Management. The curriculum is based on textbook course materials, class discussion and case studies. Publications of the Institute of Real Estate Management and the National Association of Realtors also are utilized.

Students receive instruction from certified property managers. Five of its technical courses (2931, 2932, 2933, 2934 and 2935) are offered only in the evening. The curriculum includes required courses for the Ohio real estate license.

In many cases co-op employment requires a state real state license. The program is such that an academic half-day schedule may be maintained until degree requirements are satisfied.

As in most technologies, co-op employment is conditioned upon a jobs-available basis.

Property Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term				
1001	English Composition I	3	0	3
1121	Business Mathematics	4	0	4
2951	Real Estate Principles & Practices	3	0	3
2931	On-Site Property Management I	3	1	3
2925	Business Principles	3	0	3
3001	Typewriting I	2	3	3
		18	4	19
■ First Co-op Term				
9201	Cooperative Employment	4	40	3
■ Second School Term				
1007	Research & Argumentative Writing	3	0	3
112x	Business Mathematics Elective	4	0	4
1850	Computerized Business Applications	2	3	3
2926	Principles of Management	3	0	3
2932	On-Site Property Management II	3	1	3
2953	Real Estate Law	3	0	3
		18	4	19
■ Second Co-op Term				
9202	Cooperative Employment	4	40	3
■ Third School Term				
1011	Business Communications	3	0	3
1502	Human Relations-Applied Psychology	3	0	3
2911	Principles of Accounting I	3	2	3
2933	Executive Level Property Management	3	1	3
2955	Real Estate Appraisal I-Residential	3	0	3
7931	Light Construction	3	3	3
		18	6	18
■ Third Co-op Term				
9203	Cooperative Employment	4	40	3
■ Fourth School Term				
1513	Macroeconomics	3	0	3
1732	Microcomputer Systems	3	0	3
2901	Principles of Marketing I	3	0	3
2912	Principles of Accounting II	3	2	3
2936	Institutional Property Management	3	0	3
2954	Real Estate Finance	3	0	3
		18	2	18
■ Fourth Co-op Term				
9204	Cooperative Employment	3	40	2
■ Fifth School Term				
102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
1524	Stress Management	3	0	3
1832	Personnel Management	3	0	3
2902	Principles of Marketing II	3	0	3
2935	Property Management Case Study	3	0	3
		18	0	18
■ Fifth Co-op Term				
9205	Cooperative Employment	3	40	2
				105

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Real Estate Technology (RE)

CTC's Real Estate technology, directed by a licensed real estate broker, helps students and professionals with their career development.

Students may follow a sequenced, six-course program which meets all the requirements to qualify for the Ohio Real Estate Sales Associate and Broker's license examinations. The associate degree curriculum includes all required courses for the real estate license and the GRI designation.

During the study, the student is encouraged to secure the state real estate license early in the schedule in order to gain actual co-op work experience. A half-day schedule may be maintained for degree requirements until graduation. Co-op work in this technology always requires a state real estate license.

The program can be combined with certain property management courses for a double major.

Real Estate Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1120 Introduction to Business Mathematics	4	0	4
1512 Microeconomics	3	0	3
2925 Business Principles	3	0	3
2951 Real Estate Principles & Practices	3	0	3
2953 Real Estate Law	3	0	3
	19	0	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1024 Group Dynamics - Problem Solving OR 1502 Human Relations - Applied Psychology	3	0	3
1121 Business Mathematics	4	0	4
1513 Macroeconomics	3	0	3
2940 Real Estate Sales	3	0	3
2954 Real Estate Finance	3	0	3
	19	0	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1020 Effective Speaking	3	0	3
1804 Risk & Insurance	3	0	3
2901 Principles of Marketing I	3	0	3
2905 Money & Banking	3	0	3
2911 Principles of Accounting I	3	2	3
2952 Real Estate Brokerage	3	0	3
	18	2	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1007 Research & Argumentative Writing	3	0	3
1505 Introduction to Psychology: Inner World	3	0	3
2902 Principles of Marketing II	3	0	3
2912 Principles of Accounting II	3	2	3
2926 Principles of Management	3	0	3
2955 Real Estate Appraisal I - Residential	3	0	3
	18	2	18
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1011 Business Communications	3	0	3
1850 Computerized Business Applications	2	3	3
1842 Advertising & Display	3	2	4
2917 Federal Taxation I	2	3	3
2956 Real Estate Appraisal II - Income Producing Property	3	0	3
2957 Real Estate Seminar: Special Topics	3	0	3
	16	8	19
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			106

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

Sales Marketing & Industrial Sales Technologies

In the Sales Marketing program, the most important objective is developing talent for the sales marketing professions. The kinds of cooperative employment presently held by Sales Marketing students are as varied as the marketing area itself.

Students in the Industrial Sales Marketing program attend day and evening classes. This option focuses on selling in the industrial-commercial area.

Sales Marketing (SM) Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1020 Effective Speaking	3	0	3
1120 Introduction to Business Mathematics	4	0	4
1810 Principles of Salesmanship	3	0	3
1845 Principles of Retailing	3	0	3
2925 Business Principles	3	0	3
	16	0	16
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1001 English Composition I	3	0	3
1024 Group Dynamics - Problem Solving	3	0	3
1121 Business Mathematics	4	0	4
1836 Principles of Wholesaling	3	0	3
2926 Principles of Management	3	0	3
3005 Administrative Typewriting	2	3	3
	18	3	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1002 English Composition II	3	0	3
1505 Introduction to Psychology: Inner World	3	0	3
1521 Introduction to Sociology	3	0	3
1850 Computerized Business Applications	2	3	3
1832 Personnel Management	3	0	3
2901 Principles of Marketing I	3	0	3
	17	3	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1007 Research & Argumentative Writing	3	0	3
1512 Microeconomics	3	0	3
1815 Audiovisual Sales Techniques	3	2	4
1823 Business Law I	3	0	3
2902 Principles of Marketing II	3	0	3
2911 Principles of Accounting I	3	2	3
	18	4	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1011 Business Communications	3	0	3
1840 Retail Merchandising & Operations	4	0	4
1824 Business Law II	3	0	3
1842 Advertising and Display	3	2	4
2912 Principles of Accounting II	3	2	3
1804 Risk and Insurance	3	0	3
	19	4	20
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			105

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

Industrial Sales (SI) Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1020 Effective Speaking	3	0	3
1120 Introduction to Business Mathematics	4	0	4
3005 Administrative Typewriting	2	3	3
1810 Principles of Salesmanship	3	0	3
2925 Business Principles	3	0	3
	15	3	16
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1001 English Composition I	3	0	3
1121 Business Mathematics	4	0	4
1813 Industrial Sales	3	0	3
1823 Business Law I	3	0	3
2960 Principles of Finance	3	0	3
2926 Principles of Management	3	0	3
	19	0	19
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1002 English Composition II	3	0	3
1024 Group Dynamics - Problem Solving	3	0	3
1505 Introduction to Psychology: Inner World	3	0	3
1850 Computerized Business Applications	2	3	3
1814 Case Studies – Industrial Sales	3	0	3
1521 Introduction to Sociology	3	0	3
	17	3	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1011 Business Communications	3	0	3
1512 Microeconomics	3	0	3
1815 Audiovisual Sales Techniques	3	2	4
2911 Principles of Accounting I	3	2	3
1817 Industrial Purchasing	3	0	3
1846 Industrial Product Marketing I	3	0	3
	18	4	19
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1010 Technical Writing I	3	0	3
2912 Principles of Accounting II	3	2	3
1824 Business Law II	3	0	3
1847 Industrial Product Marketing II	3	0	3
1820 Sales Management	3	0	3
1804 Risk and Insurance	3	0	3
	18	2	18
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			103

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

Office Specialist Technologies (Secretarial)

Three majors are available in the office specialist area: Administrative Support, General Office, and Word Processing. The curriculums include not only technical skill development but also courses in business principles and management.

The Administrative Support Specialist curriculum emphasizes the art of oral and written communication in office procedures, typing, shorthand, word processing, and management techniques.

The General Office Specialist curriculum emphasizes learning skills in typing, data entry, word processing, and management.

The Word Processing Specialist curriculum prepares an individual to be a word processor or a word processing supervisor. In this program, hands-on classroom training is provided on personal computers, electronic typewriters, stand-alone display text-editing equipment, and shared-logic equipment. Word processing management techniques and procedures are emphasized.

Advanced placement is available only through testing in shorthand and typing.

Administrative Support (ADSS) Specialist Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
1120 Introduction to Business Mathematics	4	0	4
2925 Business Principles	3	0	3
3001 Typewriting I	2	3	3
*3082 Shorthand I – Century 21 OR	2	3	3
3084 Shorthand I – Gregg OR	2	3	3
3080 Speedwriting I	2	3	3
3021 Office Procedures	3	2	3
	17	8	19
■ First Co-op Term			
9201 Cooperative Employment	4	40	3
■ Second School Term			
1009 Business English (Traditional)	3	0	3
1121 Business Mathematics	4	0	4
3002 Typewriting II	2	3	3
3022 Word Processing Office Applications	2	3	3
3032 Office Procedures/Professional Development	2	3	3
3061 Word/Information Processing I	1	4	3
3081 Speedwriting II OR	2	3	3
*3083 Shorthand II-Century 21 OR	2	3	3
*3085 Shorthand II-Gregg	2	3	3
	16	26	22
■ Second Co-op Term			
9202 Cooperative Employment	4	40	3
■ Third School Term			
1002 English Composition II	3	0	3
2926 Principles of Management	3	0	3
1823 Business Law I	3	0	3
3003 Typewriting III	2	3	3
3086 Shorthand III – Gregg/C21/ Speedwriting	2	3	3
3023 Machine Transcription	2	3	3
	15	9	18
■ Third Co-op Term			
9203 Cooperative Employment	4	40	3
■ Fourth School Term			
1011 Business Communications	3	0	3
1502 Human Relations - Applied Psychology	3	0	3
2911 Principles of Accounting I	3	2	3
3087 Transcription I – Gregg/C21/ Speedwriting	2	8	5
3024 Secretarial Procedures	2	3	3
1850 Computerized Business Applications	2	3	3
	15	16	20
■ Fourth Co-op Term			
9204 Cooperative Employment	3	40	2
■ Fifth School Term			
1020 Effective Speaking	3	0	3
1512 Microeconomics	3	0	3
1521 Introduction to Sociology	3	0	3
2912 Principles of Accounting II	3	2	3
3088 Transcription II – Gregg/C21/ Speedwriting	2	8	5
	14	10	17
■ Fifth Co-op Term			
9205 Cooperative Employment	3	40	2
			109

General Office (GOS) Specialist Curriculum

		Hours Per Week Class	Lab	Credit Hours
First School Term				
1001	English Composition I	3	0	3
1120	Introduction to Business Mathematics	4	0	4
1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
3001	Typewriting I	2	3	3
3021	Office Procedures	3	2	3
		17	8	19
First Co-op Term				
9201	Cooperative Employment	4	40	3
Second School Term				
1009	Business English	3	0	3
1121	Business Mathematics	4	0	4
3022	Word Processing Office Applications	2	3	3
3002	Typewriting II	2	3	3
3032	Office Procedures/ Professional Development	2	3	3
3061	Word/Information Processing I	1	4	3
		14	13	19
Second Co-op Term				
9202	Cooperative Employment	4	40	3
Third School Term				
1002	English Composition II	3	0	3
2926	Principles of Management	3	0	3
1823	Business Law I	3	0	3
2905	Money & Banking	3	0	3
3003	Typewriting III	2	3	3
3023	Machine Transcription	2	3	3
		16	6	18
Third Co-op Term				
9203	Cooperative Employment	4	40	3
Fourth School Term				
1011	Business Communications	3	0	3
1502	Human Relations - Applied Psychology	3	0	3
1832	Personnel Management	3	0	3
2911	Principles of Accounting I	3	2	3
3004	Typewriting IV	2	3	3
3024	Secretarial Procedures	2	3	3
		16	8	18
Fourth Co-op Term				
9204	Cooperative Employment	3	40	2
Fifth School Term				
1020	Effective Speaking	3	0	3
1521	Introduction to Sociology	3	0	3
2903	Survey of Marketing	3	0	3
2904	Office Management	3	0	3
1512	Microeconomics	3	0	3
1712	Data Entry Systems	2	3	3
		17	3	18
Fifth Co-op Term				
9205	Cooperative Employment	3	40	2
				105

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

Word Processing (WP) Specialist Curriculum

		Hours Per Week Class	Lab	Credit Hours
First School Term				
1001	English Composition I	3	0	3
1120	Introduction to Business Mathematics	4	0	4
1850	Computerized Business Applications	2	3	3
3001	Typewriting I	2	3	3
3021	Office Procedures	3	2	3
3060	Intro to Word/Information Processing	2	0	2
3061	Word/Information Processing I	1	4	3
		17	12	21
First Co-op Term				
9201	Cooperative Employment	4	40	3
Second School Term				
1009	Business English	3	0	3
1121	Business Mathematics	4	0	4
2925	Business Principles	3	0	3
3002	Typewriting II	2	3	3
3032	Office Procedures/ Professional Development	2	3	3
3062	Information Records Processing	1	4	3
		15	10	19
Second Co-op Term				
9202	Cooperative Employment	4	40	3
Third School Term				
1002	English Composition II	3	0	3
1512	Microeconomics	3	0	3
2926	Principles of Management	3	0	3
3003	Typewriting III	2	3	3
3023	Machine Transcription	2	3	3
3063	Word/Information Processing II	1	4	3
		14	10	18
Third Co-op Term				
9203	Cooperative Employment	4	40	3
Fourth School Term				
1011	Business Communications	3	0	3
1502	Human Relations - Applied Psychology	3	0	3
2903	Survey of Marketing	3	0	3
2911	Principles of Accounting I	3	2	3
3064	Word/Information Processing Simulations	1	4	3
3065	Advanced Word/Information Processing	1	4	3
		14	10	18
Fourth Co-op Term				
9204	Cooperative Employment	3	40	2
Fifth School Term				
1020	Effective Speaking	3	0	3
1521	Introduction to Sociology	3	0	3
1823	Business Law I	3	0	3
2904	Office Management	3	0	3
2912	Principles of Accounting II	3	2	3
3066	Text Processing	1	4	3
3067	Word/Information Processing Administration	2	3	3
		18	9	21
Fifth Co-op Term				
9205	Cooperative Employment	3	40	2
				110

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

Engineering Technologies Division

The Engineering Technologies Division offers programs in many engineering technology disciplines to help meet the need for competent technicians which is required by today's highly technological society. 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 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 co-op credit hours identified in each curriculum are required for the associate degree. Students wishing not to co-op must make up the co-op credits with approved academic credits. *Students with valid work experience prior to acceptance into an engineering technology program can receive up to 13 advance standing co-op credits. Students with prior work experience who wish to apply for advance standing co-op credits should contact their advisor during their first term at the College.*

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 admissions test.

If the test indicates that a student does not meet certain academic levels, the student may be advised to take appropriate preparatory courses before acceptance is granted. 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' course work begins.

Aviation Technology (AV)

The Aviation program is designed to prepare aircraft and powerplant mechanics 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. The first five academic terms concentrate on general and airframe and the last three terms on powerplant.

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				
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
2221	Technical Physics I	2	3	3
8100G	Aircraft Orientation	3	2	3
8101G	Machine and Hand Tools	1	4	3
8102G	Basic Aerodynamics & FAA Regulations	3	2	3
		16	11	19
■ Second School Term				
1192	Algebra & Trigonomerty II	4	0	4
2291	Physics I - Kinematics & Dynamics	3	2	3
8106G	Engineering Graphics (Aviation)	1	4	2
8107G	Materials and Processes	2	3	3
8108G	Aircraft Electricity	3	2	3
8109G	Cleaning & Corrosion Control	2	3	3
		15	14	18
■ Third School Term				
1002	English Composition II	3	0	3
2292	Physics II - Mechancis & Heat	3	2	3
8130A	Airframe Structures I	3	7	5
8131A	Welding Processes	1	4	2
8132A	Airframe Electrical & Generating Systems	5	5	5
		15	18	18
■ Fourth School Term				
1502	Human Relations - Applied Psychology	3	0	3
8140A	Airframe Structures II	3	7	5
8141A	Airframe Fuel Systems	1	4	2
8142A	Assembly and Rigging	3	7	5
8143A	Airframe Hydraulic & Pneumatic Sys	1	4	2
		11	22	17
■ Fouth Term Co-op				
9404	Cooperative Employment	1	40	2
■ Fifth School Term				
1513	Macroeconomics	3	0	3
8150A	Instrumentation. Communication. Navigation & Utility Systems	5	5	5
8151A	Airframe Systems. Hydraulic & Pneumatic Landing Gear	3	7	5
8152A	Flightline Maintenance	1	4	2
**8155A	Airframe Comprehensive	2	1	2
		14	17	17
■ Sixth School Term				
15xx	Social Sciences Elective	3	0	3
1850	Computerized Business Applications	2	3	3
8160P	Powerplant Theory & Maintenance (Reciprocating)	5	5	5
8161P	Powerplant Lubrication	4	3	4
8162P	Propellers	3	2	3
		17	13	18
■ Seventh School Term				
102x	Speech Elective	3	0	3
8170P	Powerplant Theory & Maintenance (Turbine)	5	5	5
8171P	Powerplant Fuel Metering Systems I	5	5	5
8172P	Ignition Systems	5	5	5
		18	15	18
■ Eighth School Term				
1010	Technical Writing I	3	0	3
8180P	Engine Systems & Inspection	5	5	5
8181P	Powerplant Fuel Metering Systems II	3	2	3
8182P	Engine Instruments & Fire Protection	5	5	5
** 8185P	Powerplant Comprehensive	2	1	2
		18	13	18
English Term Co-op				
9405	Cooperative Employment	1	40	2
				147

**Not required for degree purposes but may be required for F.A.A. Licensing. Waiver of these courses must be approved by the program coordinator.

Aviation Maintenance Certificate Programs

Included in the Aviation Maintenance degree program are two certificate programs (Air Agency certificate No. 105-5). At the successful completion of either or both of the airframe and/or powerplant requirements, Cincinnati Technical College issues a certificate which, upon presentation to a FAA designated examiner, allows students to take the FAA written test leading to licensing.

Airframe Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
1001	English Composition I	3	0	3
1010	Technical Writing I	3	0	3
1191	Algebra & Trigonometry I	4	0	4
2221	Technical Physics I	2	3	3
2291	Physics I - Kinematics & Dynamics	3	2	3
2292	Physics II - Mechanics & Heat	3	2	3
8100G	Aircraft Orientation	3	2	3
8101G	Machine and Hand Tools	1	4	3
8102G	Basic Aerodynamics & FAA Regulations	3	2	3
8106G	Engineering Graphics (Aviation)	1	4	2
8107G	Materials and Processes	2	3	3
8108G	Aircraft Electricity	3	2	3
8109G	Cleaning & Corrosion Control	2	3	3
8130A	Airframe Structures I	3	7	5

8131A	Welding Processes	1	4	2
8132A	Airframe Electrical & Generating Systems	5	5	5
8140A	Airframe Structures II	3	7	5
8141A	Airframe Fuel Systems	1	4	2
8142A	Assembly and Rigging	3	7	5
8143A	Airframe Hydraulic & Pneumatic Systems	1	4	2
8150A	Instrumentation, Communication, Navigation & Utility Systems	5	5	5
8151A	Airframe Systems, Hydraulic & Pneumatic Landing Gear	3	7	5
8152A	Flightline Maintenance	1	4	2
*8155A	Airframe Comprehensive	2	1	2
		61	82	79

*Not required for degree purposes but may be required for F.A.A. Licensing. Waiver of this course must be approved by the program coordinator.

Powerplant Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
1001	English Composition I	3	0	3
1010	Technical Writing I	3	0	3
1191	Algebra & Trigonometry I	4	0	4
2221	Technical Physics I	2	3	3
2291	Physics I - Kinematics & Dynamics	3	2	3
2292	Physics II - Mechanics & Heat	3	2	3
8100G	Aircraft Orientation	3	2	3
8101G	Machine and Hand Tools	1	4	3
8102G	Basic Aerodynamics & FAA Regulations	3	2	3
8106G	Engineering Graphics (Aviation)	1	4	2
8107G	Materials and Processes	2	3	3
8108G	Aircraft Electricity	3	2	3
8109G	Cleaning & Corrosion Control	2	3	3
8160P	Powerplant Theory & Maintenance (Reciprocating)	5	5	5
8161P	Powerplant Lubrication	4	3	4
8162P	Propellers	3	2	3
8170P	Powerplant Theory & Maintenance (Turbine)	5	5	5
8171P	Powerplant Fuel Metering Systems I	5	5	5
8172P	Ignition Systems	5	5	5
8180P	Engine Systems & Inspection	5	5	5
8181P	Powerplant Fuel Metering Systems II	3	2	3
8182P	Engine Instruments & Fire Protection	5	5	5
*8185P	Powerplant Comprehensive	2	1	2
		75	65	81

*Not required for degree purposes but may be required for F.A.A. Licensing. Waiver of this course must be approved by the program coordinator.

Biomedical Engineering Technology (BMET)

The Biomedical Engineering 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 indispensible 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 Engineering 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.

Biomedical Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■	**First School Term**			
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
7030	Computer Programming (Basic)	2	2	3
2231	Fundamentals of Inorganic Chemistry	3	2	4
7710	D.C. Circuits Analysis	6	0	5
7711	D.C. Circuits Lab	0	3	1
		18	7	20
■	**First Co-op Term**			
9401	Cooperative Employment	1	40	3
■	**Second School Term**			
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
4014	Anatomy & Physiology I	3	2	4
7720	A.C. Circuits Analysis	6	0	5
7721	A.C. Circuits Lab	0	3	1
7728	Introduction to Digital Concepts	3	2	3
		19	7	20
■	**Second Co-op Term**			
9402	Cooperative Employment	1	40	3
■	**Third School Term**			
1193	Functions & Introduction to Calculus	4	0	4
2293	Physics III - Electromagnetic Waves	3	2	3
4015	Anatomy & Physiology II	3	2	4
7730	Electronics I	6	3	5
7738	Digital Systems I	3	3	4
		19	10	20
■	**Third Co-op Term**			
9403	Cooperative Employment	1	40	3
■	**Fourth School Term**			
102x	Speech Elective	3	0	3
1502	Human Relations - Applied Psychology	3	0	3
15xx	Social Sciences Elective	3	0	3
7748	Digital Systems II	3	3	4
7740	Electronics II	4	2	4
+7749	Biomedical Instrumentation I	3	2	3
		19	7	20
■	**Fourth Co-op Term**			
9404	Cooperative Employment	1	40	2
■	**Fifth School Term**			
1010	Technical Writing I	3	0	3
1513	Macroeconomics	3	0	3
7750	Electronics III	4	2	4
7768	Digital Systems III	3	3	4
+7759	Biomedical Instrumentation II	3	2	3
		16	7	17
■	**Fifth Co-op Term**			
9405	Cooperative Employment	1	40	2
				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 which is more compatible to their level of experience and aptitude.

+Each course is normally offered only one term per year in late afternoon or evening.

Civil Engineering Technology (CET) (An ABET accredited program)

Recipient of a 1984 Ohio Board of Regents Program Excellence Award.

Civil Engineering Technology is a single program from which a student may elect one of two majors.

Surveying Major

The Surveying Major is designed to help prepare the student for possible registration as a professional surveyor.

Early in the curriculum students are exposed to surveying terminology, conventional surveying equipment as well as modern theodolites, electronic distance measuring equipment and automatic levels. Also included is an emphasis on surveying related drawings: plats, contour maps, cross sections, profiles, etc.

Later in the curriculum topics include design and layout of horizontal, vertical and spiral transition curves; state plane coordinate calculations; document research; land survey systems; deed writing; site planning; evaluation of evidence and astronomic observations.

Construction Major

The Building Construction major prepares the student for careers in the construction industry. The graduate becomes the link between building tradesmen and graduate engineers, communicating good engineering practice during the construction process. The curriculum is balanced between practical methodology of construction and basic structural theory.

Civil Engineering Technology Curriculum Surveying Major

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term**				
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
2291	Physics I - Kinematics & Dynamics	3	2	3
7024	Civil Engineering Graphics I	2	4	3
7910	Surveying Measurements	3	3	3
7911	Construction Methods	3	1	3
		18	10	19
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	3
■ **Second School Term**				
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II - Mechanics & Heat	3	2	3
7032	Introduction to Computer Programming (Civil)	2	2	3
7025	Civil Engineering Graphics II	2	4	3
7920	Surveying Calculations	4	2	3
		18	10	19
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	3
■ **Third School Term**				
1193	Analytic Geometry & Calculus OR	4	0	4
1179	Technical Statistics	4	0	4
7931	Light Construction	3	3	3
1502	Human Relations - Applied Psychology	3	0	3
7935	Computer Applications (Civil)	3	2	3
7930	Route Surveying	3	3	3
7934	Statics	3	2	3
		19	10	19
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term**				
2293	Physics III - Electromagnetic Waves	3	2	3
15xx	Social Sciences Elective (Rec at Night)	3	0	3
102x	Speech Elective	3	0	3
7947	Drainage Control Systems	3	2	3
7940	Elements of Land Surveying	3	2	3
7948	Subdivision Design	3	2	3
7943	Estimation & Inspection	3	2	3
		21	10	21
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	2
■ **Fifth School Term**				
1010	Technical Writing I	3	0	3
1513	Macroeconomics	3	0	3
7950	Surveying Field Project	1	6	3
7952	Contracts & Specifications	3	0	3
7957	Environmental Engineering Technology	3	1	3
7955	Soils Engineering Technology	2	3	3
		15	10	18
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	2
				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 which is more compatible to their level of experience and aptitude.

Civil Engineering Technology Curriculum Construction Major

		Hours Per Week Class	Lab	Credit Hours
■ **First School Term**				
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
2291	Physics I - Kinematics & Dynamics	3	2	3
7024	Civil Engineering Graphics I	2	4	3
7910	Surveying Measurements	3	3	3
7911	Construction Methods	3	1	3
		18	10	19
■ **First Co-op Term**				
9401	Cooperative Employment	1	40	3
■ **Second School Term**				
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II - Mechanics & Heat	3	2	3
7032	Introduction to Computer Programming (Civil)	2	2	3
7920	Surveying Calculations	4	2	3
7025	Civil Engineering Graphics II	2	4	3
		18	10	19
■ **Second Co-op Term**				
9402	Cooperative Employment	1	40	3
■ **Third School Term**				
1193	Analytic Geometry & Calculus	4	0	4
7930	Route Surveying	3	3	3
1502	Human Relations - Applied Psychology	3	0	3
7935	Computer Applications (Civil)	3	2	3
7931	Light Construction	3	3	3
7934	Statics	3	2	3
		19	10	19
■ **Third Co-op Term**				
9403	Cooperative Employment	1	40	3
■ **Fourth School Term**				
2293	Physics III - Electromagnetic Wave	3	2	3
15xx	Social Sciences Elective (recommended at night)	3	0	3
102x	Speech Elective	3	0	3
7944	Strength of Materials (Civil)	3	2	3
7945	Structural Design I	3	2	3
7943	Estimation & Inspection	3	2	3
7941	Heavy Construction	3	2	3
		21	10	21
■ **Fourth Co-op Term**				
9404	Cooperative Employment	1	40	2
■ **Fifth School Term**				
1010	Technical Writing I	3	0	3
1513	Macroeconomics	3	0	3
7954	Structural Design II	2	4	3
7952	Contracts & Specifications	3	0	3
7953	Construction Management & Operation	3	2	3
7955	Soils Engineering Technology	2	3	3
		16	9	18
■ **Fifth Co-op Term**				
9405	Cooperative Employment	1	40	2
				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 which is more compatible to their level of experience and aptitude.

