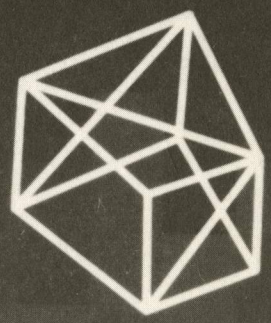
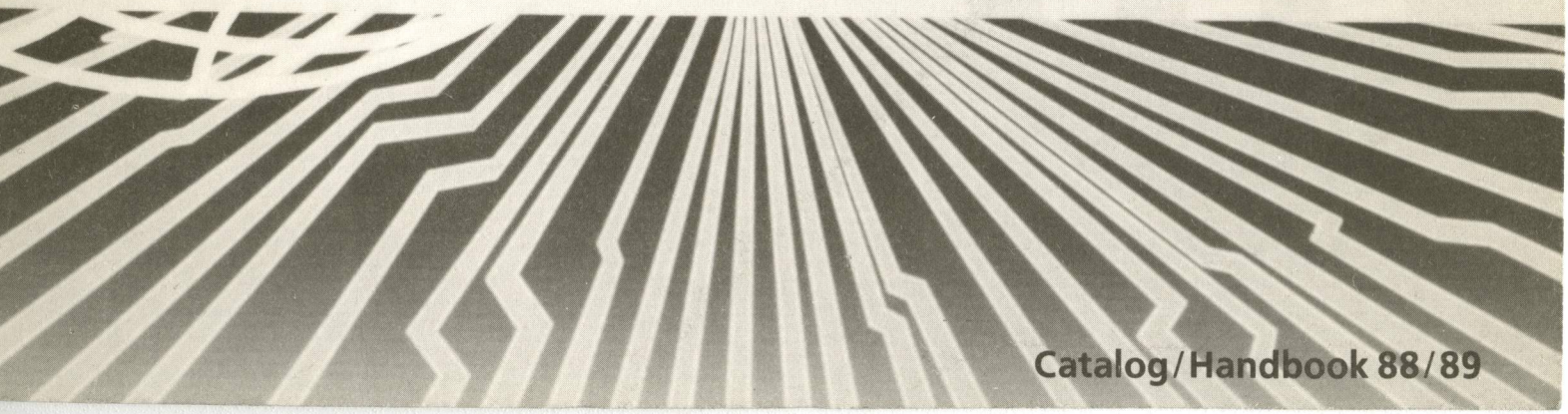
CINCINNATI TECHNICAL COLLEGE





Catalog/Handbook 88/89

1988-1989
Cincinnati Technical College
Catalog/Handbook

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Cincinnati Technical College
3520 Central Parkway
Cincinnati, Ohio 45223
(513) 569-1500
Admissions Office 569-1540

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DIRECTORY

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Bernae Fomby
Jon McKamey
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Jon McKamey
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Accounts Receivable Accountant . . . . . Harry Bradley
Payroll Accountant . . . . . Denise Rumph-Johnson
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Night Cashier . . . . . Michael Weiler
Cashier . . . . . Marge Faulhaber
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Executive Assistant . . . . . Sharon Waters
Receptionist . . . . . Sandra Sibert
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Tom Mann
Dorothy Odum
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Plant Engineer . . . . .

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Records Supervisor . . . . . Pat Williams
Clerical Assistant . . . . . Wanda Lindquist
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Counselors . . . . . Linda Meador
Diane Stump
Claudette McCarty
Steve Roth
Margery M. Burns
Veterans Coordinator . . . . . Yolanda Lawrence
Executive Assistant . . . . . Amy Linneman
Clerical Assistants . . . . . Donna Scofield
Carla Wermuth
Educational Relations Coordinator . . . . . Gabriele Boeckermann
College Representative . . . . . Althea Barnett
College Representative . . . . . Rodney Simmons

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Clerical Assistants . . . . . Colleen Broyles
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Barbara Robbins
Assistant Dean . . . . . Peggy Harrier
Director, Cooperative Education . . . . . Walt Wyatt
Director of Administration . . . . . Richard Brown
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Coordinator, Academic Computing . . . . . Jeff Vetter
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Karl von Kampen
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Keith Mains
Russell Sprinkle
Robert Van Horn
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International Commerce . . . . . Paul Davis
Clyde Kobberdahl
Jim Macke
Stewart Bonem
Chef Technology . . . . . John Kinsella
Jim Myatt
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Data Communications Technology . . . . . Bob Coil
Mike Nakoff
Management Information Systems . . . . . Elizabeth Sullivan
Sharon White
Marc Baskind
Karen Gambrell
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Graphic Communications/Flexographic Communications . . . . Al Leicht
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Gary Walton
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Bill Stock
Loss Control . . . . .
Managerial Accounting . . . . . Sandy Ruoff
Linda Schaffeld
Henry Williams
Lou Owsley
Len Penn
Ornamental Horticulture . . . . . Claire Ehrlinger
Ben Wright
Property Management/Real Estate . . . . . William Huwel
Marketing Management/Industrial Marketing . . . . . Becky Bechtel
Tom Brinkman
Lloyd Pitman
Administrative Support Specialist/General Office
Specialist/Word Processing . . . . . Sharon Brown
Connie Campbell
Swanya Smith
Lin Huelsman
Katye Mindhardt
Rick Sefton

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Clerical Assistants . . . . . Martha Roy
Julie Grass
Assistant Dean . . . . . Paul A. DeNu, P.S.
Director, Cooperative Education & Graduate
Placement . . . . . J. Terry Brown
Director of Industrial Training & Extended Services . . . . . Gary Graff
Lab Technician . . . . . Wayne Herbers
Architectural Mechnical Systems Technology
Program Chair . . . . . Don Youngpeter
Co-op & Graduate Placement . . . . . J. Terry Brown
Instructor . . . . . Clifford A. Schulte, P.E., P.S.
Associate of Individualized Studies-Engineering Technologies
Program Chair . . . . . Eileen English
Aviation Technology
Program Chair . . . . . James Schmid
Co-op & Graduate Placement . . . . . James Schmid
Instructors . . . . . Vince DeVol
Austin Wiechold
Biomedical Electronics Engineering Technology
Program Chair . . . . . Steve Yelton
Co-op & Graduate Placement . . . . . Thomas Newbold
Civil Engineering Technology
Program Chair . . . . . Greg Sketch, P.S.
Co-op & Graduate Placement . . . . . Jerry Froehlich
Instructors . . . . . Tom Burns, P.E.
John Buttelwerth
James Decker, P.S.
Computer Engineering Technology
Program Chair . . . . . Gary Webster
Co-op & Graduate Placement . . . . . Sue Kelly
Instructor . . . . . Bob McLain
Electro-Mechanical Engineering Technology
Program Chair . . . . . Ray DiPilla
Co-op & Graduate Placement . . . . . Roger Schaller
Instructors . . . . . Paul Weingartner
Fred E. Besco Jr., P.E.
Electronics Engineering Technology
Program Chair . . . . . Steve Yelton
Co-op & Graduate Placement . . . . . Sue Kelly
Instructors . . . . . Billy Mullins
Robert Lamey
Mike Carroll
Laser Electro-Optics Engineering Technology
Program Chair . . . . . Dr. Prem Batra
Co-op & Graduate Placement . . . . . Roger Schaller
Lab Technician . . . . . Jeff Hauck
Manufacturing Engineering Technology
Program Chair . . . . . Judd James
Co-op & Graduate Placement . . . . . Jerry Froehlich
Instructor . . . . . Robert Romano
Mechanical Engineering Technology
Program Chair . . . . . Don Youngpeter
Co-op & Graduate Placement . . . . . Jerri Thomas
Instructors . . . . . Chuck Jonas
Connie Bach
Edward Dekker, P.E.
Donald Meyer

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Executive Assistant . . . . . Gina Klare
Clerical Assistants . . . . . Valerie Anderson
Carolyn Franklin
Cheri Furlong
Assistant Dean . . . . . Dr. Thomas Kober
Admissions Counselors . . . . . Susan Marcotte
Athealia Bell
Dietetics . . . . . Eileen Coffe-Findlay
Marianne Krismer
Sharman Willmore
Medical Assisting . . . . . Nancy Walters
Olivia Watts
Medical Laboratory . . . . . Janelle Gohn
Carolyn Laemmle
Dr. Larry Suddendorf
Medical Record . . . . . Janette Richard
Gail Smith
Sandy Speller
Occupational Therapy . . . . . Joanne Phillips-Estes
Respiratory Therapy . . . . . Sally Blocher
Debbie Lierl
Tom Stormer
Surgical Technology . . . . . Wanda Hodges
Judith Spraley
Health Unit Coordinator . . . . . Daphne Robinson
Instructors . . . . . Ron Davidson
Bob Eveslage
Jude Norton
Lab Manager . . . . . John Szasz
Adjunct Faculty . . . . . JoAnn Airaghi

Jeannine Denson
Al Eilers
Walter Flynn
Robert Gohn
Liliane Levy
Frances Perry
David Skopin
Robert Uhl
Kathy Wolfer
Scott Woods

Physical Sciences/Mathematics Technologies

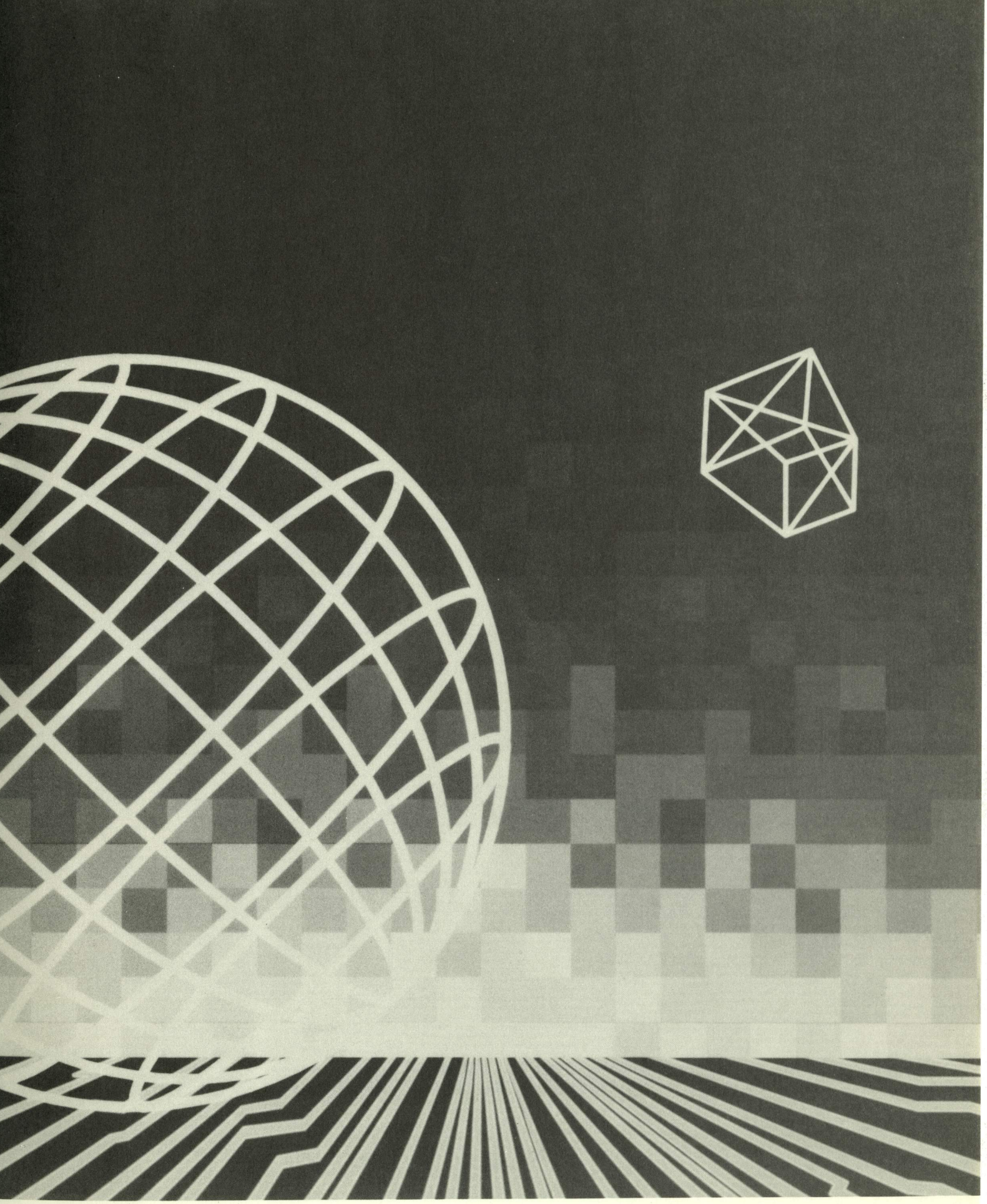
Dean . . . . . Thomas Stark
Executive Assistant . . . . . Faye McCreadie
Industrial Laboratory Technology Program Chair . . . . . Martha Brosz
Instructors . . . . . James Bronstrup
Martha Brosz
James Farrer
Jan Hoeweler
Terrence Huge
Joan Jackson
John Lalley
Robert Moon
Lawrence Pucke
Rodney Rupp
Thomas Stark
Edward Sunderhaus
Richard Swanson
William Tulloss
Adjunct Faculty . . . . . Michael Barney
Howard Baum
Lois Brauntz
Alan Collier
Robert Duffy
Patrick Ellis
Christopher Ennis
Constance Ennis
Ronald Falconi
Elias Feghali
John Goeltz
Raymond Hauck
Edward Hirsch
Linda Hoog
Norbert Koester
Donald Leininger
Dennis Link
John Martin
Robert Murray
Bill Nicholson
Baffour Otchere
Alice Portune
Atron Rowe
Robert Sanders
Shawran Seyd
William Wunderlich

Communication Skills/Social Sciences

Dean . . . . . Thomas Stark
Executive Assistant . . . . . Faye McCreadie
Assistant Dean . . . . . Catherine Rahmes
Writing Center Manager . . . . . John Battistone
Technical Writing and Editing Director . . . . . Pam Ecker
Instructors . . . . . John Battistone
Mary C. Boswell
Pamela Chaney-Land
Marcus Green
James Hassan
Mary Lee Howes
Marcha Hunley-Belanger
Mike Jones
Daniel Mellinger
Timothy Nolan
Catherine Rahmes
Alyce Rieck
Kim Ziegel
Lawrence Ziegler
Adjunct Faculty . . . . .
Mary Corey
Philip Enzweiler
Joyce Kindle
Sharon Umbaugh
Brad Witt

Developmental Education

Director . . . . . Dr. James Marcotte
Clerical Assistant . . . . . Bonnie Brown
Para-Professional . . . . . Debbie Greenlee
Counselor . . . . . Sharon Davis
Counselor, JTPA . . . . . Dr. Effie Rosa
Learning Disabilities Specialist . . . . . David Cover
Instructors . . . . . Laura Attenborough
Joan Brand
Cheryl Cummings
Linda Knepp
Hope Lieberman
Dr. James Marcotte
Adjunct Faculty . . . . . Cindy Abell
Ann Gunkel
Carol James
Thomas Otten
Carolyn Rost
Eugenia Samuel



GENERAL INFORMATION

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Philosophy and Mission of 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 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 little 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 para-professional. To prepare this para-professional to work with the scientist, 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 must develop the practical abilities the specialty requires. Such educational preparation is above the 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 fifteen technical colleges, all created since 1966 as a result of federal, state and local initiatives.

Cooperative Education

Cincinnati Technical College's "Co-opportunity" Plan

The Boards of Trustees, the administrative staff and the faculty of Cincinnati Technical College share the belief that the College's distinctive plan of cooperative education offers the soundest possible approach to technical education. The objective of each associate degree program is to prepare the student for immediate employment as a technician and for career advancement. The classroom can provide valuable laboratory experience, but it cannot duplicate an actual work environment. However, many Cincinnati Technical College students participate in supervised cooperative employment at regular intervals. The practical training they receive through cooperative education enriches their academic experience.

In 1988-89, the College will offer 45 associate degree programs and majors and nine certificate programs. Each program was developed to meet a specific need in local business or industry. The need was demonstrated through formal or informal feasibility studies, and is supported by the counsel of an advisory committee which represents the potential employers of these trained technicians.

Benefits of Cincinnati Technical College's Cooperative Education Plan

Cincinnati Technical College has developed a cooperative education program that combines academic and technical education with regular intervals of meaningful work experience. The program has these benefits for the student, the College and the community.

Benefits for the Student

(1) Educational Growth - Students supplement what they learn in class with "real life" work experience. These two learning situations complement each other.
(2) Career Clarification - The technical classwork and on-the-job experience help students focus on particular career areas and decide if those areas are appropriate for them.
(3) Social and Emotional Growth - Students develop maturity by taking responsible positions in the business world, with support and guidance to ensure that learning takes place.
(4) Financial Gain - Most full-time students are able to earn money while they gain work experience. The money earned helps many students to finance their education. Also, the work experience the student receives leads to opportunities for promotions and pay increases after graduation.

Benefits for the College

(1) Understanding area employment needs - As College personnel work to establish cooperative education jobs and place graduates, the College becomes more sensitive to the area's employment needs.
(2) Utilization of the physical plant - Because students alternate terms spent on-campus, the College is able to increase its student capacity and make more efficient year-roung use of the physical plant.