Computer-Integrated Manufacturing (CIM) Engineering Technology

The Computer-Integrated Manufacturing (CIM) program prepares the student for the revolution currently taking place in the field of Manufacturing by offering a sequence of courses covering two major manufacturing functions: planning and processing.

Numerical Control (NC), Computer Numerical Control (CNC), Distributive Numerical Control (DNC), Robotics, Materials Handling and Total Computer-Aided Manufacturing (CAM) techniques have impacted significantly the way industry processes parts.

Computer Assisted Process Planning (CAPP), Group Technology, Capacity Requirements Planning (CRP) and Material Requirements Planning (MRP) Systems have greatly improved the manufacturing planning and control functions.

An integration of the automation and planning processes results in a Computer-Integrated Manufacturing system — today's answer to improving productivity and quality.

Computer-Integrated Manufacturing Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term				
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
1513	Macroeconomics	3	0	3
2291	Physics I - Kinematics & Dynamics	3	2	3
7010	Engineering Drawing I	2	4	3
7104	Introduction to Machine Tool Processes	3	2	3
		18	8	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	3
■ Second School Term				
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II - Mechanics & Heat	3	2	3
7030	Computer Programming (Basic)	2	2	3
7111	Engineering Materials	3	2	3
7144	NC/CNC Programming I	2	3	3
		17	9	19
■ Second Co-op Term				
9402	Cooperative Employment	1	40	3
■ Third School Term				
102x	Speech Elective	3	0	3
1179	Technical Statistics	4	0	4
7145	Statics & Strengths of Materials	3	2	3
7154	NC/CNC Programming II	2	3	3
7438	Industrial Engineering Concepts	3	0	3
7708	Electrical Fundamentals & Controls	3	3	4
		18	8	20
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term				
1535	Labor/Management Relations	3	0	3
2293	Physics III - Electromagnetic Waves	3	2	3
7441	Quality Assurance/Statistical Process Control	3	2	4
7449	Computer-Aided Manufacturing I	3	2	4
7443	Manufacturing Methods & Cost Analysis I	3	2	4
		15	8	18
■ Fourth Co-op Term				
9404	Cooperative Employment	1	40	2
■ Fifth School Term				
1010	Technical Writing I	3	0	3
15xx	Social Sciences Elective	3	0	3
7160	Computer-Aided Design/Drafting I	2	3	3
7453	Manufacturing Methods & Costs Analysis II	3	2	3
7459	Computer-Aided Manufacturing II	3	2	4
7xxx	Technical Elective			3
				19
■ Fifth Co-op Term				
9405	Cooperative Employment	1	40	2
				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 which is more compatible to their level of experience and aptitude

Recommended Electives
7031 Computer Programming (Fortran)
7132 Hydraulics & Pneumatics
7150 Machine Design I
7430 Time and Motion
7165 Computer Aided Design/Drafting (CAD/D) II

Electronics Engineering Technology (EET)

The Electronics Engineering Technology program provides a course of study in modern electronic systems. The curriculum covers theory and application of mathematics, basic circuit theory, analog and digital systems; including discrete and integrated devices and microprocessors. Various technical electives specifically applicable to such areas as telecommunication electronics, instrumentation and process control, electrical power and laser optics are also available to interested students.

Electronics Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First School Term				
1001	English Composition I	3	0	3
*1191	Algebra & Trigonometry I	4	0	4
2291	Physics I - Kinematics & Dynamics	3	2	3
7030	Computer Programming (Basic)	2	2	3
7710	D.C. Circuits Analysis	6	0	5
7711	D C Circuits Lab	0	3	1
		18	7	19
■ First Co-op Term				
9401	Cooperative Employment	1	40	3
■ Second School Term				
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
7008	Basic Engineering Drawing	2	4	3
7720	A.C. Circuits Analysis	6	0	5
7721	A C Circuits Lab	0	3	1
7728	Introduction to Digital Concepts	3	2	3
		18	9	19
■ Second Co-op Term				
9402	Cooperative Employment	1	40	3
■ Third School Term				
1502	Human Relations - Applied Psychology	3	0	3
1193	Analytic Geometry & Calculus I	4	0	4
2292	Physics II - Mechanics & Heat	3	2	3
7730	Electronics I	6	3	5
7738	Digital Systems I	3	3	4
		19	8	19
■ Third Co-op Term				
9403	Cooperative Employment	1	40	3
■ Fourth School Term				
2293	Physics III - Electromagnetic Waves	3	2	3
7740	Electronics II	4	2	4
7xxx	Technical Elective			3
7748	Digital Systems II	3	3	4
102x	Speech Elective	3	0	3
				17
■ Fourth Co-op Term				
9404	Cooperative Employment	1	40	2

■ Fifth School Term			
1010 Technical Writing	3	0	3
1513 Macroeconomics	3	0	3
15xx Social Sciences Elective	3	0	3
7750 Electronics III	4	2	4
7768 Digital Systems III	3	3	4
7xxx Technical Elective			3
			20
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	2
			107

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Recommended Technical Electives

1194 Analytic Geometry & Calculus II
1195 Analytic Geometry & Calculus III
6710 Laser Optics I
7133 Industrial Instrumentation
7144 NC/CNC Programming I
7146* Electro-Mechanical Controls I (Servomechanisms)
7157* Electro-Mechanical Controls II (Robotic Systems)
7160 Computer Aided Design/Drafting I
7743 Communication Systems I
7753 Communication Systems II
7758 Motors & Controls

*offered on a space available basis. Priority will be given to Electro-Mechanical Engineering Technology students.

Electro-Mechanical Engineering Technology (EMET)

The Electro-Mechanical Engineering Technology program prepares the student for careers in development, manufacture, installation, maintenance, repair and operation of automated systems, such as industrial robots, numerically controlled (NC) and computer numerically controlled (CNC) machine tools, and other automated equipment used in industry. The curriculum includes theory and applications of analog and digital electronics, industrial hydraulic and pneumatic systems, servomechanisms, electric motors and controls, mechanisms analysis, and microprocessor-based computer control.

Electro-Mechanical Engineering Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
*1191 Algebra & Trigonometry I	4	0	4
2291 Physics I - Kinematics & Dynamics	3	2	3
7008 Basic Engineering Drawing	2	4	3
7710 D.C. Circuits Analysis	6	0	5
7711 D C Circuits Lab	0	3	1
	18	9	19
■ First Co-op Term			
9401 Cooperative Employment	1	40	3
■ Second School Term			
1002 English Composition II	3	0	3
1192 Algebra & Trigonometry II	4	0	4
7030 Computer Programming (Basic)	2	2	3
7720 A.C. Circuits Analysis	6	0	5
7721 A C Circuits Lab	0	3	1
7728 Introduction to Digital Concepts	3	2	3
	18	7	19
■ Second Co-op Term			
9402 Cooperative Employment	1	40	3
■ Third School Term			
1193 Analytic Geometry & Calculus I	4	0	4
2292 Physics II - Mechanics & Heat	3	2	3
7730 Electronics I	6	3	5
7738 Digital Systems I	3	3	4
7104 Intro to Machine Tool Processes	3	2	3
	19	10	19
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3
■ Fourth School Term			
102x Speech Elective	3	0	3
1502 Human Relations - Applied Psychology	3	0	3
2293 Physics III - Electromagnetic Waves	3	2	3
7142 Mechanisms Analysis & Design	3	2	3
7135 Fluid Power Systems	4	2	4
**7146 Electro-Mechanical Controls I Servomechanisms	3	3	4
	19	9	20
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	2
■ Fifth School Term			
1010 Technical Writing I	3	0	3
1513 Macroeconomics	3	0	3
15xx Social Sciences Elective	3	0	3
7758 Motors & Controls	3	2	3
**7157 Electro-Mechanical Controls II	3	3	4
7xxx Technical Elective			3
			19
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	2
			109

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**Course available to students in other programs only on a space available basis.

Recommended Technical Electives

1194 Analytic Geometry & Calculus II
7133 Industrial Instrumentation
7144 NC/CNC Programming
7156 Electro-Mechanical Design
7156 Computer Aided Design/Drafting (CAD/D) I
7740 Electronics II
7748 Digital Systems II

HVAC Design Engineering Technology (HVAC)

Preparing students for the design and management of commercial and industrial Heating, Ventilating and Air Conditioning systems is the major objective of the HVAC Design program.

An HVAC designer must be familiar with all types of building materials and structures and the various mechanical systems to heat, ventilate and air condition. In addition, he or she must understand the types of controls employed to operate these systems (electrical, hydraulic, pneumatic and electronic) in order to design the noise-free, energy-efficient, comfortable and safe environment which modern buildings demand.

An HVAC manager must be capable of assisting plant engineers who oversee the operation of these high-tech systems after they have been installed. This requires a working knowledge of not only HVAC systems but also power distribution, plumbing, process piping and emergency back-up systems. HVAC managers have the responsibility of planning and implementing the programs to properly operate and maintain large modern buildings for reliability and efficiency.

HVAC Design Engineering Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
*1191 Algebra & Trigonometry I	4	0	4
2291 Physics I - Kinematics & Dynamics	3	2	3

7010 Engineering Drawing I	2	4	3
7525 Intro to HVAC Principles	3	2	3
7911 Construction Methods	3	1	3
	18	9	19

■ First Co-op Term

9401 Cooperative Employment	1	40	3

■ Second School Term

1002 English Composition II	3	0	3
1192 Algebra & Trigonometry II	4	0	4
2292 Physics II - Mechanics & Heat	3	2	3
7016 Construction Drawing	2	4	3
7030 Computer Programming (Basic)	2	2	3
7708 Electrical Fundamentals & Controls	3	3	4
	17	11	20

■ Second Co-op Term

9402 Cooperative Employment	1	40	3

■ Third School Term

1193 Analytical Geometry & Calculus I	4	0	4
1502 Human Relations — Applied Psychology	3	0	3
7138 Fluid Mechanics	3	2	3
7148 Basic Thermodynamics	3	0	3
7535 HVAC Systems I	3	2	3
7736 Electrical Power Systems	4	2	4
	20	6	20

■ Third Co-op Term

9403 Cooperative Employment	1	40	3

■ Fourth School Term

102x Speech Elective	3	0	3
2293 Physics III - Electromagnetic Waves	3	2	3
7160 Computer Aided Design/Drafting I	2	3	3
7545 HVAC Systems II	3	2	3
7547 Pumps & Piping System Design	3	2	3
7xxx Technical Elective			3
			18

■ Fourth Co-op Term

9404 Cooperative Employment	1	40	2

■ Fifth School Term

1010 Technical Writing	3	0	3
15xx Social Sciences Elective	3	0	3
1513 Macroeconomics	3	0	3
7555 HVAC Systems III	3	3	4
7557 Controls & Safety Systems Design	3	2	3
7952 Contracts & Specifications	3	0	3
	18	5	19

■ Fifth Co-op Term

9405 Cooperative Employment	1	40	2
			109

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Recommended Technical Electives

7140 Strength of Materials
7728 Introduction to Digital Concepts
7758 Motors and Controls
7943 Estimation and Inspection
7953 Construction Management and Operation

Mechanical Engineering Technology (MET)

The Mechanical Engineering Technology program provides the scientific theory, mathematical and computer skills required to solve complex problems in many areas of mechanical design and manufacturing. As a graduate of the Mechanical Engineering Technology program you could qualify for jobs in mechanical engineering design, mechanical design drafting, computer aided design (CAD) and computer aided design/drafting (CADD).

Mechanical Engineering Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First School Term			
1001 English Composition I	3	0	3
*1191 Algebra & Trigonometry I	4	0	4
2291 Physics I - Kinematics & Dynamics	3	2	3
7010 Engineering Drawing I	2	4	3
7104 Intro to Machine Tool Processes	3	2	3
7111 Engineering Materials	3	2	3
	18	10	19
■ First Co-op Term			
9401 Cooperative Employment	1	40	3
■ Second School Term			
1192 Algebra & Trigonometry II	4	0	4
2292 Physics II - Mechanics & Heat	3	2	3
7012 Engineering Drawing II	2	4	3
7030 Computer Programming (Basic)	2	2	3
7160 Computer Aided Design/Drafting (CAD/D) I	2	3	3
7130 Engineering Mechanics (Statics)	3	2	3
	16	13	19
■ Second Co-op Term			
9402 Cooperative Employment	1	40	3
■ Third School Term			
1002 English Composition II	3	0	3
1193 Analytic Geometry & Calculus I	4	0	4
7132 Hydraulics & Pneumatics	4	2	4
7140 Strength of Materials	4	2	4
7142 Mechanisms Analysis & Design	3	2	3
	18	6	18
■ Third Co-op Term			
9403 Cooperative Employment	1	40	3
■ Fourth School Term			
102x Speech Elective	3	0	3
2293 Physics III - Electromagnetic Wave	3	2	3
1502 Human Relations – Applied Psychology	3	0	3
7150 Machine Design I	4	2	4
7165 Computer Aided Design/Drafting II	2	3	3
7xxx Technical Elective			3
			19
■ Fourth Co-op Term			
9404 Cooperative Employment	1	40	2
■ Fifth School Term			
1010 Technical Writing I	3	0	3
15xx Social Sciences Elective	3	0	3
1513 Macroeconomics	3	0	3
7158 Mechanical Systems Design Project	3	0	3
7155 Machine Design II	4	2	4
7708 Electrical Fundamentals & Controls	3	3	4
	19	5	20
■ Fifth Co-op Term			
9405 Cooperative Employment	1	40	2
			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 which is more compatible to their level of experience and aptitude.

Technical Electives

1194 Analytic Geometry & Calculus II
7031 Computer Programming (Fortran)
7449 Computer-Aided Manufacturing I
7144 NC/CNC Programming
7147 Tool, Die, Jig & Fixtures

Robotics Technology

The industrial robot will be an integral part of the revitalization of American industry in the 1980's.

Although no discrete curriculum on robotics exists at this time, it should be noted that as early as 1974 the Electro-

Mechanical Technology program has offered courses in computer control servo-systems (both servomechanisms and servohydraulics) with transducer feedback which is the heart of many pieces of automated equipment such as robots, CNC machine tools, etc. Students interested in the electrical, mechanical and control features of the industrial robot should refer to the Electro-Mechanical program and course numbers 7135, 7146 and 7157.

Students who are more interested in the application of robots to an automated manufacturing environment should refer to this program and course 7449.

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, mathematics and computer programming considered basic for successful study in a science dependent field such as engineering technology, health or technical business services
- providing in-depth instruction in the applied sciences leading the student to a career in either industrial laboratory, industrial software development 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 experience in business and industry. As a result, the chances for student success in physics, chemistry and mathematics are greatly enhanced.

Mathematics Placement Service

Since it is not unusual for a college student to experience math anxieties as he or she faces a technical career, the mathematics department is happy to offer the services of a mathematics placement test designed for the specific type of technology of interest to the student. The placement test is designed to be a placement tool and students are strongly encouraged to take advantage of this service before registration occurs. There is no charge for the test. The results of the test assist the student in choosing a sequence of math courses suited to his or her skill development as well as being related to his or her technology major and general area of interest.

Students wishing to brush up on skills prior to enrolling in a regular course sequence should refer to the Developmental Education courses listed in this catalog.

Service to the Community - Industrial Training

Faculty in the Physical Sciences and Mathematics Division welcome inquiries involving retraining from individuals and corporations. The program may vary from a single course to a series of programs. Resources are available to assist and advise individuals toward solving their problems in these areas.

Mathematics and Physical Science Offerings

Each sequence of mathematics course is tailored to meet the requirements of the curriculum served and to provide additional skills as elected by the student.

Courses Serving General Student Interests:

1132 Statistics
1151 Pre-Calculus Math: Algebra
1152 Pre-Calculus Math: Trigonometry
1153 Elementary Analysis
1154 Calculus I
1155 Calculus II

Sequence of Courses Serving Chemical and Health Technology Students:

1150 Introduction to Science Mathematics
1170 Introduction to Technical Mathematics
1171 Technical Mathematics I
1180 Applied Statistical Analysis

Sequence of Courses Serving Business and Business Technology Students:

1120 Introduction to Business Mathematics
1121 Business Mathematics
1122 Financial Analysis
1123 Electronic Financial Analysis
1124 Business Algebra
1125 Business Calculus

Sequence of Courses Serving Computer Programming Technology Students:

1140 Introduction to Linear Algebra
1141 Matrix Algebra
1142 Probability & Introduction to Quantitative Analysis
1143 Quantitative Approach to Operations Research

Sequences of Courses Serving Engineering Technology & Physical Science Technology Students:

1170 Introduction to Technical Mathematics
1171 Technical Mathematics I
1172 Technical Mathematics II
1173 Technical Mathematics III
1179 Introduction to Applied Statistics
1191 Algebra & Trigonometry I
1192 Algebra & Trigonometry II
1193 Analytic Geometry & Calculus I
1194 Analytic Geometry & Calculus II
1195 Analytic Geometry & Calculus III

Physics and chemistry, 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 department therefore places much emphasis on the laboratory. Care is taken to ensure all laboratories are well supplied with equipment. The laboratory experiences, pointing the way for students, assist them to organize an attack on the problem, encourage the students to use their own ingenuity and thoughts while carrying the investigation to a conclusion; and, finally, prepare a report of the findings.

Introductory Courses Serving General Student Interests:

2200 Basic Chemistry
2209 Technical Chemistry Survey
2210 Inorganic Chemistry
2270 Introduction to Physics

Sequence of Courses Serving General Student Interests:

2231 Fundamentals of Inorganic Chemistry
2232 Fundamentals of Organic Chemistry
2233 Fundamentals of Biochemistry
2241 College Physics I
2242 College Physics II

Sequence of Courses for Students With Specific Needs:

2221 Technical Physics I
2222 Technical Physics II
2244 Health Physics
2245 Health Physics II
2263 Physical Science for Graphic Communications

Sequence of Courses Serving Engineering Technology & Physical Science Technology Students:

2291 Physics I - Kinematics & Dynamics
2292 Physics II - Mechanics & Heat

2293 Physics III - Electromagnetic Wave
2294 Physics IV - Atomic & Nuclear

Computer Programming Courses:
1130 Microcomputer Systems
1133 BASIC 2 for Science & Engineering Technologies
1134 Macro FORTRAN & Microcomputers
1135 "C" Programming
1136 FORTH Programming
1137 PASCAL Programming
1138 Introduction to Computer Graphics & Modeling
1139 Introduction to XENIX/UNIX

For the student who relates strongly to the sciences and is excited by expanding technology, 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. Technical core courses for these field are described in courses numbered in the range 6600 to 6999.

Laser/Optics Technology (LO)

CTC's Laser/Optics program is the first of its kind in Ohio and one of the few associate degree programs in laser technology in the country. The curriculum includes the basic aspects of laser-electro-optics theory.

Co-op opportunities are very limited at this time.

Recommended courses from high school are algebra I and II, chemistry, geometry and programming.

Students who have not successfully completed the recommended high school courses prior to acceptance into the laser/optics program may take qualifying course work at CTC and should plan to study longer than two years to meet graduation requirements.

Laser/Optics Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
First Term			
1001 English Composition I	3	0	3
*1191 Algebra & Trigonometry I	4	0	4
2291 Physics I - Kinematics & Dynamics	3	2	3
6710 Laser Optics I	3	2	4
7710 D.C. Circuits Analysis	6	0	4
7711 D.C. Circuits Lab	0	3	1
	19	7	19
Second Term			
9601 Cooperative Employment	1	40	3
Third Term			
100x English Composition Elective	3	0	3
1192 Algebra & Trigonometry II	4	0	4
2292 Physics II - Mechanics & Heat	3	2	3
6720 Laser/Optics II	3	3	5
7720 A.C. Circuits Analysis	6	0	4
7721 A.C. Circuits Lab	0	3	1
	19	8	20
Fourth Term			
9602 Cooperative Employment	1	40	3
Fifth Term			
1193 Analytic Geometry & Calculus I	4	0	4
151x Economics Elective	3	0	3
6730 Laser/Optics III	3	3	5
7030 Computer Programming (Basic)	2	2	3
7730 Electronics I	6	3	5
	18	8	20
Sixth Term			
9603 Cooperative Employment	1	40	3
Seventh Term			
xxxx Elective	3	2	3
102x Oral Communications Elective	3	0	3
15xx Social Sciences Elective	3	0	3
6740 Laser/Optics IV	3	3	5
7740 Electronics II	4	2	4
	16	7	18
Eighth Term			
9604 Cooperative Employment	1	40	2
Ninth Term			
xxxx Elective	3	2	3
101x Technical Writing Elective	3	0	3
15xx Social Sciences Elective	3	0	3
6750 Laser/Optics V	3	3	5
7750 Electronics III	4	2	4
	16	7	18
Tenth Term			
9605 Cooperative Employment	1	40	2
			108

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

xxxx Electives (Coordinator approval required):
1133 BASIC II for Science & Engineering Technologies
1134 MacroFORTRAN and Microcomputers
1135 "C" Programming Language
1136 FORTH Programming
1137 PASCAL Programming
1138 Introduction to Computer Graphics & Modeling
1194 Analytic Geometry & Calculus II
1195 Analytic Geometry & Calculus III
2294 Physics IV - Atomic & Nuclear
4000 Intro to Medical Terminology
6611 Technical Laboratory Chemistry I
6621 Technical Laboratory Chemistry II
6670 Introduction to Statistical Process Control
6741 Fiber Optics
6745 Optical System Design
6999 Special Problem Seminar Project
7031 Computer Programming (FORTRAN)
7728 Introduction to Digital Concepts
7738 Digital Systems I
7748 Digital Systems II
7768 Digital Systems III

Industrial Laboratory Technology

The Industrial Laboratory program has two majors. The Laboratory Technician major is designed to prepare the student for employment in a testing laboratory in which the physical and chemical properties of materials are measured. As a well-prepared lab technician the graduate will apply the concepts from statistics and science to the planning and execution of tests and to taking, recording, compiling, and reporting of measurement data.

Recommended courses from high school are algebra I and II, biology, chemistry, geometry and programming.

Students who have not successfully completed the recommended high school courses prior to acceptance into the industrial laboratory program may take qualifying course work at CTC and should plan to study longer than two years to meet graduation requirements.

Industrial Laboratory Technology Curriculum (ILT) (Laboratory Technician Major)

	Hours Per Week Class	Lab	Credit Hours
First Term			
1001 English Composition I	3	0	3
*1191 Algebra & Trigonometry I	4	0	4
2291 Physics I - Kinematics & Dynamics	3	2	3
6611 Technical Laboratory Chemistry I	3	3	4
6629 Science of Materials	3	2	4
	16	7	18
Second Term			
9601 Cooperative Employment	1	40	3
Third Term			
100x English Composition Elective	3	0	3
1192 Algebra & Trigonometry II	4	0	4
15xx Social Sciences Elective	3	0	3

2292	Physics II - Mechanics & Heat	3	2	3
6621	Technical Laboratory Chemistry II	3	3	4
113x	Programming Elective	2	2	3
		18	7	20
■ Fourth Term				
9602	Cooperative Employment	1	40	3
■ Fifth Term				
1179	Introduction to Applied Statistics	4	0	4
2293	Physics III - Electromagnetic Waves	3	2	3
6631	Technical Laboratory Chemistry III	3	3	4
6639	Instrumentation & Measurement	3	2	4
xxxx	Elective	3	2	3
		16	9	18
■ Sixth Term				
9603	Cooperative Employment	1	40	3
■ Seventh Term				
101x	Technical Writing Elective	3	0	3
1193	Analytic Geometry & Calculus I	4	0	4
6649	Materials Testing	3	4	5
6641	Technical Laboratory Chemistry IV	3	3	4
xxxx	Elective	3	2	3
		16	9	19
■ Eighth Term				
9604	Cooperative Employment	1	40	2
■ Ninth Term				
102x	Speech Elective	3	0	3
1194	Analytic Geometry & Calculus II	4	0	4
151x	Economics Elective	3	0	3
15xx	Social Science Elective	3	0	3
6659	Analysis of Materials Project	3	4	5
2294	Physics IV - Atomic & Nuclear	3	2	3
		19	6	21
■ Tenth Term				
9605	Cooperative Employment	1	40	2
				109

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xxxx Electives (Coordinator approval required):
1133 BASIC II for Science & Engineering Technologies
1134 MacroFORTRAN and Microcomputers
1135 "C" Programming Language
1136 FORTH Programming
1137 PASCAL Programming
1138 Introduction to Computer Graphics and Modeling
1195 Analytic Geometry & Calculus III
4000 Basic Medical Terminology
4009 General Microbiology
6641 Technical Laboratory Chemistry IV
6661 Chemical Contamination in the Environment
6670 Introduction to Statistical Process Control
6710 Laser/Optics I
7031 Computer Programming (FORTRAN)
7441 Quality Assurance/Quality Control
7704 Basic Industrial Electricity (Aviation)
7708 Electrical Fundamentals and Controls
7710 D C Circuit Analysis
7711 D C Circuit Lab

SQC/SPC Training

Increasing demands on industry to implement statistical process control (SPC) as an essential component in the production and manufacturing process have served to place Cincinnati Technical College at the leading edge in the technical educational community. The CTC faculty, with experience in manufacturing, quality control and applied statistics, is certified to teach state-of-the-art theory and practices of SPC. Currently, the College offers courses covering the relevant topics of applied statistics, SPC, reliability, experimental design and quality circles; and by 1986-87, CTC will have formalized a full-fledged program in SPC. Considering the time and location constraints of the numerous industries in the Cincinnati area, CTC also offers SPC in a customized plant-site modular format for direct company implementation. Contact the Manufacturing Engineering Technologies or Statistics Department for detailed information.

A certificate of recognition is awarded upon completion of each module.

Module I Introduction to Statistical Reasoning
An introduction to descriptive and inferential statistics as applied to industry. Collection and organization of data including mean, median, range, standard deviation, z-scores, etc., including graphical displays. Basic concepts of probability, probability distributions (bionomial, normal, etc.) and the central limit theorem. Testing hypotheses concerning means and proportions. Simple linear regression ("forecasting") and correlation. Many applied problems from a wide variety of industrial settings will be examined. A scientific calculator (preferably with STAT capabilities) is required.

Module II Introduction to Statistical Process Control
An introduction to modern industrial quality control — statistically oriented with emphasis on the "continuous improvement" philosophy. Preparation and analysis of histograms, Pareto charts, cause and effect (fishbone) charts, etc. Statistical control charting (X, R, p, np, c, u, etc.) applied to process stability and capability with emphasis on data collection, measurement concepts (including geometric tolerancing), chart preparation and chart interpretation. Many applied problems from a wide variety of industrial settings will be examined. A scientific calculator (preferably with STAT capabilities) is required.

Module III Applied Statistics and Quality Design
A continuation of modules I and II, the emphasis here being the statistical methods to assure that products are *designed* properly. The "power tools" of statistics are introduced: testing hypotheses concerning two or more samples, analysis of variance (ANOVA), experimental design and orthogonal arrays, multiple regression, reliability and nonparametrics. As in the previous modules, the applied problems come from a wide variety of industrial settings.

Module IV Group Dynamics and Quality Circles
This module helps people understand themselves and their roles as communicators, improve their small group communication skills, develop problem-solving strategies as group members and apply theories to their work (i.e., quality circles) and personal relationships.