(3) Employer involvement - Employers become directly involved in the educational process of the College through cooperative education. They also share in the cost of education by providing on-the-job training.
(4) Faculty awareness - Faculty members keep informed about activities in their fields through their contact with business and industry.

Benefits for the Community

(1) Trained technicians - The College's programs provide a workforce of trained, experienced technicians for the community. This helps make the community more attractive for business development.
(2) Employment screening - Employers have the opportunity to observe students and to evaluate their suitability for full-time employment before they make the commitment to hire full-time personnel.
(3) Economic gain - The increased earning potential of the College's graduates benefits the community through productivity increased, taxes paid and contributions made.
(4) Citizen productivity - Graduates enter the workforce with well-clarified career goals and experience which allows them to be more productive and motivated workers.

History of Cincinnati Technical College

Because a 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 twenty-two 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. Last year the College enrolled 4500 students in 45 degree and certificate programs and options, had a staff of 260 plus over 100 part-time instructors, and had 500 co-op employers.

While the college has experienced tremendous growth, efforts have also been made to offer the highest quality of instruction available. Many awards and citations have been received attesting to the excellence of the College faculty and students. The College has been honored by the Ohio Board of Regents through its Program Excellence Awards. This state-wide competition is open to all undergraduate programs offered at public colleges and universities. The College received awards for the Civil Engineering Technology Program in 1984 and the Electromechanical Engineering Technology Program in 1986.

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 the Ohio Organization of Technical Colleges
Member of Cooperative Education Association
Member of American Technical Education Association
Member of American Association of Community and 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. Among the benefits of the Consortium are 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 Registrar 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.

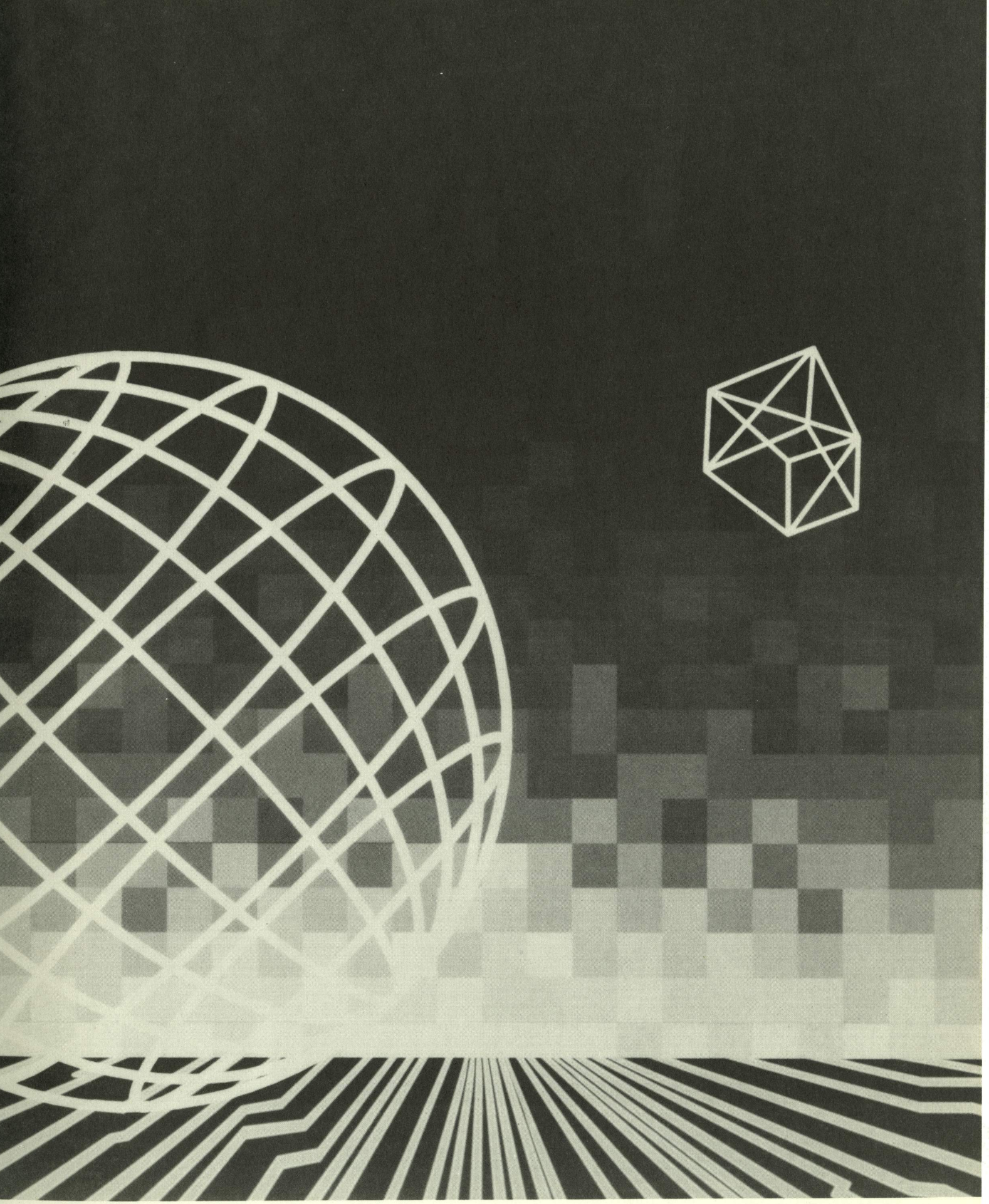
Reserve Officers Training Corps

Cincinnati Technical College has a cross-enrollment agreement with the Army and Air Force ROTC at the University of Cincinnati.

Army and Air Force personnel teach the General Military Training (GMT) course classes. Enrollment in these classes entails no service obligation. Books for these courses and uniforms are provided free to the student.

The student attends ROTC classes and drill periods on the University of Cincinnati campus while attending academic classes at Cincinnati Technical College.

Details may be obtained from the Veterans Affairs Office, room 157 at Cincinnati Technical College.



ADMISSIONS & FEES

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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 Admission Records Office. (With a GED, the applicant should submit a copy of scores.)
3. All applicants are required to attend a Success Seminar, which includes the ASSET test. (See schedule below.)
4. After the applicant's file is complete and has been reviewed by the program coordinator/advisor, the applicant will be notified as to the admission interview status.
5. The applicant should call the Admissions Office for an interview appointment.
6. Applicant will be informed of admission status at time of interview.

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.

Matriculation Fee

A $30 matriculation fee is payable when you accept the College's offer of admission. If a deferment is requested, it will be charged at the time of the first registration after the program major has been approved. The fee covers all subsequent registration fees and drop/add fees while a degree/certificate student and graduation.

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 military duty.

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 Applications

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 incidental expenses, must be provided by the student. In order to facilitate enrollment, an international student should contact the International Student Advisor.

Success Seminars

All applicants for admission to certificate or degree programs at Cincinnati Technical College must attend a Success Seminar. The Success Seminar consists of an orientation to the College, assessment of skills and advisement on courses and services needed by a student to begin their college career successfully.

The ASSET orientation, assessment and advising system developed by the American College Testing Service (ACT) is used in the Success Seminar.

Success Seminar Schedule

Tuesday	12:30 p.m. - 3:00 p.m.
Wednesday	6:30 p.m. - 9:00 p.m.
First Saturday of Each Month*	9:00 a.m. - 11:00 a.m.
*(Excludes January, June and September due to holidays)	
Each day of extended registration	12:30 p.m. - 3:00 p.m.

NOTE:

On Tuesdays, a student can attend the College/Career Information Session at 9:00 a.m., the Financial Aid Seminar at 11:00 a.m. and continue with the Success Seminar from 12:30 to 3:00 p.m. In one day you can successfully begin your college career and have lunch on us in the Cincinnati Technical College cafeteria.

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 Regents' subsidy for their instruction. (See the end of this section for complete explanation of residency determination.)

Fees are non-refundable other than the Instructional Fee.

Schedule of Fees*

Cincinnati Technical College continues to maintain affordable tuition rates in both the Greater Cincinnati area, and in the State of Ohio.

Instructional Fees (per term)

	Resident of Ohio	Non-resident
Comprehensive fee for load of 12 to 18 hours inclusive	$540.00	$900.00
Extra fees for each hour in excess of 18 hours	45.00	75.00
Fee for each hour load of 1 to 11 hours inclusive	45.00	75.00

Includes the instructional fee, general fee, and other non-instructional services to students.

Miscellaneous Fees

Application Fee	$20
Matriculation Fee $30	
**Credit by Examination Fee (per course)	$25
Late Registration: (first day after the beginning date of term)	$10
(second day after the beginning date of term)	$20
(third day after the beginning date of term)	$30
Partial Payment of Fees (promissory note)	$10
Check Fee (for check returned by bank)	$10
Laboratory Fee On a Per Course Basis	
Student I.D. Card	$1
Part-time Registration Fee	$5
Transcript Fee	$3

Vehical Lower Lot Registration (per term) plus 50¢ a day	
Campus Upper Lot Parking Permit Fee (per term)	$30
Motorcycle Parking (per term)	No Charge
Evening Parking, with card (12 Parking Privileges)	$5
Evening Parking, per evening	50¢
Credit for Validated Work Experience (per course)	$25
Graduation Cap, Gown, Invitations	Purchased in Bookstore

****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 students fails the exam and must continue in the course, a $5 fee will be charged.**
***Subject to change at the discretion of the College.**

Cooperative Education Employment

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 $100 to $150 per term.

Senior Citizens

Senior citizens may register tuition free to audit courses as space is available. Senior citizens must pay the registration, lab and out-of-state fees, if applicable. Regular tuition will be charged to those senior citizens who wish to receive credit for the 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.)

Refunds

1. The following fees are not refundable.
   Matriculation fee
   Application fee
   Registration fee (except when the College cancels all courses the student is registered for)
   Promissory note fee (except when the College cancels all courses the student is registered for)
   Late registration fee (except when the College cancels all courses the student is registered for)
2. Requests for refunds will only be considered if the student completes and signs the official college student drop/add form.
3. **Students who do not follow the established withdrawal procedures of the College will not be eligible for a refund.**
4. A student who has been permitted to make only a partial payment at registration will be refunded the difference between payments made and the total due based on the refund schedule detailed below.
5. If a student has a financial obligation or balance due the College, and leaves, the entire balance is due immediately.
6. Refunds for total withdrawal are made on the in-or out-of-state instructional tuition only at the following rates. The official date of total withdrawal is the date of entry by the Registrar's Office.
   80% From the first day of class to the seventh calendar day immediately following the first day of class
   60% From the eighth calendar day of class to the fourteenth calendar day immediately following the first day of class
7. If a student drops a course before the first day of classes, signs and turns in a course drop/add form, the student will be entitled to a 100% refund of the in- or out-of-state instructional tuition, general fee, and lab fee for that course.
   If a student drops a course within seven calendar days after the first day of class, the student will be entitled to an 80% refund of the in- or out- of-state instructional tuition for that course.
   If a student drops a course within eight to fourteen calendar days after the first day of classes, the student will be entitled to a 60% refund of the in- or out-of-state instructional tuition for that course.
   Students must process a drop/add form. The official date of a drop/add form is the date of entry by the Registrar's Office.
8. Refunds due to extenuating circumstances must be made in writing and turned in the the Division Dean or the Director of Extended Services. The Division Dean or the Director of Extended Services will determine refund policy exceptions.

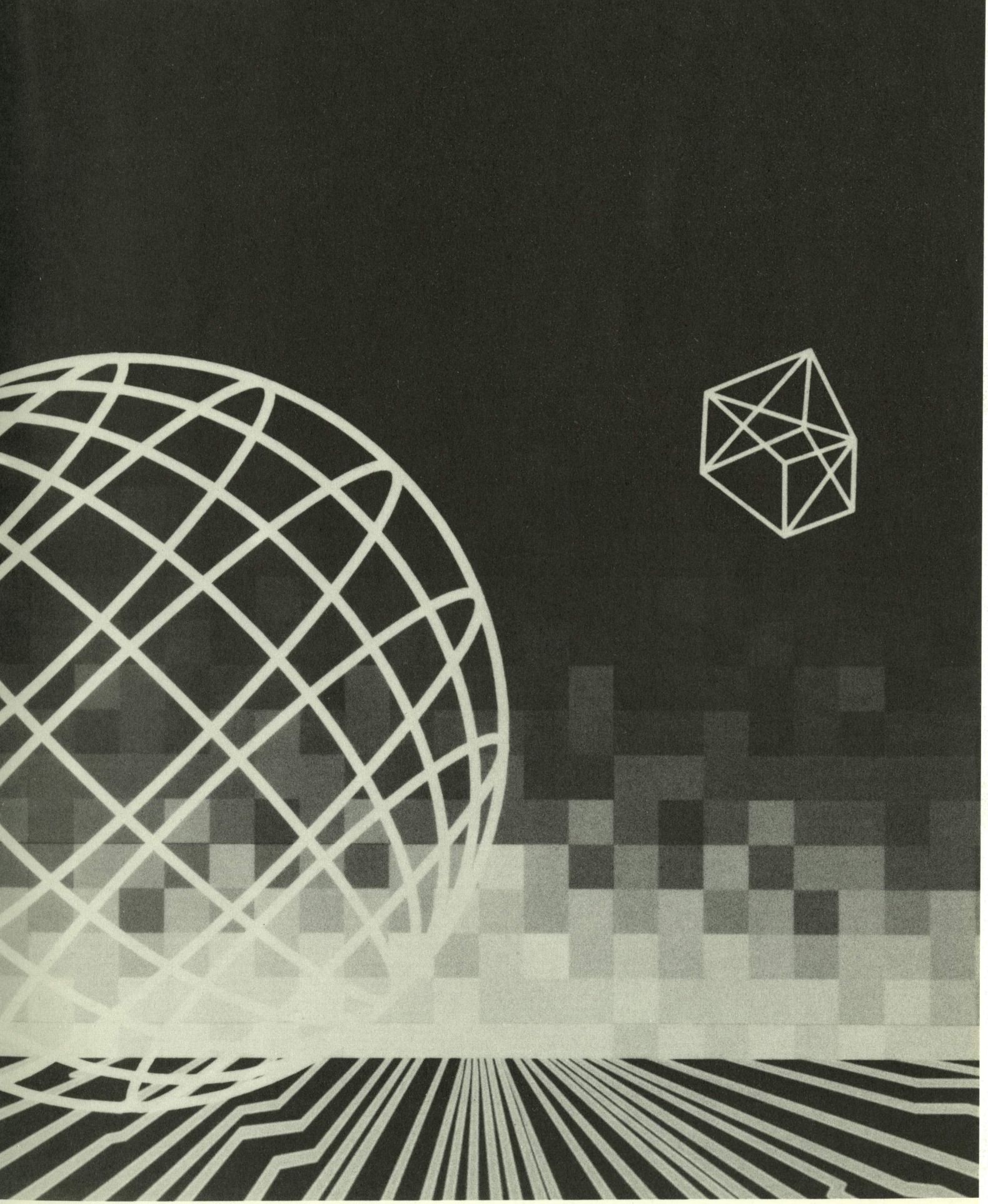
CINCINNATI TECHNICAL COLLEGE RESERVES THE RIGHT TO REVISE THIS STATEMENT OF TUITION REFUNDS AT ANY TIME.

Residence of Students

In determining whether or not an enrolled student at Cincinnati Technical College is an Ohio resident, a determination of fact shall be made in accordance with the Ohio Board of Regents' Residency Rule and Guidelines 3333-1-10, Ohio Student Residency for State Subsidy and Tuition Surcharge Purposes. (Copies are available in the Admissions Office.)A non-resident student may request a review of his or her residency status after living for twelve consecutive months in Ohio.

A review of a student's residency status will be made upon proof of proper documentation that the student has been a resident of the state of Ohio for twelve (12) consecutive months prior to the request for residency review. A form for residency review is available in the 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 and Business Affairs makes the final determination.

Students who move from Ohio to another state retain their Ohio residency status for one year.



POLICIES & PROCEDURES

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 acceptance, 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 no less than 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 acceptance, and attain no less than 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 academic 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 student must file a graduation petition in order to graduate. Any matriculated student may file a graduation petition when 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.

Petition Filing Time Frame	Term Degree Requirement Completed
May 31-July 14, 1988	September, 1988
August 16-September 20, 1988	November, 1988
October 24-November 14, 1989	January, 1989
January 12-February 14, 1987	April, 1989
March 22-April 25, 1989	June, 1989

Participation in Commencement

Students may participate in the September commencement ceremonies if they have met the following requirements:

They have satisfactorily completed all requirements for a certificate or degree and have not previously participated in a CTC graduation ceremony.

*They need no more than nine credit hours (including co-op) and can complete all degree or certificate requirements during the September term. These students may participate if:

1. They register for all remaining courses by the close of the advance payment date and present a paid registration receipt to the Registrar.
2. The Division Dean approves the student's participation.

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

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 GPA. Such a student is given a period during which he/she 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 is 1.0 or below.

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

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

*Non-degree credit hours will not be calculated in the GPA.

A student who does not maintain the above cumulative averages will be placed on academic probation. A student designated as on academic probation is subject to the following conditions:

1. 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.
2. The student may not be eligible to enroll for cooperative education or clinical experience/directed practice without the permission of the program coordinator.
3. The student will be subject to academic dismissal from the program if he/she 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 a 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 courses:

Grade	Explanation	Points Per Credit Hour
A	Excellent	4
B	Good	3
C	Average	2
D	Poor	1
F	Failing	0
V	Withdrawal (Unofficial)	0
I	Incomplete	Not Computed
IP	In Progress	Not Computed
W	Withdrawal (Official)	Not Computed
X	Audit	Not Computed
UX	Audit Unsatisfactory	Not Computed
K	Transfer Credit	Not Computed
S	Satisfactory	Not Computed
U	Unsatisfactory	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 GPA. If a student earns the same grade upon repeating a course, only one grade will be computed in the calculation of the GPA.

Incomplete (I)

When unusual circumstances prevent a student from completing course requirements during the term in which the student is enrolled, the student may contract with the instructor to record a grade of "I" (Incomplete) until the final grade may be established. A grade of "I" is awarded at the discretion of the instructor: timetables and requirements for the completion of the course are the instructor's prerogatives. If a final grade has not been established by the last day of the fifth week of the following term, a grade of "F" will be automatically recorded.

In Progress (IP)

When unusual circumstances prevent a student of an individualized course or another IP-approved course from completing course requirements during the term in which the student is enrolled, the student may contract with the instructor to record a grade of "IP" (In Progress) until the final grade may be established. A grade of "IP" is awarded at the discretion of the instructor: timetables and requirements for the completion of the course are the instructor's prerogatives. If a final grade has not been established by the last day of the following term, a grade of "F" will be automatically 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 Registrar's Office.

Course Withdrawal (W) and (V)

A student who wishes 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 complete a drop/add form in the Registrar's Office. The date of the withdrawal will be the time/date stamped in the Registrar's Office. A grade of "F" or an unofficial withdrawal represented by "V" may be assigned as the final grade in a course if a student discontinues attendance without officially dropping the course.

Audit (X)

Students who are interested in taking a course solely for the value of the instruction may register to audit the course. No college credit may be earned or later claimed for an audited course. Regular tuition is charged for courses being audited. Requirements for attendance, completion of assignments, and examinations are the preogatives of the instructor of the course.

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

Unsatisfactory Audit (UX)

A grade of Ux may be given if the student has not fulfilled predetermined requirements for attendance and completion of assignments as established by the instructor of the course.

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.)

Any accepted and enrolled (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 an explanation sheet. Courses equivalent to those at 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.

Any accepted and enrolled (matriculated) student should apply for credit transfer with the program coordinator before the end of the first term at Cincinnati Technical College. 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 is available to students who have been accepted into a program and paid the matriculation fee. The following advanced standing methods allow the student to earn credit for various prior academic and/or work experiences:

Credit Through Proficiency Examinations

1. 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.

2. CTC Exams (EC)

Proficiency examinations are offered by each of the academic divisions at CTC to any enrolled/degree seeking student. 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 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)

Credit may be obtained by providing validated written documentation to the respective academic division in which the student is enrolled and seeking a degree. The documentation must either:

1. indicate course content and hours, such as that provided by military programs, industrial programs and hospital programs, or
2. provide 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 programs of Butler County Joint Vocational School, Cincinnati Public Schools, Colerain Vocational Center, Northwest Vocational Center, The Great Oaks Joint Vocational Schools, U.S. Grant Joint Vocational School 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 the 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 coordinators. No fee is charged made for the courses for which credit is received.

Other Academic Policies

Registration

A degree seeking 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 for the next term and/or the alternate term if the student will be on co-op. (Please refer to the Calendar Section in the rear of the catalog for dates of pre-registration, billing, payment due dates and on-line registration dates and times.)

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 on 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 who wish to add or register for a course which has met after the third day of the term **MUST HAVE written permission** of the instructor. Failure to obtain permission will prohibit a student from registering for that particular course.

The last day to register or add an evening or Saturday course is the fifth day of the term (or first Saturday). However, students who wish to add or register for a course after the first meeting **MUST HAVE written permission** of the instructor or the division dean responsible for the course. Failure to obtain permission will prohibit a student from registering for that particular course.

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

Administrative Withdrawal

Effective with the September, 1988 term, a matriculated student who fails to enroll for five (5) consecutive terms will be administratively withdrawn. In such a case, the student must reapply for admission to a program and will be subject to re-evaluation and to any change of degree requirements during his or her absence. The re-admitting process is done in the Admissions Office.

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 he 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 to remove such grades 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.

Dean's List

In recognition of academic excellence, a Dean's List is compiled each academic term. Students accepted into a technology can qualify for Dean's List status in one of two ways:

Full-time students, those who enroll in academic courses totaling 12 or more credit hours, will qualify if their GPA for that term is 3.5 or greater.

Part-time students, those who enroll in academic courses totaling less than 12 credit hours, who have a cumulative GPA of 3.5 or greater, will qualify for Dean's List status after completion of 12, 24, 36, 48, 60, 72, 84, and 96 academic credit hours. Part-time students will not qualify if they have received a grade of I, IP, D, F, U, or V in their most recent academic 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 new/alternate technology.

Only courses which are applicable to the curriculum of the new technology will be computed in the student's GPA.

Cooperative Education Program

The cooperative education program is an integral part of Cincinnati Technical College's past growth, current strength, and continued success. The College's commitment to cooperative education is reflected in the curriculums of many technologies.

Meeting Cooperative Education Requirements

Cincinnati Technical College students who are enrolled in a curriculum which contains a cooperative education requirement may fulfill the requiremnt one of three ways:

1. Alternate full-time terms in the classroom with full-time terms of cooperative education employment over a ten term period.
2. Attend classes on a half-day schedule, while simultaneously working half-time (or longer) cooperative education employment, for ten consecutive terms.
3. With prior approval from the appropriate division, substitute academic courses or previous work experience for cooperative education employment. The student must present appropriate documentation of valid work experience. (See "Grades and Credit Earned, Advanced Standing Credit.").

Meeting Academic Eligibility Requirements

To be eligible for placement in cooperative education employment (or clinical experience/directed practice), a student must maintain the required grade point average as stated in the College catalog (see "Academic Probation and Dismissal"). The students must also demonstrate satisfactory proficiency in core or other required courses.

A student who does not maintain the required GPA will not be eligible for cooperative education or clinical experience/directed practice without the permission of the program coordinator.

Refer to the division sections of the catalog for additional requirements.

Obtaining Cooperative Education Assignments

The College has been quite successful in placing most students in cooperative education jobs; however, there is **no absolute guarantee** of initial or continuing employment. The employer is solely responsible for decisions about hiring, retention, dismissal, promotion or demotion of a cooperative education student. Initial and continuing employment depends on the skills, aptitudes, and behaviors the individual student offers to each potential employer.

College Policies

Equal Opportunity

Cincinnati Technical College 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 also adheres 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 interrupts 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 and 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 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 Human Resource Services 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
Human Resource Services
Room 139

Grievance Procedure

Step 1—The employee discusses the grievance with his or her immediate supervisor(s). The student should discuss problems with his/her 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 Human Resource Services. 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 resolved 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 of 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

Scheduling of Classes

Classes are scheduled during the week between 7:00 a.m. and 10:00 p.m. On occasion, classes may be held on Saturday and Sunday.

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.

On cooperative education and clinical placements the employer or supervisor 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.

An instructor does not have to permit or grant make-up privileges.

Grade Reports

It is the student's responsibility to check his or her grade report for accuracy. Any errors/discrepancies should be reported to his or her coordinator/faculty advisor; any omissions should be reported to the Registrar's Office. Concerns of students should be

made within 30 days of the end of the term for which the grade report was issued.

Transcripts

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

The first transcript is free; each additional transcript is $3.00. Please allow five working days for processing transcripts.

Faculty Office Hours

All full-time 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 many 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 considered public information but the College may exercise its discretion regarding the release of any information.

1. Name
2. Technology/Division
3. Full or Part Time Status

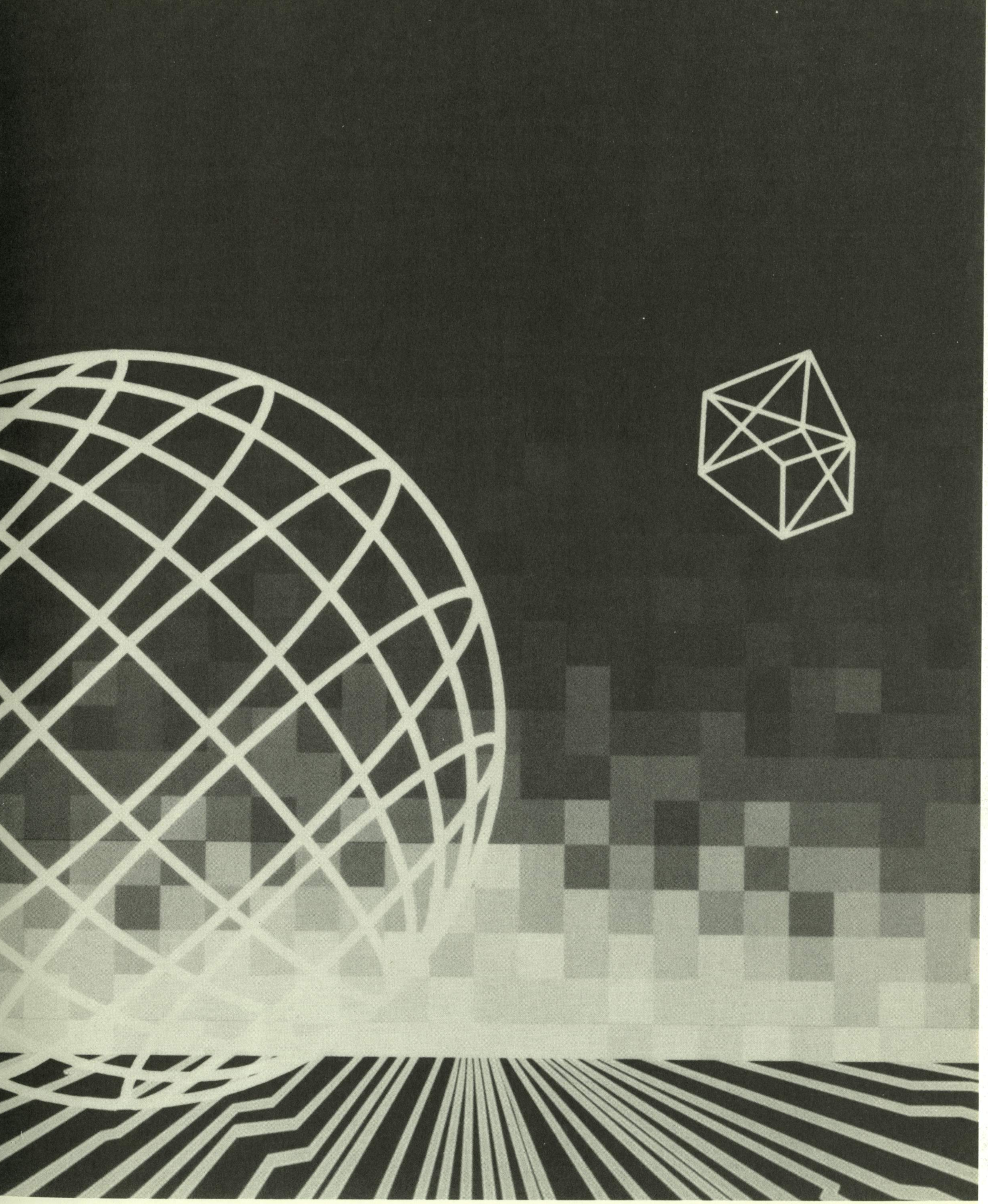
Public information will be used for releases to newspapers, television and radio.

All other information is confidential and will be released only upon the receipt of written permission from the student 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 advise 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 counseling, 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; assisting 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 handicaps or special needs, and students in special programs, i.e., Job Corps.

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, until 5:00 p.m. on Friday, and Saturday by appointment.

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 facilities, 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 coordinator will help students with official paperwork and information regarding benefits. All degree programs at Cincinnati Technical College are fully approved by the State Approving Agency for Veterans Training. Upon being accepted by CTC, veterans should contact the Veterans Office for full information concerning application 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 coordinator will attempt to find a qualified faculty tutor. Please contact the Veterans Office for further information.

The State Approving Agency for Veterans Training has approved Cincinnati Technical College for the education and training of veterans and all their dependents under all existing public laws. Inquiries concerning eligibility should be directed to the Coordinator of Veteran's Affairs in Room 157.

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 the assistance available to help students meet the difference between what they can afford to pay and what it actually costs to attend school.

All students must be fully accepted into the College 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 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.

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.

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

Money advanced under the Perkins Program represents federal funds in the form of a LOAN, and must be repaid in accordance with the terms of the Perkins 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 determining 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 twenty 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 educational loans.

The **maximum** loan amount is $2625 per calendar year, with the 5.5% origination fee being deducted from the proceeds of the loan. New loans carry an 8% interest charge and a six months grace period starting from graduation or withdrawal from school.

Previous borrowers will be charged interest and be eligible for grace under the same terms as their original loan.

All loan checks are co-payable to the school and the borrower and are sent directly to the school. Students have up to ten years to repay the loan and monthly payments for many borrowers are as little as $50.

Information regarding the Dislocated Worker and the Lender of

Last Resort Loan Programs can be obtained from the Financial Aid Office. Students should contact their lending agencies regarding the PLUS Loan Program.

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 guardsmen 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 of 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 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 and Avon) is 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 availability of funds.

The maximum CINTECH and Avon loan amount is $200 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. The program is designed to help students with extreme emergency financial needs. Grants 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 a Perkins Loan (formerly 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 Finance and Business Affairs. This authorization takes place by the end of the fourth week of each term. The Office of Finance and Business Affairs 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 Finance and Business Affairs 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. 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) Perkins Loan (formerly NDSL), 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 of income benefits.
4. All financial aid recipients must notify the Financial Aid Office of 1ny 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 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.
9. All students must notify the Financial Aid Office if they are in default of a loan - Perkins (formerly NDSL), GSL and PLUS while in attendance at **ANY** post secondary institution.

All students must notify the Financial Aid Office if they owe a refund to Pell Grant, Supplemental Educational Opportunity Grant (SEOG) while in attendance at **ANY** post secondary institution.

Satisfactory Progress

The higher education act of 1965 as amended by Congress in 1980, requires institutions of higher education to establish minimum standards of satisfactory progress for students receiving federal financial aid under the title IV programs. Cincinnati Technical College applies these standards to all institutionally awarded funds including the college work study program, guaranteed student loans, perkins loans, pell grant, and supplemental educational opportunity grants.

The Ohio Board of Regents requires that a student who receives financial aid through a state funded program must maintain standards of progress considered by the institution as satisfactory toward receipt of the degree sought by the student. CTC applies these standards to the Ohio Academic Scholarship, Ohio Instutional Grant, Ohio National Guard Scholarship, and the Ohio War Orphans Scholarship.

All CTC students must maintain satisfactory academic progress toward their degree. Financial aid recipients must also successfully complete 60% of the credits they register for each term.

A grade of "F" " W" "V" will constitute failure.

Duration of Eligibility

A full time student is eligible for 13 terms of financial aid.
A part time student is eligible for 20 terms of financial aid.

Credit Levels	Total Credit Hours attempted	GPA
I	0 through 35	1.75
II	36 and over	2.00

If the student fails to maintain the required grade point average or if they fail to successfully complete 60% of the credits they register for, they will be placed on probation for the next term. They must make an appointment to speak with a financial aid counselor at least one week prior to registering for the next term.

If the student fails to maintain the required grade point average or fails to complete 60% of the credits they register for a second term they will be terminated from financial aid.

Special Note The student should contact the financial aid office before dropping a class and speak with a financial aid counselor regarding satisfactory progress.

Course Withdrawals

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

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 orrur; change of term, change of credit hour load, change of technology, or change of 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.

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. Furthermore, if the student fails to meet all conditions and responsibilities regarding the awarding and disbursement of financial aid, previously awarded aid may become void and the student will be held responsible for the unpaid balance of the student's tuition charges.

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 acts as a liaison between students and the administration.

Athletics

The Tigers of Cincinnati Technical College have built a winning tradition in athletics. As members of the National Junior College Athletic Association (NJCAA).

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 intramural program. Class competition is intense in basketball 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 Gabriele Boeckermann in room 156.

Student Organizations

Students are encouraged to join organizations designed for 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), student chapter of Data Processing Management Association (DPMA), student chapter of the Les Chefs De La Cuisine, Ornamental Horticulture Club, Greater Cincinnati Restaurant Association Student Auxiliary, 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 free time 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. Fridays. The spacious 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 to 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 8:00 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 adminstrative staff. Students have access to various forms of audio-visual materials such as audio tapes, slides, filmstrips, video tapes, 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.

Access to Greater Cincinnati Library Consortium (GCLC) Libraries

Registered students at Cincinnati Technical College have access to a number of libraries in the Greater Cincinnati area through the Learning Resource Center's membership in the Greater Cincinnati Library Consortium (GCLC). Information concerning the members of the library consortium is available in the Learning Resource Center. To use one of the libraries in the consortium you must acquire a **"GCLC Common Patron I.D."** from the Cincinnati Technical College's library staff in the Learning Resource Center. The I.D.'s expire at the end of each CTC term. You must get a new "GCLC Common Patron I.D." **each term** you are registered for classes at CTC and wish to use a GCLC library.