The Microsystems Programming major is designed to provide for employment in technical software programming. The graduate will have a technical background that includes the language of scientists and engineers; various capabilities and limitations of mini and micro computers; and selected low and high-level languages. The graduate will be a valuable team member in the developing, modifying, maintaining and documenting of technical systems/programs for scientific and industrial applications.

Recommended courses from high school are algebra I and II, geometry, chemistry, typing.

Students who have not had sufficient high school preparation prior to acceptance into Microsystems Programming major may take qualifying course work at CTC and should plan to study longer than two years to meet graduation requirements.

Industrial Laboratory Technology Curriculum (ILMP) (Microsystems Programming Major)

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1137	PASCAL Programming	2	2	3
1191	Algebra & Trigonometry I	4	0	4
6110	Software Documentation	2	2	3
6611	Technical Laboratory Chemistry I	3	3	4
		14	7	17
■ Second Term				
9601	Cooperative Employment	1	40	3
■ Third Term				
1141	Matrix Algebra	4	0	4
1192	Algebra & Trigonometry II	4	0	4
6111	PL/M Programming	2	2	3
6112	Device Control Software	2	2	3

6621 Technical Laboratory Chemistry II	3	3	4
	15	7	18

■ Fourth Term

9602 Cooperative Employment	1	40	3

■ Fifth Term

102x Oral Communication Elective	3	0	3
1193 Analytic Geometry & Calculus I	4	0	4
151x Economics Elective	3	0	3
2291 Physics I - Kinematics & Dynamics	3	2	3
6113 Real Time Programming	2	2	3
6137 PASCAL Programming II	2	2	3
	17	6	19

■ Sixth Term

9603 Cooperative Employment	1	40	3

■ Seventh Term

1010 Technical Writing I	3	0	3
15xx Social Sciences Elective	3	0	3
2293 Physics III - Electromagnetic Waves	3	2	3
6115 Micro/Mini Operating Systems	2	2	3
7031 Computer Programming (FORTRAN)	2	2	3
xxxx Elective	3	2	3
	16	8	18

■ Eighth Term

9604 Cooperative Employment	1	40	2

■ Ninth Term

1015 Technical Writing II	3	0	3
113x Programming Elective	2	2	3
1179 Introduction to Applied Statistics	4	0	4
150x Psychology Elective	3	0	3
6118 System Implementation Project	1	4	3
xxxx Elective	3	2	3
	16	8	19

■ Tenth Term

9605 Cooperative Employment	1	40	2
			104

xxxx Electives (Coordinator approval required):

1133 Basic II for Science & Engineering Technologies
1135 "C" Programming Language
1136 FORTH Programming
1138 Introduction to Computer Graphics & Modeling
1139 Introduction to XENIX/UNIX
1194 Analytic Geometry & Calculus II
1195 Analytic Geometry & Calculus III
1752 Real Time Systems & Data Communications
1763 Systems Analysis and Design
2233 Fundamentals of Biochemistry
2292 Physics II - Mechanics & Heat
2294 Physics IV - Atomic and Nuclear
6135 "C" Programming II
6136 FORTH Programming
6629 Science of Materials
6631 Technical Laboratory Chemistry III
6639 Instrumentation and Measurement
6641 Technical Laboratory Chemistry IV
6670 Introduction to Statistical Process Control
6710 Laser Optics I
6720 Laser Optics II
6741 Fiber Optics
6745 Optical Systems Design
7728 Introduction to Digital Concepts (STRONGLY RECOMMENDED)
7738 Digital Systems I (STRONGLY RECOMMENDED)
7748 Digital Systems II (STRONGLY RECOMMENDED)

Associate of Individualized Study

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 a 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 Extended Services and A.I.S. program.

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.

Cincinnati Technical College offers the following associate degree and certificate programs through the main campus evening program:

Business Technologies Division
business management
computer information systems programming
loss control
management information systems
managerial accounting
real estate/property management
sales marketing
industrial sales marketing
office specialist

Engineering Technologies Division
electronics engineering technology
electro-mechanical engineering technology
biomedical electronics engineering technology
computer integrated manufacturing engineering technology
mechanical engineering technology

Health Technologies Division
medical record technology
unit clerk/coordinator certificate
electrocardiography certificate

Physical Science/Mathematics Division
industrial laboratory technology – industrial lab & microsystems
laser optics technology

To pursue a degree program at night, the student should apply for admissions and meet the admissions criteria for that program.

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.

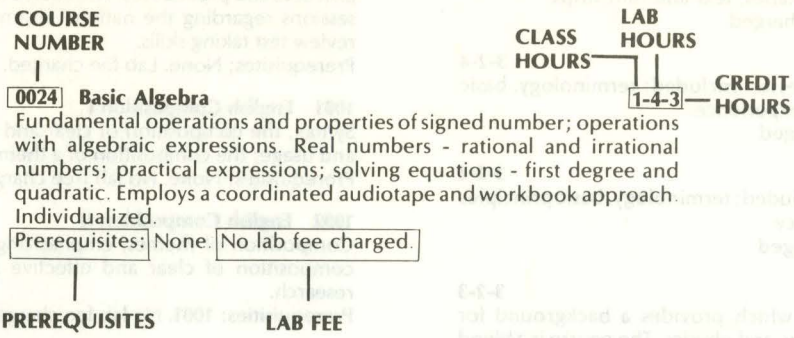
Cincinnati Technical College has addressed these student needs by increasing its degree and certificate program offerings in the evening and in convenient locations. Cincinnati Technical College provides concurrent course offerings through its extension centers located within the College service area.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

COURSE DESCRIPTIONS

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: an 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.

0001 English Grammar 3-2-4
This course deals with the words and language of the grammatical system of standard English. Correct usage is stressed.
Prerequisites: None. No lab fee charged.

0002 College Spelling 2-2-3
An individualized spelling improvement program. Uses multisensory approach to develop desirable spelling attitudes and habits. Also stresses word analysis and proofreading.
Prerequisites: None. No lab fee charged.

0003 Basic Writing I 3-2-4
After an analysis of strengths and weakness in writing, student is given instruction and practice in the construction of clear, error-free sentences and messages.
Prerequisites: 0001 or equivalent. No lab fee charged.

0004 Basic Writing II 3-2-4
Emphasizes paragraph organization and transitional devices in longer composition; punctuation.
Prerequisites: 0003 or equivalent. No lab fee charged.

0007 Telephone Techniques 1-2-2
Develops confidence and accuracy in the use of the telephone for business. Stresses clarity and enunciation.
Prerequisites: None. No lab fee charged.

0008 Oral Reports 2-2-3
Enlarges student's concept of skill in oral communication. Provides means for each student to develop clear and accurate reports.
Prerequisites: 0003 or equivalent. No lab fee charged.

0010 College Reading I 3-2-4
Instruction and practice to develop flexibility in reading, improve vocabulary; sharpen comprehension. Diagnostic and prescriptive testing; individualized, multi-media.
Prerequisites: None. No lab fee charged.

0011 College Reading II 3-2-4
Continuation of 0010. Recommended for students needing further improvement in reading skills.
Prerequisites: 0010 or equivalent. No lab fee charged.

0012 Technical Reading I 3-2-4
Develops skills and vocabulary needed to succeed in a particular technology through an individualized curriculum drawn from the reading required. Emphasizes purposeful reading.
Prerequisites: 0010 or equivalent. No lab fee charged.

0013 Technical Reading II 3-2-4
Continuation of 0012. Recommended for students needing further instruction and practice. Emphasizes finding information and following written directions.
Prerequisites: 0012. No lab fee charged.

0014 College Study Skills 3-2-4
A comprehensive course for the student who would like to get the most out of his or her courses. Attention is given to the development of positive attitudes toward good study habits and self-improvement of basic study skills (such as note-taking, memory, preparing for examinations). Individualized.
Prerequisites: None. No lab fee charged.

0017 Speed Reading 2-4-4
This course is designed to help readers increase their reading efficiency. This course will increase recall, and eliminate inefficient reading habits while improving speed, comprehension, and memory. Speed reading offers specific techniques to help readers process written materials quickly while extracting essential information. This course uses several approaches, processing skill development, visual/perceptual training and concept development, to improve speed and comprehension.
Prerequisites: 0013 No lab fee charged

0020 Basic Mathematics I - Individualized 3-2-4
Individualized instruction and practice in the fundamental skills of mathematics. Assignments for each student as determined by diagnostic test. Topics available; whole numbers and related operations, primes, composites, factoring, common fractions, decimals, percent.
Prerequisites: None. No lab fee charged.

0021 Basic Mathematics II - Individualized 3-2-4
Continuation of 0020. Recommended for students needing further instruction and practice in computation and application.
Prerequisites: 0020. No lab fee charged.

0022 Essentials of Mathematics 3-6-6
A review of mathematical principles and computation. 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.

0023 Basic Geometry 1-4-3
Individualized instruction in basic concepts of Geometry. Focuses on the study of the measurement and relationships of lines, angles, plane (flat) figures, and solid figures. Included is the study of angles, triangles, perpendicular lines, tangents, and the study of distance, area, and volume. This course will use an IP (In Progress) grade.
Prerequisites: None. No lab fee charged.

0024 Basic Algebra I - Individualized 3-2-4
Fundamental operation and properties of signed numbers. Operations with algebraic expressions. Real numbers - rational and irrational numbers. Practical expressions, solving equations - first degree and quadratic, graphing. Employs a coordinated audiotape and workbook approach.
Prerequisites: None. No lab fee charged.

0025 Basic Algebra II - Individualized 3-2-4
Continuation of 0024. Recommended for students needing further instruction and practice. This course will use an IP (In Progress) grade.
Prerequisites: 0024. No lab fee charged.

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

0030 Basic Concepts Biology **3-2-4**
A survey of the study of life processes. Included: terminology, basic principles of biology, laboratory experience.
Prerequisites: None. Lab fee charged.

0031 Basic Concepts Chemistry **3-2-4**
A survey of general chemistry. Included: terminology, basic principles of chemistry, laboratory experience.
Prerequisites: None. 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.

0036 Basic Concepts of Medical Terminology **3-2-4**
Course will provide an introduction to major medical word parts. This will include word roots, prefixes and suffixes. Emphasis will be placed on medical word building, compounding medical word parts and special emphasis on saying, listening to and spelling words as an aid to study procedures.
Prerequisites: None. No lab fee charged.

0040 Interpersonal Development **3-2-4**
Focuses on the development of the total person; develops an awareness of the personal skills needed to succeed in college and of those habits which inhibit success; each student plans and implements a workable schedule for self.
Prerequisites: None. No lab fee charged.

0041 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.

0042 Interpersonal Skills **3-2-4**
This course will examine and discuss skills which will aid the student in developing a positive self-image and enable the student to succeed in college. Time management, goal setting and communication skills are some of the topics which will be covered. Students will be required to participate in structured group activities.
Prerequisites: 0042 No lab fee charged

0043 Interpersonal Skills II **1-2-2**
This course is an extension of Interpersonal Skills I. The student develops an individual project to demonstrate mastery of concepts discussed in Interpersonal Skills I.
Prerequisites: 0042. No lab fee charged.

0050 Business Orientation **1-0-1**
A basic introduction to the language, principles and practices of business. The course is designed to introduce students to the very basic elements of business.
Prerequisites: None. No lab fee charged.

0133 Speedwriting I **2-3-0**
Designed for those students who have had no previous shorthand/speedwriting training. Emphasis includes rapid reading of plate material, mastery of principles of theory, writing and transcribing.
Prerequisistes: None. Lab fee charged.

0134 Speedwriting II **3-2-0**
A continuation of Speedwriting I. Emphasis is on speed development and mailable transcription, with a review of punctuation and spelling.
Prerequisites: Speedwriting I with a minimum grade of "C" or by permission of coordinator. Lab fee charged.

0500 Certification Review for Medical Assistants **2-0-0**
This course will provide a basic review and study preparation for any medical assistant interested in preparing for the National Certification Examination given by the American Association of Medical Assistants or any medical assistant interested in updating skills and knowledge.
Prerequisites: None. Lab fee charged.

0502 Certification Review Workshop for Unit Clerk/Coordinator **3-0-0**
Examination review workshop is designed for entry level examination candidates and others who wish a review of unit clerk/coordinator practices and procedures. The course will feature lecture and discussion sessions regarding the national exam of unit clerk/coordinators and review test taking skills.
Prerequisites: None. Lab fee charged.

1001 English Composition I **3-0-3**
Syntax, the composition of clear and effective sentences; paragraphs and usage; the composition of a theme.
Prerequisites: None. No lab free charged.

1002 English Composition II **3-0-3**
Composition of themes, emphasizing types of development; syntax, composition of clear and effective sentences; principles of library research.
Prerequisities: 1001. No lab fee charged.

1007 Research and Argumentative Writing **3-0-3**
Organization and development of argumentative writing, including research and logical and fallacious reasoning.
Prerequisites: 1001. No lab fee charged.

1008 Composition: Science Fiction **3-0-3**
The composition course includes a study of masters of science fiction. Reading will include short stories and novels. Essays and research paper(s) will be required.
Prerequisites: 1001. 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: None. No lab fee charged.

1010 Technical Writing I **3-0-3**
The principles and practices of various types of business correspondence including the letter of application and resume; audience analysis; visuals; various technical communications such as procedures, explanation of process, mechanism description, formal and informal reports. Students who register for this course should also register for an upper level course within their program major.
Prerequisite: 1001 and 12 hours in technical area. No lab fee charged.

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

1015 Technical Writing II **3-0-3**
The principles and practices of researching, organizing, and presenting the various types of reports germance to the student's career choice. The course focuses on both written and oral reports which include analytical subject areas such as surveys, proposals, testing, lab reports, problem analysis, and job related reports. Students who register for this course should also register for an upper level course withing their program major.
Prerequisites: 1010. No lab fee charged.

1017 Project Research **3-3-4**
Technical communicators must research the projects that they manage; therefore, this course will address the tasks that technical writers and editors perform as they research projects. Major tasks to be mastered include: data gathering methods, interviewing skills and techniques, questionnaire design, observation, simulation, pilot projects and walk-throughs. Literature searches using data bases will also be employed. The student will be able to identify, select and use the most appropriate method that corresponds to the project.
Prerequisites: 1001 or equivalent preferred. No lab fee charged.

1018 Writing the Project Copy I **2-5-4**
This introduction to technical communications examines the formats, conventions, and rhetoric of technical writing as opposed to expository writing. Topics include audience analysis, the problem solving process, readability criteria, and language editing. Students will be required to define technical terms and analyze equipment related to their technical field. Students will have their writing analyzed for both style and structure, and will be required to conduct a language edit of a document.
Prerequisites: 3 credit hours of English composition. Lab fee charged.

1020 Effective Speaking **3-0-3**
The preparation and effective delivery of various types of speeches.

Improved listening techniques, audience participation, and evaluation are stressed.
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. Can be applied for Social Science Credit.
Prerequisites: None. No lab fee charged.

1024 Group Dynamics & Problem Solving **3-0-3**
This course helps people understand themselves and their roles as communicators, improve their small group communication skills, develop problem-solving strategies as group members and apply theories to their work (i.e. quality circles) and personal relationships. Students must participate in structured experiences.
Prerequisites: None. No lab fee charged.

1031 Technical Spanish **2-2-3**
This course will provide the student with an introduction to the fundamentals of Spanish grammar with an emphasis on technical vocabulary.
Prerequisites: None. No lab fee charged.

1032 Technical Spanish II **2-2-3**
This course continues the study of Spanish grammar and syntax with an emphasis on technical vocabulary.
Prerequisites: 1031 or equivalent. No lab fee charged.

1033 Technical German **2-2-3**
This course will provide the student with an introduction to the fundamentals of German grammar and syntax with an emphasis on technical vocabulary.
Prerequisites: None. No lab fee charged.

1034 Technical German II **2-2-3**
This course continues the study of German grammar and syntax with emphasis on technical vocabulary.
Prerequisites: 1033 or equivalent. No lab fee charged.

1035 Technical Japanese **2-2-3**
This course will provide the student with an introduction to the fundamentals of Japanese grammar and syntax with an emphasis on technical vocabulary.
Prerequisites: None. No lab fee charged.

1036 Technical Japanese II **2-2-3**
This course continues the study of Japanese grammar and syntax with an emphasis on technical vocabulary.
Prerequisites: 1035 or equivalent. No lab fee charged.

1099 Special Problem in Communication Skills **1-5—0—1-5**
Individual study and special projects pertaining to the particular technology in which the student is enrolled. 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 Communication Skills Division.
Prerequisites: 6 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 a faculty advisor to make the proper course recommendation for each student. Following the test, students will be advised to take the mathematics course which is most appropriate for their individual skill level. The final decision ultimately lies with each student. There is no additional fee for this service and the four (4) credit hour tuition will be credited to the course selected. See page 59.
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.
Prerequisites: None. No lab fee charged.

1120 Introduction to Business Mathematics **4-0-4**
A review of the basic computational skills needed for success in business mathematics, especially those involving fractions, decimal fractions and ratios. Applied topics such as payroll, present value simple interest, mark up, mark down, etc. Use of an electronic calculator having the floating decimal point is encouraged. Students should register for this course after taking the math placement test. Offered as independent study or traditional lecture.
Prerequisities: 0020 or equivalent. No lab fee charged.

1121 Business Mathematics **4-0-4**
A review of introductory topics such as payroll present value, simple interest, mark up, mark down. Mathematics of business and banking to include promissory notes, trade and cash discounts, inventories, taxes, compound interest, finance charges. Use of an electronic calculator having the floating decimal point is encouraged. Offered as independent study or traditional lecture.
Prerequisites: 1120 or equivalent. No lab fee charged.

1122 Financial Analysis **4-0-4**
Review of discounts and taxes, compound interest, present value, revolving charges. Annual percentage rate, depreciation, mortgages, amortization, insurance. Offered as independent study or traditional lecture.
Prerequisites: 1121 or the equivalent. No lab fee charged.

1123 Computerized Financial Analysis **3-1-4**
Qualitative and quantitative graphs, data, etc. Stocks, bonds, and annuities. Common business investment and banking, financial calculations, trends and forecasts taught through the use of a microcomputer.
Prerequisites: 1122 and 2911. Lab fee charged.

1124 Business Algebra **4-0-4**
Review of the basic laws of Algebra. Emphasis is placed on Linear and Exponential Equations and applications in a variety of areas: compound interest, annuities, amortization, etc. Introduction to basic statistical concepts. The student will learn to use equations and algebraic expressions as tools in business applications.
Prerequisites: 0024 and 1121 or equivalent. No lab fee charged.

1125 Business Calculus **4-0-4**
Algebric emphasis on Functions and applications. An overview of limits. Derivatives and antiderivatives with their applicability to business situations. Decision making involving maximum and minimum conditions using calculus as an analytical and predictive tool.
Prerequisites: 1124 or 1131 or 1140. No lab fee charged.

1130 Introduction to Microcomputer Systems **2-2-3**
Intended for anyone interested in microcomputers. A how to use and how to make use of microcomputer systems. The technical vocabulary associated with microcomputers with emphasis on tape and diskette routines. Assistance with tracking error messages. The specific microcomputer used will depend upon the models available at the campus offering the course.
Prerequisites: None. Lab fee charged.

1131 College Algebra **4-0-4**
This course presents important algebraic relationships that provide supportive skills for all students in technical programs dependent on algebra.
Prerequisites: Previous course work in algebra. No lab fee charged.

1132 Statistics **4-0-4**
Descriptive statistics (mean median standard deviation, etc.) and organization of data, including graphical displays. Probability and probability distributions. Testing statistical hypotheses. Sampling techniques. Confidence intervals. Simple linear regression and correlation. A scientific calculator (preferably with STAT capabilities) is required.
Prerequisites: Algebra. No lab fee charged.

1133 Basic 2 for Science and Engineering Technologies **2-2-3**
An intermediate course in the use of the computer in science and engineering technologies. Computation techniques including various mathematical algorithms, use of files and simple graphics are introduced and applied. Basic language is used.
Prerequisites: 1192, 7030. Lab fee charged.

1134 Microfortran/Microcomputers **2-2-3**
Techniques to implement large scientific and engineering programs in Fortran on the microcomputer, fooling the microcomputer into processing like a mini/supermini computer using large Fortran programs. Interaction among the microcomputer, disks, and the mini/supermini computer. Special consideration will be given to system (program) design of the large program, use of overlays, virtual arrays, memory utilization, I/O techniques, user friendly programming, etc.
Prerequisites: FORTRAN. Lab fee charged.

1135 "C" Programming Language **2-2-3**
"C" is a very portable programming language used for systems and communications programs. Its portability is making it increasingly popular for applications programs. This course will cover structured programming concepts, input/output operations, arrays and data struc-

tures, functions, pointers and the "C" library. Students should have some programming experience. This "C" is 90 percent compatible with UNIX or XENIX operating systems.
Prerequisites: BASIC or COBOL. Lab fee charged.

1136 Forth Programming **2-2-3**
Forth is a flexible, powerful and different programming language used for systems, graphics and machine control. Using Forth is also a good way to learn about how compilers and interpreters work and how a computer handles data. This course is an overview of Forth, covering simple arithmetic through extending the compiler. It is both an introduction to Forth and a look at the inner workings of languages in general.
Prerequisites: None. Lab fee charged.

1137 PASCAL Programming **2-2-3**
Since its introduction in the early 70's, PASCAL has gained popularity in both scientific and business applications due to its combination of "structured" control facilities, powerful data structures, and simplicity of expression. PASCAL can serve as an introduction to advanced programming techniques. This course is intended for students who have already had an introductory course in high level language programming.
Prerequisites: Any high level language such as BASIC, COBOL, etc. Lab fee charged.

1138 Introduction to Computer Graphics and Modeling **2-2-3**
The hardware, software, and data structure considerations for utilizing ready made graphics packages; the mathematical and programming techniques for displaying and manipulating graphical objects; the fundamentals and limitations of mathematics and computer algorithms for development of modeling and graphics programs.
Prerequisites: BASIC or FORTRAN. Lab fee charged.

1139 Introduction to XENIX/UNIX **2-2-3**
XENIX is Microsoft's adaption of the UNIX operating systems for microcomputers. Highly regarded for its power and portability, UNIX systems have been implemented in micro-, mini- and mainframe environments. This course introduces the tree-type file system, basic I/O, system commands and shell programming. Familiarity with these techniques is ensured through laboratory exercises.
Prerequisites: Some programming experience preferred. Lab fee charged.

1140 Introduction to Linear Algebra **4-0-4**
Review of the basic laws of algebra. Polynomials, quadratics, exponents and roots. Linear equations and inequalities. Sets and set operations. Linear and polynomial functions. Students should register for this course after taking the math placement test. See page 59.
Prerequisites: 0024 or equivalent. No lab fee charged.

1141 Matrix Algebra **4-0-4**
Selected topics from business and banking applicable to matrix modeling. Matrix operations. Systems of linear functions. Systems of linear inequalities. Linear programming techniques.
Prerequisites: 1140 or equivalent. No lab fee charged.

1142 Probability and Introduction to Quantitative Analysis **4-0-4**
Definition of Qualitative analysis, its development and typical applications. Probability, basic concepts, classical, conditional. Bayes theorem, expectations, binomial distribution. Normal distribution definition of quantitative analysis, introduction to decision making. Forecasting, data analysis.
Prerequisites: 1140 or equivalent. No lab fee charged.

1143 Quantitative Approach to Operation Research **4-0-4**
Decision Theory. Model Construction; network, transportation, simplex and other programming, dynamic programming, queuing. Markov analysis, past, present, future methods.
Prerequisites: 1141 and 1142 or equivalent. No lab fee charged.

1150 Introduction To Science Mathematics **4-0-4**
Fundamental skills of mathematics as applied to the 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. Offered as either independent study or traditional lecture.
Prerequisites: Math Placement Test. No lab fee charged.

1151 Pre-Calculus Math: Algebra **4-0-4**
Properties of real numbers and algebraic expressions, algebraic operations, functions, simultaneous equations, determinants, exponents and roots, inequalities.
Prerequisites: High School Algebra or equivalent. No lab fee charged.

1152 Pre-Calculus Math: Trigonometry **4-0-4**
Basic geometric concepts, trigonometric functions, radians and circular functions, angles in various quadrants, right and oblique triangles, trig. identities and equations, inverse trig. functions, polar coordinates.
Prerequisites: 1131 or 1151. No lab fee charged.

1153 Elementary Analysis **4-0-4**
Review of coordinate systems, exponents, fractional expressions, linear and quadratic equations and inequalities. Functions and their graphs, variation, rational functions, higher degree functions, exponential and logarithmic functions, conic sections.
Prerequisites: 1131, 1151 or equivalent. No lab fee charged.

1154 Calculus I **4-0-4**
Functions and functional notation, limits and continuity. Tangents, slope and the derivative. Basic derviative operations. Maximum and minimum values and inflection points. Related rates. The antiderivative, indefinite and definite integrals, area under a curve.
Prerequisites: 1153. No lab fee charged.

1155 Calculus II **4-0-4**
Review. Derivatives of implicit functions. Area between curves. Derivatives and integrals of trigonometic, logarithmic and exponential functions. Integration by parts, by separation of variables, by trigonometric substitution. Partial derivatives. Multiple integration.
Prerequisites: 1152 and 1154. 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, proportions, 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, formulas, graphs, meters, micrometers, calipers, etc. Students should expect to purchase a scientific calculator for the second half of the course. Offered as either independent study or traditional lecture.
Prerequisites: 0020, 0024, or the equivalent. No lab fee charged.

1171 Technical Mathematics 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. Applications on the 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: 1170 or the equivalent. No lab fee charged.

1172 Technical Mathematics II **4-0-4**
Logarithic 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 Mathematics 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 Introduction to Applied Statistics **4-0-4**
Descriptive and inferential statistics — application oriented. Organization of data including mean, median, standard deviation, z scores, etc. — including graphical displays. Probability and probability distributions (binomial, normal, etc.) Testing hypotheses concerning means and proportions Linear regression ("forecasting") and correlation. Sampling techniques including determination of sample size. A scientific calculator (preferably with STAT capabilities) is required.
Prerequisites: College Algebra.. No lab fee charged.

1180 Applied Statistical Analysis **4-0-4**
A continuation of the applied statistical topics presented in course 1179. Testing statistical hypotheses concerning two or more samples, analysis of variance (ANOVA), experimental design, multiple regression, reliability and nonparametric statistics, etc. A final project consists of a complete statistical study from design to collection of data to analysis to typewritten report with graphics. A scientific calculator with STAT capa-

bilities is required.
Prerequisites: 1179. 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, introduction to Boolean Algebra. 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: 1170 or equivalent. No lab fee charged.

1192 Algebra and Trigonometry II **4-0-4**
Common logarithms and natural logarithms, exponential equations, Trigonometric graphs, identities and equations, direct and inverse variation, quadratics, complex numbers. 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 Analytic Geometry & Calculus I **4-0-4**
Topics from analytic geometry involving conic sections, etc. Graphs of some first and second degree functions, derivative concept, applications of derivatives including related rates, maximum and minimum points. Indefinite and definite integrals with applications including areas and volumes. Students enrolled in this course should expect to utilize an electronic calculator having Scientific Notation, trig. and log. functions.
Prerequisites: 1192. No lab fee charged.

1194 Analytic Geometry & Calculus II **4-0-4**
A continuation of Analytic Geometry & Calculus I. Derivates and integrals of transcendental functions. Integration using Integral Tables. Double integration. Partial derivatives with applications including Least Squares Curve Fitting. Integration using the computer. Students enrolled in this course would find a pocket calculator helpful. The student should expect to utilize an electronic calculator having Scientific Notation, trig. and log. functions.
Prerequisites: 1193. No lab fee charged.