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 at any time during the year.

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

The College's new cafeteria 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 for "free play" from 8:00 a.m. to 3:00 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 8:00 p.m. and on Saturday from 9:00 a.m. to 12:00 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. to 4:30 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.

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 Upper Lot**
   This plan permits a student to park in any of the areas

marked in yellow lines on campus. The Upper Lot plan can be purchased for $25.00 per term. Those areas open to the Upper Lot parking plan are Lot A, Lot B, (the gravel lot), some hilltop spaces, and the front and back drives.

2. **The Lower Lot**
   This plan permits a student to park in Lot C, (the stadium parking lot). The fee for this plan is $2.00 per term, plus an additional 50¢ per day.
3. **The Motorcycle**
   This plan permits students to park motorcycles on campus. Students must park motorcycles in the areas specifically marked. The fee for this plan is $12.50 per term.
4. **The Handicapped**
   This plan permits handicapped students to park in the areas marked in blue lines on campus. Those areas are located in the front and the back of the building. The fee for this plan is $25.00 per term.
5. **Night College Parking**
   Upper lot parking for night school will be 50¢ per car, per night. This is paid at the Guard House. A parking card can be purchased for $5.00 which entitles the student to park for 12 nights. These cards will be punched upon entry by a Security Officer. Stadium parking for night school is free.

Traffic Regulations

Traffic Regulations will be strictly enforced. Violators will face monetary fines and possible loss of parking privileges and/or transcript withheld until fines are paid, (financial hold); 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 on to 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 the 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 parking	$ 3.00
2.	Blocking driveway	5.00
3.	Parking in or blocking fire lanes	10.00
4.	Disregarding posted signs; no stopping, no parking, loading, tow away zone	5.00
5.	Parking in a manner to use two stalls	5.00
6.	Parking disregarding painted lines	3.00
7.	Parking outside permitted decal areas	3.00
8.	Parking in reserved areas	5.00

Moving

9.	Wrong direction on a one-way street	15.00
10.	Wreckless operation	15.00

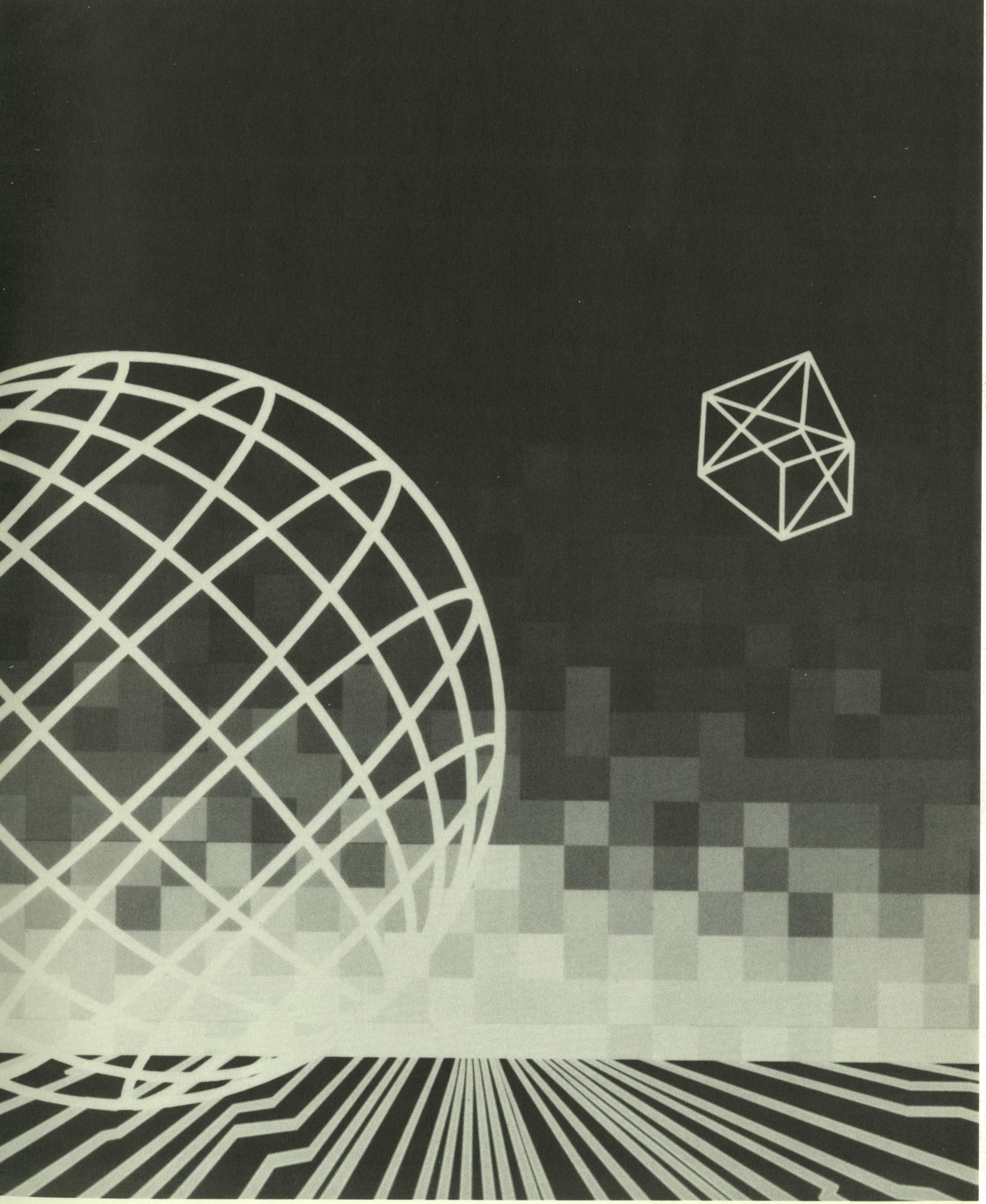
Other

11.	No parking permit (decal) or not displayed	5.00
12.	Vehicle not registered	5.00
13.	Impoundment	Cost
14.	Disregard of barricades	10.00
15.	Reproducing, alteration or defacing of a parking decal or permit. Using stolen or revoked permit or decal (Impound)	Cost
16.	Overtime parking	3.00

Failure to pay fines will result in the holding of transcripts and prevention of registration 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.



DEGREE & CERTIFICATE PROGRAMS

DEGREE & CERTIFICATE PROGRAMS

Academic Divisions

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

Communication Skills and 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 communications.
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 with 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 1001, 1009, 1010 and 1011 are also offered on an individualized basis. Individualized courses being offered each term are designated by the course type I.

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 (569-1736 or 569-1737) answers questions about business communications, technical writing, grammar, punctuation, spelling, capitalization and word usage. The hours are 8:00 a.m. to 8:00 p.m., Monday through Thursday, 8:00 a.m. to 4:00 p.m. Friday, and 9:00 a.m. to 1:00 p.m. Saturday.

Requirements

College - Wide

To qualify for the associate degree, a student must complete at least 21 credit hours; 12 must be in the communication skills area and 9 in the social sciences area. 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. 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. A lab fee is charged in these classes.

To complete the minumum 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.

Listed below are the courses which constitute each of the areas:

Communication Skills

Composition:
- 1001 English Composition I
- 1002 English Composition II
- 1007 Critical Thinking and Writing
- 1009 Business English

Technical Writing and Business Communications:
- 1010 Technical Writing
- 1011 Business Communications
- 1015 Technical Report Writing
- 1017 Project Research
- 1018 Technical Writing Style and Techniques

Oral Communication:
- 1020 Effective Speaking
- 1024 Group Dynamics and Problem Solving
- 1025 Group Dynamics within Organizations

Psychology:
- 1502 Human Relations - Applied Psychology
- 1505 Introduction to Psychology I
- 1506 Introduction to Psychology II
- 1507 The Psychology of Color
- 1508 Psychology: Child Development
- 1509 Psychology: Adult Development
- 1510 Psychology: Adolescent Development

Economics:
- 1512 Microeconomics

1513 Macroeconomics
Sociology:
1521 Introduction to Sociology
1523 Social Institutions
1524 Stress Management
1525 Changing Roles for Men and Women
1527 Technology and Ethical Decisions
Community Relations:
1531 Introduction to Political Science
1535 Introduction to Labor Management Relations
1539 Public Policy and the American Worker

Technical Writing & Editing Technology (TWET)

Technical communication is the work performed by technical writers, editors, and illustrators who put scientific or technical information into readily understandable language for a specific audience. Technical writers and editors combine their language skills with their technical knowledge so they can prepare materials which meet the needs of technical specialists as well as average consumers. Technical communication is the language of high technology. In our society, where understanding technical information is increasingly important to our everyday lives, technical writers and editors play a vital role.

The Technical Writing & Editing Technology program was created after extensive research and feedback from professional technical communicators. In the core courses, students practice the writing and editing skills required to enter the profession, by preparing reports, brochures, handbooks, and other documents. Much classwork takes place in the College's Writing Center, where students learn to use computers and "desktop publishing systems" as essential tools for writing and editing. In addition, students gain technical competence by earning at least 26 credit hours in a technical specialty area. These technical specialty courses may be from any of the other technologies offered at Cincinnati Technical College.

Students who plan to study Technical Writing & Editing Technology should have previous successful writing experience (in school or on the job), good reading skills, and school or work experience in math, science, or technology.

Technical Writing & Editing Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
**xxxx	Technical Specialty Requirement	3	3	4
**xxxx	Technical Specialty Requirement	3	3	4
*1001	English Composition I	3	0	3
3005	Administrative Typing	2	3	3
5001	Introduction to TWET Careers	1	2	2
		12	11	16
■ Second Term				
**xxxx	Technical Specialty Requirement	3	3	4
**xxxx	Technical Specialty Requirement	3	1	3
1017	Project Research	3	3	4
1018	Technical Writing Style & Techniques	2	5	4
3061	Word/Information Processing I	1	4	3
		12	16	18
■ Third Term				
9701	Co-Op Employment TWET Technology	1	40	3
■ Fourth Term				
**xxxx	Technical Specialty Requirement	3	3	4
1512	Microeconomics	3	0	3
3063	Word/Information Processing II	1	4	3
5010	Planning & Preparing the Illustration	2	2	3
5040	Critical & Creative Thinking	2	3	3
		11	12	16
■ Fifth Term				
9702	Co-Op Employment TWET Technology	1	40	3
■ Sixth Term				
**xxxx	Technical Specialty Requirement	3	3	4
**xxxx	Technical Specialty Requirement	3	3	4
1024	Group Dynamics & Problem Solving	3	0	3
5032	Writing Instructional Documents	2	5	4
5041	Technical Editing Methods I	2	2	3
		13	13	18
■ Seventh Term				
9703	Co-Op Employment TWET Technology	1	40	3
■ Eighth Term				
**xxxx	Technical Specialty Requirement	3	3	4
5022	Technical Presentations	3	2	4
5033	Writing Promotional Documents	2	5	4
5042	Technical Editing Methods II	2	2	3
5051	Organizational Dynamics/Career Assess	3	1	3
		13	13	18
■ Ninth Term				
9704	Co-Op Employment TWET Technology	1	40	2
■ Tenth Term				
**xxxx	Technical Specialty Requirement	3	0	3
15xx	Social Science Elective	3	0	3
15xx	Social Science Elective	3	0	3
5089	Technical Communication Seminar	1	6	3
		10	6	12
				109

*Students whose test scores or previous experience indicate advanced standing may substitute another communication skills course.
Recommended substitutes: 1007, 1009.
Recommended Social Science Electives: 1505, 1506, 1524, 1527.
**Coordinator/Advisor approval required.

Sample Technical Specialty Requirements

The Technical Writing & Editing Technology advisors help students plan an appropriate curriculum in their preferred technical specialty area. The samples that follow show some of the technical courses recommended for a few technical specialty areas. Consult with the Technical Writing & Editing Technology advisors for information about other technical specialty areas.

Sample A - Computer Systems Documentation Writing

		Hours Per Week Class	Lab	Credit Hours
1124	Business Algebra	4	0	4
1127	Business Statictics	4	0	4
1135	"C" Programming Language	2	2	3
1701	Introduction to Data Processing	3	0	3
1702	Introduction to BASIC Programming	2	3	3
1721	Programming Logic & Methods	2	3	3
1742	COBOL Programming I	3	7	6
1763	Systems Analysis & Design	3	7	5
6110	Software Documentation	2	2	3

Sample B - Health Technologies Documentation and Report Writing

		Hours Per Week Class	Lab	Credit Hours
2232	Fundamentals of Organic Chemistry	3	2	4
2233	Fundamentals of Biochemistry	3	2	4
4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care Systems	2	0	2
4009	General Microbiology	3	3	4

4014	Anatomy & Physiology I	3	2	4
4015	Anatomy & Physiology II	3	2	4
4016	Anatomy & Physiology III	3	2	4
4408	Advanced Medical Terminology	3	0	3

Sample C - Engineering Documentation and Report Writing

		Hours Per Week Class	Lab	Credit Hours
1191	Algebra & Trigonometry I	4	0	4
1192	Algebra & Trigonometry II	4	0	4
2291	Physics I	3	2	4
7010	Engineering Drawing I	2	3	3
7130	Engineering Mechanics	3	2	3
7132	Hydraulics & Pneumatics	3	2	3
7142	Mechanisms Analysis & Design	3	2	3
7160	Computer Aided Drafting I-Mechanical	2	3	3
7708	Electrical Fundamentals & Controls	3	2	3

Sample D - Industrial Testing and Research Report Writing

		Hours Per Week Class	Lab	Credit Hours
1191	Algebra & Trigonometry I	4	0	4
2291	Physics I	3	2	4
2293	Physics III	3	2	4
6611	Chemistry I & Quantitative Analysis	3	3	4
6621	Chemistry II & Quantitative Analysis	3	3	4
6629	Industrial Materials Testing I	3	2	4
6631	Chemistry III & Quantitative Analysis	3	3	4
6639	Fundamentals of Physical Measurement	3	2	4

Sample E - Technical Writing & Editing Certificate Hours Per Week Credit

		Hours Per Week Class	Lab	Credit Hours
1017	Project Research	3	3	4
1018	Technical Writing Style & Techniques 2	5	4	
5001	Introduction to TWET Careers	1	2	2
5002	Introduction to Computer-Assisted Writing	2	2	3
xxxx	Computer Skills Elective	2	2	3
5010	Planning and Preparing Illustrations	2	2	3
5015	Technical Publication Production	2	2	3
5016	Computer-Assisted Publishing	2	2	3
5022	Technical Presentations	3	2	4
5032	Writing Instructional Documents	2	5	4
5033	Writing Promotional Documents	2	5	4
5040	Critical & Creative Thinking	2	3	3
5041	Technical Editing Methods&Techniques I	2	2	3
5042	Technical Editing Methods&Tehcniques II	2	2	3
5051	Organizational Dynamics & Career Asses	3	1	3
5089	Technical Communication Seminar	1	6	3

Developmental Education Program

The Developmental Education program consists of several parts which 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 0057 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 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 determining 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
#0017	Speed Reading	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
#0027	Pre Tech Health Math	4
#0031	Basic Concepts of Chemistry	4
#0040	Interpersonal Development	4
#0041	Interpersonal Communications	4
0042	Interpersonal Skills	4
0049	College Orientation	1
0057	Pre-Accounting	4

Basic Skills Assessment Services

Placement testing in the basic skills academic areas of Reading, Writing and Mathematics is available upon request.

Testing, interpretation, and advising are available on a walk-in basis from 8:30 A.M. to 3:00 P.M., Monday through Friday, and Monday evenings from 6:00 P.M. to 9:00 P.M.

Learning Lab

DE offers an open lab with Apple and IBM computers, VCR equipment, Didactor machines and cassette players for students use. Instructional materials in Math, Biology, Chemistry, Physics, Accounting, Computer Programming, Engineering, Reading, Grammar and Spelling are available. There are also drop-in "Help Sessions" on selected topics where students can come and get help one-on-one. Located on the mezzanine of the Learning Resource Center, the Lab is open in the afternoon for all CTC students.

Services for Handicapped and Learning Disabled Students

Students, who because of a permanent disability need academic accomodations, are encouraged to contact the Learning Specialist located in Room 266A. Services include readers, proctors, note takers, taped text books, blank tapes, tape recorders and computer access. There is no fee for these services.

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 fee for this service.

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 associate degree and certificate programs which are clinically intensive and prepare students to perform immediately upon graduation. 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. The division affiliates with over fifty different hospitals and other health care agencies and institutions to provide clinical experiences for health students. All programs are accredited or approved by their respective professional bodies (if accreditation or approval is available).

Prerequisites for all programs are available at CTC.

Dietetic Technician - Nutrition Care (DTNC)

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

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

Successful completion of this program permits the student to take the American Dietetic Association certification examination for Dietetic Technicians. This program is approved by the American Dietetic Association.

Dietetic Technician Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care Systems	2	0	2
4005	Chemistry for Health Technologies	3	2	4
4100	Fundamentals of Nutrition	4	0	4
4111	Diet Orientation & Dir Practice I	1	3	1
4121	Food Management	2	6	4
		15	12	18
■ Second Term				
9300	Co-Op Employment Health Technology	1	40	2
■ Third Term				
1001	English Composition I	3	0	3
1502	Human Relations	3	0	3
4102	Nutrition for Lifecycle	4	0	4
4112	Dietetics Directed Practice II	0	8	1
4124	Food Service Sanitation Certification	2	0	2
4133	Food Science	2	3	3
		14	11	16
■ Fourth Term				
9300	Co-Op Employment Health Technology	1	40	2
■ Fifth Term				
4014	Anatomy and Physiology I	3	2	4
4030	Technology of Education for Health	1	3	2
4104	Clinical Nutrition I	4	0	4
4113	Dietetics Directed Practice III	0	8	1
4122	Institutional Food Systems I	2	3	3
4125	Quantity Food Production	2	3	3
		12	19	17
■ Sixth Term				
10xx	English Composition Elective	3	0	3
1850	Computerized Business Applications	2	3	3
4015	Anatomy and Physiology II	3	2	4
4031	Health Care Management	3	0	3
4106	Clinical Nutrition II	4	0	4
4114	Dietetics Directed Pracice IV	0	10	2
		15	15	19
■ Seventh Term				
1024	Group Dynamics & Problem Solving	3	0	3
15xx	Social Science Elective	3	0	3
2911	Principles of Accounting I	3	2	3
4016	Anatomy and Physiology III	3	2	4
4107	Clinical Nutrition III	4	0	4
4115	Dietetics Directed Practice V	0	10	2
		16	14	19
■ Eighth Term				
9300	Co-Op Employment Health Technology	1	40	2
■ Ninth Term				
101x	Technical Writing Elective	3	0	3
15xx	Social Science Elective	3	0	3
4108	Community Nutrition	4	0	4
4109	Dietetics Seminar	2	0	2
4116	Dietetics Directed Practice VI	0	8	1
*4117	DTNC Homecare Directed Practice	0	5	1
4129	Institutional Food System II	1	5	3
		13	18	17
				112

*Course 4117 may also be taken in terms 6, 7, or 8.
English Composition Electives: 1002, 1007, 1008, 1010
Social Science Electives: (At least 2 groups must be represented.)
Group 1 - Psychology: 1505, 1506, 1508, 1509, 1510
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1524, 1525, 1527
Group 4 - Government: 1531, 1535, 1539
Technical Writing Elective: 1010, 1015

Articulation with Mt. St. Joseph College

The Dietetic Technician Nutrition Care 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.

Dietary Manager Certificate (DMC)

This one year certificate program prepares a person to perform dietary supervisor functions in many types of facilities. The program, attended on a part-time basis, encourages employment and course work combined. Two terms of cooperative work experience or the equivalent are a certificate requirement.

Upon graduation, Dietary Managers are employed in nursing homes, retirement facilities, hospitals, schools, handicap institutions and business. Job activities might include food distribution supervision, employee hiring, training, scheduling and evaluation, inventory controls, safety and sanitation controls and food production supervision.

This program has national approval by the Dietary Managers Association. Following the certification examination, membership in this professional organization is encouraged.

Dietary Manager Technology Certification Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
4130	Introduction to Nutrition	3	0	3
4141	Dietary Manager's Orientation	1	3	2
		4	3	5
■ Second Term				
4121	Food Management	2	6	4
4124	Food Service Sanitation Certification	2	0	2
		4	6	6
■ Third Term				
4105	Introduction to Clinical Nutrition	2	2	3
4112	Dietetics Directed Practice II	0	8	1
4122	Institutional Food Systems I	2	3	3
9300	Co-Op Employment Health Technology	1	40	2
		5	53	9
■ Fourth Term				
4125	Quantity Food Production	2	3	3
4147	Dietetic Manager Seminar	1	0	1
4155	Basic Mgt Tech Food Service	2	0	2
		5	3	6
■ Fifth Term				
4143	Food Systems Mgt Direct Practice III	1	8	2
9300	Co-Op Employment Health Technology	1	40	2
		2	48	4
				30

Electrocardiograph Technician (EGRT)

The ECG Technician is the entry-level position for the health field of cardiovascular technology. Individuals in this field must possess the knowledge, skill and ability necessary to provide professional services related to proper diagnosis and subsequent treatment of cardiovascular diseases. The ECG technician is responsible for performing Electrocardiograms with patients who may have irregularities in heart action, or as part of a routine examination. The technician prepares the recording for analysis by the physician. This includes the recognition and elimination of technical errors in the recording and also the ability to recognize and call to the physician's attention significant ECG abnormalities. Some ECG technicians must also type physician interpretations of ECG's on reports, schedule appointments, maintain patient files and care for ECG equipment. ECG technicians spend 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. With experience, an ECG technician may assist with or perform additional procedures such as stress testing and Holter monitoring. 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.

Electrocardiograph Technician Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1502	Human Relations	3	0	3
4000	Introduction to Medical Terminology	3	1	3
		6	1	6
■ Second Term				
4770	Basic Electrocardiography	3	2	4
■ Third Term				
4771	Arrhythmia Recognition	3	0	3
4780	ECG Clinical Practice	0	20	1
		3	20	4
				14

Geriatric Technician Program (GER)

The purpose of the Geriatric Technician Program is to prepare technicians who possess skills in the care of the geriatric client in nursing homes, adult day care centers, home health agencies, retirement communities, community health centers, shared or assisted housing facilities, senior centers and hospitals in the Greater Cincinnati area.

The Geriatric Technician is a skilled health care technician qualified by academic and clinical training to provide case management in both individual and group plans. This technician will also provide input and assistance to other health care professionals in home and health care settings to address the needs and wants of the geriatric client.

The objectives of the program are to prepare the graduates to demonstrate multiple entry-level skills in the following areas: observe and react to changes in normal behavior patterns; physical, psychological, emotional, and spiritual needs of the geriatric client; observe, recognize, and report pathophysiological conditions; participate in case management documentation; facilitate and motivate individual and group activity skills; serve as an advocate for social programs and agencies and make appropriate referrals for the geriatric client; assist the geriatric client in the correct use of medications; address death and dying rights; and be creative, innovative and able to facilitate and participate in improving the general health skills of the geriatric client and continue to update multiple skills to guarantee delivery of qualified services.

Geriatric Technician Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care System	2	0	2
4014	Anatomy and Physiology I	3	2	4

4050	Patient Care Skills	0	2	1
4800	Introduction to Geriatric Technology	3	2	4
		14	7	17

■ Second Term

9300	Co-Op Emp oyment Health Technology	1	40	2

■ Third Term

1002	English Composition II	3	0	3
1502	Human Relations	3	0	3
1505	Introduction to Psychology I	3	0	3
4015	Anatomy and Physiology II	3	2	4
4130	Introduction to Nutrition	3	0	3
4805	Activity Therapy	2	2	3
		17	4	19

■ Fourth Term

9300	Co-Op Employment Health Technology	1	40 2	

■ Fifth Term

1024	Group Dynamics & Problem Solving	3	0	3
1509	Psych: Adult Development	3	0	3
4016	Anatomy and Physiology III	3	2	4
4105	Introduction to Clinical Nutrition	2	2	3
4394	Interpretation of Laboratory Values 3	0	3	
4815	Physiology of Aging	3	0	3
		17	4	19

■ Sixth Term

9300	Co-Op Employment Health Technology	1	40	2

■ Seventh Term

1521	Introduction to Sociology	3	0	3
4002	Community Health Services	2	0	2
4007	Emergency Medical Procedures	1	2	2
4020	Fundamentals of Pathophysiology	5	0	5
4830	Mental Health & The Elderly	3	2	4
		14	4	16

■ Eighth Term

9300	Co-Op Employment Health Technology	1	40	2

■ Ninth Term

1010	Technical Writing I	3	0	3
4018	Essentials of Pharmacology	3	0	3
4031	Health Care Management	3	0	3
4820	Aging and Disease	5	0	5
4850	Geriatric Care Seminar	5	0	5
		19	0	19

■ Tenth Term

9300	Co-Op Employment Health Technology	1	40	2
				100

Health Unit Coordinator (UCMA)

The Health Unit Coordinator's role is **non-nursing**. The Health Unit Coordinator performs the clerical, reception, communication and coordination tasks for the nursing unit, thus giving the nursing staff more time to perform the clinical and patient care duties.

Health Unit Coordinators 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 of the nursing unit.

Health Unit Coordinators must have good communication skills, ability to be tactful with all people, ability to organize and prioritize and understanding of the legal and ethical implications of their jobs.

Cincinnati Technical College's Health Unit Coordinator training program is a four-term program. The first three terms consist of classes at the College covering Health Unit Coordinating procedures and communication skills. The last term consists of a five-week internship at a local hospital along with classes at the College.

The Cincinnati Technical College program in Health Unit Coordinating meets the standards of education as published by the National Association of Health Unit Clerks/Coordinators. This program is designed for students seeking basic entry-level skills in Health Unit Coordinating. Completion of the program will qualify the student to take the National Certification Exam for Health Unit Coordinators.

Health Unit Coordinator Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours

■ First Term

4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care Systems	2	0	2
4270	Orient. Health Unit Coordination	3	0	3
		8	1	8

■ Second Term

3001	Typewriting I	2	3	3
4271	Health Unit Coordinating I	2	4	4
4408	Advanced Medical Terminology	3	0	3
		7	7	10

■ Third Term

1001	English Composition I	3	0	3
1502	Human Relations	3	0	3
4272	Health Unit Coordinating II	2	4	4
		8	4	10

■ Fourth Term

4281	Health Unit Coordinating Practicum	2	20	6
				34

Medical Assistant Technology (MAC) (MA)

The Medical Assistant program trains students to work in physicians' offices providing patient care and performing administrative tasks. The administrative tasks performed include filing, scheduling appointments, handling correspondence, patient management, maintaining patient records, bookkeeping and completing insurance forms. The clinical tasks performed involve taking and recording medical histories, preparing patients for examinations, assisting with examinations and office surgeries, measuring vital signs, performing routine laboratory work, x-rays, EKG's and giving injections.

The Medical Assistant program offers two options for the student: students can complete one year for a technical certificate or continue on to the second year, receiving an Associate Degree upon completion. The first year of the program prepares the student with entry-level job skills. The second year of the program adds additional management, occupational and education skills. 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 or Allied Health Education and Accreditation (CAHEA) in collaboration with the American Association of Medical Assistants (AAMA).

Upon successful completion of the program, either the one or two year, graduates are eligible to take the examination to become a Certified Medical Assistant (CMA).

Medical Assistant 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	Medical Office Practice I	2	3	3
4202	Clinical Procedures I	2	3	3
4204	Medical Lab Procedures I	2	3	3
		12	12	16
■ Second Term				
1009	Business English	3	0	3
4042	Integrated Science II	3	2	4
4201	Medical Office Practice II	2	3	3
4203	Clinical Procedures II	2	3	3
4441	Medical Word Processing Operations I	1	3	3
		11	11	16
■ Third Term				
4211	MA Clinical Experience I	0	21	3
■ Fourth Term				
1505	Introduction to Psychology I	3	0	3
4007	Emergency Medical Procedures	1	2	2
4043	Integrated Science III	3	2	4
4205	Medical Lab Procedures II	2	3	3
4208	Insurance/Patient Records	2	2	3
		11	9	15
■ Fifth Term				
1506	Introduction to Psychology II	3	0	3
2909	Office Accounting I	3	2	3
4018	Essentials of Pharmacology	3	0	3
4209	Medical Assistant Seminar	2	4	3
4212	MA Clinical Experience II	0	21	3
		11	27	15
				65

Medical Assistant Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
100x	English Composition Elective	3	0	3
4001	Introduction to Health Care Systems	2	0	2
4131	Developmental Nutrition	2	0	2
4224	Advanced Clinical Procedure	2	3	3
4408	Advanced Medical Terminology	3	0	3
		12	3	13
■ Second Term				
1011	Business Communications	3	0	3
1024	Group Dynamics & Problem Solving	3	0	3
1527	Technical & Ethical Decisions	3	0	3
4206	Medical Laboratory Procedures III	2	3	3
		11	3	12
■ Third Term				
4213	MA Clinical Experience III	0	21	3
■ Fourth Term				
15xx	Social Science Elective	3	0	3
15xx	Social Science Elective	3	0	3
1509	Psychology: Adult Development	3	0	3
4031	Health Care Management	3	0	3
4209	Medical Assistant Seminar	2	4	3
		14	4	15
				43

English Composition Electives: 1001, 1002
Social Science Electives: 1502, 1508, 1521, 1523, 1525

Medical Laboratory Technician (ML)

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 banks 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 collaboration 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 the National Certification Agency for Medical Laboratory Personnel to obtain certification as a Clinical Laboratory Technician, CLT (NCA).

Medical Laboratory Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
11xx	Math 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				
102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
4001	Introduction to Health Care Systems	2	0	2
4023	Immunology	3	0	3

4315 Laboratory Practicum I	0	12	4
	11	12	15

■ Fifth Term

4353 Medical Lab Clinical Practice	1	40	6

■ Sixth Term

15xx Social Science Elective	3	0	3
4009 General Microbiology	3	3	4
4305 Blood Banking - Serology	4	6	6
	10	9	13

■ Seventh Term

9300 Co-Op Employment Health Technology	1	40	2

■ Eighth Term

100x English Composition Elective	3	0	3
15xx Social Science Elective	3	0	3
4306 Clinical Microbiology	4	6	6
4308 Special Laboratory Procedure	1	3	2
	11	9	14

■ Ninth Term

9300 Co-Op Employment Health Technology	1	40	2

■ 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, 1010
Math Electives: 1151, 1153, 1154, 1191
Oral Communication Electives: 1020, 1024
Social Science Electives: (At least 2 groups must be represented.)
Group 1 - Psychology: 1502, 1505, 1506, 1508, 1509, 1510
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1525, 1527
Group 4 - Government: 1531, 1535, 1539
Technical Writing Electives: 1010, 1015

Medical Record Technician (MR)

Medical Record Technicians are responsible for preparing, analyzing and preserving health information in hospitals, clinics, nursing homes, insurance companies and health maintenance organizations. The technician has both medical and information processing knowledge necessary to manage the complex and computerized systems found in the modern health care institution.

Students spend every other term in paid cooperative education experience.

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

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 Technician Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term			
1001 English Composition I	3	0	3
4000 Introduction to Medical Terminology	3	1	3
4001 Introduction to Health Care Systems	2	0	2
4014 Anatomy and Physiology I	3	2	4
4414 Record Science, File Sys/Rec Analysis	4	3	5
	15	6	17

■ Second Term

9300 Co-Op Employment Health Technology	1	40	2

■ Third Term

100x English Composition Elective	3	0	3
1502 Human Relations	3	0	3
4015 Anatomy and Physiology II	3	2	4
4408 Advanced Medical Terminology	3	0	3
4415 Legal Aspects of Rec in Health Care	3	1	4
4441 Medical Word Processing Operations I	1	4	3
	16	7	20

■ Fourth Term

9300 Co-Op Employment Health Technology	1	40	2

■ 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 Diagnoses, Operations & Proc	5	5	7
	14	7	17

■ Sixth Term

9300 Co-Op Employment Health Technology	1	40	2

■ Seventh Term

1010 Technical Writing I	3	0	3
15xx Social Science Elective	3	0	3
1850 Computerized Business Applications	2	3	3
4417 Medical Statistics & Record Abstract	3	2	4
4419 Advanced Coding	2	2	3
4428 Medical Record Directed Practice I	0	16	3
	13	23	19

■ Eighth Term

9300 Co-Op Employment Health Technology	1	40	2

■ Ninth Term

15xx Social Science Elective	3	0	3
4020 Fundamentals of Pathophysiology	5	0	5
4409 Medical Record Seminar	3	0	3
4418 Tumor Registry, Util Rev & Qual Assu	4	0	4
4429 Medical Record Directed Practice II	0	16	3
	15	16	18

■ Tenth Term

9300 Co-Op Employment Health Technology	1	40	2
			101

English Composition Electives: 1002, 1007, 1008, 1010
Oral Communications Electives: 1020, 1024
Social Science Electives: (At least 2 groups must be represented.)
Group 1 - Psychology: 1505, 1506, 1508, 1509, 1510
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1525, 1527
Group 4 - Government: 1531, 1535, 1539

The CTC/Bethesda Hospital, Inc. Nursing Program (NUR)

(Proposed to begin September, 1989)

The purpose of the program is to prepare graduate nurses who are eligible to take the national standardized nursing examination (NCLEX-RN) and upon passing, work as registered nurses.

The graduate is a member of the health team qualified to practice in hospitals, extended care facilities and other similar institutions.

The objectives of the program are to prepare the graduate to:

1. Deliver individualized care to nursing clients with common health problems as the direct care provider.
2. Function within a structured health care setting as a health team member under the guidance of a registered nurse manager or licensed physician.
3. Incorporate health promotion activities into the nursing plan of care to maximize the client's health potential.

4. Communicate effectively with nursing clients, their families and health team members.
5. Be accountable for nursing care delivered as a member of the nursing profession.
6. Utilize the nursing process as a decision making tool when managing care for nursing clients.

The program has been approved by the Ohio State Board of Nursing Education and Nurse Registration. Accreditation by the National League of Nursing, which is not available until the first class has graduated, will be pursued.