1195 Analytic Geometry & Calculus III **4-0-4**
A continuation of Analytic Geometry & Calculus II. Maclaurin Series Expansions and Taylor, Fourier Series; 1st order Differential Equations, Linear Differential Equations and applications; 2nd order Differential Equations; Repeated Roots and Nonhomogeneous Equations; Numerical Methods; Laplace Transforms.
Prerequisites: 1194. No lab fee charged.

1199 Special Studies-Mathematics **Var-Var-Var**
A personal academic pursuit related to the student's technical field of study mutually agreed upon by the student and supervising faculty member. Prior to registration, the plan of study must be approved by the Dean of the Physical Sciences/Mathematics Technologies. (Grades "S" or "U".)
Prerequisites: None. No lab fee charged.

1201 Private Police Officer Training Course **4-8-8**
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 **3-0-3**
First-aid instruction including Red Cross Multi-Media Standard First-Aid course, including instructors' certification; CPR instruction, including instructors' certification.
Prerequisites: None. No lab fee charged.

1203 Security Investigation **3-0-3**
Investigations will provide the security officer the methods for gathering information from public records and private individuals. Legal aspects, investigative strategies and report writing will be covered.
Prerequisites: None. No 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 **3-0-3**
Criminal procedure deals with 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 **3-0-3**
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 existence; 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. No lab fee charged.

1224 Fundamentals of Fire Prevention **3-0-3**
Organization and function of the fire prevention organization; chemistry of fire; inspections, surveying and mapping procedures, recognition of fire hazards, engineering a solution to 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 and 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 situations, 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 management 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 **3-0-3**
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 typesetting - 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.

1403 Advertising Typography **2-6-4**
An extended study of display advertising utilizing computer equipment and some hot metal typesetting. Analysis, evaluation and recommendations based on individual usage of type styles and sizes presented for good design and makeup.
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 of 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 and 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 **2-3-3**
Development and evaluation of printing devices. Graphic art processes in use today: letterpress, gravure, flexographic, offset and screen printing. How they work, and the kinds of work for which they were designed. Hands on training of offset duplicator and electrostatic plates will be covered in laboratory.
Prerequisites: None. Lab fee charged.

1419 Survey of Printing Inks **3-0-3**
This course is about ink technology as it is divided into physical make-up; how its integral parts affect color, drying properties, subtrates, 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 operations of various keyboards. The use of electronics, computers, and tape operated controls.
Prerequisites: 1402. Lab fee charged.

1428 Mangement 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.

1429 Screen Printing **1-9-4**
The use and operation of manual and semi-automatic screen printing presses. Basic fundamentals of printing frames, screen cloths, stencils, squeeges and inks. Printing on many substrates and odd-shaped objects.
Prerequisites: 1421. Lab fee charged.

1430 Relief Presswork I **1-9-4**
The use and operation of platen and cylinder letterpress equipment. The use of such equipment for diecutting, foil stamping and embossing. Basic fundamentals of flexographic printing.
Prerequisites: 1403, 1480. Lab fee charged.

1431 Relief Presswork II **2-13-6**
Advanced techniques in the operation of multi-color narrow web flexo press. Strong emphasis in process printing. Comparison of narrow web, wide web and corrugated flexo presses. Advanced training on mounting, platemaking and finishing operations.
Prerequisites: 1430. Lab fee charged.

1440 Offset Press Operation **2-13-6**
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 job 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: 1161. 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 or 1482. Lab fee charged.

1482 Flexo Photography **2-3-3**
Introduction to types of camera copy and styles of process cameras. General and special use of films. Uses of precise measuring darkroom instruments. Learn how to calculate distortion factors for negatives to produce flexo Plates. Darkroom techniques. Making line and half-tone negatives. Produce single and multi-color proofs.
Prerequisites: None. Lab fee charged.

1502 Human Relations - Applied Psychology **3-0-3**
Applies psychological principles to everyday life. These applications help students understand themselves better, change their behaviors, and enhance their relationships. The students must participate in structured experiences.
Prerequisites: None. No lab fee charged.

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

1506 Introduction to Psychology: External World **3-0-3**
This course covers 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: None. No lab fee charged.

1507 The Psychology of Color 2-2-3
The meaning of color is studied as it relates to its perceptual impact on people. Colors will be analyzed for their subliminal message and significance. The physics of light and chemistry of inks will be contrasted and discussed. Cultural differences and the symbolism of color will also be presented. Even a color test will be used to analyze the psychosocial conflicts in students' lives. People who must select and/or use colors for sales marketing or graphic designing may be interested in this course.
Prerequisites: 1505 or 1506 or equivalent. No lab fee charged.

1508 Child Psychology 3-0-3
The child's life begins with genetic and environmental influences. The student considers the physical, intellectual, language, social, moral, and abnormal growth of the child. Theories help to explain this growth to adolescence.
Prerequisites: 1506 recommended. No lab fee charged.

1509 Psychology of Human Development-Adolescence through Aging 3-0-3
The general principles and theories governing human growth and development from adolescence through aging are studied as they relate to the physical, cognitive, and psychosocial development of people. The major contemporary theories are presented, discussed and compared. Major topics include the identity struggle of adolescence, career selection and development, marriage, parenting, mid-life crises, retirement and death and dying.
Prerequisites: None. No lab fee charged.

1512 Microeconomics 3-0-3
This course introduces the fundamental economic problem of scarcity and provides a brief overview of the macro-system. The primary focus is 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 Macroeconomics 3-0-3
This course introduces the basic economics problem of scarcity and provides an overview of the micro-system. The primary focus of the course is 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 science occupied with classifying and defining group behavior. Emphasis is placed on the basic institutions necessary to the processes of socialization and acculturalization.
Prerequisites: None. No lab fee charged.

1523 Sociology: Major Institutions 3-0-3
The detailed study of the five major social institutions in society: the family, religion, education, the economy, and government.
Prerequisites: 1521. No lab fee charged.

1524 Stress Management 3-0-3
Theory and applied coping techniques for effective management of typical on-the-job crises for managers. This course encompasses communication principles and technqiues, control of stressful situations, developing coping techniques and role playing of pertinent management situations.
Prerequisites: None. No lab fee charged.

1525 Changing Roles for Men and Women 3-0-3
An interdisciplinary look at the processes through which sex roles develop, the ways in which they impact upon individuals and society, and an analysis of the changing sex role patterns in the U.S. and elsewhere.
Prerequisites: 3 hours of Psychology or Sociology. No lab fee charged.

1527 Technology and Ethical Decisions 3-0-3
The technician and issues having ethical or moral implications to technology. Students will use acceptable ethical principles and apply them to their own technology. Research into current publications will asist students is understanding how ethics is applied in practical situations. Discussion of ethical principles and procedures is an integral part of the courses. Practical decisions with emphasis on technology will be stressed.
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 Introduction to Labor/Management Relations 3-0-3
A general overview of the historical, legal and current status of Labor Management relations in union and nonunion environments, and in both the private and public sectors. Include labor economics, labor law, labor movements and concept to relative bargaining power.
Prerequisites: None. No lab fee charged.

1536 Practical Government: Dealing with Regulatory Agencies 3-0-3
Introduces students to the practical workings of typical government agencies that average citizens must deal with during their lives. Agencies to be covered include U.S. Department of Labor, Equal Employment Opportunity Commission, Social Security, and the Veterans' Administration.
Prerequisites: None. No lab fee charged.

1539 Public Policy and the American Worker 3-0-3
Covers three major areas of concern to the Worker - Collective Bargaining Rights, Employment Rights and Workplace Protection - from the viewpoint of management and Labor. Topics include EEO, Workers Compensation, OSHA, Bargaining, Hiring and Firing Law, etc.
Prerequisites: None. No lab fee charged.

1599 Special Problems in Social Science 1-5—0—1-5
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 Communication Skills/Sciences Division.
Prerequisites: Six hours in Social Sciences. No lab fee charged.

1701 Introduction to Data Processing 3-0-3
This course is designed to provide first-term students with an overview of the entire field of data processing. Terminology and concepts for hardware and software are introduced. Future trends are discussed.
Prerequisites: None. No lab fee charged.

1702 Introduction to Basic Programming 2-3-3
This course is designed to provide first-term students with an introduction to the basic language and programming techniques.
Prerequisites: High School Typing or 3001. Corequisites: 1701 & 1721. Lab fee charged.

1711 Introduction to Data Management and Computer Operations 2-3-3
Instruction is in the operational function of the key-operated equipment and introduction to computer operations. Laboratory work will reinforce these principles.
Prerequisites: High School Typing or 3001. Corequisite: 1701. Lab fee charged.

1712 Data Entry Systems 2-3-3
Instruction is given in the operation of card-punch, key-type, and key-disc equipment. Laboratory work will reinforce the instruction.
Prerequisites: High School Typing or 3001. Lab fee charged.

1721 Programming Logic and Methods 2-3-3
The course is designed to give the student initial exposure to programming logic methods and programming documentation. Emphasis is on structural approach to programming and the BASIC language is used to reinforce the concepts covered in the course. Typical business applications are assigned as problems.
Prerequisites: "C" or better in 1701. Lab fee charged.

1722 Advanced Basic Programming 2-3-3
The full range of BASIC language instructions and coding techniques are introduced with programs written using DASD, screen formatting, and table processing. All programs are tested and thoroughly documented. Program linkage and operating systems are introduced.
Prerequisites: "C" or better in 1701, 1702, 1721. Lab fee charged.

1731 Peripheral-Equipment Operations 2-3-3
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: "C" or better in 1701. 1711 Lab fee charged

1732 Microcomputer Systems 3-0-3
This course is meant to fulfill the need for students majoring in the area of data processing. It will make the student aware of the potential of the microcomputer with much hands-on experience with actual microcomputer.
Prerequisites: "C" or better in 1701 or 1850. No lab fee charged.

1739 Operating Systems **2-3-3**
The standard functions of supervisory routines, including introduction to run control, I/O control, multi-programming and service routines, are discussed and explained. Job control languages are introduced with exercises.
Prerequisites: "C" or better in one programming class and 1701. Lab fee charged.

1740 Operating Systems I **2-3-3**
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: 1731. Lab fee charged.

1741 Operating Systems II **2-3-3**
Advanced operations concepts, cataloged procedures; generation of test files — OS, MFT, MVT, VSAM; concepts of real-time operating system and time sharing.
Prerequisites: "C" or better in 1740. 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 **3-7-6**
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: "C" or better in 1701, 1721. Lab fee charged.

1752 Real-Time Systems & Data Communications I **2-3-3**
The System 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: "C" or better in 1762. Lab fee charged.

1754 Data Communications **3-2-3**
In Data Communications the student will learn the reasons and methods used in remote computing. Asynchronous, synchronous, Bi-synchronous protocols will be discussed as well as terminals, micro-computers and other remote computing peripherals. Communications software systems will be dealt with at length.
Prerequisites: 15 credit hours of CIS courses. Lab fee charged.

1761 Introduction to RPG II (BDP) **3-7-6**
Beginning level course for the programming major student. Topics include processing of sequential files and generating typical business reports.
Prerequisites: "C" or better in 1701, 1721. Lab fee charged.

1762 COBOL Programming II **3-7-5**
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: "C" or better in 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: 15 credit hours of 1700 courses including 1701, 1721. Lab fee charged.

1771 Data Base Management Systems **2-3-3**
Manipulating data to extract required information through the use of external data base managers. Topics include designing the data base, creating it, and accessing it. Methods of access will include interactive manipulation, user-written procedures, and access through other languages.
Prerequisites: 15 credit hours in technical courses including 1701 & 1721. 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: "C" or better in 1761. 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 **1-3-2**
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: 15 credit hours of 1700 courses including 1701, 1721. 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 salesmanship. 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 eduction 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 observation of the steps of a sale and an introduction to industrial and wholesale selling.
Prerequisites: None. No lab fee charged.

1813 Industrial Sales **3-0-3**
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 **3-0-3**
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 **3-2-4**
Planning and executing sales presentations using audiovisual media. Emphasis is placed on video camera/playback equipment and other equipment employing sight and sound.
Prerequisites: None. Lab fee charged.

1817 Industrial Purchasing 3-0-3
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 3-0-3
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 regulations, trust, and insurance.
Prerequisites: 1823. No lab fee charged.

1825 Hotel Law 3-0-3
A study of the fundamental principles of hotel law concerned with the various public callings. Covers the essential laws for making responsible decisions in the complex and diverse operations of modern hotels, motels, and restaurants.
Prerequisites: None. No lab fee charged.

1826 Financial Law 3-0-3
This course covers the study of the Securities and Exchange Commission regulations as they relate to the offering and management of client investments.
Prerequisites: 1823. No lab fee charged.

1832 Personnel Management 3-0-3
A broad overview of the traditional functions of 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 3-0-3
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.

1843 Advertising and Display 3-2-4
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 3-0-3
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 experience.
Prerequisites: None. No lab fee charged.

1846 Industrial Product Marketing I 3-0-3
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 3-0-3
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
A course in data processing theory with an emphasis on business applications. Laboratory work will include the operation of personal computers, execution of application software, and use of results to increase productivity.
Prerequisites: None. 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. Students will utilize the computer and peripheral equipment in course.
Prerequisites: 1850 or 1798, 1799 or comparable course, 2913. No lab fee charged.

1852 EDP & Auditing 2-3-3
A study of methods of accounting control and the application of computerized audit techniques. The person taking this course is one of two types: (1) a practicing auditor or manager with a limited background in computers; or (2) a student usually of 4th or 5th term standing.
Prerequisites: 1851. Lab fee charged.

1860 Management Software for Professionals 2-2-3
Microcomputer applications for small to large-scale businesses. Specific areas to be studied include dBase II, Lotus 1-2-3 and Multimate Word Processing as well as other special application packages.
Prerequisites: Basic knowledge of microcomputer operations. Lab fee charged.

1861 Electronic Spreadsheets (Lotus 1-2-3) 2-2-3
Lotus Development Corp. 1-2-3 Application Software Package will be the primary topic discussed in this class. This software combines the benefits of an electronic spreadsheet, a graphics generator and a file manager in one integrated package.
Prerequisites: 1850 or 1860 or permission of instructor. Lab fee charged.

1999 Special Problem Seminar Var-Var-Var
Individual study and special projects pertaining to the particular technnology 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.

2010 Industrial Hygiene Measurements 2-3-3
Gas and vapor volume calculations and 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 3-2-4
This is an introductory course that is designed to satisfy entrance requirements for related areas of study. The course stresses an integrated approach between lectures and laboratory experiments to form a sound basis for future study in more rigorous chemistry courses. Topics covered include properties, structure and chemical classification of matter, use of symbols, formulas and equations, chemical bonding, properties of bases, salts, and solutions, naming of acids, bases and salts, radioactivity, and organic chemistry.
(All students should be tested in advance of registration for basic math competency and if there is a need, suggested corequisite math courses are available.)
Corequisites: 1150 or 1170 (competency test may waive). 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 equivalent. Lab fee charged.

2221 Technical Physics I **2-3-3**
Fundamental principles of heat and electricity 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 **2-3-3**
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 vehicle. 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-couse sequence in college chemistry; for those interested in the structure and properties of matter, changes in matter, chemical bonding, chemical reactions, equilibrium.
Prerequisites: 1150 or equivalent. Lab fee charged.

2232 Fundamentals of Organic Chemistry **3-2-4**
The second course of a three-course sequence in college chemistry; organic chemistry as related to the study of biochemistry - carbon bonding; saturated, unsaturated and aromatic hydrocarbons; alcohols, phenols, aldehydes, ketones, acids, amines.
Prerequisites or Corequisites: 2231 or equivalent. Lab fee charged.

2233 Fundamentals of Biochemistry **3-2-4**
The third course of a three-course sequence in college chemistry; biochemistry - carbohydrates, amino acids, proteins, lipids, vitamins, enzymes, metabolism, body fluids.
Prerequisites: 2232 or equivalent. Lab fee charged.

2241 College Physics I **3-2-4**
Measurement, units and conversions, linear measure, area and volume, velocity and acceleration, motion with a constant force, the gravitational field, projectile motion, energy and work, heat energy, temperature scales, specific heat, latent heat, heat transfer, radiation.
Prerequisites: High School Algebra or equivalent. Lab fee charged.

2242 College Physics II **3-2-4**
Waves as carriers of energy, sound, light as a wave, index of refraction, fundamentals of optics, simple optical systems, diffraction, light as a photon, spectral analysis, the hydrogen atom, the photoelectric effect, the nucleus, mass defect and binding energy, fission and fusion, carbon 14 dating, types of decay, radiation units, and the biological effects of radiation.
Prerequisites: 2241. Lab fee charged.

2244 Health Physics I **3-2-3**
Pressure and other related topics as applied to the Allied Health profession; 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 Health Physics II **5-0-3**
Electromagnetic radiation, including basic sources detection schemes and medical application of infra-red, visible, ultra-violet, X-ray, and gamma radiation; fundamental nuclear particles and applications of nuclear techniques both as diagnostic and therapeutic tools; the electron, fundamental forces with emphasis on the electric field, potential energy and voltage, current, resistance and simple DC circuits; the potentiometer, the transformer; schematics and simple circuit layout; basic components of various medical instruments.
Prerequisites: None. Lab fee charged.

2261 Printing Science I (Chemistry) **3-2-4**
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) **2-3-3**
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.

2263 Physical Science for Graphic Communications **3-4-5**
This is a lab-oriented course concerning selected topics from chemistry and physics as they are applied to the graphic communications field.
Prerequisites: 1170. Lab fee charged.

2270 Introduction to Physics **2-3-3**
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.

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.
Corequisites: 1172 or 1191. 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, 1191 or 1172. 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, 1191 or 1172. 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; Planck'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, 1192. Lab fee charged.

2299 Special Studies-Science **Var-Var-Var**
A personal academic pursuit related to the student's technical field of study. Mutually agreed upon by the student and supervising faculty member. Prior to registration, the plan of study must be approved by the Dean of the Physical Science/Mathematics Technologies. (Grades "S" or "U".)
Prerequisites: None. No lab fee charged.

2501 Automotive Technology I **5-10-8**
Principles of the internal combustion engine. Repair and rebuilding modern automotive engines, including 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 **2-8-5**
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 **2-8-5**
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

2506 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 is placed on developing sound trade judgement, safe work habits and correct work procedures
Prerequisites: None Lab fee charged

2507 Basic Blueprint Reading & 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

2508 Techniques of Welding **1-4-2**
Fundamental understanding and skill in the use of oxyacetylene, arc welding and cutting equipment is developed Such typical operations as butt, lap and fillet welds and the making of a bead are performed
Prerequisites: None 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. Lab fee charged.

2801 Food & Beverage Sanitation, Safety, Service **3-0-3**
An introduction to sanitation, safety and its importance in the restaurant industry A basic understanding of professional service and covering the basic guidelines and information for becoming a qualified practitioner
Prerequisites: None. Lab fee charged.

2802 Food & Beverage Cost Controls. **2-4-3**
An application of accounting theory to food service management This course is offered to set up systems that can be implemented to control major costs in the food service industry
Prerequisites: 2801, 2911 Lab fee charged

2803 Menu Production and Purchasing **2-4-3**
Examination and production of a full service menu to develop a food service purchasing system.
Prerequisites: 2801, 2802. Lab fee charged.

2804 Catering Banquets and Beverage Management **3-0-3**
To give a comprehensive study of a hotel banquet and catering operation. This course also involves actual situations related to pricing and profit, beverage personnel job descriptions, beverage terms, merchandising, liquor laws, equipment and profits.
Prerequisites: None. No lab fee charged.

2805 Food & Beverage Supervision **3-0-3**
Encountering the problems of human resources while learning the elements of leadership and supervision
Prerequisites: 1001, 1002, 1021, 2804 No lab fee charged

2806 Beverage Management **3-0-3**
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

2807 Basic Foods for Hotel/Restaurant **2-4-3**
Through lab and lecture the student will gain knowledge of basic foods including sauces, soups, fish, meats, simple desserts, breads, vegetables, potatoes, starches, culinary terms and menu preparation.
Prerequisites: None. Lab fee charged.

2811 Introduction to Hotel 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 Front Office and Night Audit Procedures **3-2-3**
Study of front office management and operation with emphasis on the use of various front office equipment, supplies, and procedures. Practical operating procedures in performing the hotel night audit including registration, rates, hotel racks posting charges and credits
Prerequisites: None No lab fee charged

2813 Hotel Executive Housekeeping **3-2-3**
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 Maintenance and Management **3-0-3**
A study of the basic terminology of energy, maintenance, and engineering Explains, investigates, and provides basic decision-making models for energy, maintenance, and engineering situations
Prerequisites: None No lab fee charged

2815 Principles and Practices of Hotel Management **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 **3-0-3**
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 Chef Basic Cookery I **2-4-3**
Through lab and lecture the student will gain a working knowledge of the following subjects: kitchen orientation, methods of cookery, soups, sauces, culinary terms, with practical application in the lab. Salad preparation with interpretation of menus will also be covered.
Prerequisites: None. Lab fee charged.

2823 Chef Basic Cookery II **2-4-3**
Basic classical soups, salad making, basic meat, fish and poultry, basic baking, confentionery, menu planning.
Prerequisites: None. Lab fee charged.

2824 Chef Advanced Cookery **2-4-3**
Through lab and lecture the student will gain a working knowledge of the following: classical soups, sauces, classical meat, poultry, fish dishes, garne manger, buffet work.
Prerequisites: None. Lab fee charged.

2825 Pastry and Confectionery **4-8-6**
Through lab and lecture the student will gain a working knowledge of the following: pastry and confectionery for the hotel and restaurant industry, dessert menu planning, correct orientation and familiarization with the patisserie environment, all basic pastry preparations and apply them to classical dessert making.
Prerequisites: 2822. Lab fee charged.

2826 Classical Cookery **4-8-6**
Using previous knowledge, cooking advanced menus and planning and coordinating them, refining the skills of a chef and testing standard recipes, final cooking test of a seven-hour demonstration and theory test (three hours).
Prerequisites: 2825. Lab fee charged.

2827 Butchery & Fish Management **2-4-3**
Through lab and lecture, the student will gain a working knowledge of the identification of grades of meats and fish, the wholesale purchase and distribution of any products, cutting of meats and fish, and the sanitary storage of them.
Prerequisites: None. Lab fee charged.

2901 Principles of Marketing I **3-0-3**
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 **3-0-3**
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.

2903 Survey of Marketing **3-0-3**
An introductory course that covers the basic principles of marketing. This course is designed to provide a fundamental understanding of the economic and social forces which influence the marketing process.
Prerequisites: None. 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.

2909 Office Accounting I **3-2-3**
Principles and practices of basic accounting for the student who is required to complete only one term of accounting or needs 2910. Includes recording, and accumulating financial events, preparation of statements, adjustments and cash and banking procedures. Limited to a study of service enterprises.
Prerequisites: None. No lab fee charged.

2910 Office Accounting II **3-2-3**
A continuation of the concepts developed in 2909. Topics include account receivables, account payables, comprehensive practice set.
Prerequisites: 2909. No 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. No lab fee charged.

2914 Cost Accounting I **2-3-3**
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 **2-3-3**
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 Federal Taxation I **2-3-3**
A study of Federal Income Tax as it relates to the individual taxpayer. The course deals in general terms with the most common aspects of taxes as they relate to the individual and business.
Prerequisites: None. No lab fee charged.

2918 Federal Taxation II **2-3-3**
A study of Federal Taxation dealing with advanced topics, partnerships and corporations.
Prerequisites: 2917. No lab fee charged.

2919 Intermediate Accounting I **2-3-3**
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 Intermediate Accounting II **2-3-3**
Advanced topics in accounting theory and practice dealing with corporations. Topics include retained earnings, earnings per share, accounting changes, changes in financial position and financial statement analysis.
Prerequisites: 2919. No lab fee charged.

2921 Managerial Accounting **2-3-3**
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.

2925 Business Principles **3-0-3**
A study of the nature of business, forms of business ownership, production problems and financing, forecasting, budgeting, governmental regulations of business, business personnel practices, the security markets and financial news.
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 Security Management **3-0-3**
The emerging role of security management in the modern organization. Organization of the internal structure of the security department and the roles and responsibilities of director, supervisors, and individual employees. Planning, budgeting, inspections, evaluation of countermeasures, investigations, office administration, and public relations.
Prerequisites: 2926. No lab fee charged.

2928 Hotel-Restaurant 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 night audit. Operation of posting machines and peripheral office equipment.
Prerequisites: None. No lab fee charged.

2930 Hotel-Restaurant Case Studies **3-0-3**
A series of case studies in the hospitality industry involving daily management decisions. Studies include, but not limited to, financing forecasting, budgeting, line and staff organization, and decision making.
Prerequisites: 2815. 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, policies, property maintenance, merchandising and renting, financial reporting, resident relations and legal concerns.
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. This course encompasses management planning, personnel and resident policies, accounting and budgeting, legal aspects, insurance, marketing, leasing and sales, maintenance management and energy conservation.
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 objectives of ownership, use of data and statistics, analysis or regions, neighborhoods and markets, cash flow projections and financial analysis, 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 encompasses 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.

2936 Institutional Property Management **3-0-3**
Techniques for successful management of non-traditional housing. This course provides training in HUD housing, nursing home care, handicapped housing and those facilities providing services for people with special needs.
Prerequisites: 2933. 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.

2944 Accounting Information Systems **3-0-3**
This course takes the viewpoint that it is the company's responsibility to design an accounting system with emphasis on internal accounting controls. Logically organized, it is equally meaningful to students of accounting, management, or information systems. Topics move from manual systems to computer-based systems; and in a parallel treatment, the same subsystems in manual mode are coverted to computer-based mode.
Prerequisites: 2913. 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 charged.

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 State of Ohio prior to taking the brokers 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.

2961 Financial Planning **3-0-3**
Effective financial planning is consumerism applied to your financial affairs. It involves coordinated, realistic planning in the areas of buying insurance, homes and investment property; accumulating capital; retirement planning; tax planning and estate planning.
Prerequisites: None. No lab fee charged.

2962 Investment Management I **3-0-3**
Principles and techniques involved in selecting and managing a portfolio; including securities, stocks, bonds, etc., depending on the financial needs and resources of the client. Course covers the concepts involved with the sources and uses of investment funds.
Prerequisites: 2926. No lab fee charged.

2963 Investment Tax **3-0-3**
Course content will cover tax treatment of all savings and investment vehicles including IRAs and pension plans. Discussion will identify tax benefits of various investments including federal, state, city and personal property implications.
Prerequisites: None. No lab fee charged.

2970 Management Theory and Practice **3-0-3**
Study of the basic management theories, including Theory X, Theory Y, Theory Z and Quality Circles Management. The course includes practical applications of these theories in current management situations.
Prerequisites: 2926, 1832. No lab fee charged.

2975 Case Studies in Management **3-0-3**
An in-depth management course using the case study and simulation methods. The course covers the entire scope of management including all functional and decision-making areas.
Prerequisites: 2970. No lab fee charged.

3001 Typewriting I **2-3-3**
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 **2-3-3**
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 **2-3-3**
The development of skills, knowledge, and techniques applicable to typewriting. Opportunity is provided for the student to experience situations 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 2-3-3
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 rought draft material.
Prerequisites: Minimum grade of "C" in Typewriting III or permission from coordinator. Lab fee charged.

3005 Administrative Typewriting 2-3-3
An introduction to touch typewriting with problem-solving emphasis on business correspondence, tabulation, telegrams, duplicating masters, and the special typing assignments encountered in administrative positions.
Prerequisites: None. Lab fee charged.