Nursing Program Level I

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1505	Introduction to Psychology I	3	0	3
4014	Anatomy and Physiology I	3	2	4
4901	Foundations of Nursing Practice	6	5	7
		15	7	17
■ Second Term				
1002	English Composition II	3	0	3
2232	Fundamentals of Organic Chemistry	3	2	4
4015	Anatomy & Physiology II	3	2	4
4902	Intro. to Common Health Problems	4	5	5
		13	9	16
■ Third Term				
2233	Fundamentals of Biochemistry	3	2	4
4016	Anatomy and Physiology III	3	2	4
4903	Common Health Problems I	3	10	5
		9	14	13
■ Fourth Term				
1508	Psychology: Child Development	3	0	3
4009	General Microbiology	3	3	4
4904	Common Health Problems II	3	10	5
		9	13	12

Level II

		Hours Per Week Class	Lab	Credit Hours
■ Fifth Term				
4905	Adolescent and Adult Health Nursing	9	12	11
*9371	Cooperative Education Experience I	1	17	1
		10	29	12
■ Sixth Term				
4906	Parent Child Health Nursing	9	12	11
4001	Intro. to the Health Care System	2	0	2
		11	12	13
■ Seventh Term				
9372	Cooperative Education Experience II	1	24	2
■ Eighth Term				
1527	Technology and Ethical Decisions	3	0	3
4907	Mental Health Nursing	5	12	7
1024	Group Dynamics & Problem Solving	3	0	3
		11	12	13
■ Ninth Term				
1010	Technical Writing I	3	0	3
4909	Management of Client Care	6	18	9
		9	18	12
				110

*This co-op is completed over a two term period with students completing 9 hours per week of co-op experience during two consecutive terms.

Occupational Therapy Assistant Program (OTA)

Occupational therapy is the art and science of directing man's response to selected activity to promote and maintain health, to prevent disability, to evaluate bahavior and to treat or train patients with physical or psychological dysfunction.

The term "selected activity" in the definition of occupational therapy is the key to uniqueness of the field and relates directly to an individual's occupation. Occupation may be defined as those tasks which occupy the majority of one's time. Occupational therapy is concerned with the person biologically, psychologically and socially, and provides services to those individuals whose ability to cope with the tasks of living is threatened or impaired. Using evaluative and therapeutic means, occupational therapy promotes meaningful performance throughout the life cycle and encourages a healthy balance of time spent in self-care, work and play-leisure.

The graduate occupational therapy assistant is a technically qualified member of the health team who functions under the supervision or consultation of a certified/registered occupational therapist. The assistant accepts clinical responsibilities in hospitals, nursing homes, day care centers, rehabilitation centers or those organizations directed to maintain health and socialization of their members. The graduate will demonstrate entry-level competency in the analysis of activities and their application to patient needs; occupational therapy concepts and skills (daily living skills, group activities, media used in treatment and adaptive equipment); direction of activity programs; management of department operations; data collection; self understanding and the realization of the effect that one's behavior has on the patient/client and others; upholding the standards of the profession and identifying the need for continuing professional education and growth; and relating occupational therapy to the total health care system.

The Occupational Therapy Assistant program is approved by the Accreditation Committee of the American Occupational Therapy Association. Graduates of the program will be able to sit for the national certification examination for the occupational therapy assistant administered by the American Occupational Therapy Certification Board. After successful completion of this exam, the individual will be a Certified Occupational Therapy Assistant (COTA). Many states require licensure in order to practice; however, state licenses are usually based on the results of the AOTCB Certification Exam.

Occupational Therapy Assistant Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1505	Introduction to Psychology I	3	0	3
4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care Systems	2	0	2
4600	Introduction to OTA	2	3	3
		13	4	14
■ Second Term				
1002	English Composition II	3	0	3
1506	Introduction to Psychology II	3	0	3
4014	Anatomy and Physiology I	3	2	4
4610	Theory of OT	3	0	3
4620	Techniques of OT	0	4	2
		12	6	15
■ Third Term				
1024	Group Dynamics & Problem Solving	3	0	3
4007	Emergency Medical Procedures	1	2	2
4015	Anatomy and Physiology II	3	2	4
4611	OT Concepts - Psychosocial	3	0	3
4621	Media for OT - Psychosocial	0	4	2
4651	OTA Field Work I (Level I)	0	8	2
		10	16	16

■ Fourth Term				
1508	Psychology: Child Development	3	0	3
4016	Anatomy and Physiology III	3	2	4
4612	OT Concepts - Infants & Children	3	0	3
4622	Media for OT - Infants & Children	0	4	2
4652	OTA Field Work II (Level I)	0	8	2
		9	14	14
■ Fifth Term				
1509	Psychology: Adult Development	3	0	3
4025	Kinesiology	2	2	3
4613	OT Concepts - Physical Disabilities	3	0	3
4623	Media for OT - Physical Disabilities	0	4	2
4653	OTA Field Work III (Level I)	1	8	2
		9	14	13
■ Sixth Term				
1521	Introduction to Sociology	3	0	3
4020	Fundamentals of Pathophysiology	5	0	5
4614	OT Concepts - Gerontology	3	0	3
4624	Media for OT - Gerontology	0	4	2
		11	4	13
■ Seventh Term				
1010	Technical Writing I	3	0	3
1502	Human Relations	3	0	3
4625	Surv of Therapeutic Media OT	0	6	3
4631	OT Fundamentals Practice	3	0	3
		9	6	12
■ Eighth Term				
4660	OTA Field Work IV (Level II)	2	32	6
■ Ninth Term				
4661	OTA Field Work V	2	32	6
				109

Phlebotomy Certificate Program (PCML)

(Blood Drawing)

Laboratory scientists, technologists and technicians require blood specimens that have been obtained promptly and efficiently by qualified phlebotomists. The phlebotomist is an integral member of the laboratory team. This important individual must be trained in all aspects of specimen collection and processing. The phlebotomist must also be able to maintain high standards of professionalism with patients. To ensure that quality training is available to persons interested in this field of work, Cincinnati Technical College has developed a training program in phlebotomy.

The program is currently approved by the National Phlebotomy Association, Inc.

Phlebotomy Certificate Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
4000	Introduction to Medical Terminology	3	1	3
■ Second Term				
1502	Human Relations	3	0	3
4380	Introduction to Phlebotomy	3	0	3
		6	0	6
■ Third Term				
4390	Basic Phlebotomy	5	0	5
■ Fourth Term				
4391	Phlebotomy Practicum I	1	10	2
				16

Respiratory Therapist (RT)

Respiratory Therapy education at CTC is a two year associate degree program.

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

The program is twenty-two months in duration. This program does not include paid cooperative education since students spend their time in course work and unpaid clinical experiences.

The program is accredited by the American Medical Association's Committee on Allied Health Education and Accreditation in collaboration with the Joint Review Committee for Respiratory Therapy Education. Program graduates may apply for the certification examination and registry examination administered by the National Board for Respiratory Care (NBRC). Candidates who complete these requirements are recognized as Certified Respiratory Therapy Technicians (CRTT) and as Registered Respiratory Therapists (RRT).

Respiratory Therapy Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
11xx	Math Elective	4	0	4
4001	Introduction to Health Care Systems	2	0	2
4005	Chemistry for Health Technology	3	2	4
4007	Emergency Medical Procedures	1	2	2
4014	Anatomy and Physiology I	3	2	4
4700	Introduction to Respiratory Therapy	1	0	1
		14	6	17
■ Second Term				
1001	English Composition I	3	0	3
4015	Anatomy and Physiology II	3	2	4
4701	Respiratory Therapy Science I	3	2	4
4720	Cardiopulmonary A & P	3	2	4
		12	6	15
■ Third Term				
4009	General Microbiology	3	3	4
4016	Anatomy and Physiology III	3	2	4
4702	Respiratory Therapy Science II	2	3	3
4711	RT Clinical Practice I	0	8	1
		8	16	12
■ Fourth Term				
100x	English Composition Elective	3	0	3
4018	Essentials of Pharmacology	3	0	3
4703	Respiratory Therapy Science III	3	2	4
4712	RT Clinical Practice II	0	8	1
4718	Pulmonary Diseases I	2	0	2
		11	10	13
■ Fifth Term				
102x	Oral Communication Elective	3	0	3
4704	Respiratory Therapy Science IV	3	2	4
4713	RT Clinical Practice III	0	24	4
4719	Pulmonary Diseases II	2	0	2
		8	26	13
■ Sixth Term				
15xx	Social Science Elective	3	0	3
4705	Respiratory Therapy Science V	3	2	4
4714	RT Clinical Practicum IV	0	32	5
		6	34	12
■ Seventh Term				
101x	Technical Writing Elective	3	0	3
2244	Health Physics I	3	2	4

4020	Fundamentals of Pathophysiology	5	0	5
4706	Respiratory Therapy Science VI	3	2	4
		14	4	16

■ Eighth Term

15xx	Social Science Elective	3	0	3
15xx	Social Science Elective	3	0	3
4707	Respiratory Therapy Science VII	3	0	3
4715	RT Clinical Practice V	0	16	3
		9	16	12

■ Ninth Term

4716	RT Clinical Practice VI	0	16	3
4723	Respiratory Therapy Seminar	2	2	3
		2	18	6
				116

English Composition Electives: 1002, 1007, 1008, 1010
Course 4000, Intro to Medical Terminology is suggested in the first term.
Math Electives: 1131, 1151, 1171, 1191
Oral Communications Electives: 1020, 1024
Social Science Electives: (At least 2 groups must be represented.)
Group 1 - Psychology: 1505, 1506, 1508, 1509, 1510
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1524, 1525, 1527
Group 4 - Government: 1531, 1535, 1539

Surgical Technology (ST)

A surgical technologist is a health care practitioner assisting with the care of the surgical patient and other related patient services. Employment opportunities include hospital operating room departments, obstetrical departments, medical supply/processing departments, outpatient surgical centers and physician office practices.

During operative procedures, the surgical technician functions as an integral part of the surgical team and works directly with the anesthesiologist, registered nurse and surgeon. Their responsibilities include preparation of surgical equipment, instrumentation during operative procedures and other intra-operative patient care activities.

Surgical technology is an associate degree program which focuses upon a basic understanding of general surgery and surgical specialities. Approximately sixteen area hospitals are affiliated with the program.

The first year of the curriculum concentrates upon surgical concepts, theory and operative procedures. Theory and practice are integrated through the use of simulated laboratory experiences and hospital operating room experiences. During this year students also take supportive coursework in basic sciences, communication skills and social sciences.

The emphasis of the second year is directed toward intensive practical hospital experience, consisting of forty hours per week, for three consecutive terms. These clinical terms provide additional clinical application and practical problem solving experiences for the student. Students are not paid during these learning experiences.

The surgical course work is taken in sequential terms throughout the curriculum.

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

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.

Surgical Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
100x	English Composition Elective	3	0	3
4000	Introduction to Medical Terminology	3	1	3
4001	Introduction to Health Care Systems	2	0	2
4009	General Microbiology	3	3	4
4505	Introduction to Surgery I	4	0	4
		15	4	16
■ Second Term				
100x	English Composition Elective	3	0	3
4014	Anatomy and Physiology I	3	2	4
4408	Advanced Medical Terminology	3	0	3
4506	Introduction to Surgery II	5	0	5
		14	2	15
■ Third Term				
1020	Effective Speaking	3	0	3
15xx	Social Science Elective	3	0	3
4015	Anatomy and Physiology II	3	2	4
4531	General Surgery	4	0	4
4541	ST Surgery Lab	0	2	1
		13	4	15
■ Fourth Term				
15xx	Social Science Elective	3	0	3
4016	Anatomy and Physiology III	3	2	4
4018	Essentials 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 Science 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				
1524	Stress Management	3	0	3
4031	Health Care Management	3	0	3
4534	Surgical Specialties II	5	0	5
4544	ST Clinical Experience III	0	5	2
		11	5	13
■ 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
				110

English Composition Electives: 1001, 1002, 1007, 1008
Social Science Electives: (At least 2 groups must be represented.)
Group 1 - Psychology: 1502, 1505, 1506, 1508, 1509
Group 2 - Economics: 1512, 1513
Group 3 - Sociology: 1521, 1523, 1525, 1527

Business Technologies Division

Business and industry are constantly searching for capable and responsible men and women identified as managers who can establish an 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, is 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.

Cincinnati Technical College is meeting the need for specialized business training with twenty-one 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 twenty-one business curricula. Collegiate level courses in these business areas, combined with job-related activities during the alternating ten-week co-op terms, provide students with both business skills and business experience. Upon completion of the two-year co-op/college 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, Xavier University, Northern Kentucky University, Ohio University and the Union for Experimenting Colleges and Universities.

Cooperative Education

In the Business Technologies Division students participate in a cooperative education program. We feel that cooperative education sets Cincinnati Technical College apart from most colleges and universities. Cooperative education allows students to apply their majors in the business world, and to gain experience that will enhance their first full-time employment after graduation. Therefore, in the Business Technologies Division, all students are required to earn 13 credit hours in cooperative education (Horticulture requires 11 credit hours).

To prepare for successful job interviews and continued success in their cooperative education jobs, all students are required to successfully complete the Professional Practices class offered by the Business Technologies Division, either before or concurrent with course 9201 or 9501.

* Students with prior business experience may be permitted to fulfill the cooperative education requirement by applying, through their program coordinators, to submit a portfolio which documents past work experience. The portfolio will be reviewed to determine its validity.
* Students with other work experience may apply, through their program coordinators, to complete appropriate business courses as a substitute for cooperative education employment.

Refer to the "Cooperative Education Program" section of the catalog for additional requirements.

Industry Training

The Business Technologies Division is committed to providing customized training programs for business and industry. These programs are designed to provide employees with the necessary skill-building or updating needed to keep abreast of the rapid technological changes and challenges faced in today's business world.

Automotive Service Management Technology (AS)

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 and technical centers 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 Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
2501	Automotive Technology I	5	10	8
2506	Machine & Hand Tool Lab	2	3	3
		13	13	17
Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
Third Term				
1002	English Composition II	3	0	3
1170	Intro to Technical Mathematics	4	0	4
2221	Technical Physics I	2	3	3
2502	Automotive Technology II	5	10	8
		14	13	18
Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
Fifth Term				
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
2911	Principles of Accounting I	3	2	3
2925	Business Principles	3	0	3
		15	16	20
Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
Seventh Term				
1010	Technical Writing I	3	0	3
1505	Intro to Psychology I	3	0	3
1535	Intro to Labor Management Relations	3	0	3
2504	Automotive Technology IV	2	8	5
2508	Techniques of Welding	2	3	3
2511	Automotive Management II	2	3	3
		15	14	20
Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
Ninth Term				
1020	Effective Speaking	3	0	3
1823	Business Law I	3	0	3
1850	Computerized Business Applications	2	3	3
2505	Automotive Technology V	5	10	8
2903	Survey of Marketing	3	0	3
		16	13	20
Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				108

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 compatible with their level of experience and aptitude.

Management Information Systems (MIS)

(Formerly Business Data Management Technology)

The Management Information Systems curriculum prepares the student to satisfy the demand for increased employment in the data processing environment. Job opportunities for graduates include computer operations input - output control and microcomputer specialist. The students career path can lead to operations management.

Management Information Systems Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
112x	Math Elective	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
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
112x	Math Elective	4	0	4
1731	Advanced Computer Operations	2	3	3
1861	Electronic Spreadsheet	2	1	3
2912	Principles of Accounting II	3	2	3
2925	Business Principles	3	0	3
		17	6	19
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
15xx	Social Science Elective	3	0	3
1702	Introduction to Basic Programming	2	3	3
1721	Programming Logic & Methods	2	3	3
1754	Data Communications	3	2	3
2913	Principles of Accounting III	3	2	3
2926	Principles of Management	3	0	3
		16	10	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1010	Technical Writing I	3	0	3
1512	Microeconomics	3	0	3
1740	Operating Systems I	2	3	3
1742	COBOL Programming I	3	7	6
1823	Business Law I	3	0	3
		14	10	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
1020	Effective Speaking	3	0	3
1502	Human Relations	3	0	3
1741	Operating Systems II	2	3	3
1761	Introduction to RPG 2	3	7	6
1771	Data Base Management Systems	2	3	3
2903	Survey of Marketing	3	0	3
		16	13	21
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				108

Math Electives: 1124, 1126, 1127, 1128
Social Science Electives: 1505, 1506, 1513, 1521, 1524, 1527, 1535
*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 compatible 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 (CISP)

(Formerly Business Data Processing Technology)

The objective of the Computer Information Systems Programming curriculum 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 information systems community after graduation.

Computer Information Systems Programming Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
112x	Math Elective	4	0	4
1701	Introduction to Data Processing	3	0	3
1702	Introduction to Basic Programming	2	3	3
1721	Programming Logic & Methods	2	3	3
2911	Principles of Accounting I	3	2	3
		17	8	19
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1127	Business Statistics	4	0	4
1722	Advanced Basic Programming	2	3	3
1761	Introduction to RPG 2	3	7	6
2912	Principles of Accounting II	3	2	3
		15	12	19
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1505	Intro to Psychology I	3	0	3
1512	Microeconomics	3	0	3
1742	COBOL Programming I	3	7	6
1781	Advanced RPG 2	2	3	3
2913	Principles of Accounting III	3	2	3
		14	12	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh 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	2	3	3
2903	Survey of Marketing	3	0	3
2921	Managerial Accounting	3	0	3
		17	12	20

■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
1020	Effective Speaking	3	0	3
15xx	Social Science Elective	3	0	3
17xx	MIS Elective	2	3	3
1752	Real-Time Systems/Data Comm I	2	3	3
1769	Program Data Base Application	2	3	3
1823	Business Law I	3	0	3
2926	Principles of Management	3	0	3
		18	9	21
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				110

Math Electives: 1124, 1126
Social Science Electives: 1502, 1506, 1513, 1521, 1524, 1527, 1535
Management Information Systems Elective: 1711, 1712, 1740, 1741 1764, 1771, 1861
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 compatible with 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.

Data Communications Technology (DCT)

As the data processing industry continues to grow and mature, more specialists are needed each year to control and manage the information explosion.

Data communications technicians are those specialists who provide the expertise to ensure that information gets from its source to the place where it is needed. Utilizing a unique array of communication tools and trouble-shooting techniques, the data communications specialist installs and maintains the links of information.

Courses will include Programming, Data Communications I and II, Networking, and Electronic Fundamentals.

Data Communications Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1701	Introduction to Data Processing	3	0	3
1702	Introduction to Basic Programming	2	3	3
1721	Programming Logic & Methods	2	3	3
2925	Business Principles	3	0	3
7701	Electrical Fundamentals I	4	2	4
		17	8	19
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	0
■ Third Term				
1002	English Composition II	3	0	3
1723	Assembler Language I	2	4	4
1754	Data Communications I	3	2	3
2911	Principles of Accounting I	3	2	3
7702	Electrical Fundamentals II	4	2	4
		16	8	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1010	Technical Writing	3	0	3
1739	Operating Systems	2	3	3
1763	Systems Analysis & Design	2	3	3
1764	Data Communications II	3	2	4
2903	Survey of Marketing	3	0	3
2911	Principles of Accounting I	3	2	3
		16	10	19
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1127	Business Statistics	4	0	4
1502	Human Relations	3	0	3
1512	Microeconomics	3	0	3
1771	Data Base Management Systems	2	3	3
1861	Electronic Spreadsheets	2	1	3
2912	Principles of Accounting II	3	2	3
		17	6	19
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
xxxx	Business Elective	3	0	3
1020	Effective Speaking	3	0	3
15xx	Social Science Elective	3	0	3
1784	Networking	3	2	4
1823	Business Law I	3	0	3
2926	Principles of Management	3	0	3
		18	2	19
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				107

Math Electives: 1124, 1126
Business Electives: 1135, 1139, 1761, 1811, 1820, 1867, 2902, 2923 2960, 2970
Social Science Electives: 1505, 1506, 1509, 1513, 1521, 1523, 1524 1525, 1527, 1531, 1535, 1536, 1539, 1542, 1543

Business Management Technology (BM)

The Business Management Technology at CTC combines sound business training with on-the-job experience. The classroom experience centers around a well-planned management curriculum including courses in basic management principles, labor-management relations and management theories with practical applications. Through cooperative education work experience, students learn to handle directions and gain valuable insights into solving management problems.

Business Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics	3	0	3
1850	Computerized Business Applications	2	3	3
2901	Principles of Marketing I	3	0	3
2911	Principles of Accounting I	3	2	3
2925	Business Principles	3	0	3
		17	5	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3

■ Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics II	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
2926	Principles of Management	3	0	3
		18	2	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1007	Research & Argumentative Writing	3	0	3
1123	Business Mathematics III	3	0	3
1832	Personnel Management	3	0	3
1861	Electronic Spreadsheets	2	1	3
2905	Money and Banking	3	0	3
2913	Principles of Accounting III	3	2	3
		17	3	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1011	Business Communications	3	0	3
1535	Intro to Labor Management Relations	3	0	3
1823	Business Law I	3	0	3
2921	Managerial Accounting	3	0	3
2960	Principles of Finance	3	0	3
2970	Contemporary Management Concepts	3	0	3
		18	0	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
1512	Micoreconomics	3	0	3
1804	Risk and Insurance	3	0	3
1824	Business Law II	3	0	3
29xx	Business Elective	3	0	3
2975	Business Management Seminar	3	0	3
		21	0	21
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				106

*Course 1850 is a prerequisite for course 1732.
Business Electives: 2961, 2962
Oral Communication Electives: 1020, 1024
Social Science Electives: 1502, 1505, 1513, 1521, 1524, 1539
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 compatible with their level of experience and aptitude.

Financial Management Technology (FM)

Financial Management is an option of the Business Management technology designed especially to provide a combination of sound financial business training with on-the-job experience. Courses covering basic management concepts and specializing in investment management techniques, financial law and investment tax principles provide much of the necessary background for careers in the financial industry.

Financial Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
2901	Principles of Marketing I	3	0	3
2911	Principles of Accounting I	3	2	3
2925	Business Principles	3	0	3
		17	5	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics II	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
2926	Principles of Management	3	0	3
		18	2	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1007	Research & Argumentative Writing	3	0	3
1123	Business Mathematics III	3	0	3
1832	Personnel Management	3	0	3
1861	Electronic Spreadsheets	2	1	3
2905	Money and Banking	3	0	3
2913	Principles of Accounting III	3	2	3
		17	3	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1011	Business Communications	3	0	3
1125	Computerized Financial Analysis	2	2	3
1823	Business Law I	3	0	3
2960	Principles of Finance	3	0	3
2962	Investment Management I	3	0	3
2970	Contemporary Management Concepts	3	0	3
		17	2	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
102x	Oral Communication Elective	3	0	3
1512	Macroeconomics	3	0	3
1535	Intro to Labor Management Relations	3	0	3
1826	Financial Law	3	0	3
2963	Investment Tax	3	0	3
2975	Business Management Seminar	3	0	3
		18	0	18
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				103

Oral Communication Electives: 1020, 1024

Small Business Management (SBM)

Small Business Management is another option of the Business Management Technology. This program is designed to provide the students with the knowledge to own and operate their own business. The courses will expose the student to the basic principles of management, marketing, accounting and other courses that are developed for those with this type of career in mind. The combination of courses and on-the-job training will give the students the necessary background for Small Business Management.

Small Business Management Certificate

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1850	Computerized Business Applications	2	3	3
2901	Principles of Marketing I	3	0	3
2911	Principles of Accounting I	3	2	3
2926	Principles of Management	3	0	3
		11	5	12
■ Second Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1861	Electronic Spreadsheet	2	1	3
2902	Principles of Marketing II	3	0	3
2912	Principles of Accounting II	3	2	3
		8	3	12
■ Third Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1810	Principles of Salesmanship	3	0	3
1832	Personnel Management	3	0	3
2971	Small Business Management I	3	0	3
		9	0	12
■ Fourth Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1823	Business Law I	3	0	3
2960	Principles of Finance	3	0	3
2972	Small Business Management II	3	0	3
		9	0	12
■ Fifth Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1512	Microeconomics	3	0	3
1804	Risk and Insurance	3	0	3
1824	Business Law II	3	0	3
		9	0	12
				60

*Technical electives must be approved by the coordinator.

Small Business Management Technology

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
2903	Survey of Marketing	3	0	3
2911	Principles of Accounting I	3	2	3
2925	Business Principles	3	0	3
		17	5	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1002	English Composition II	3	0	3
1122	Business Mathematics	3	0	3
15xx	Social Science Elective	3	0	3
1861	Electronic Spreadsheet	2	1	3
2912	Principles of Accounting II	3	2	3
2912	Principles of Management	3	0	3
		17	3	21
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1123	Business Mathematics III	3	0	3
1810	Principles of Salesmanship	3	0	3
1832	Personnel Management	3	0	3
2913	Principles of Accounting III	3	2	3
2971	Small Business Management I	3	0	3
		15	2	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1011	Business Communications	3	0	3
1512	Microeconomics	3	0	3
1823	Business Law I	3	0	3
2905	Money and Banking	3	0	3
2972	Small Business Management II	3	0	3
		15	0	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
*xxxx	Tech Elective/Coordinator Approval	0	0	3
1024	Group Dynamics & Problem Solving	3	0	3
15xx	Social Science Elective	3	0	3
1804	Risk and Insurance	3	0	3
1824	Business Law II	3	0	3
2960	Principles of Finance	3	0	3
		15	0	18
■ Tenth Term				
9204	Co-Op Employment Business Tech	1	40	2
				109

*Technical electives must be approved by the coordinator.

Chef Technology (CH)

The Chef Technology program leads to the awarding of an associate degree. Students will be trained in all aspects of Culinary Arts including soups, sauces, butchery, vegetable cookery, meat and fish cookery, pastry, hors d'oeuvres, ice and tallow carving, garne manger 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

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
2801	Food & Bev Sanitation, Safety, Service	3	0	3
2822	Chef Basic Cookery I	2	4	3
2827	Butchery & Fish Management	2	4	3
2925	Business Principles	3	0	3
3007	Introduction to Keyboarding	1	4	2
		17	12	20
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	4	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1037	Tech. French-Culinary Professionals	2	2	3
1122	Business Mathematics II	3	0	3

2802	Food & Beverage Cost Control	3	0	3
2808	Food and Beverage Lab I	0	4	1
2823	Chef Basic Cookery II	2	4	3
2911	Principles of Accounting I	3	2	3
		16	12	19

■ Fourth Term

9202	Co-Op Employment Business Tech	1	40	3

■ Fifth Term

1011	Business Communications	3	0	3
1123	Business Mathematics III	3	0	3
2803	Menu Production & Purchasing	3	0	3
2824	Chef Advanced Cookery	2	4	3
2912	Principles of Accounting II	3	2	3
4130	Introduction to Nutrition	3	0	3
		17	6	18

■ Sixth Term

9203	Co-Op Employment Business Tech	1	40	3

■ Seventh Term

1521	Introduction to Sociology	3	0	3
1502	Human Relations	3	0	3
1850	Computerized Business Applications	2	3	3
2805	Food & Beverage Supervision	3	0	3
2825	Pastry & Confectionary	4	8	6
		15	11	18

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth Term

1020	Effective Speaking	3	0	3
1512	Microeconomics	3	0	3
1825	Hotel Law	3	0	3
2821	Sales Techniques	3	0	3
2826	Classical Cookery	4	8	6
		16	8	18

■ Tenth Term

9205	Co-Op Employment Business Tech	1	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 compatible with their level of experience and aptitude.

Graphic Communications Technology (GC)

At CTC, modern computerized typesetting equipment, letterpress and offset presses, screen printing and 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 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 lables. Students will become familiar with delicate halftone and color process printing, laser etched continuous print cylinders and photopolymer coated cylinders.

Graphic Communications Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1170	Introduction to Technical Mathematics	4	0	4
1401	Layout & 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
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third 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
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1020	Effective Speaking	3	0	3
1429	Screen Printing	1	9	4
1450	Estimating	2	3	3
1502	Human Relations	3	0	3
1810	Principles of Salesmanship	3	0	3
2263	Physical Science for GC	3	4	5
		15	16	21
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1007	Research & Argumentative Writing	3	0	3
1419	Survey of Printing Inks	3	0	3
1430	Relief Presswork I	1	9	4
1480	Photolithography I	2	3	3
1823	Business Law I	3	0	3
2911	Principles of Accounting I	3	2	3
		15	14	19
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth 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
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				110

Flexographic Communications Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1170	Introduction to Technical Mathematics	4	0	4
1401	Layout & 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
■ Second Term				
9200	Professional Practices	1	0	0

9201	Co-Op Employment Business Tech	1	40	3
		2	40	3

■ Third 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

■ Fourth Term

9202	Co-Op Employment Business Tech	1	40	3

■ Fifth Term

1020	Effective Speaking	3	0	3
1429	Screen Printing	1	9	4
1450	Estimating	2	3	3
1502	Human Relations	3	0	3
1810	Principles of Salesmanship	3	0	3
2263	Physical Science for GC	3	4	5
		15	16	21

■ Sixth Term

9203	Co-Op Employment Business Tech	1	40	3

■ Seventh Term

1007	Research & 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
2911	Principles of Accounting I	3	2	3
		15	14	19

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth Term

1010	Technical Writing I	3	0	3
1428	Management Survey	3	0	3
1431	Relief Presswork	2	13	6
1481	Photolithography II	2	3	3
1521	Introduction to Sociology	3	0	3
		13	16	18

■ Tenth Term

9205	Co-Op Employment Business Tech	1	40	2
				110

Hotel-Restaurant Management Technology (HR)

CTC's Hotel-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 for the type of career they wish to follow in industry.

Hotel-Restaurant Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours

■ First Term

1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1502	Human Relations	3	0	3
2801	Food & Bev Sanitation/Safety/Service	3	0	3
2811	Introduction to Hotel Management	3	0	3
2925	Business Principles	3	0	3
3007	Introduction to Keyboarding	1	4	2
		19	4	20

■ Second Term

9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3

■ Third Term

1002	English Composition II	3	0	3
1122	Business Mathematics II	3	0	3
1850	Computerized Business Applications	2	3	3
2802	Food & Beverage Cost Control	3	0	3
2808	Food and Beverage Lab I	0	4	1
2812	Hotel Front Office Night Audit Proc.	3	2	3
2911	Principles of Accounting I	3	2	3
		17	11	19

■ Fourth Term

9202	Co-Op Employment Business Tech	1	40	3

■ Fifth Term

1123	Business Mathematics III	3	0	3
1832	Personnel Management	3	0	3
2803	Menu Production/Purchasing	3	0	3
2815	Princ and Practices of Hotel Mgmt	3	0	3
2912	Principles of Accounting II	3	2	3
4130	Introduction to Nutrition	3	0	3
		18	2	18

■ Sixth Term

9203	Co-Op Employment Business Tech	1	40	3

■ Seventh Term

1011	Business Communications	3	0	3
1512	Microeconomics	3	0	3
1521	Introduction to Sociology	3	0	3
2805	Food & Beverage Supervision	3	0	3
2814	Hotel Maintenance	3	0	3
2928	Hotel Restaurant Accounting	3	0	3
		18	0	18

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth Term

1020	Effective Speaking	3	0	3
1825	Hotel Law	3	0	3
2804	Catering Banquets Beverage Management	3	0	3
2807	Basic Food Hotel/Restaurant	2	4	3
2813	Hotel Executive Housekeeping	3	2	3
2821	Sales Techniques	3	0	3
		17	6	18

■ Tenth Term

9205	Co-Op Employment Business Tech	1	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 compatible with their level of experience and aptitude.

International Commerce Technology Program (IC)

The International Commerce Technology Program at CTC is designed to train students for beginning work assignments in the rapidly expanding career of International Trade-Export Specialist. Students will be trained in special areas of expertise relating to the preparation and processing of international sales transactions. These areas include issuing quotations, coordinating shipment dates with production schedules, processing orders, planning shipments, preparing export documents, and performing post-shipment activities. In addition to these specialized areas of training, students will receive practical business education in business administration topics such as accounting, marketing, finance, law and management.

International Commerce Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
2901	Principles of Marketing I	3	0	3
2911	Principles of Accounting I	3	2	3
2925	Business Principles	3	0	3
		17	5	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics II	3	0	3
29xx	Export Procedure & Documentation	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
		18	2	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1123	Business Mathematics III	3	0	3
1513	Macroeconomics	3	0	3
152x	Sociology Elective	3	0	3
1810	Principles of Salemanship	3	0	3
1861	Electronic Spreadsheets	2	2	3
29xx	Import Procedure & Documentation	3	0	3
		17	2	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1007	Critical Thinking & Writing	3	0	3
153x	Labor Relations Elective	3	0	3
1823	Business Law I	3	0	3
29xx	International Purchase & Finance	3	0	3
29xx	International Marketing Case Studies	3	0	3
29xx	International Transportation & Dist	3	0	3
		18	0	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
1011	Business Communications	3	0	3
102x	Oral Comm. Elective	3	0	3
18xx	International Law	3	0	3
1804	Risk & Insurance	3	0	3
29xx	International Trade Seminar	3	0	3
296x	Business Elective	3	0	3
		18	0	18
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				103

Sociology Electives: 1521, 1523, 1525, 1527
Labor Relations Electives: 1535, 1537
Oral Communication Electives: 1020, 1024
Business Electives: 2961, 2962

Landscape Horticulture Technology (LH)

The Landscape 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. Landscape Horticulture students spend two terms (during the growing season) in cooperative employment during each of the two years in the program.