3021 Office Procedures 3-2-3
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 Word Processing Office Applications 2-3-3
A survey of the techniques, processes, operations and applications of information processing equipment. Equipment used in the class includes electronics typewriters, standalone display editing word processors, and multi-terminal word processors.
Prerequisites: 3001 or by permission of the coordinator. Lab fee charged.

3023 Machine Transcription 2-3-3
An introduction to transcribing machines and to the techniques of machine transcription on various models of word processing equipment and/or typewriters. Students will also review basic grammar, punctuation, and spelling for successful output of mailable documents.
Prerequisites: 3001 and 1009. WPS students must have a grade of "C" or better in 3023 to continue with program sequence. ADSS and GOS students must have a grade of "C" or better in 3023. Lab fee charged.

3024 Secretarial Procedures 2-3-3
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, including a continuation of the operations/applications of machine transcription emphasizing correct grammar, punctuation and spelling.
Prerequisites: 3021. Lab fee charged.

3032 Office Procedures/Professional Development 2-3-3
A continuation of training in office procedures and human relations principles with emphasis placed on oral and written office communications, negotiating, assertiveness, and professional development.
Prerequisites: 3021. No lab fee charged.

3048 Word Processing Operations I 1-4-3
A comprehensive "hands on" application of the basic operation and management of Word Processing and the Text Management System. The course will introduce students to a set of computer-assisted instruction lessons especially designed to acquaint students with the Advanced Text Management System display terminal. This course is not to be taken for credit by students seeking a degree in the Word Processing technology.
Prerequisites: 3001. No lab fee charged.

3049 Word Processing Operations II 1-4-3
A continuation of the overview of Word Processing and the completion of the "Learn" Lessons to prepare students for entry into Text Management and Editing. Students will perform such functions as entering unformatted text, replacing, restructuring and storage of documents and subdocuments. Completion of the "Learn" Lessons will reinforce the successful operation of the Advanced Text Management System display terminal. This course is not to be taken for credit by students seeking a degree in the Word Processing Technology.
Prerequisites: 3048. No lab fee charged.

3055 Medical Office Transcription 1-3-2
A survey course to introduce the student to transcribing machines and the techniques of transcription Medical terminology related to the transcription of history and physical reports. pathology reports. surgical reports. radiologic reports. laboratory reports. operative reports. reports of diagnostic tests. letters and other correspondence Students should attain proficiency in producing mailable transcripts using correct punctuation. spelling. and format
Prerequisites: 3002 Lab fee charged

3060 Introduction to Word/Information Processing 2-0-2
This course will present an historical overview of the development of automatic recording and transcribing equipment to show why word processors are an asset to businesses.
Prerequisites: None. No lab fee charged.

3061 Word/Information Processing I 1-4-3
This course is designed for students choosing a career in word/information processing. Students will receive 'hands on" practical experience on the IBM Personal Computer.
Prerequisites: 3001 or by permission of the coordinator. Lab fee charged.

3062 Information Records Processing 1-4-3
This course is designed to acquaint students with a database management tool which involves creating, sorting and manipulating files within a data management environment. Students will also become acquainted with an electronic spreadsheet environment utilizing the IBM Personal Computer. The creation of database records and spreadsheet applications are designed to enable students to logically sequence computer operations.
Prerequisites: 3001, 1850 or by permission of the coordinator. Lab fee charged.

3063 Word/Information Processing II 1-4-3
This course is an introduction to several different word processors, including the Exxon Series 500 Information Processor and the Wang Word Processing System. Introductory information includes formatting documents, inserting and deleting text, text entry, editing and manipulating text and printing documents.
Prerequisites: 3001, 3060, or by permission of the coordinator. Lab fee charged.

3064 Word/Information Processing Simulations 1-4-3
This course combines the students' skills in machine transcription and in the use of the equipment experienced in courses 3063 and 3023. Through the use of simulated office experiences, the students will transcribe documents from cassette tapes, rough draft materials, revision of originals, etc., and will produce final copy using the word processing equipment at their disposal.
Prerequisites: Must have a grade of "C" or better in 3023 before this class can be taken. Also, 3001, 3060, 3063, or by permission of the coordinator.
Corequisite: 3065. Lab fee charged.

3065 Advanced Word/Information Processing 1-4-3
This course is designed for students to perform advanced functions on the equipment introduced in course 3063. These functions include advanced printing, document assembly, merging, stop codes, decimal alignment, pagination and repagination, headers and footers, superscripts and subscripts, global search and replace, and right margin justification.
Prerequisites: Must have a grade of "C" or better in 3023 before this class can be taken. Also, 3001, 3060, 3063, or by permission of the coordinator. Lab fee charged.

3066 Text Processing 1-4-3
This course is designed for students to understand and operate the IBM shared-logic system. This will include learning to use the text editor, entering and editing documents, processing documents, along with control words and tag names necessary to format letters, memos, tabulated and centered information, and reports.
Prerequisites: 3001 and 3060 or by permission of the coordinator. Lab fee charged.

3067 Word/Information Processing Administration 2-3-3
The role of the word/information processing administrator and/or supervisor of word/information processing will be explored. Office simulations and special projects will enhance the various duties and functions of word/information processing administration. Case studies and the psychological aspects of supervision of automated offices from a secretarial standpoint will be discussed.
Prerequisites: 3001, 3060, 3064 and 3065. Lab fee charged.

3080 Speedwriting I 2-3-3
Designed for those students who have had no previous speedwriting training. Emphasis is on rapid reading of plate material, mastery of principles of theory, including brief forms. The student is introduced to writing, speedwriting and transcribing on the typewriter from speedwriting notes.
Prerequisites: 3001 or by permission of the coordinator. Lab fee charged.

3081 Speedwriting II 2-3-3
Designed for those students who have had previous speedwriting training and can transcribe within a 5 percent error allowance from speed-

writing notes dictated at the rate of 60 words per minute. A continuation of the mastery of principles of theory from 3080. The student is introduced to dictation from material which is not familiar. Emphasis is on speed development.
Prerequisites: Minimum grade of "C" in 3080 or by permission of the coordinator. Lab fee charged.

3082 Shorthand I - Century 21 **2-3-3**
Designed for those students who have had no previous shorthand training. Century 21 Shorthand is used. Rapid reading of plate material and mastery of principles of theory, including speed forms in emphasized. The student is introduced to writing shorthand and transcribing on the typewriter from shorthand notes.
Prerequisites: 3001 or by permission of the coordinator. Lab fee charged.

3083 Shorthand II - Century 21 **2-3-3**
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 3082 and an introduction to dictation from unfamiliar material. Emphasis is on speed development.
Prerequisites: Minimum grade of "C" in 3082 or by permission of the coordinator. Lab fee charged.

3084 Shorthand I - Gregg **2-3-3**
Designed for those students who have had no previous shorthand training. Emphasis is on rapid reading of plate material and mastery of principles of theory, including brief forms. The student is introduced to writing shorthand and transcribing on the typewriter from shorthand notes.
Prerequisites: 3001 or by permission of the coordinator. Lab fee charged

3085 Shorthand II - Gregg **2-3-3**
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 3084 and an introduction to dictation from unfamiliar material. Emphasis is on speed development.
Prerequisites: Minimum grade of "C" in 3084 or by permission of the coordinator. Lab fee charged.

3086 Shorthand III - Speedwriting/C21/Gregg **2-3-3**
An advanced course designed for those students who have had previous Speedwriting, Century 21, or Gregg shorthand training. Emphasis is on speed development from both familiar and unfamiliar materials.
Prerequisites: Minimum grade of "C" is 3081, 3083 or 3085 or by permission of the coordinator. Lab fee charged.

3087 Transcription I - Speedwriting/C21/Gregg **2-8-5**
A continuation of the study of Speedwriting, Century 21, and Gregg Shorthand fundamentals and a development of transcription skills. Emphasis is on the development of mailable transcription, with a review of punctuation and spelling.
Prerequisites: Minimum grade of "C" in 3086 or 3089 or by permission of the coordinator. Lab fee charged.

3088 Transcription II - Speedwriting/C21/Gregg **2-8-5**
Continuation of 3087. Emphasis on mailable transcription. Integration of office-style dictation and the mailable letter to meet office standards.
Prerequisites: Minimum grade of "C" in 3087 or permission of the coordinator. Lab fee charged.

3089 Shorthand IV - Speedwriting/C21/Gregg **2-3-3**
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 3086 or by permission of the coordinator. Lab fee charged.

3094 Workshops in Business **Var-0-Var**
Consideration and study of selected issues and topics in the business technologies area designed to meet current needs. Content and emphasis varies from year to year
Prerequisites: None. Lab fee charged

3500 Orientation to Horticulture Occupations **1-0-1**
An introduction to the various horticulture occupations. Various guest speakers will discuss benefits, working conditions, abilities needed, and job levels within the horticulture industries
Prerequisites: None. No lab fee charged

3501 Soils and Plant Nutrition **3-0-3**
A basic course dealing with the formation and physical, chemical and biological properties which affect plant growth
Prerequisites: 2200 or 2209. No lab fee charged

3502 Horticulture Science **3-1-3**
To provide a basic understanding of plant classification, structures, physiology, development, and the environmental conditions which effect plant growth
Prerequisites: None. Lab fee charged

3504 Woody Plant Materials I **2-3-3**
The study of woody plants primarily grown by nurseries and found in the landscape and secondarily found in naturalized settings of Ohio. The deciduous and evergreen trees, shrubs, and vines will be studied with emphasis on identifying features, cultures, and landscape use. Weekly plant walk field trips are required
Prerequisites: None. No lab fee charged

3505 Herbaceous Plant Materials **2-2-3**
Classification, identification, and general cultural requirements of annuals, perennials, bulbs, and roses commonly used in garden planting.
Prerequisites: None. No lab fee charged

3506 Nursery Management **2-2-3**
An introduction to the techniques and practices used in the commercial production of herbaceous wood plants. Plant propagation, field and container production, and marketing are emphasized
Prerequisites: None. Lab fee charged

3507 Arboriculture **2-3-3**
A study of the commerical arboriculture business. The diagnosis and treatment of tree ills, principles and techniques used to protect trees from disease and damage, pruning, removal, and climbing safety are emphasized. Field activities required.
Prerequisites: 3510, 3521, 3532. No lab fee charged.

3508 Turfgrass Management **2-3-3**
Principles and practices of identification, growth, uses, establishment, and pest control of turfgrass areas. Field trips required.
Prerequisites: 3510. No lab fee charged.

3509 Principles of Landscape Design **2-3-3**
A course in landscape development for residential sites. The design process, graphics, and lettering are emphasized. Drawing tools to be provided by student.
Prerequisites: None. Lab fee charged.

3510 Horticulture and Turfgrass Equipment **2-3-3**
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 Construction **1-5-3**
The technique and use of materials for construction and installation of various landscape plantings and features such as decks, patios, trellises, benches, steps, walls, pools, fences, streams, and mounds. Use of hand and power tools is emphasized. Field trips required.
Prerequisites: 3509, 3510. Lab fee charged.

3515 Woody Plant Materials II **2-3-3**
The study of woody plants primarily grown by nurseries and used in the landscape. Secondary consideration is given to novel plants found in arboretums and those plants in naturalized settings in the state of Ohio. The deciduous and evergreen trees, shrubs, and vines will be covered with emphasis on identifying features, culture, and landscape use. Weekly plant walk field trips required.
Prerequisites: 3504. No lab fee charged.

3518 Advanced Landscape Design **2-4-3**
A continuation of the principles of Landscape Design, with progressively difficult problems. Emphasis is placed on basic details of landscape architectural construction. Grading, construction, drainage, irrigation factors are examined and utilized in plan development.
Prerequisites: 3509. Lab fee charged.

3519 Landscape Contracts and Specifications **3-0-3**
A study of planting design and plan presentations. Typical plantings are examined in the field. Cost estimates, procedures, specifications and types of contracts are studied and developed.
Prerequisites: 3511. No lab fee charged.

3521 Entomology and Plant Pathology **2-2-3**
Principles and practices in diagnosing and treating plant diseases and insect problems on various horticultural crops.
Prerequisites: None. Lab fee charged.

3528 Greenhouse Management 2-3-3
Principles and practices involved in building and maintaining the greenhouse and structures controlling the environment within the greenhouse which is vital to plant growth.
Prerequisites: None. No lab fee charged.

3530 Horticulture Seminar I 1-1-1
Guest speakers and field trips dealing with current industry topics.
Prerequisites: None. No lab fee charged.

3531 Horticulture Seminar II 1-1-1
Guest speakers and field trips dealing with current industry topics.
Prerequisites: None. No lab fee charged.

3532 Landscape Maintenance 2-3-3
Principles and practices involved in the maintenance of ornamental plants including planting, fertilizing, pruning, pest control, and other related maintenance practices. Field project required.
Prerequisites: None. Lab fee charged.

3534 Interior Plantscaping 2-2-3
Identification, culture, selection, and maintenance of tropical plants used in residential and commercial interior plantings. Field trips required.
Prerequisites: None. No lab fee charged.

3540 Introduction to Floral Design 2-3-3
A basic course dealing with principles of making simple flower arrangements and corsages. Types of designs, styles, principles, tools, equipment, materials, foliage and flower types are covered.
Prerequisites: None. Lab fee charged.

3544 Advanced Floral Design 2-3-3
An advanced course in floral design dealing with more complex designs such as wedding, hospital, church and funeral work.
Prerequisites: 3540. Lab fee charged.

3545 Floriculture Production III 2-3-3
The principles and practices involved in managing, scheduling, growing and marketing greenhouse crops. Crops covered will be those normally grown in this area during the winter. spring and early summer months.
Prerequisites: 3501, 3502, 3525, 3528. Lab fee charged.

4000 Introduction to Medical Terminology 3-1-3
An introduction to a basic medical vocabulary through word analysis, definition, spelling and pronunciation of medical and surgical terms. Emphasis on prefixes, suffixes, word roots and their combining forms. Assist in the development of a basic working medical vocabulary. Includes practice in pronunciation and spelling.
Prerequisites: None. No lab fee charged.

4001 Introduction to the Health Care System 2-0-2
This course will acquaint students with an overall view of the health care system. Topics stressed will include history, organization, areas of specialization, roles and relationships, education, medical ethics and patient rights.
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 3-2-4
An introduction to cell biology, genetics, anatomy and physiology. Fulfills high school biology requirement.
Prerequisites: None. Lab fee charged.

4014 Anatomy and Physiology I 3-2-4
Structure and function of the human body. Topics discussed include anatomical terminology, physiological transport, the cell, tissue, skin, the skeletal system, the muscular system and the nervous system. Laboratory includes dissection.
Prerequisites: High school chemistry. Lab fee charged.

4015 Anatomy and Physiology II 3-2-4
Structure and function of the human body. Topics include special senses, endocrine system, blood, the cardiovascular system and the respiratory system. Laboratory includes dissection.
Prerequisites: 4014. Lab fee charged.

4016 Anatomy and Physiology III 3-2-4
Structure and function of the human body. Topics discussed include the gastrointestinal system, metabolism, the renal system, fluids and electrocytes, acidbase balance, reproduction and the immune system. Laboratory includes dissection.
Prerequisites: 4015. Lab fee charged.

4018 Essentials of Pharmacology 3-0-3
A discussion of the basic principles of pharmacology needed by the health technician. Topics include principles, terminology, modes of administration, and mechanisms of action of the major drug groups.
Prerequisites: 4014 and 4015. Corequisites: 4016 or equivalent or permission of instructor. No lab fee charged.

4020 Fundamentals of Pathophysiology 5-0-5
An introduction to basic disease processes including necrosis, inflamation, repair, developmental abnormalities, neoplasia, immune disorders and infectious disease. The pathogenesis of representative diseases in each category will be discussed.
Prerequisites: 4014, 4015 and 4016 or equivalent or permission of instructor. No lab fee charged.

4023 Immunology 3-0-3
A study of structure and function of the immune system. Includes discussions of antigen, antibody, lymphocytes, serology complement, immune disease and transplant reactions.
Prerequisites: 4016. No lab fee charged.

4029 General Microbiology and Immunology 4-3-5
Fundamental microbiology including microbial cell structure, metabolism, growth requirements and ecology, principles of immunology and control of microorganisms. A study of structure and function of the immune system. Includes discussions of antigen antibody, immune disease and transplant reactions.
Prerequisites: 4015. Lab fee charged.

4030 Technology of Education for Health 1-3-2
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 evaluations, budgeting and general management techniques of health care institutions.
Prerequisites: 10 weeks of work experience in health care facility. No lab fee charged.

4041 Integrated Science I 3-2-4
This course is an introduction to basic concepts in chemistry and biology. Included is weights and measures; inorganic, organic and biochemistry; cell structure and function; genetics and microbiology.
Prerequisites: None. Lab fee charged.

4042 Integrated Science II 3-2-4
This course includes basic concepts of anatomy, physiology, pathology and pharmacology as they relate to the skeletal, muscular, nervous, endocrine and cardiovascular systems.
Prerequisites: 4041 or high school biology and chemistry. Lab fee charged.

4043 Integrated Science III 3-2-4
This course includes basic concepts of anatomy, physiology, pathology and pharmacology as they relate to the integumentary, respiratory, gastrointestinal, renal, reproductive and immune systems.
Prerequisites: 4042. Lab fee charged.

4050 Patient Care Skills 0-2-1
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. Lab fee charged.

4061 Contemporary Health Care Issues **3-0-3**
This course will acquaint students with health care economics and new trends and issues in health care.
Prerequisites: None. No lab fee charged.

4094 Workshops in Health Technologies **3-0-3**
Consideration and study of selected issues and topics in the health technologies area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. No lab fee charged.

4099 Special Topics in Immunology **10-0-1**
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 Health Technologies.
Prerequisites: Varies. No lab fee charged.

4100 Fundamentals of Nutrition **4-0-4**
A basic introduction to the science and art of nutrition. Includes fundamental study of the food nutrients, their digestion absorption, and metabolism; the relationship of nutrition to health maintenance, and the determination of nutritional needs of adults.
Prerequisites: None. Corequisite: 4111. No lab fee charged.

4102 Nutrition for the Life Cycle **4-0-4**
The study of the nutritional needs of the lifecycle 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.
Prerequisites: 4000, 4010, and 4030. Corequisites: 4112. No lab fee charged.

4104 Clinical Nutrition I **4-0-4**
An introduction to nutritional therapy and assesments. Course uses a holistic approach to the nutritional treatment of illness, burns, and surgical disorders. Also included are nutritional treatment for bone disorders, rehabilitation, and the role of the CNS in food acceptance.
Prerequisites: 4102. Corequisite: 4113, 2231, 4015. No lab fee charged.

4105 Introduction to Clinical Nutrition **4-0-4**
An introductory study of nutritional therapy as it relates to pathological states of the body systems. Basic nutritional assessment and counseling skills are also covered in this course.
Prerequisites: 4102. Corequisites: 4113. No lab fee charged.

4106 Clinical Nutrition II **4-0-4**
Nutritional therapy and assessment for endocrine, cardiovascular, and respiratory disorders. Also included is the role of the senses in food acceptance.
Prerequisites: 4104. Corequisite: 4114, 2232, 4016. No lab fee charged.

4107 Diet Therapy **4-0-4**
Nutritional therapy and assessment for metabolic, gastro-intestinal, renal, and immune disorders. The role of total parenteral nutrition and enteral tube feedings in nutritional therapy will be explored.
Prerequisites: 4106. Corequisite: 4115, 2233, 4017. No lab fee charged.

4108 Community Nutrition **4-0-4**
A study of nutritional needs and assessment techniques within community wellness, and health maintenance programs. High risk groups such as infants, adolescents, pregnant and lactating women, and senior citizens are studied.
Prerequisites: 4107. Corequisite: 4116. 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 of the Dietetics Program. No lab fee charged.

4111 Dietetics Orientation and Directed Practice I **1-3-1**
Orientation to the field of nutrition and dietetics, 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. Directed practice component includes field trips, role playing sessions, guest speakers, etc.
Prerequisites: Acceptance into Dietetics Program. No lab fee charged.

4112 Dietetics Directed Practice II **0-6-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Normal Nutrition.
Prerequisites: 4102. 4111. Lab fee charged.

4113 Dietetics Directed Practice III **0-8-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Nutrition in Human Growth & Development.
Prerequisites: 4112. Corequisites: 4105. No lab fee charged.

4114 Dietetics Directed Practice IV **0-10-2**
Nutrition care rotation in a health care facility parallel to didactics covered in Nutrition in Disease.
Prerequisites: 4113. Corequisites: 4106. Lab fee charged.

4115 Dietetics Directed Practive V **10-0-2**
Nutrition care rotation in a health care facility parallel to didactics covered in Diet Therapy.
Prerequisites: 4114. Corequisites: 4107. Lab fee charged.

4116 Dietetics Directed Practice VI **0-8-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Dietetics Seminar.
Prerequisites: 4115. Corequisites: 4109. No lab fee charged.

4117 Dietetic Technician Nutrition Care Homecare Directed Practice **0-5-1**
This directed practice provides the nutrition care dietetic technician student with home nutrition care delivery system experiences. The student will be responsible for visiting, assessing, developing care plans and educating patients and nurses within the patients' homes under the guidance of a clinical instructor and the home care nursing staff.
Prerequisites: 4113. No lab fee charged.

4120 Food Management I **2-3-3**
The fundamentals of food preparation including consumer equipment utilization and maintenance, energy sources and food composition related to nutritional value. Principles of menu planning and presentation to small groups. A study of food economics including major indicators and marketing trends and purchasing techniques. Preparation and evaluation of some simple food groups using appropriate procedures.
Prerequisites: Acceptance into DTC Program. Corequisite: 4100. Lab fee charged.

4121 Food Management II **2-6-4**
Consumer kitchen layout applying efficiency and time management principles. Preparation and evaluation of more complex food groups using appropriate procedures. The food composition of these food groups as related to nutritional value.
Prerequisites: 4120, 4100. Corequisite: 4133. Lab fee charged.

4122 Introduction to Food Systems **2-3-3**
This course serves as a basic introduction to the principles of health care food systems. Topics addressed are institutional menu planning recipe standardization, purchasing of supplies, inventory controls, equipment maintenance and management, and supervision of quality food production and service.
Prerequisites: None. No lab fee charged.

4123 Institutional Menu Planning **1-2-2**
Principles and practices of menu planning related to schools, hospitals, and health care institutions. Consideration of costs, utilization of labor, equipment, purchasing, inventory, and storage will be stressed.
Prerequisites: 4122. Corequisite: 4144. No lab fee charged.

4124 Food Service Sanitation Certification **2-0-2**
This course includes all aspects of institutional food service sanitation for both the commercial and health care industries. Upon completion the student will receive a certificate approved by the Ohio Department of Health.
Prerequisites: None. No lab fee charged.

4125 Quantity Food Production **2-3-3**
A lecture/laboratory course in quantity food preparation involving the use of institutional equipment, the preparation and evaluation of foods using standardized quantity recipes, and the estimation of raw material needs and resources management.
Prerequisites: 4120, 4121. Lab fee charged.

4126 Records and Cost Control **2-0-2**
This course provides more advanced knowledge of procurement methods, procedures and records using learned accounting skills. Cost control methods and application for all facets of food systems management are included.
Prerequisites: 2911, 4125. No lab fee charged.

4127 Institutional Food Service Equipment, Layout & Planning **2-3-3**
Food service layout, planning, and analysis, space requirements and flow line charts. Selection of building materials, time, and motion are studied considering the special needs of health care facilities.
Prerequisites: 4125. Corequisite: 4146. No lab fee charged.

4128 Food Service and Catering **2-3-3**
Determination of the type of serive best suited for an operation. Planning, implementing and evaluating meals served for special activities.
Prerequisites: 4125, 4145. No 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.

4133 Food Science **3-2-4**
The study of the chemical, physical and microbiological properties of food and the effect of processing and handling on its properties. This course is designed for the student with basic science and some food preparation background. Lab will include experimentation that will support lecture material.
Prerequisites: 4120, 4100, High School Chemistry or 2200. Lab fee charged.

4143 Food Systems Management Directed Practice III **0-8-1**
Food service management rotation in a health care facility parallel to didactics studied in quantity food production. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4112. Corequisite: 4122. No lab fee charged.

4144 Food Systems Management Directed Practice IV **2-8-3**
Food service management rotation in a health care facility parallel to didactics studied in Institutional Menu Planning. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4143. Corequisite: 4123. Lab fee charged.

4145 Food Systems Management Directed Practice V **2-8-3**
Food service management rotation in a health care facility parallel to didactics studied in Food Procurement Systems.
Prerequisites: 4144. Corequisite: 4125. No lab fee charged.

4146 Food Service Management Directed Practice VI **2-8-3**
Food service management rotation paralleling didactics studied in Food Service and Catering.
Prerequisites: 4145. Corequisite: 4128. No lab fee charged.

4147 Dietetic Manager Seminar **1-0-1**
This course will briefly review the role of the Dietary Manager in the health care field, food preparation and management systems, nutrition care and personnel management in preparation for the Dietary Manager's certification examination. Test taking skills will be discussed and practiced.
Prerequisites: None. No lab fee charged.

4194 Workshops 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.

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 Health Technologies.
Prerequisites: None. No lab fee charged.

4200 Orientation to Medical Assisting **3-0-3**
Course will include the following content areas: patient management, professional characteristics and behavior, medical law and ethics, communication skills, health care delivery systems and practitioners, and the concept of working in a team relationship.
Prerequisites: Acceptance into Medical Assisting program or by permission. No lab fee charged.

4201 Medical Office Practice **2-3-3**
Course will include the following content areas: patient management, office management, supplies and inventory, administrative procedures, management of office property, communication skills and the patient. Laboratory practice modules designed for simulation of the administrative work in the physician's office.
Prerequisites: None. Lab fee charged.

4202 Clinical Procedures I **2-3-3**
Course will include the following content areas: legal responsibilities with clinical procedures, communication skills, meeting the patient, assisting the physician, instrumentation, vital signs, physical measurements, medical histories, vision testing, hearing testing.
Prerequisites: Acceptance into Medical Assisting program. Lab fee charged.

4203 Clinical Procedures II **2-3-3**
Course will include the following content areas: medications, sterile procedures, assisting in minor office surgeries, assisting in ob/gyn, special examinations — pap smears, pelvics, proctology, etc.
Prerequisites: 4202. Lab fee charged.

4204 Medical Laboratory Procedures I **2-3-3**
Course will include modular units in the following content areas: basic laboratory procedures in hematology and urinalysis, specimen collection and preparation, wet preps, mono tests, pregnancy testing, laboratory safety, blood typing and special chemistry procedures.
Prerequisites: 4041. Corequisites: 4042. Lab fee charged.

4205 Medical Procedures II **2-8-4**
Continuation of Medical Procedures I. with emphasis on differentials. WBC. RBC. urine microscopics. chemistry procedures. coagulation testing. vision and hearing testing. EKG interpretation. blood grouping and rh typing. serological procedures. ova and parasites. ultra sound and diathermy. basic pulmonary studies. other patient diagnostic tests and employee health programs
Prerequisites: 4204 Lab fee charged

4208 Insurance and Patient Records **2-2-3**
Fundamental principles of initiating. 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 Students hold clinics for practical experience in the performance of procedures learned during previous Medical Assisting courses
Prerequisites: Students who take this course must be in their last term of Medical Assisting Program 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 Students will not receive renumeration for these experiences
Prerequisites: None. Lab fee charged.

4212 Medical Assisting Clinical Experience II **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 Students will not receive renumeration for these experiences
Prerequisites: None No lab fee charged

4213 Medical Assisting Clincal Experiences III **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 Students will not receive renumeration for these experiences
Prerequisites: None No lab fee charged

4270 Introduction to Unit Clerking **3-0-3**
Communications. human relations. tasks and procedures. legal and ethical issues. introduction to health care and management topic appropriate to the role of the unit clerk
Prerequisites: Acceptance into Unit Clerk Program No lab fee charged

4271 Unit Clerk Procedures I **2-4-4**
Presentation and practice in use of equipment. procedures and techniques needed for unit clerking
Prerequisites: 4270 No lab fee charged

4272 Unit Clerk Procedures II **2-4-4**
Continuation of course #4271. Emphasis on transcription of orders and computer awareness.
Prerequisites: 4271. No lab fee charged.

4280 Unit Clerk Practicum **0-20-4**
Practice of unit clerk skills and procedures in the hospital setting.
Prerequisites: 4000, 4001, 4270, 4271, 3002, 4408, 4272, 1502, 1009. Corequisite: 4373. Lab fee charged.

4290 Basic Electrocardiography **3-2-4**
An introduction to the principles of electrocardiography. Designed to acquaint students with cardiac anatomy and physiology, taking the ECG, patient preparation, recognizing and correcting distortion problems, mounting and filing of the ECG, special patients and other procedures.
Prerequisites: 4000. Lab fee charged.

4291 Arrhythmia Recognition **3-0-3**
Advanced course in electrocardiography with emphasis on recognizing arrhythmias. Review of basic ECG principles and cardiac anatomy. Emphasis on measurement and calculation of ECG patterns for determining variations in heart patterns (Dysrhythmias).
Prerequisites: 4290 or permission of instructor. No lab fee charged.

4292 Electrocardiography Technician Clinical Practice **0-20-1**
This course consists of clinical practice of electrocardiography in a local hospital. Students will be supervised by practicing ECG technicians employed by the hospital. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4290. Lab fee charged.

4294 Workshops in Medical Assisting **Var-0-1-4**
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 Health Technologies.
Prerequisites: None. No lab fee charged.

4301 Basic Laboratory Techniques **1-3-2**
Orientation to the field of medical technology includes a discussion of the role of the medical laboratory technician, study of the use and maintenance of laboratory equipment and basic laboratory techniques including specimen collection and handling.
Prerequisites: Acceptance into tech courses of ML Program. Lab fee charged.

4302 Basic Hematology and Urinalysis **4-6-6**
Study of theory and practice of hematology, coagulation, and urinalysis with emphasis on routine procedures in these areas.
Prerequisites: 4301. Lab fee charged.

4304 Clinical Chemistry **4-6-6**
Study of theory and procedures of routine manual and automated chemical laboratory procedures, their quality control and use of related instrumentation.
Prerequisites: 4301, 2231, 2232. Corequisite: 2233. 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, cross-matching, antibody screening, cell panels and routine serologic procedures.
Prerequisites: 4301 and 4023. Lab fee charged.

4306 Clinical Microbiology **4-6-6**
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.

4308 Special Laboratory Procedures **1-3-2**
Discussion of special laboratory procedures from the various areas, to include RIA, parasitology, mycology, spinalfluids, etc.
Prerequisites: Completion of all MLT courses. Lab fee charged.

4309 Medical Laboratory Seminar **3-0-3**
Review of the various departments of the clinical laboratory, includes a registry type comprehensive examination.
Prerequisites: Completion of all MLT courses. No lab fee charged.

4311 Clinical Applications I — Hematology & Urinalysis **0-6-2**
Laboratory practice in routine hematology and urinalysis. The practicum will stress workload organization, record keeping, quality control, routine maintenance and troubleshooting of related instrumentations.
Prerequisites: 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. Grade of Satisfactory or Unsatisfactory.
Prerequisites: Concurrent with or subsequent to 4304. Lab fee charged.

4313 Clinical Applications 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. Grade of Satisfactory or Unsatisfactory.
Prerequisites: Concurrent with or subsequent to 4305. Lab fee charged.

4314 Clinical Applications 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. Grade of Satisfactory or Unsatisfactory.
Prerequisites: Concurrent with or subsequent to 4306. Lab fee charged.

4315 Laboratory Practicum I **0-12-4**
On campus laboratory experience in hematology, urinalysis, coagulation, and clinical chemistry. The practicum will stress workload organization, record keeping, quality control, routine maintenance, and troubleshooting of related instrumentation. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4302, 4304. Lab fee charged.

4316 Laboratory Practicum II **0-12-4**
On campus laboratory experience in Blood Bank, Serology, and Clinical Microbiology. The practicum stresses workload organization, records-keeping and quality control. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4305, 4306. Lab fee charged.

4350 Orientation to the Clinical Lab **1-9-2**
Experience in the clinical laboratory, designed to familiarize the student with laboratory organization, specimen collection and handling with emphasis on phlebotomy. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4301. Lab fee charged.

4351 Clinical Experience I **1-24-4**
Students are assigned to the clinical laboratory where previously learned theories and procedures are applied in a patient-oriented atmosphere. Students are required to complete a minimum of 240 hours. This may necessitate makeup work to accommodate the sche-duled holidays of the college. Students also attend seminar activities on campus, relating to the clinical experience.
Prerequisites: 4311. No lab fee charged.

4352 Clinical Experience II **1-24-4**
Students are assigned to the clinical laboratory where previously learned theories and procedures are applied in a patient-oriented atmosphere. Students are required to complete a minimum of 240 hours. This may necessitate makeup work to accommodate the sche-duled holidays of the college. Students also attend seminar activities on campus, relating to the clinical experience.
Prerequisites: 4312. No lab fee charged.

4353 Medical Laboratory Clinical Practice **1-40-6**
Students are assigned to the clinical laboratory where previously learned theories and procedures in hematology, urinalysis and clinical chemistry are applied in patient-oriented atmosphere. Students are required to complete a minimum of 400 hours. This may necessitate make-up work to accommodate scheduled college holidays.
Prerequisites: 4315, 4350. No lab fee charged.

4390 Basic Phlebotomy **5-1-5**
This course introduces the student to blood drawing. Topics include terminology, anatomy and physiology appropriate to phlebotomy; techniques of vein puncture and capillary sampling; professional responsibilities. Ten hours of practice with techniques.
Prerequisites: None. No lab fee charged.

4391 Phlebotomy Practicum I **0-5-1**
Placement in a local clinical facility for practice in blood drawing techniques on adults. Optional pediatric experience available. Grade of Satisfactory or Unsatisfactory.
Prerequisites: 4390. Lab fee charged.

4394 Interpretation of Laboratory Values **3-0-3**
Course 4394 will present many of the clinical laboratory tests. How samples are collected and analyzed will be outlined. Also discussed will be how the results are reported and what they may mean clinically to the health professional.
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 Health Technologies.
Prerequisites: None. No lab fee charged.

4400 Medical Word Processing **3-6-6**
Basic medical word processing and text management, medical terminology and transcription related to diseases and operations encountered in transcription of history and physical examination; radiology, operative and pathology reports; discharge summaries, medical specialty reports and autopsy reports.
Prerequisites: Typing ability of 40 words per minute and 4000. Lab fee charged.

4408 Advanced Medical Terminology **3-0-3**
This course will provide a continuation of the study of basic medical terminology. Terms emphasized in the areas of pathology, pharmacology, psychiatry, radiology, obstetrics, cancer medicine and other associate specialty terms.
Prerequisites: 4000. 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 Accreditation Examination.
Prerequisites: 4414, 4415, 4416, 4417, 4418. No lab fee charged.

4411 Medical Record Directed Practice I **0-12-2**
Practice in 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 medico-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 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 practice experience in supervision.
Prerequisites: None. No lab fee charged.

4414 Record Science, Filing Systems & Record Analysis **4-3-5**
Introduction to the Medical Record field. History of advances in medicine and medical records. Organization and structure of the American Medical Record Association; roles and functions of the RRA and ART; admitting office procedures; major numbering and filing systems; indexes and registers, including Tumor Registry; and case record analysis emphasizing JCAH Accreditation policies.
Prerequisites: None. Lab fee charged.

4415 Legal Aspects of Records in Health Care Facilities **3-1-4**
The medical record as a legal document; confidential communication; authorization for release of medical information; consent forms; preparation and presentation of medical record for courtroom use; the medical witness; legal responsibilities of hospital administration, employees and physicians; record management systems in other health care facilities including Medicare and Medicaid Laws and JCAH standards for these facilities.
Prerequisites: 4414. No lab fee charged.

4416 Coding of Diagnoses, Operations and Procedures **4-3-5**
Coding classification according to ICD-9-CM. Introduction to other major coding systems including SNDO, DRG, SNOP, DSM-11.
Prerequisites: 4000, 4408, 4414 or permission of instructor. Lab fee charged.

4417 Medical Statistics and Record Abstracting **3-2-4**
Statistical procedures including calculation of daily census, monthly census and percentages. Completion of monthly reports; analysis of reports including simple retrieval through abstracting of medical information from the patient record and learning the process of computer terminal input.
Prerequisites: 4414, 4415, 4416. Lab fee charged.

4418 Tumor Registry, Utilization Review & Quality Assurance **4-0-4**
Further understanding of the Tumor Registry with special emphasis on Morphology Coding; Completion of Tumor Registry Abstract and Follow-up Abstract. Fundamentals of Federal requirements for the Utilization Review process; utilization of the CPHA Length of Stay Handbook to establish appropriate length of stay by Diagnosis and/or Operative Procedure; federal and JCAH requirements. Computer applications to Tumor Regisitry and Utilization Review.
Prerequisites: 4414, 4416, 4417. Lab fee charged.

4428 Medical Record Directed Practice I **0-16-3**
Practice in the hospital medical record department performing the following: Admission and discharge procedures; correspondence and release of medical information; outpatient clinics; medical records review and completion; coding of diseases, operations, and procedures by ICD-9-CM; abstracting medical data for computer input and statistical reporting. Grade of Satisfactory or Unsatisfactory.
Prerequisites: None. Lab fee charged.

4429 Medical Record Directed Practice II **0-16-3**
Practice in hospital medical record departments performing the following: Cancer Registry, Utilization Review, Quality Assurance and Medical Audit, experience with health records in nursing homes, selected special interest assignments, and directed experience in supervision. Grade of Satisfactory or Unsatisfactory.
Prerequisites: None. No lab fee charged.

4441 Medical Word Processing Operations I **1-3-3**
Basic medical word processing and text management operation, medical terminology and transcription related to diseases and operations encountered in transcription of history and physical examinations; radiology, operative, and pathology reports discharge summaries.
Prerequisites: Typing ability of 40 words per minute and 4000. Lab fee charged.

4442 Medical Word Processing Operations II **1-3-3**
Medical word processing and text management operations; medical terminology and transcription related to diseases and operations encountered in transcription of various types of medical specialty reports; autopsy reports.
Prerequisites: 4441. 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. 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 Health Technologies.
Prerequisites: None. No lab fee charged.

4501 Introduction to Surgery **6-0-6**
This course will discuss the gradual evolution of modern day surgery, orient the student to the organization and structure of the operating room department and also introduce the student to the roles and functions of OR personnel. The care and sterilization of equipment, care and preparation of the operative patient, sutures/needles, basic instruments, anesthesia and wound healing are included.
Prerequisites: None. No lab fee charged.

4502 Medical-Surgical Operative Procedures I **8-0-8**
This course utilizes the content presented in course 4501 Introduction to Surgery, incorporating the content into a comprehensive study of operative procedures. This course will provide instruction in operative procedures in the field of general surgery, gynecological surgery, thoracic and vascular surgery.
Prerequisites: 4501, 4011. Corequisites: 4512, 4012. Lab fee charged.

4503 Medical-Surgical Operative Procedures II **10-0-10**
This course incorporates the study of specialized areas of surgical procedures, namely reconstructive plastic surgery, thyroid and parathyroid surgery, ear, nose and throat surgery, ophthalmic surgery, neurosurgery, orthopedic surgery, genitourinary and cardiac surgery.
Prerequisites: 4501 and 4502. No lab fee charged.

4505 Introduction to Surgery I **4-0-4**
This course will discuss the gradual evolution of modern day surgery, orient the student to the structure and organization of the operating room department and also introduce the student to the roles and functions of OR personnel. Aseptic techniques pertinent to the OR are stressed. Preparation and storage of OR supplies and methods of sterilization are addressed.
Prerequisites: Acceptance into Surgical Technology program or permission of the instructor. No lab fee charged.

4506 Introduction to Surgery II **5-0-5**
This course is a continuation of course 4505, and focuses on OR equipment, electrosurgical unit, catheters/drains, sponges, needles, sutures and instruments. The process of wound healing is reviewed. Pre- and post-op care of the surgical client is included. Anesthesia and OR drugs are examined.
Prerequisites: 4505 or permission of the instructor. No lab fee charged.

4511 Surgical Technology Clinical Experience I **0-5-2**
Introduction to basic OR skills including aseptic techniques, OR attire, scrubbing, gowning, gloving, opening sterile packs and sterilization of OR supplies. The course involves supervised practice of OR skills in a practice lab on campus and in the operating rooms of an affiliated hospital.
Prerequisites: Permission of instructor Corequisites: 4501. Lab fee charged.

4512 Surgical Technology Clinical Experience II **0-5-2**
Continuation of course 4511 - Clinical Experience I.
Prerequisites: 4511. Corequisites: 4502. Lab fee charged.

4513 Surgical Technology Clinical Experience III **0-10-2**
Exposes the clinically experienced ST 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 Surgical Technology Clinical Practice I **1-40-7**
Students are assigned to the operating room of a hospital currently affiliated with the program. The student is supervised by an adjunct faculty member and program coordinator. Students also attend a one-hour weekly seminar on campus relating to the field experience.
Prerequisites: Permission of instructor. Lab fee charged.

4522 Surgical Technology Clinical Practice II **1-40-7**
Continuation of 4521 accompanied with a one hour weekly seminar on campus relating to the field experience.
Prerequisites: 4521. No lab fee charged.

4523 Surgical Technology Clinical Practice III **0-10-2**
Exposes the clinically experienced ST student to all aspects of surgery including pre-operative, operative and post-operative care of the surgical patient.
Prerequisites: 4512. No lab fee charged

4531 General Surgery I **4-0-4**
Course content will include discussion of aparotomy, biliary and bowel operative procedures. The course will focus on an analysis of associated pathological conditions in relationship to normal anatomy and physiology and integrate x-ray diagnostic tests which are rountinely used to confirm the pathological state. The student will then focus on respective operative procedures which are utilized as part of the treatment modality for the surgical client.
Prerequisites: 4506 or permission of instructor. No lab fee charged.

4594 Fundamentals of OR Nursing **3-2-4**
The fundamentsl of Operating Room Nursing is a basic introductory course for senior level nursing students and registered nurses seeking continuing education in the area of operating room nursing. The course content provides an introduction to basic orientation to the operating room. Demonstration of sterile techniques of scrubbing, gowning and gloving will be presented. Discussion of the OR environment, patient preparation and supplies such as sutures, needles and basic instruments, anesthesia and OR durgs are included.
Prerequisites: For senior level nursing students and registered nurses. Lab fee charged.

4599 Special Studies - Surgical Technology **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 Health Technologies.
Prerequisites: None. No lab fee charged.

4701 Respiratory Therapy Science I **3-2-4**
History of and introduction to the field of Respiratory Therapy. Introduction to respiratory therapy equipment and basic patient skills. Topics include oxygen equipment, gas cylinders, vital signs, patient communication, body mechnaics and isolation procedures.
Prerequisites: Acceptance into RT program. 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, O^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 on 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 are introduced.
Prerequisites: 4704. Lab fee charged.

4706 Respiratory Therapy Science VI **3-2-4**
Respiratory care for the critically ill patient. Invasive and non-invasive monitoring techniques, patient assessment and evaluation are 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 O^2 delivery apparatus, cleaning, disinfection, sterilization, and airway management.
Prerequisites: 4701, 4720. 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, 4702. No lab fee charged.

4713 Respiratory Therapy Clinical Practice III **0-24-5**
A continuation of 4712. Neonatal applications are also treated.
Prerequisites: 4712, 4703. No lab fee charged.

4714 Respiratory Therapy Clinical Practicum I **0-32-4**
A clinical practicum in all phases of respiratory care with emphasis on patients requiring mechanical ventilation.
Prerequisites: 4713, 4704. No lab fee charged.

4715 Respiratory Therapy Clinical Practice IV **0-12-2**
Application of advanced respiratory care techniques. Emphasis on patients in the critical care setting.
Prerequisites: 4706. Lab fee charged.

4716 Respiratory Therapy Clinical Practicum II **0-24-3**
A clinical practicum which provides experience with advanced respiratory care techniques. Home care techniques, supervisory and training experiences are also included.
Prerequisites: 4707, 4715. No lab fee charged.

4718 Pulmonary Diseases I **2-0-2**
Indepth study of pulmonary disease, including pathophysiology, diagnosis and treatment. Emphasis placed on the role of respiratory therapy in the management of patients with pulmonary disease.
Prerequisites: 4702. No lab fee charged.

4719 Pulmonary Diseases II **2-0-2**
Continuation of 4718.
Prerequisites: 4718. 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, O^2 and CO^2 transport, red cell physiology, EKG and neonatal cardiopulmonary anatomy and physiology, renal physiology and acid-base balance.
Prerequisites: Acceptance into RT Program. 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 **0-0-1-4**
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. 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 Health Technologies.
Prerequisites: None. No lab fee charged.

6110 Software Documentation **2-2-3**
In this course students will be concerned with the procedures and documentation used in developing machine control software systems. Using libraries of existing software modules, students will build and execute functioning programs. Formal testing procedures and documentation will be used to compare the performance of the programs with the specifications. Bugs will be documented and corrected in some cases. The programs used in this course will control laboratory instruments and other robots. Students will assemble the computer modules of the control system.
Prerequisites: Some programming exposure. Lab fee charged.

6111 PL/M Programming **2-2-3**
PL/M is a subset of the PL/1 language that was designed for systems and machine control programming. It is widely used in computer-controlled industrial machines, including machine tools and robots. This course will introduce students to PL/M programming. Class projects will emphasize external communication, as used in machine control applications. The compiler runs under the iRMX operating system, so students will also be introduced to a professional software development environment.
Prerequisites: 1135 or 1137 or experience. Lab fee charged.

6112 Device Control Software **2-2-3**
Students will write programs to control simple machines and laboratory instruments. The machines will be connected to the computers through interfaces. Program and machine performance will be tested. Program specifications and pseudocode will be provided. Students will write and test the programs. Advanced students will participate in the design of new procedures and programs. Project documentation will be an important part of the course. Students will write maintenance procedure and structure descriptions, data dictionaries, bug and maintenance reports, progress reports and user documentation.
Prerequisites: 6110, 6137. Lab fee charged.

6113 Real Time Programming **2-2-3**
In this class students will write programs to monitor and control industrial equipment. Programs written in this course will be used as a basis for the Systems Integration Project class that concludes the ILMT series of courses. The programs will respond in real time to signals from the machines being controlled. Interrupts will be handled using both stand alone programs and a real time, multitasking operating system. Programs will be developed from design specification and pseudocode. Students will be responsible for writing and maintaining the necessary design and user documentation.
Prerequisites: 6112. Lab fee charged.

6115 Micro/Mini Operating Systems **2-2-3**
A Real Time programming class concentrating on programs to control individual machines. In this class programs that control systems of machines will be developed. Use of a real time, multitasking operation system will be studied. The system is RMX from Intel Corporation. Topics covered will include modification and installation of the operating system, multiple CPU systems, and program interface with the operating system. These topics will be covered in the context of developing system control programs.
Prerequisites: 6111, 6113. Lab fee charged.

6118 Systems Implementation Project **2-2-3**
Programs and techniques developed in previous courses will be applied to other laboratory instrumentation and industrial manufacturing automation projects. Data collection devices, sensors in various configuration, machine tools, robots and material handling equipment will be controlled and coordinated to produce a product. Student tasks will include installing the software systems, connecting computers, interfaces and machines and testing and debugging system performance.
Prerequisites: 6115. Lab fee charged.

6135 "C" Programming II **2-2-3**
In this project-oriented class students will develop one or two larger programs. These projects will provide practice with the basic elements of the language learned in "C" programming. It will also provide an opportunity to use some of the advanced features of the "C" including file I/O, library functions, structures and unions. Concepts of program design, module building, design documentation and testing will be introduced and applied.
Prerequisites: 1135. Lab fee charged.

6136 FORTH Programming II **2-2-3**
In this project-oriented class students will develop one or two larger programs. These projects will provide practice with the basic elements of the language learned in FORTH programming. It will also provide an opportunity to use some of the advanced features of FORTH including vectored execution, disk I/O, and compiler extension. Concepts of program design, module building, design documentation and testing will be introduced and applied.
Prerequisites: 1136. Lab fee charged.

6137 Pascal Programming II **2-2-3**
In this project-oriented class students will develop one or two larger programs. These projects will provide practice with the basic elements of the language learned in Pascal programming. It will also provide an opportunity to use some of the advanced features of Pascal, including pointers, linked lists and dynamic variables. Concepts of program design, module building, design documentation and testing will be introduced and applied.
Prerequisites: 1137. Lab fee charged.

6611 Technical Laboratory Chemistry I **3-3-4**
This course is a blend of laboratory techniques applied to the concepts of general chemistry procedures including lab safety, use of burners, balances, purity of reagents, identification of types of chemical reactions, stoichiometric relationships and the preparation and dilution of solutions using volumetric apparatus. The structure, properties and states of matter, physical and chemical changes, solution chemistry and general acid-base theories are some of the concepts treated. Distinctions between organic and inorganic compounds are also convered especially as those distinctions relate to bonding and property differences.
Prerequisites: High school chemistry or equivalent and high school algebra or equivalent. Lab fee charged.

6621 Technical Laboratory Chemistry II **3-3-4**
This course follows 6611 and emphasizes organic chemistry. Concepts of nomenclature, properties, preparations and typical reactions involving families of organic compounds are covered. Lab procedures will include melting and boiling point determinations, separation and purification techniques, synthesis reactions, and noninstrumental methods for organic group identification.
Prerequisites: 6611. Lab fee charged.

6629 Science of Materials **3-2-4**
A study of the physical and mechanical properties of engineering materials and of the tests that are used to determine those properties. The materials studies are primarily ferrous and nonferrous metals, woods and polymers but there is some discussion of composites and ceramics. Tests include tensile, creep, hardness, torque and impact. Metallographic specimens are mounted, then polished and examined under a

metallurgical microscope.
Prerequistes: None. Corequisites: 1191. Lab fee charged.

6631 Technical Laboratory Chemistry III **3-3-4**
This course continues from 6621 with emphasis on concepts and lab techniques related to oxidation/reduction and kinetics and equilibria as it applies to solubility and acid-base theory. Lab procedures will stress noninstrumental analytical techniques, both qualitative and quantitative. Gravimetric and volumentric (titrametric) procedures are included.
Prerequisites: 6621. Lab fee charged.

6639 Fundamentals of Physical Measurement **3-2-4**
A study of measurement standards, error and uncertainty, propagation of uncertainty, accuracy and precision and basic statistics. Laboratory experiments are performed utilizing various measuring devices, then the data is analyzed and empirical equations developed. Basic electricity is taught to the extent that the student can understand the fundamental operation of the laboratory equipment used.
Prerequisites: 6629 or 7111, 1192. Lab fee charged.

6641 Technical Laboratory Chemistry IV **3-3-4**
This course continues from 6641 to emphasize the instrument aspect of chemical analysis of both inorganic and organic compounds. Lab procedures include specific ion analysis using selective ion electrodes, potentiometric titrations, fluorimetry, ploarography, gas chromatography, and visible and UV spectrophotometry.
Prerequisites: 6631. Lab fee charged.

6649 Materials Testing **3-4-5**
A continuation of the concepts developed in 6629 and 6639. Materials such as concrete, fabrics and paper products are tested, then the collected data analyzed. The course is project oriented where the student will develop the experimental procedure, perform the test, apply appropriate statistical techniques then submit a formal report to the instructor.
Prerequisites: 6639, 1192. Lab fee charged.

6659 Analysis of Materials Project **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 projects data.
Prerequisites: 6649, 6631, 1179. Lab fee charged.

6661 Chemical Contamination in the Environment **3-0-3**
Characterization of contaminations, sources, dispersions, fate of contaminants, effects on human health, environmental quality and examination of exposure limits.
Prerequisites: Basic Chemistry or equivalent. No lab fee charged.

6699 Technical Laboratory Problems **Var-Var-1-5**
Special problems, projects, seminars and individual study assignements pertinent to technical laboratory areas. Arranged only with approval of coordinator and dean.
Prerequisites: None. No lab fee charged.

6670 Introduction to Statistical Process Control **4-0-4**
Practical applications of statistical techniques such as X-R charts for variables and p, np, c and c charts for attributes. Pre Control techniques will also be discussed. No prerequisites required but a basic understanding of algebra is helpful. Students should purchase a scientific calculator for this course.
Prerequisites: None. No lab fee charged.

6710 Laser Optics I **3-2-4**
Emission and absorption of photons, elements of laser, properties of laser light, optical cavities, Helium-neon gas lasers, Laser classifications and characteristics. Introduction to laser safety.
Corequisites: 1172 or 1191. Lab fee charged.

6720 Laser Optics II **3-3-5**
Geom Optics: Reflection and refraction of light, mirrors, lenses and prisms. Wave Optics: Reflection, interference, diffraction and polarization.
Prerequisites: 1191, 6710. Lab fee charged.

6730 Laser Optics III **3-3-5**
Optical Components: Optical windows, flats, filters and beamsplitters. Laser-Optic Devices: Photodetectors, laser power and energy detectors, collimators, autocollimators, beam expanders, spatial filters, electro-optic Q-switch and Laser modulators.
Prerequisites: 6720. Lab fee charged.

6740 Laser Optics IV **3-3-5**
Laser power and energy measurements; wavelength; dispersion and refractive index measurements; use of monochromators and spectrophotometers; use of Fabry-Perot, Michelson, Twyman-Green and Mach-Zehnder interferometers.
Prerequisites: 6730. Lab fee charged.

6741 Fiber Optics **3-2-4**
Introduction to Fiber Optics; Review of the Nature of Light, Reflection, Refraction, Light Measurement; Light Sources and Transmitters; Optical Fibers-Physical Description, Light Propagation, Transmission Losses; Splices, Connectors and Coupler; Receivers - Pin Photodiodes, Avalanche Photodiodes and Photo-Transistors; Typical Systems.
Prerequisites: 6710. Lab fee charged.

6745 Optical System Design **3-3-5**
Refraction matrix, translation matrix, lens matrix, optical matrix, optical system matrix. Gaussian constants and their significance. Spherical aberration, chromatic aberration. Gaussian beam propagation, spot size, radius of curvature. Optical resonators, modes of oscillation. Microcomputer systems and analysis of optical systems.
Prerequisites: 6720. Lab fee charged.

6750 Laser Optics V **3-3-5**
Laser material processing, cutting, drilling and welding; air pollution monitoring with lasers; data processing and data display; optical memories; holographic non-destructive testing; medical applications of lasers; optical communication systems.
Prerequisites: 6740. No lab fee charged.

6999 Special Problems Seminar **0-0-15**
Individual study and/or special project assigned in student's technical field of study. Available to fourth and fifth term students by special arrangement with coordinator and dean.
Prerequisites: None. Lab fee charged.

7000 Engineering Technologies Orientation **1-0-1**
Designed to familiarize the engineering student with the operations and policies of the Engineering Technologies Division, his/her 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 Divisional Coordinator of Academic 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.

7008 Basic Engineering Drawing **2-4-3**
A beginning course which covers the techniques and functions of drafting. Use of technical terms, equipment, lettering and basic line quality. Includes orthographic and isometric sketching and projection. The basic concepts of sections, dimensions and auxiliary view drawing.
Corequisites: 1171 or 1191. 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. Lab fee charged.

7010 Engineering Drawing I **2-4-3**
Emphasis on continued development of drafting skills. Concepts to be covered will include: secondary auziliary view, gears, cams, various sectioning representation, American Standard tolerancing, Geometric referencing, detailed and assembly working drawings to include bills of materials.
Prerequisites: 7008 or equivalent. Corequisites: 1171 or 1191. Lab fee charged.

7012 Engineering Drawing II **2-4-3**
A continuation of Engineering Drawing I with an introduction to the design process as applied to Mechanical Design Technology majors. Emphasis will be on working drawings with specific applications to machine assembly and detail drawings utilizing computer data base inforamtion.
Prerequisites: 7010. Lab fee charged.

7013 Engineering Graphics (descriptive Geometry) **2-4-3**
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: None. Corequisites: 1171 or 1191. No lab fee charged.

7016 Construction Drawing 2-4-3
Emphasis on floor plans, electrical and plumbing layouts, and blueprint reading
Prerequisites: 7008. Lab fee charged.

7018 Electrical Drafting 2-4-3
Provides a drawing knowledge of electrical power symbols (ANSI designations) and teaches blueprint reading Includes: schematics, one-line diagrams, raceway layouts, motor control ladder diagrams, riser diagrams, cable and fixture schedules, grounding systems, lighting layouts, power distribution and protective devices, basic architectural symbols, electronic schematics and digital logic diagrams
Prerequisites: None. Lab fee charged.

7024 Civil Engineering Graphics I 2-4-3
Construction drawing to include: Floor plan layout, structural section views, building elevation and typical architectural details, electrical plans, standard architectural symbols and abbreviations, and conventional dimensioning methods Emphasis on construction materials and their uses in the building industry Development and use of perspective and presentation drawings
Prerequisites: None. Corequisites: 1171 or 1191. Lab fee charged.

7025 Civil Engineering Graphics II 2-4-3
Development of individual skills and techniques, with emphasis on surveying related drawings, profiles, cross sections, contour maps, plats and abstracts, and computer graphics.
Prerequisites: 7024. Lab fee charged.

7030 Computer Programming (Basic) 2-2-3
Study of the basic programming language as a vehicle to write and code computer programs Course is problem solving oriented Emphasis is on good program design (flow charting and documenting) and efficient, logical coding Programs will be analyzed, designed and entered by use of a terminal to the computer Output will be produced on terminal and printer
Corequisites: 1171 or 1191 Lab fee charged

7031 Computer Programming (Fortran) 2-2-3
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) 2-2-3
Terminology and basic concepts of automation, introduction to Fortran programming with applications in surveying and construction
Prerequisites: None Corequisites: 7920, 2292 No lab fee charged

7033 Advanced Computer Applications 2-2-3
Compilers, assemblers and machine language codes are covered along with data file management, efficient programming and optimum use of memory systems The computer will be used to communicate via I/O busses with transducers, DC motors, Robots and other peripherals
Prerequisites: 7030 No lab fee charged

7040 Supervision & Management 3-—-3
Operational theory and science of management that are pertinent to all levels of supervision Responsibilities of management to plan, organize, staff, and control leading to the accomplishment of organizational and individual
Prerequisites: None No lab fee charged

7099 Special Studies - Engineering Technologies Var-Var-1-6
Special studies which may occur on an individual basis to provide a student the opportunity to work on special technical topics in the field of Engineering Technologies This course may be substituted for Technical Elective credits
Prerequisites: None No lab fee charged

7102 Machine and 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

7104 Introduction to Machine Tool Processes 3-2-3
Designed to acquaint students to processes used in manufacturing with emphasis on turning, milling, drilling, and broaching operations. Measuring instruments, tooling, concepts of horsepower, speeds, feeds are covered. Practical applications on manual and NC equipment.
Prerequisites: None. Corequisites: 1171 or 1191. Lab fee charged.

7111 Engineering Materials 3-2-4
A study of the physical and mechanical properties of engineering materials and of the tests that are used to determine those properties. The materials studied are primarily ferrous and nonferrous metals, woods and polymers but there is some discussion of composites and ceramics. Tests include tensile, creep, hardness, torque and impact.
Prerequisites: None. Corerequisites: 1191. No lab fee charged.

7123 Material Selection 3-2-3
Covers the basic physical and specific properties of irons, steels, nonferrous and plastic materials Also covered will be the effects of the Manufacturing Process on material selection, the proper use of material, catalogs, and the cost procedures of material selection
Prerequisites: 1191, 7104 or equivalent No lab fee charged

7130 Engineering Mechanics 3-2-3
An analytical and graphical approach to the solution and understanding of the mechanics of 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, and radius of gyration
Corequisites: 1192, 2292 No lab fee charged

7132 Hydraulics and Pneumatics 4-2-4
Basic principles of hydraulics and pneumatics Study of fluid power components including pumps, pressure, directional, and flow control valves, actuators and miscellaneous devices Introduction into graphical symbols and common industrial circuits
Prerequisites: 1171 or 1191 No lab fee charged

7133 Industrial Instrumentation 3-2-3
An introduction to transducers used in process control systems Basic transducer types will be studied: Thermal, Mechanical, Optical Signal conditioning between transducer and control elements will be discussed Other topics include: Calibration of transducers, discussion of device accuracy and resolution, and data recording techniques
Prerequisites: 7720 Corequisites: 7730 No lab fee charged

7134 Introduction to Machine Processes & N.C. Programming 3-2-3
Designed to acquaint the student with the various machine tools and processes used in manufacturing Topics include applications and tooling for turning, milling, drilling and grinding machines Also included are measuring instruments, characteristics of metals and cutting tools and cutting techniques, and an introduction to numerical control (NC) programming
Prerequisites: None Corequisite: 1172 or 1191 No lab fee charged

7135 Fluid Power Systems 4-2-4
Basic principles of hydraulics and pneumatics Covers the generation, distribution and control of fluid power and fluid transport system Includes graphical symbols and circuits A comprehensive study in the fundamental concepts of servo-hydraulics, air logic fluidics, machine and process control systems
Prerequisites: 1191, 2291 No lab fee charged

7138 Fluid Mechanics 3-2-3
Principles of fluid mechanics Topics include fluids at rest, flow of fluids, pressure and energy losses laminar and turbulent flow, viscosity, series and parallel pipe systems, and flow measurement devices Prerequisites: 2291, 1191 No lab fee charged

7140 Strength of Materials 4-2-4
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 Topics of study include simple, torsional, and bending stresses; deflection and combined stresses
Prerequisites: 1192, 2292 No lab fee charged

7142 Mechanisms Analysis & Design 3-2-3
This course provides an introduction to the analysis and design of mechanisms The course involves mathematical and graphical solutions of problems involving the kinematics of mechanisms and the interaction of their components, including the study of the displacement, velocity, and acceleration of points within the mechanism Cam analysis and design is introduced, with particular emphasis on pressure angles and follower motions An introductory study of gears and gear trains is included
Prerequisites: 2291 Corequisite: 1193 No lab fee charged

7143 Process Control Systems I 3-3-4
Introduction to process controls Course covers closed loop feedback systems as found in the process control industry The course integrates transducers, controllers, and actuators into complete control systems

Topics include: discontinuous and continuous control systems. proportional-integral-differential (PID) control algorithms. loop tuning techniques. process stability and quality
Prerequisites: 7133 No lab fee charged

7144 NC/CNC Programming I **2-3-3**
Introduction to Numerical Control (NC) and Computer Numerical Control (CNC) technology. Emphasis on programming 2½ axes NC milling machines, 2 axes CNC lathe and 2½ axes CNC mill.
Prerequisites: 1191, 7104 or equivalent. 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 Electro-Mechanical Control I (Servomechanisms) **3-3-4**
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. optical encoders. leadscrew control. and stepping motors
Prerequisites: 7730. 7738 Lab fee charged

7147 Tool, Die, Jig, & Fixtures **3-2-3**
Introduces the student to techniques and practices of tool design with emphasis on cutting tools. gages. clamping. jigs. fixtures. tools and die design Also covered will be the application of NC/CNC
Prerequisites: 7014. 1191 or 1172 No lab fee charged

7148 Basic Thermodynamics **3-0-3**
An introduction to the first and second laws of thermodynamics including energy equation of gases. mollier diagrams. energy utilization. heat transfer. specific heat. carnot cycles. entropy. enthalpy. and adiabatic process
Prerequisites: 1192. 2292 No lab fee charged

7150 Machine Design 1 **4-2-4**
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 Emphasis is on the fundamentals principals of the design of separate components rather than the complete machine or structure
Prerequisites: 7130. 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

7153 Process Control Systems II **3-3-4**
A continuation of Process Controls I The course deals with programmable closed loop control systems as used in the control industry Topics include: programmable controllers. direct digital controllers with PID capability. distributed control systems using local controllers with a central host system. data highways. multi-variable systems and nonlinear systems
Prerequisites: 7143 No lab fee charged

7155 Machine Design 2 **4-2-4**
The application of principles of mechanics and strength of materials to the design of machine and structures A practical approach for both draftsmen and practicing designers Emphasis will not be entirely on force analysis and calculations. but will also include economic considerations. manufacturing methods. installation. safety. and servicing
Prerequisites: 7150 No lab fee charged

7156 Electromechanical Design **2-4-4**
A course intended to exercise the student's knowledge of electromechanical systems It provides the time and opportunity for students 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: 7146. Corequisites: 7157. Lab fee charged.

7157 Electro-Mechanical Controls II (Robotic Systems) **3-3-4**
Introduction to computer architecture Course develops the use of programmable controllers for machine control Topics include DC-Servos. AC-Servos. Hydraulic Servos Course continues with computer based control of robotic systems Discussions of current robotic sensors such as proximity sensing. touch. and vision will be covered
Prerequisites: 7146 Lab fee charged

7160 Computer Aided Design/Drafting I **2-3-3**
An introduction to computer aided design drafting. Use of computer graphics to create, store, copy and alter engineering drawings. Cost, part number, bill of materials, and related data to analyze alternate design.
Prerequisites: 7008, 7010 or 7030. Lab fee charged.

7161 CAD/CAM **2-4-3**
A project course integrating Computer Aided Design Technology with Computer Aided Manufacturing Projects will be coordinated by the instructor so as to familiarize the students with the realities of a totally automated factory
Prerequisites: 7449. 7160 No lab fee charged

7165 Computer Aided Design/Drafting II **2-3-3**
Emphasis on 3-D model design, 3-view projections, dimensioning and exploded views. Capabilities of the larger turnkey systems will be discussed.
Prerequisites: 7160. Lab fee charged.

7199 Special Problems Seminar — Mechanical **2-4 Credit Hours**
Individual and independent study and special projects pertaining to the particular technology in which the student is enrolled The study may deal with an idea or concept normally not covered by existing courses at the college. or with a specific problem found in the industry in which the student is employed Open to fourth and fifth term students. by special arrangement with the Coordinator and Divisional Coordinator of Academic Affairs
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

7409 Industrial Safety & OSHA **3-2-3**
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 Safety 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

7411 Processes and Materials of Manufacturing **3-2-4**
Designed to acquaint the student with the wide selection of materials. machines and processes available in areas of machining. forming and joining of materials Computer usage in areas of feeds and speeds. material selection. tool geometry and machinabilities of materials will be applied to compile and store pertinent data
Prerequisites: 7111 No lab fee charged

7430 Time and Motion Study **3-2-3**
Principles of motion economy. tools for time and motion study to include process and operation charts. the movie camera. videotape. stop watch Includes study and application of the basic principles used to develop better methods of performing work. and maintain audit and control functions. survey of standard data systems. implement cost reduction proposals
Prerequisites: None Lab fee charged

7435 Human Factors Engineering **3-0-3**
Includes considerations for human capabilities and limitations as they relate to the development and design of safe and efficient environments and products Topics include human anatomy and sensory considerations for noise. lighting. fatigue and other stresses;

person-machine factors. human behavior. skills and performance
Prerequisites: None No lab fee charged

7438 Industrial Engineering Concepts 3-0-3
Emphasis on principles of motion economy, efficient arrangement of production areas as to utilization of space, equipment, and material flow analysis. Standard data systems, plant layout and material handling elements will be applied in planning and managing the manufacturing areas.
Prerequisites: None. No lab fee charged.

7440 Industrial Processes & Plant Layout 3-3-4
Project course with emphasis on the most efficient arrangement of a production area and process arrangement to achieve effective utilization of space and equipment in manufacturing and service industries. Layout of aisles and use of cube space To include layouts for small and medium size design. the characteristics of industrial processes and how instrumentation is used for process control Analysis of sequence of Flow and/or Assembly Facilities audit
Prerequisites: None Lab fee charged

7441 Quality Assurance/Statistical Process Control 3-2-4
Survey of various functions, concepts and responsibilities as applied to quality control. Applications of statistics and probabilities with emphasis on statistical process control charts ($\bar{x}$, R, P, U, C) to aid in determining present status and future performance of manufacturing operations. Computer applications in preparation of charts, graphs and historical data.
Prerequisites: 1179. No lab fee charged.

7443 Manufacturing Methods and Cost Analysis I 3-2-4
Manufacturing practices and planning procedures are introduced with emphasis on manufacturing analysis. cost estimating. quality and tool design Additional topics include application of methods and production scheduling control as required in tool and manufacturing design
Prerequisites: 7411 No lab fee charged

7449 Computer Aided Manufacturing I 4-2-4
This course covers the high technology hardware involved with the totally automated factory Numerical Control (NC). Computer Numerical Control (CNC). Distributive Numerical Control (DNC). Robotics. Flexible Manufacturing Systems (FMS) and other Computer Aided Manufacturing systems are discussed Computer-Assisted part programming and group technology techniques are introduced
Prerequisites: 7030. 7144. 1179 or 1193 No lab fee charged

7452 Industrial Hygiene Measurements 3-2-3
Sampling. measurement and calculations of air flow. heat. noise. gas. oxygen. particulate. and toxic levels in the industrial environment. Survey of effects of toxics. noise. heat. particulate concentrations on the human body Includes area ventilation. heat stress. noise characteristics. measurements Use of selected instrumentation to establish compliance with standards set by governmental and industry groups
Prerequisites: 7409 Lab fee charged

7453 Manufacturing Methods and Cost Anaylsis II 3-2-3
Implementation of the manufacturing plan with emphasis in areas of detailed parts. assemblies. testing and packaging The part and/or product is processed from its original to finished state by the application of methods. tool and fixture selection. correct sequencing of operations. operation identification and standard time requirements
Prerequisites: 7443 No lab fee charged

7459 Computer Aided Manufacturing II 3-2-4
This course covers the software systems of a totally automated factory Techniques for attaining optimum utiliziation of facilities. equipment and other manufacturing resources are covered; Computer Assisted Process Planning (CAPP). Capacity Requirements Planning (CRP). and Material Requirements Planning (MRP) systems are introduced
Prerequisites: 7449 No 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. operation. maintenance and troubleshooting 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 4-2-4
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 fit-tings. 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. troubleshooting and servicing of these heating devi-ces
Prerequisites: 7510. 7701 No lab fee charged

7525 Introduction to HVAC Principles 3-2-3
An introduction to refrigeration. air conditioning. and heat systems Topics covered include terminology. principles of refrigeration. the components of refrigeration systems. refrigerants. gas and oil burners. boilers. pumps. and absorption systems
Prerequisites: 1171 Corequisite: 1191 or 1172 No lab fee charged

7530 Air Conditioning Principles I 3-2-3
Study of cooling towers. evaporating condensers. water treatment. air cooled condensers. refrigeration safety devices. crankcase heaters. water chillers. and pumps Laboratory experience to emphasize equipment. maintenance and troubleshooting procedures
Prerequisites: 7510. 7702 No 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: 7510. 7530 Lab fee charged

7532 Sheet Metal Layout and Fabrication 2-4-3
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: 7008 Lab fee charged

7535 HVAC Systems I 3-2-3
An introduction to the layout and control of air conditioning systems. energy considerations. fans and basic heat load calculations
Prerequisites: 1191. 7725 No lab fee charged

7540 Air Conditioning Principles 2 4-2-4
Basic principles of thermodynamics. cycle analysis. noise and vibration control. and pipe sizing are covered Laboratory sessions allow the student to measure and perform cycle analysis of operating refrigeration systems. and verify noise and vibration calculations
Prerequisites: 7530 No lab fee charged

7541 Air Conditioning Design I 4-2-4
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 Emphasis on design calculations. equipment selection and system layout for non commercial structures
Prerequisites: 7520 No lab fee charged

7545 HVAC Systems II 3-2-3
The selection of inside design conditions with regards to economics and comfort. psychrometrics. noise and vibration. piping. and selection of equipment are covered
Prerequisites: 7535 or 1192 No lab fee charged

7547 Pumps and Piping System Design 3-2-3
The design and layout of plumbing systems including fixtures. traps. intercepting devices. water supply systems. drainage and vent systems. gravity flow. pipe sizing. air flow in vent piping. standard plumbing code regulations. zone control. and hot water systems
Prerequisites: 7016 No lab fee charged

7550 Air Conditioning Principles 3 3-2-3
Basic principles of commercial duct sizing. balancing air and hydronic systems. refrigerant pipe sizing. low temperature refrigeration. and first cost vs operating costs are covered Laboratory sessions allow student to measure and balance air and hydronic systems. design and connect control systems for low temperature refrigeration
Prerequisites: 7540. 7702 No lab fee charged

7551 Air Conditioning Design 2 3-3-4
Basic principles of commercial air conditioning load calculations.

design and equipment selection Includes equations and methods of calculation of external internal building loads. ventilation requirements and solar loads Laboratory sessions allow the student to calculate the load. select the equipment and layout the duct system for a commercial building
Prerequisites: 7540. 7541 Corequisites: 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
Prerequisites: 7702. 7540 Lab fee charged

7555 HVAC Systems III **3-3-4**
Calculation of the heating and cooling loads of buildings Topics covered include heat losses and gains through the building envelope (due to temperature difference. color. and infiltration). zoning. thermal storage. people. lights and power. and shading from adjacent structures
Prerequisites: 7545 No lab fee charged

7557 Controls and Safety Systems Design **3-2-3**
The design and layout of safety systems including fire alarms. security and communication systems. smoke detectors. sprinkler systems. and computer monitoring systems for energy management
Prerequisites: 7016. 7715. or 7708 No lab fee charged

7700 Electrical Concepts **3-2-3**
Designed for the student with limited formal background in electrical fundamentals. Introduces the concepts of electrical units. circuits and measurements; including series. parallel. series-parallel and basic inductance and capacitance concepts A required course for all pre-engineering electrical technology majors
Corequisites: 1171 or 1191 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 Corequisites: 1171 or 1191 No lab fee charged

7702 Electrical Fundamentals 2 **4-2-4**
Solution of alternating current circuits containing inductance. capacitance. and resistance; transformers; motors. phasor diagrams are covered
Prerequisites: 7701. 1191 or 1171 No lab fee charged

7703 Electrical Troubleshooting **3-3-4**
Basic electrical theory; resistance and its measurement; voltage and its measurement; and current and its measurement; continually applied to control diagrams. circuits. and components Also electromagnetism. transformers. available electrical power. control circuit functions. DC and 3 Ø AC motors and components replacement with emphasis on safe troubleshooting and repair of power and control circuits
Prerequisites: None No lab fee charged

7708 Electrical Fundamentals and Controls **3-3-4**
A survey of the field of electrical/electronics controls Topics to include basic circuit analysis. relay logic control (ladder diagrams). programmable controls. digital electronic devices and microprocessors
Prerequisites: 1192 No lab fee charged

7710 D.C. Circuit Analysis **6-0-5**
This course introduces the concepts of electricity. including current. voltage. power and energy Series. parallel. and series-parallel circuits will be covered along with application of these circuits Also. network analysis and an introduction to capacitance will be studied
Corequisites: 7711. 1191 or 1172 No lab fee charged

7711 D.C. Circuits Lab **0-3-1**
Laboratory exercises. demonstrations. evaluations in the proper use of techniques and instruments commonly used by technicians in theory verification and troubleshooting of D C circuits Major emphasis on power supplies. VOM's. & VTVM's
Prerequisites: None Corequisite: 7710 No lab fee charged

7715 Electrical Fundamentals **4-2-4**
An introduction to D C and A C circuit concepts. power distribution. and control circuitry Including transformers. three phase systems. circuit protection. grounding. conductor sizing. power factor. switches. and relays
Prerequisites: None Corequisite: 1171 or 1191 No lab fee charged

7720 A.C. Circuit Analysis **6-0-5**
This course introduces inductive and covers capacitive and inductive time constants AC signal generation. AC waveforms. reactance. impedance will be studied Series. parallel and series parallel A C circuits will be covered along with applications of these circuits including filters and resonance Transformers will be introduced An emphasis in lab will be placed on the poscilloscope. function generator and V T V M for application in A C circuits
Prerequisites: 7710. 7711 Corequisite: 7721. 1192 No lab fee charged

7721 A.C. Circuits Lab **0-3-1**
Laboratory exercises. demonstrations. and evaluations in the proper use of techniques and instruments commonly used by technicians in theory-verification and troubleshooting of A C circuits Major emphasis on oscillescopes. signal generators and VTVM's
Prerequisites: 7710. 7711 Corequisite: 7720 No lab fee charged

7728 Introduction to Digital Concepts **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: 1191. 7708 or 7710 Lab fee charged

7730 Electronics I **6-3-5**
Semiconductory theory. pn junctions. diodes. Zener diodes. light emitting diodes. rectifier circuits. power supply filtering. regulators. clippers and clampers. SCR. Triacs. basics of operational amplifiers and negative feedback inverting and non-inverting amplifiers. comparators. differentiators and integrators
Prerequisites: 7720 No lab fee charged

7733 Electronic Troubleshooting **3-2-3**
Developing systematic analysis and troubleshooting techniques Electronic device/circuit principles. analysis. failures and corrections Possible modification of circuits and device specificiations are studied to increase circuit reliability
Prerequisites: None Corequisite: 7730 No lab fee charged

7736 Electrical Power Systems **4-2-4**
Covers the articles of the National Electrical Code which apply to electrical systems Transformer principles and 3 phase systems Also covers overcurrent devices. conductors. grounding. wiring methods. branch circuits. service entrances. load calculations and special topics
Prerequisites: 7708. No lab fee charged.

7738 Digital Systems I **3-3-4**
Includes edge triggered circuitry; j-k flip-flops Sync and Async counters. shift registers. clock circuits. monostable theory Also encoders. decoders. multiplexing (time base) displays Circuit design techniques using MSI IC's will be discussed
Prerequisites: 7720. 7728 Lab fee charged

7740 Electronics II **4-2-4**
Waveform generators. precision rectifiers differential. instrumentation and bridge amplifiers. active filters. bipolar transistor theory. bipolar switch. bipolar biasing circuits
Prerequisites: 7730 No lab fee charged

7743 Communications Systems 1 **4-2-4**
A basic course covering many of the various types of communications systems including AM. FM. TV Space and Mobile systems The course combines many of the circuit building blocks from previous courses into receiving and transmitting systems The study will include tuned RF Amplifiers. Oscillators. Mixers. Amplitude and Frequency Modulation. AM and FM detection. Wave Propagation. TV Systems. Antennas. and simple broadcasting station requirements
Prerequisites: 7730 No lab fee charged

7748 Digital Systems II **3-3-4**
Microprocessor Hardware: includes memories. RAMS. ROMS. and E-PROMS. also ALU units with A/D and D/A conversions Course continues with Microprocessors. Microcomputers. Architecture. CPU. and Bus Structures Application of Microprocessor will be discussed interfacing with laboratory systems
Prerequisites: 7738. Lab fee charged.

7749 Biomedical Instrumentation 1 **3-2-3**
Covers basic medical instrumentation and the role of the BMET in the hospital To include: man to machine interface. medical terminology. hospital organization. heart and circulatory system. electrodes. transducers. bioelectric amplifiers. EKG's. mechanical recorders. ICU's and CCU's electrical safety. and electro-surgery units
Prerequisites: 4012. 7730. 7738 No labe fee charged

7750 Electronics III **4-2-4**
Class A small signal and power amplifiers. class B amplifiers. field effect

transistors, FET biasing, FET amplifiers, frequency response of amplifiers.
Prerequisites: 7740. No lab fee charged.

7753 Communication Systems II **4-2-4**
This course covers the analysis and design of circuitry required for communications systems including tuned circuits, phase locked loops, AM-FM and pulse detectors, modulators, linear amplifiers, power amplifiers, transmitters, receivers, transmission lines, wave guides, microwave transmissions, antennas, radar and facsimile.
Prerequisites: 7743. No lab fee charged.

7758 Motors & Controls **3-2-3**
Fundamentals, applications and selection of DC and 30 AC motors including speed torque characteristics, horsepower and efficiency calculations. Relay, static, and programmable (control circuits emphasizing equipment and personal protection, across the line starting, acceleration methods, speed control, reversing, plugging, sequencing, counting, breaking, and jogging will be analyzed, constructed, designed and diagnosed for improper operation.
Prerequisites: 7720 or 7702, or 7708, 7728. No lab fee charged.

7759 Biomedical Instrumentation II **3-2-3**
Course presents a survey of the more complex and specialized devices used for patient care and diagnosis. Advanced equipment malfunction isolation and test instruments are presented. Maintenance management including records, stock level optimization, shop layout, forms and technician duties is discussed. Consideration is given to the ethics related to biomedical equipment servicing.
Prerequisites: 7749. No lab fee charged.

7768 Digital Systems III **3-3-4**
Microprocessor software. Course develops machine language and assembly language programming for an 8-bit microprocessor system. Machine instruction sets will be discussed. Use of programmable, peripheral chips will be included. Course develops applications software.
Prerequisites: 7748. Lab fee charged.

7799 Special Problems Seminar - Electrical/ Electronics **Var-Var-2-4**
Individual study and special projects pertaining to the particular technology that the student is enrolled in. The study may deal with an idea or concept normally not covered by existing courses at the College, or with a specific problem found in the industry in which the student is employed. Open to fourth and fifth term students by special arrangement with the Program Coordinator and Divisional Coordinator of Academic Affairs.
Prerequisites: None. No lab fee charged.

7810 Welding Skills **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.

7811 Welding Processes & Techniques **3-3-4**
Introduction to the use and technical aspects of basic and oxy-fuel welding processes. Studies are made of various welding process factors such as heat, polarity, electrode application. Laboratory experience to include joining of mild steel. Gas metal arc welding (MIG welding) theory and application are also introduced. The American Welding Society designation of GMAW, OAW, and SMAW apply to this course.
Prerequisites: None. Lab fee charged.

7901 Energy Management and Alternatives **3-0-3**
Methods of evaluating and solving energy-usage problems particularly in residential homes. Coverage includes: structural energy usage analysis, lifestyle management, problem-solving methods showing retrofits and alterations of existing systems as well as new applications. Alternate energy options including solar and wind energy.
Prerequisites: None. No lab fee charged.

7910 Surveying Measurements **3-3-3**
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.
Corequisites: 1171 or 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, slope staking, pipe layout. "COGO" Computer Program.
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, 7032. 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; lightweight 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 friction and hydrostatic pressure, and an introduction into the relation between stress and strain.
Prerequisites: 1192, 2292. No lab fee charged.

7935 Computer Applications (Civil) **3-2-3**
Advanced pile handling, monitor graphics and animation. Civil engineering software development and usage.
Prerequisites: 7030, 1192, 7920. 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**
Design principles and construction techniques involving building constructed with heavy timber, steel, concrete, or a combination of these materials. Emphasis on commercial and individual buildings including multi-level structural installations, piles, caissons, and retaining walls.
Prerequisites: 7945. No lab fee charged.

7943 Estimation and Inspection **3-2-3**
It is a technical course that has been designed to give the student an understanding of bidding procedures, quantity take off of materials and their relationship to the construction contracts. Description of materials and how different materials affect the bid. Study of installation procedure and how they affect the bid. Study and analysis of the unit of measurement of work. Estimation of the quantity of materials needed to finalize construction project.
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 Subdivision Design **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: 7910, 7925. 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 astro-

nomic 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 housing, building construction and engineering services Examples of actual contracts and specifications relative to A I A and CSI formats
Prerequisites: None No lab fee charged

7953 Construction Management and Operation **3-2-3**
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 subcontracts 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 Lab fee charged

7955 Soils Engineering Technology **2-3-3**
An introductory course in Soils and Foundation Engineering Technology Topics of instruction include: soil index properties, classification, exploration, sampling, compaction, strength, slope stability and dewatering operations
Prerequisites: 7934 Lab fee charged

7957 Environmental Engineering Technology **3-1-3**
An introductory course in the methodology of addressing environmental pollution Topics of instruction include the technological approach to abatement of pollution in: solid waste, hazardous waste, potable water treament, domestic wastewater treatment and industrial wastewater treatment
Prerequisites: 7947 No lab fee charged

7961 Introduction to Hazardous Waste Management **3-0-3**
An introductory course exploring the current practices and problems associated with management of hazardous substances Several case histories will be presented Discussion will focus on how past and current practices may adversely affect human health Legislative efforts to regulate exposure, promote conservation and clean-up existing sites will be summarized The importance and techniques of citizen involvement will be stressed
Prerequisites: None No lab fee charged

7999 Special Problems Seminar - Civil **Var-Var-2-4**
Individual and independent study and special projects pertaining to the particular technology in which the student is enrolled The study may deal with an idea or concept normally not covered by existing courses at the College, or with a specific problem found in the industry in which the student is employed Open to fourth and fifth term students, by special arrangement with Program Coordinator and Divisional Coordinator of Academic Affairs
Prerequisites: None No lab fee charged

8100G Aircraft Orientation **3-2-4**
Learn to perform ground engine run-up and flight control movement check and taxi procedure Learn aircraft physical laws and perform numerical computations
Prerequisites: None No lab fee charged

8101G Machine & Hand Tools **1-4-3**
Identify and select aircraft hardware and materials Fabricate and install right and flexible fluid lines and fitting
Prerequisites: None Lab fee charged

8102G Basic Aerodynamics & FAA Regulations **3-2-3**
Complete required maintenance forms, records and inspection report Select and use FAA and manufacturer's aircraft maintenance specifications, data sheets, manuals, publications and related Federal Aviation Regulations Lift, thrust and drag Stability of aircraft
Prerequisites: None No lab fee charged

8106G 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
Prerequisites: None No lab fee charged

8107G 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 nondestructive testing methods Perform basic heat-treating processes Inspect and check welds
Prerequisites: None Lab fee charged

8108G Aircraft Electricity **3-2-3**
Repair aircraft electrical system components Install, check and service airframe electrical wiring, controls, switches, indicators, and protective devices Clean, inspect and service aircraft batterys Read and interpret aircraft electrical wiring diagrams
Prerequisites: 2221 No lab fee charged

8109G Cleaning and Corrosion Control **2-3-3**
Identify and select cleaning materials Perform aircraft cleaning and corrosion control Protect interior surfaces of closed steel and aluminum tubing against corrosion Remove corrosion products Use paints and similar organic coatings for corrosion protection purposes
Prerequisites: None No lab fee charged

8130A Airframe Structures I **3-7-5**
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: 1191, 2291, 8102G Lab fee charged

8131A Welding Processes **1-4-2**
To include soldering, brazing and gas arc-welding steel Fabrication of tubular structures, soldering of stainless steel, welding stainless and aluminums, magnesium and titanium Inspect and check welds
Prerequisites: 8102G, 8107G Lab fee charged

8132A Airframe Electrical and Generating Systems **5-5-5**
Repair aircraft electrical system components Install, inspect, check, troubleshoot, 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 blocks, magnetic switches and transformers
Prerequisites: 8102G, 8108G No lab fee charged

8140A Airframe Structures II **3-7-5**
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, highshear rivets, cherry lock rivets
Prerequisites: 8130A No lab fee charged

8141A Airframe 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, troubleshoot, and repair powerplant fuel systems
Prerequisites: 8130A No lab fee charged

8142A Assembly and Rigging **3-7-5**
Rig fixed-wing aircraft Rig rotary-wing aircraft Assemble, balance and rig aircraft and control surfaces Using inspection forms, perform a 100 hour inspection Perform check of aircraft pertaining to specification Check and perform weight and balance of aircraft
Prerequisites: 1191, 8107G Lab fee charged

8143A Airframe Hydraulic and Pneumatic Systems **1-4-2**
Repair hydraulic and pneumatic power system components Inspect, check, service, troubleshoot and repair hydraulic and pneumatic power systems
Prerequisites: 1191, 2292 No lab fee charged

8150A Instrumentation, Communication, 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 auto-pilot, 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 systems and carbon monoxide detection systems Inspect, check and service ice and rain control systems Inspect, check, troubleshoot, service and repair landing gear position and warning system and aircraft fire detection and extinguishing systems
Prerequisites: 8107G, 8140A, 8108G, 8143A No lab fee charged

8151A Airframe Systems, Hydraulic and Pneumatic Landing Gear **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: 8143A. No lab fee charged.

8152A Flightline Maintenance **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: 8141A, 8142A. Corequisite: 8150A, 8151A. No lab fee charged.

8155A Airframe Comprehensive **2-1-2**
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 written test.
Prerequisites: All general and airframe courses. No lab fee charged

8160P Powerplant Theory, and Maintenance (Reciprocating) **5-5-5**
Introduction to the design, manufacture, overhaul and repair of piston engines. Overhaul of an opposed engine. Inspect and repair a 14-cylinder or larger radial piston engine.
Prerequisites: 1191, 2291, 8102G. No lab fee charged.

8161P Powerplant Lubrication **4-3-4**
Identify and select proper lubricants. Inspect, check, service, trouble-shoot and repair powerplants lubrication systems.
Prerequisites: 2292, 8102G. No lab fee charged.

8162P 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.
Prerequisites: 1191, 2291, 8102G. No lab fee charged.

8170P Powerplant Theory and Maintenance (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: 8160P. No lab fee charged.

8171P Powerplant Fuel Metering Systems I **5-5-5**
Inspect, check and service water injection system. Overhaul a carburetor. Repair fuel metering components. Inspect, check, service, troubleshoot and repair reciprocating carburetor systems and induction manifolds. Repair engine cooling system components. Inspect, check, troubleshoot, service and repair engine cooling system.
Prerequisites: 8160P. No lab fee charged.

8172P Ignition Systems **5-5-5**
Overhaul magneto and ignition harness. Repair engine ignition system components. Inspect, check, service, troubleshoot and repair powerplant ignition systems.
Prerequisites: 8160P. No lab fee charged.

8180P Engine Systems and Inspection **5-5-5**
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: 8170P. No lab fee charged.

8181P Powerplant Fuel Metering Systems II **3-2-3**
Inspect, check, service, troubleshoot and repair reciprocating fuel injection systems. Install, troubleshoot, and repair engine exhaust systems.
Prerequisites: 8171P. No lab fee charged.

8182P Engine Instruments and Fire Protection **5-5-5**
Install, check and service engine electrical wiring, controls, switches, indicators, and protective devices. Inspect, check, service, troubleshoot and repair engine temperature, pressure and RPM indicating system.
Prerequisites: 8170P. No lab fee charged.

8185P Powerplant Comprehensive **2-1-2**
A comprehensive study and review of all the required subjects 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 written test.
Prerequisites: All general and powerplant courses. No lab fee charged.

8190 Aviation Make-up **Var-Var-1-5**
This course is designed to allow a student the opportunity to make up missed theory or practical classes outside of normal class hours during the academic term in which the classes were missed. Approval to register for this course must be obtained from the coordinator of the aviation program and the instructor. Permission may be refused if the coordinator or instructor feels that the make-up time is excessive. Credit hours will be determined by the amount of make-up time needed.
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
3-2 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
3-2 Credit Hours
Usually on an alternating term basis, the Health Technologies 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 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
3-2 Credit Hours
Usually on an alternating term basis, the Engineering Technology 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. Adherence to Engineering Technologies Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

9501, 9502, 9503, 9504 Cooperative Employment
3-2 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.

9601, 9602, 9603, 9604, 9605 Cooperative Education
3-2 Credit Hours
Usually on an alternating term basis, the Math/Science Technology student is placed on 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. Adherence to Math/Science Technologies Division co-op policies and procedures required to earn credit
Prerequisites: None. No lab fee charged

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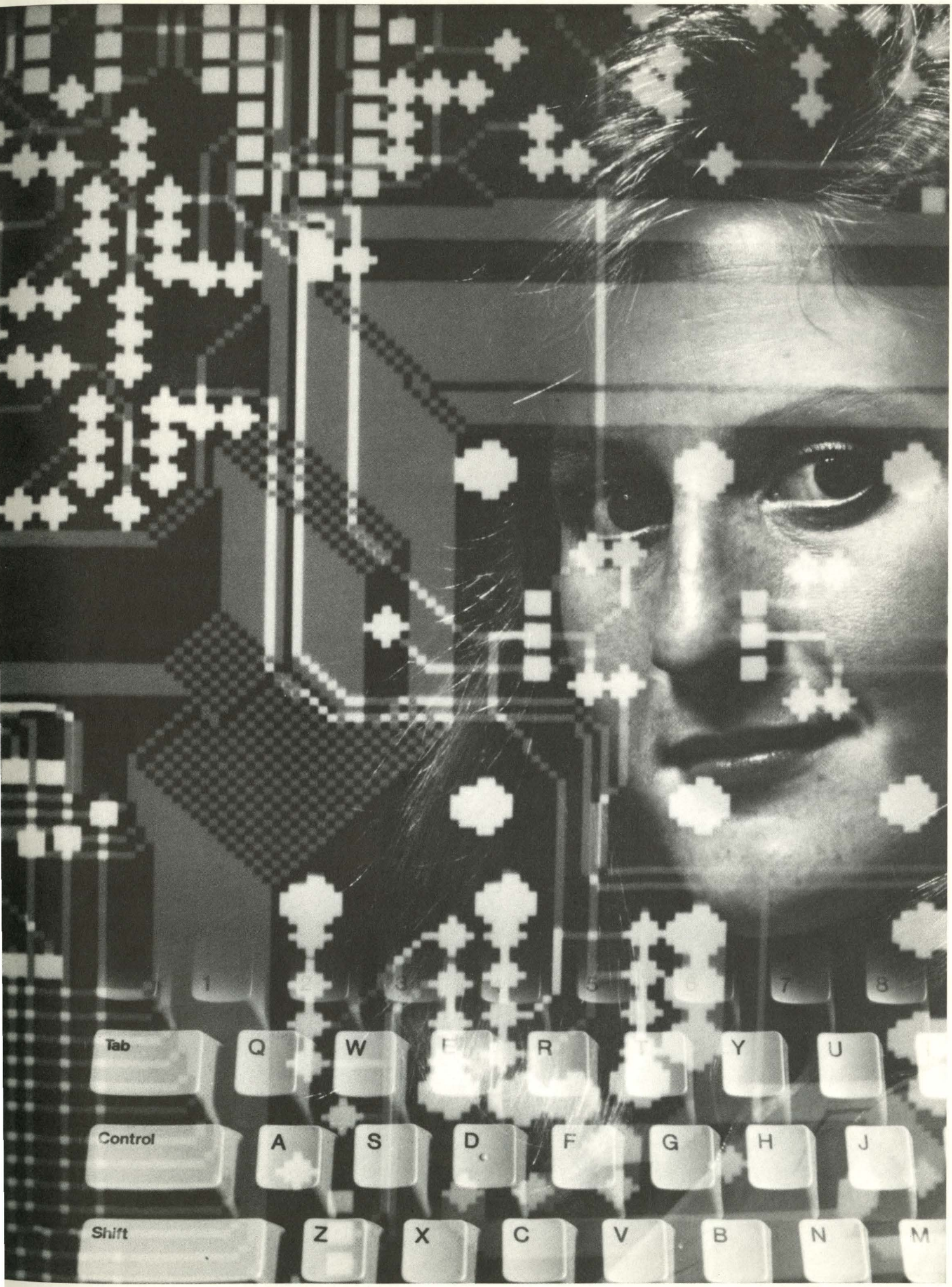

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CALENDAR

CALENDAR

SEPTEMBER, 1985

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 Extended Registration 9:00 a.m. - 7:00 p.m. August 26, 27, 28	**2** Labor Day/College Closed	**3** No Classes/Offices Open Last day to withdraw with 100% refund — Sept. term	**4** September Term classes begin Senior Citizens Registration Registration 9:00 a.m.- 7:00 p.m.	**5** Late fee assessed for registration	**6** Registration 9:00 a.m. - 3:00 p.m. June term grade reports mailed	**7**
8	**9** Registration 9:00 a.m. - 7:00 p.m.	**10** Last day to register for September term or add courses except co-op and extensions Last day to withdraw with 80% refund — September term	**11**	**12**	**13**	**14** Admissions Test
15	**16** Rosh Hashanah	**17**	**18** Last day to register for co-op FTE reporting date Last day for November Term Pre-registration Last day to petition — November Term grads.	**19**	**20**	**21**
22 Commencement Music Hall 1:00 p.m.	**23**	**24** Board of Trustees Meeting	**25** Yom Kippur	**26**	**27**	**28**
29	**30**					

OCTOBER, 1985

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2 Bills for November term mailed	3	4	5
6	7	8 Last day to change "I" grades from June term	9	10	11 Co-op Information sheets due — September term	12 Admissions Test
13	14	15	16 Bills for November term due No pays — voided pre-registration	17	18	19
20	21	22 Last day to withdraw with a "W" Board of Trustees Meeting	23 Graduation Petitions for January Term begins (end November 22)	24	25 Distribution grade report list — September term	26
27	28 January term pre-registration begins (ends November 20) Final January Term schedule available	29	30	31		

Course Changes — Drop/Adds Only
9:00 a.m.-3:00 p.m.

Course Changes — Drop/Adds Only
9:00 a.m. — 3:00 p.m.

Course Changes —
Drop/Adds Only
9:00 a.m. - 7:00 p.m.

No Registration or Drop/Add Activity

Registration 9:00 a.m. - 3:00 p.m. for Nov. Term

No Registration or Drop/Add Activity for Nov. Term

NOVEMBER, 1985

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 No Registration	**2**
3	**4** Registration 9:00 a.m. - 7:00 p.m.	**5** Election Day	**6** September term ends Last day to change "IP" grades from June Term	**7** No Classes/Offices Open Last day to withdraw with 100% refund — November term Registration 9:00 a.m. - 3:00 p.m.	**8** College Closed Veterans Day Observed	**9**
10	**11** November Term Classes begin Senior Citizens Registration September term grades due 4:00 p.m.	**12** Late fee assessed for registration Registration 9:00 a.m. - 7:00 p.m.	**13**	**14**	**15** Last day to register for November term or add courses except co-op 9:00 a.m. - 3:00 p.m. September Term grade reports mailed Last day to withdraw with 80% refund — November term	**16** Admissions Test Vincennes Invitational Tournament (away TBA)
17	**18**	**19**	**20** January term pre-registration ends Co-op Registration only 9:00 a.m. - 3:00 p.m.	**21**	**22** Last day to register for co-op Last day to petition — January Term grads. Queen City Classic (at CTC)	**23**
24	**25**	**26** Board of Trustees Meeting CTC vs. Miami U.-Hamilton (away 7:00 p.m.) No Registration	**27**	**28** Thanksgiving College Closed	**29** College Closed Brevard Thanksgiving Tournament (away TBA)	**30**

DECEMBER, 1985

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	**2**	**3**	**4** Bills for January term mailed Sinclair vs. CTC (home 7:30 p.m.)	**5**	**6**	**7** Admissions Test Columbus Tech vs. CTC (home 3:00 p.m.)
8 Hanuka	**9** CTC vs. Wabash Valley (away 7:00 p.m.)	**10**	**11** CTC vs. Miami U.-Middletown (away 7:30 p.m.)	**12**	**13** Co-op Information Sheets Due — November Term Motlow State Classic (away TBA)	**14**
			Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.			
15	**16**	**17** Thomas More J.V. vs. CTC (home 7:30)	**18** Bills for January term due No pays — voided pre-registration	**19** CTC vs. Shawnee St. (away 7:30)	**20**	**21**
	Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.		Extended Hours 9:00 a.m. - 7:00 p.m.	No Registration or Drop/Add Activity		
22	**23** Offices Open	**24** College Closed	**25** Christmas Day College Closed	**26** Offices Open	**27** Offices Open	**28**
	No Registration or Drop/Add Activity					
	Winter Recess					
29	**30** College Closed	**31** College Closed				

JANUARY, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 New Year's Day College Closed	**2** Classes Resume Registration 9:00 a.m. - 3:00 p.m.	**3**	**4** Miami U.-Hamilton vs. CTC (home 2:00 p.m.)
5	**6** Registration 9:00 a.m. - 3:00 p.m. for Jan. Term	**7**	**8** Northwestern vs. CTC (home 7:30 p.m.)	**9** Last day to withdraw with a "W" for Nov. Term No Registration or Drop/Add Activity	**10** Graduation Petitions for April Term begin (end February 10) CTC vs. Columbus Tech (away 7:30 p.m.)	**11**
12	**13** Distribution grade report lists November term Final April Term schedule available April term pre-registration begins (ends February 4)	**14** CTC vs. Sinclair (away 7:00 p.m.) No Registration or Drop/Add Activity for Jan. Term	**15** Martin Luther King's Birthday	**16**	**17**	**18** CTC vs. Owens Tech (away 2:00 p.m.)
19	**20** College Closed Martin Luther King Day observed	**21** CTC vs. Edison State (away 7:30 p.m.) Registration 9:00 a.m. - 7:00 p.m.	**22** CTC vs. Edison State (away 7:30 p.m.)	**23** Registration 9:00 a.m. - 3:00 p.m.	**24** November term ends Last day to change "IP" grades from September Term	**25** Lakeland vs. CTC (home 7:30 p.m.)
26	**27** Last day to withdraw with 100% refund — January term No Classes/Offices Open	**28** January Term begins Registration 9:00 a.m. - 7:00 p.m. Senior Citizens Registration Board of Trustees Meeting November term grades due — 4:00 p.m. Shawnee State vs. CTC (home 7:30 p.m.) Registration 9:00 a.m. - 7:00 p.m.	**29** Late fee assessed for registration	**30**	**31** CTC vs. Metro (away 8:00 p.m.) Registration 9:00 a.m. - 3:00 p.m.	

FEBRUARY, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1 Admissions Test CTC vs. Lakeland (away 3:00 p.m.)
2	**3** November term grade reports mailed Last day to register for January term or add courses except co-op Last day to withdraw with 80% refund — January term Vincennes vs. CTC (home 7:30 p.m.) Registration 9:00 a.m. - 7:00 p.m.	**4** April term pre-registration ends	**5** Co-op Registration Only 9:00 a.m. - 3:00 p.m.	**6**	**7**	**8** Owens Tech vs. CTC (home 2:00 p.m.)
9	**10** Last day to petition April Term grads. Last day to register for co-op 9:00 a.m. - 3:00 p.m.	**11**	**12** CTC vs. Clark Tech (away 7:30 p.m.)	**13**	**14** Valentines Day	**15** Metro vs. CTC (home 3:00 p.m.)
16	**17** Presidents Day College Closed	**18** CTC vs. Northwestern (away 7:30 p.m.)	**19** Bills for April term mailed	**20**	**21** OJCAC Tournament (away TBA)	**22** Admissions Test
23 OJCAC Tournament (away TBA)	**24**	**25** Board of Trustees Meeting	**26**	**27** Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.	**28**	

MARCH, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 Courses Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.	4 Last day to change "I" grades from November term	5 Bills for April term due No pays — voided pre-registration Course Changes Drop/Adds Only Extended Hours 9:00 a.m. - 7:00 p.m.	6 No Registration or Drop/Add Activity	7	8
9	10 Registration 9:00 a.m. - 3:00 p.m. for April Term	11	12	13	14	15 Admissions Test
16	17 St. Patrick's Day No Registration or Drop/Add Activity for April Term	18	19 Graduation Petitions for June Term begin (end April 21)	20 Last day to withdraw with a "W"	21	22
23 Easter 30	24 June term pre-registration begins (ends April 18) Final June Term schedule available Distribution grade report lists January term Registration 9:00 a.m. - 7:00 p.m. 31	25 Board of Trustees Meeting	26	27 No Classes Offices Open	28 Good Friday College Closed	29

APRIL, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 Registration 9:00 a.m. - 7:00 p.m.	**2**	**3**	**4** January term ends Last day to change "IP" grades from November Term Registration 9:00 a.m. - 3:00 p.m.	**5**
6	**7** No Classes/Offices Open Registration 9:00 a.m. - 3:00 p.m.	**8** April term classes begin Senior Citizens Registration January term grades due — 4:00 p.m. Last day to withdraw with 100% refund — April term	**9** Late fee assessed for registration Registration 9:00 a.m. - 7:00 p.m.	**10**	**11** January term grade reports mailed Registration 9:00 a.m. - 3:00 p.m.	**12** Admissions Test
13	**14** Last day to withdraw with 80% refund — April term Last day to register for April term or add courses except co-op Registration 9:00 a.m. - 7:00 p.m.	**15**	**16** Co-op Registration Only 9:00 a.m. - 3:00 p.m.	**17**	**18** June term pre-registration ends	**19**
20	**21** Last day to petition — June Term grads Last day to register for co-op 9:00 a.m. - 3:00 p.m.	**22** Board of Trustees Meeting	**23** No Registration or Drop/Add Activity	**24** Passover begins	**25**	**26**
27	**28**	**29**	**30**			

MAY, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7 Bills for June term mailed	8	9	10 Admissions Test
11	12 Last day to change "I" grades from January term Co-op Information sheets due — April term	13	14 Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.	15	16	17
18	19 Course Changes — Drop/Adds Only for June Term 9:00 a.m. - 3:00 p.m.	20	21 Bills for June term due No pays — voided pre-registration Course Changes Drop/Adds Only for June Term Extended Hours 9:00 a m - 7:00 p m	22 No Add/Drop Activity for June Term No Registration	23	24
25	26 Graduation Petitions for September Term begins (end July 9)	27 Last day to withdraw with a "W" Board of Trustees Meeting	28	29 September term pre-registration begins (ends July 11)	30 Memorial Day College Closed	31

JUNE, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 Distribution grade report lists April term	3	4	5	6 Admissions Test	7
8	9	10 Last day to change "IP" courses from January term April term ends	11	12 April term grades due — 4:00 p.m. Summer Recess - Offices Open	13	14
15	16 Registration 9:00 a.m. - 7:00 p.m.	17	18 April term grade reports mailed Summer Recess - Offices Open	19 Registration 9:00 a.m. - 3:00 p.m.	20 Admissions Test	21
22	23 Summer Recess Registration 9:00 a.m. - 3:00 p.m.	24 Board of Trustees Meeting	25 June term begins Senior Citizens Registration Registration 9:00 a.m. - 7:00 p.m.	26 Late fee assessed for registration	27 Regisration 9:00 a.m. - 3:00 p.m.	28
29	30 Registration 9:00 a.m. - 7:00 p.m.					

JULY, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 Last day to register for June term or add courses except co-op Last day to withdraw with 80% refund — June Term Registration 9:00 a.m. - 7:00 p.m.	**2** Co-op Registration Only 9:00 a.m. - 3:00 p.m.	**3**	**4** Independence Day College Closed	**5**
6	**7** Co-op Registration Only 9:00 a.m. - 3:00 p.m.	**8**	**9** Last day to register for co-op	**10**	**11** September Term pre-registration ends Admissions Test	**12**
13	**14**	**15**	**16**	**17**	**18** Admissions Test	**19**
20	**21**	**22**	**23** Bills for September Term mailed	**24**	**25**	**26**
27	**28**	**29**	**30** Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.	**31**		

AUGUST, 1986

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 Admissions Test Course Changes Drop/Adds Only 9:00 a.m. - 3:00 p.m.	**2**
3	**4** Course Changes — Drop/Adds Only 9:00 a.m. - 3:00 p.m.	**5**	**6** Bills for September term due — No pays — voided pre-registration Course Changes Drop/Adds Only Extended Hours 9:00 a.m. - 7:00 p.m.	**7** No Drop/Add Activity No Registration	**8**	**9**
10	**11**	**12**	**13**	**14** Last Day To Withdraw With A "W"	**15**	**16**
	Registration 9:00 a.m. - 3:00 p.m. for Sept. Term					
17	**18** Distribution grade report lists — June Term November term pre-registration begins (ends September 16) Final November term schedule available	**19**	**20** No Registration for Sept. Term	**21**	**22**	**23**
24 / **31**	**25**	**26** Board of Trustees Meeting	**27** June Term ends Last day to change "IP" grades from April Term	**28** No Classes/Offices Open	**29** No Classes/Offices Open June Term grades due — 4:00 p.m.	**30**
	Registration 9:00 a.m. - 7:00 p.m.			Registration 9:00 a.m. - 3:00 p.m.		

NOTES

NOTES

CUSTOMIZED TRAINING

Cincinnati Technical College can provide customized training programs to business, industry, and professional organizations in a variety of areas, including the following:

- Accounting
- Analyzing the Message Sent to Your Audience
- Applied Statistics and Quality Design
- Automotive Update
- Basic Industrial Electricity w/Troubleshooting
- Blueprint Reading
- Career Planning
- Computer Aided Design/Drafting (CADD)
- Creativity & Problem Solving
- Development of Technical Writing Style
- EKG Training
- Editing Technical Documents
- Electrical Code
- Electrical Maintenance
- Electrical Motors and Controls
- Electrical Power Distribution
- Electrical Troubleshooting
- Energy Management
- Estimation - Contracts - Specifications
- Food Service Management
- Greenhouse and Nursery Management
- Group Dynamics and Quality Circles
- Health Care Management Techniques
- Heating, Ventilating, and Air Conditioning
- Human Relations: Problem Centering and Sharing
- Hydraulics and Pneumatics
- IBM Personal Computer Training
- Industrial Instrumentation
- Industrial Safety
- Labor Relations
- Landscape Design
- Languages (Technical): German
  Japanese
  Spanish
- Management/Supervision
- Manufacturing Processes
- Materials Handling
- Measurement and Metrology
- Mechanical Drives & Linkages
- Medical Record Coding
- NC/CNC Programming
- Parenting and the Professional
- Precision Measurement
- Process Control
- Production Costs & Controls
- Programming: Basic
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- Skill Assessment and/or Development
- Statistical Process Control (SPC)
- Surgical Techniques
- Technical Presentations
- Telephone Techniques
- Text and Graphics Processing
- Tool-Die-Jig & Fixtures
- Train the Trainer
- Training/Human Resource Development
- Understanding Yourself and Your Employees
- Unit Clerk Training
- Welding
- Word Processing
- Xenith/Unix

Please contact Paul Callahan, Director of Continuing Education and Extended Services, by calling or writing:

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