Landscape Horticulture Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
11xx	Math Elective	4	0	4
1502	Human Relations	3	0	3
3500	Orient to Horticulture Occupation	1	0	1
3502	Horticulture Science	2	2	3
3504	Woody Plant Materials I	2	3	3
		15	5	17
■ Second Term				
1002	English Composition II	3	0	3
22xx	Chemistry Elective	3	2	4
2925	Business Principles	3	0	3
3510	Small Engine Maintenance & Repair	2	3	3
3532	Landscape Management	2	3	3
		13	8	16
■ Third Term				
15xx	Social Science Elective	3	0	3
2911	Principles of Accounting I	3	2	3
3501	Soils & Plant Nutrition	3	0	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
■ Fourth Term				
9200	Professional Practices	1	0	0
9501	Co-Op Employment OHOF Tech	1	40	3
		2	40	3
■ Fifth Term				
1010	Technical Writing I	3	0	3
3505	Herbaceous Plant Material	2	2	3
3508	Turfgrass Management	2	3	3
3511	Landscape Construction	1	5	3
3521	Entomology/Plant Pathology	2	2	3
		10	12	15
■ Sixth Term				
9502	Co-Op Employment OHOF Tech	1	40	3
■ Seventh Term				
102x	Oral Communication Elective	3	0	3
151x	Economics Elective	3	0	3
1850	Computerized Business Applications	2	3	3
2926	Principles of Management	3	0	3
35xx	Technical Elective	2	3	3
3515	Woody Plant Materials II	2	3	3
		15	9	18
■ Eighth Term				
1810	Principles of Salesmanship	3	0	3
1823	Business Law I	3	0	3
35xx	Technical Elective	2	3	3
35xx	Technical Elective	2	3	3
3518	Advanced Landscape Design	2	4	3

3531 Horticulture Seminar II	1	1	1
	13	11	16

■ Ninth Term

9503 Co-Op Employment OHOF Tech	1	40	3

■ Tenth Term

9504 Co-Op Employment OHOF Tech	1	40	2
			109

Math Electives: 1170, 1171, 1172, 1173, 1179, 1191, 1192, 1193, 1194, 1195
Oral Communication Electives: 1020, 1024
Technical Electives: 3506, 3507, 3519, 3533, 3534, 3535, 3540, 3544
Chemistry Electives: 2200, 2209
Social Science Electives: 1505, 1506, 1507, 1508, 1509, 1510, 1521, 1524
Economics Elective: 1512, 1513

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 for 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 Term			
1001 English Composition I	3	0	3
1121 Business Mathematics I	3	0	3
1201 Private Police Officer Training	3	6	6
1210 Intro to LC Security Administration	3	0	3
1216 Security Administration I	3	0	3
2926 Principles of Management	3	0	3
	18	6	21
■ Second Term			
9200 Professional Practices	1	0	0
9201 Co-Op Employment Business Tech	1	40	3
	2	40	3
■ Third Term			
1002 English Composition II	3	0	3
1122 Business Mathematics II	3	0	3
1211 Industrial Security	3	0	3
1217 Security Administration II	3	0	3
1220 Fund of Fire Protection	3	0	3
2927 Security Management	3	0	3
	18	0	18
■ Fourth Term			
9202 Co-Op Employment Business Tech	1	40	3
■ Fifth Term			
1010 Technical Writing I	3	0	3
1020 Effective Speaking	3	0	3
1123 Business Mathematics III	3	0	3
1203 Security Investigation	3	0	3
1208 Criminal Law I	3	0	3
1230 Safety Management	3	0	3
	18	0	18
■ Sixth Term			
9203 Co-Op Employment Business Tech	1	40	3
■ Seventh Term			
1xxx Comm Skill/Soc. Sci. Elective	3	0	3
1204 Personnel Security System	2	3	3
1209 Criminal Law II	3	0	3
1218 Executive Protection	3	0	3
1535 Intro to Labor Management Relations	3	0	3
1823 Business Law I	3	0	3
2909 Office Accounting I	3	2	3
	20	5	21
■ Eighth Term			
9204 Co-Op Employment Business Tech	1	40	2
■ Ninth Term			
1205 Criminal Interrogation	3	0	3
1505 Intro to Psychology I	3	0	3
1506 Intro to Psychology II	3	0	3
1521 Introduction to Sociology	3	0	3
1850 Computerized Business Applications	2	3	3
2903 Survey of Marketing	3	0	3
	17	3	18
■ Tenth Term			
9205 Co-Op Employment Business Tech	1	40	2
			109

Social Science Electives: 1024, 1502
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 compatible with their level of experience and aptitude.

Managerial Accounting Technology (MG)

Managerial Accounting provides students knowledge of business fundamentals and an understanding of accounting skills. Students are provided an opportunity to enhance their skills by co-oping with financial institutions, small and large CPA firms, manufacturing and service companies and governmental agencies.

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

Managerial Accounting Technology Curriculum

	Hours Per Week Class	Lab	Credit Hours
■ First Term			
1001 English Composition I	3	0	3
1121 Business Mathematics	3	0	3
1850 Computerized Business Applications	2	3	3
2911 Principles of Accounting I	3	2	3
2925 Business Principles	3	0	3
2960 Principles of Finance	3	0	3
	17	5	18
■ Second Term			
9200 Professional Practices	1	0	0
9201 Co-Op Employment Business Tech	1	40	3
	2	40	3
■ Third Term			
10xx English Composition Elective	3	0	3
1122 Financial Analysis	3	0	3
1823 Business Law I	3	0	3
1861 Electronic Spreadsheet	2	1	3
2912 Principles of Accounting II	3	2	3
2917 Federal Taxation I	3	0	3
	17	3	18
■ Fourth Term			
9202 Co-Op Employment Business Tech	1	40	3
■ Fifth Term			
1007 Critical Thinking & Writing	3	0	3
1123 Business Mathematics III	3	0	3
1824 Business Law II	3	0	3
*29xx Business Elective	3	0	3

2913	Principles of Accounting III	3	2	3
2914	Cost Accounting I	3	0	3
2926	Principles of Management	3	0	3
		21	2	21

■ Sixth Term

9203	Co-Op Employment Business Tech	4	40	3

■ Seventh Term

1011	Business Communications	3	0	3
15xx	Social Science Elective	3	0	3
2903	Survey of Marketing	3	0	3
2915	Cost Accounting II	3	0	3
2918	Federal Taxation II	3	0	3
2919	Intermediate Accounting I	3	0	3
		18	0	18

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth Term

102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
1512	Micro Economics	3	0	3
1851	Auditing	3	0	3
2920	Intermediate Accounting II	3	0	3
2921	Managerial Accounting	3	0	3
		18	0	18

■ Tenth Term

9205	Co-Op Employment Business Tech	1	40	2
				106

English Composition Electives: 1002, 1008, 1009, 1010
*Business Elective: See coordinator for approval.
Social Science Electives: 1502, 1505, 1506, 1508, 1509, 1510, 1513, 1521, 1523, 1525, 1527
Oral Comm. Electives: 1020, 1024

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. The curriculum includes required courses for the Ohio real estate license.

In many cases co-op employment requires a state real estate license. The program is designed for parallel co-op.

As in most technologies, co-op employment depends upon the availability of job sites.

Property Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics	3	0	3
2925	Business Principles	3	0	3
2931	On-Site Property Management I	3	0	3
2951	Real Estate Principles & Practices	3	0	3
3005	Administrative Typing	2	3	3
3007	Intro to Keyboarding	1	4	2
		18	7	20

■ Second Term

9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3

■ Third Term

1007	Critical Thinking & Writing	3	0	3
112x	Math Elective	4	0	4
1122	Business Mathematics II	3	0	3
1850	Computerized Business Applications	2	3	3
2926	Principles of Management	3	0	3
2932	On-Site Property Management II	3	0	3
2953	Real Estate Law	3	0	3
		21	3	22

■ Fourth Term

9202	Co-Op Employment Business Tech	1	40	3

■ Fifth Term

1011	Business Communications	3	0	3
1123	Business Mathematics III	3	0	3
1502	Human Relations	3	0	3
2911	Principles of Accounting I	3	2	3
2933	Executive Level Property Management	3	0	3
2945	Residential Construction	3	0	3
2955	Real Estate Appraisal I-Residential	3	0	3
		21	2	21

■ Sixth Term

9203	Co-Op Employment Business Tech	1	40	3

■ Seventh Term

1513	Macroeconomics	3	0	3
1861	Electronic Spreadsheets	2	1	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
		17	3	18

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth 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

■ Tenth Term

9205	Co-Op Employment Business Tech	1	40	2
				115

Oral Comm. Electives: 1020, 1024
Social Science Electives: 1505, 1506, 1512, 1535, 1536
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 compatible with their level of experience.

Purchasing Management Technology (PM)

Purchasing is very important to a company's operations and profits. Approximately 50 cents of every dollar received by a company is spent on the purchase of goods and services.

Because of this, business is constantly searching for individuals who understand the fundamentals of effective purchasing practice.

A career in purchasing offers individuals above-average earnings and the opportunity to work with many professionals within their company and from the companies that call on them.

This program was designed with the help and cooperation of many leading purchasing professionals in the Greater Cincinnati area.

Purchasing Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1020	Effective Speaking	3	0	3
1121	Business Mathematics	3	0	3
1502	Human Relations	3	0	3
1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
		17	3	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics II	3	0	3
1512	Microeconomics	3	0	3
1861	Electronic Spreadsheets	2	1	3
2911	Principles of Accounting I	3	2	3
2926	Principles of Management	3	0	3
		17	3	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1011	Business Communications	3	0	3
1123	Business Mathematics III	3	0	3
1513	Macroeconomics	3	0	3
1817	Industrial Purchasing	3	0	3
1823	Business Law I	3	0	3
2912	Principles of Accounting II	3	2	3
		18	2	18
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
11xx	Math Elective	3	0	3
1810	Principles of Salesmanship	3	0	3
1818	Advanced Purchasing	3	0	3
1824	Business Law II	3	0	3
1832	Personnel Management	3	0	3
2905	Money & Banking	3	0	3
2913	Principles of Accounting III	3	2	3
		21	2	21
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
1527	Technology & Ethical Decisions	3	0	3
1819	Contemporary Purchasing Issues	2	1	3
1872	Offshore Sourcing	3	0	3
2903	Survey of Marketing	3	0	3
2960	Principles of Finance	3	0	3
7005	Basic Blueprint Reading & Sketching	2	2	3
		16	3	18
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				109

Math Electives: 1125, 1127, 1153

Real Estate Technology (RE)

Recommended courses: College Prep and Business courses, Typing, Math

If you are outgoing and flexible, if you are looking for a career in sales, management or finance, and if you want a real challenge, the Real Estate program is for you. This program provides an educational foundation which satisfies the requirements for licensing as well as future requirements for becoming a real estate broker.

Real Estate positions are available through local and national real estate firms, financial institutions, insurance companies and most major corporations. Many students combine this program with the Property Management curriculum to increase employment opportunities.

Co-op employment is available in Real Estate based on the availability of co-op employers.

Real Estate Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics	3	0	3
2925	Business Principles	3	0	3
2951	Real Estate Principles & Practices	3	0	3
2953	Real Estate Law	3	0	3
3007	Intro to Keyboarding	1	4	2
		16	4	17
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1007	Critical Thinking & Writing	3	0	3
1122	Business Mathematics 2	3	0	3
1850	Computerized Business Applications	2	3	3
2926	Principles of Management	3	0	3
2940	Real Estate Sales	3	0	3
2954	Real Estate Finance	3	0	3
		17	3	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1011	Business Communications	3	0	3
1123	Business Mathematics III	3	0	3
1502	Human Relations	3	0	3
2901	Principles of Marketing I	3	0	3
2905	Money and Banking	3	0	3
2911	Principles of Accounting I	3	2	3
2955	Real Estate Appraisal I - Residential	3	0	3
		21	2	21
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
1513	Macroeconomics	3	0	3
1804	Risk and Insurance	3	0	3
1861	Electronic Spreadsheets	2	1	3
2902	Principles of Marketing II	3	0	3
2912	Principles of Accounting II	3	2	3
2952	Real Estate Brokerage	3	0	3
		17	3	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
102x	Oral Communications Elective	3	0	3
15xx	Social Science Elective	3	0	3
1524	Stress Management	3	0	3
1832	Personnel Management	3	0	3
2956	Real Estate Appraisal II-Income	3	0	3
2957	Real Estate Seminar: Special Topics	3	0	3
		18	0	18

■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				108

Oral Comm. Electives: 1020, 1024
Social Science Electives: 1505, 1506, 1512, 1535, 1536
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 compatible with their level of experience and aptitude.

Marketing Management/Industrial Marketing Technologies (MMT/IMT)

The process or scope of marketing is very broad and complex.

The casual observer sees marketing only in terms of promotion. While promotion is an important component of marketing, it is far from being the only component.

This technology examines consumer behavior; pricing practices; how, why, and where products are sold and developed.

The serious student will discover not only the challenge and excitement of marketing but the many rewarding career opportunities as well. These opportunities include sales, purchasing, advertising, marketing research, market analysis, distribution specialists and many more.

Marketing Management Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1020	Effective Speaking	3	0	3
1121	Business Mathematics I	3	0	3
1505	Intro to Psychology I	3	0	3
*1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
		17	3	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Financial Analysis	3	0	3
1512	Microeconomics	3	0	3
1804	Risk and Insurance	3	0	3
1861	Electronic Spreadsheets	2	1	3
2926	Principles of Management	3	0	3
		17	1	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1011	Business Communications	3	0	3
1024	Group Dynamics & Problem Solving	3	0	3
1123	Computerized Financial Analysis	3	0	3
1823	Business Law I	3	0	3
2901	Principles of Marketing I	3	0	3
2911	Principles of Accounting I	3	2	3
2975	Business Management Seminar	2	3	3
		20	5	21
■ Sixth Term				
9203	Co-Op Employment Business Tech	4	40	3
■ Seventh Term				
1513	Macroeconomics	3	0	3
1810	Principles of Salesmanship	3	0	3
1824	Business Law II	3	0	3
2902	Principles of Marketing II	3	0	3
2905	Money and Banking	3	0	3
2912	Principles of Accounting II	3	2	3
		18	2	18
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
1817	Industrial Purchasing	3	0	3
1832	Personnel Management	3	0	3
1845	Principles of Retailing	3	0	3
2913	Principles of Accounting III	3	2	3
2923	Market Concepts & Applications	3	0	3
2960	Principles of Finance	3	0	3
		18	2	18
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				106

*3005 to be taken in place of 1850 if student has not taken high school typing.
*1850 to be taken if 3005 was taken in Term I.
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 compatible with their level of experience and aptitude.

Industrial Marketing Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1020	Effective Speaking	3	0	3
1121	Business Mathematics I	3	0	3
1505	Intro to Psychology I	3	0	3
1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
		17	3	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Financial Analysis	3	0	3
1512	Microeconomics	3	0	3
1804	Risk and Insurance	3	0	3
1861	Electronic Spreadsheet	2	2	3
2926	Principles of Management	3	0	3
		17	1	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1011	Business Communications	3	0	3
1171	Technical Mathematics I	4	0	4
1823	Business Law I	3	0	3
2221	Technical Physics I	2	3	3
2901	Principles of Marketing I	3	0	3
7005	Basic Blueprint Reading & Sketching	2	2	3
		17	5	19
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
15xx	Social Science Elective	3	0	3
1810	Principles of Salesmanship	3	0	3
1824	Business Law II	3	0	3
2222	Technical Physics II	2	3	3
2902	Principles of Marketing II	3	0	3

2911	Principles of Accounting I	3	2	3
		17	5	18

■ Eighth Term

9204	Co-Op Employment Business Tech	1	40	2

■ Ninth Term

*xxxx	Tech Elective/Coordinator Approval	3	0	3
1817	Industrial Purchasing	3	0	3
2223	Technical Psysics III	2	3	3
2912	Principles of Accounting II	3	2	3
2923	Market Concepts & Theory	3	0	3
2960	Principles of Finance	3	0	3
		17	5	18

■ Tenth Term

9205	Co-Op Employment Business Tech	1	40	2
				104

* Technical electives must be approved by the coordinator.

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 compatible with 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 curricula include not only technical skill development but also courses in business principles and management.

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

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

The Word Processing Specialist (WP) curriculum prepares an individual to be a word/information processing operator or a word/information 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 Specialist Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1020	Effective Speaking	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
300x	Typewriting Elective	2	3	3
3021	Office Procedures	2	3	3
		15	9	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1001	English Composition I	3	0	3
1122	Business Mathematics II	3	0	3
3002	Typewriting II	2	3	3
3022	WP Office Applications	2	3	3
3032	Office Proc/Professional Development	2	3	3
3061	Word/Information Processing I	1	4	3
		13	13	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
■ Fifth Term				
1123	Business Mathematics III	3	0	3
1823	Business Law I	3	0	3
2926	Principles of Management	3	0	3
3003	Typewriting III	2	3	3
3023	Machine Transcription	2	3	3
3035	Essential Business Correspond	2	1	3
3080	Speedwriting I	2	3	3
		17	10	21
■ Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
■ Seventh Term				
xxxx	SEC/MIS Elective	2	3	3
1018	Tec WR Style & Techniques	2	5	4
1502	Human Relations	3	0	3
2911	Principles of Accounting I	3	2	3
3024	Secretarial Procedures	3	0	3
3081	Shorthand: Speed Development	2	3	3
		15	13	19
■ Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
■ Ninth Term				
xxxx	SEC/MIS Elective	2	3	3
1011	Business Communications	3	0	3
1512	Micro Economics	3	0	3
1521	Introduction to Sociology	3	0	3
2912	Principles of Accounting II	3	2	3
3090	Shorthand Transcription	2	8	5
		16	13	20
■ Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				109

Typewriting Electives: 3001, 3006
SEC/MIS Electives: 1712, 1732, 1860, 1861, 3062

General Office Specialist Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
2925	Business Principles	3	0	3
300x	Typewriting Elective	2	3	3
3021	Office Procedures	3	2	3
		15	9	18
■ Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	1	40	3
		2	40	3
■ Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics II	3	0	3
3002	Typewriting II	2	3	3
3022	WP Office Applications	2	3	3
3032	Office Proc/Prof Development	2	3	3
3061	Word/Information Processing I	1	4	3
		13	13	18
■ Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3

Fifth Term				
1123	Business Mathematics III	3	0	3
1823	Business Law I	3	0	3
2905	Money and Banking	3	0	3
2926	Principles of Management	3	0	3
3003	Typewriting III	2	3	3
3023	Machine Transcription	2	3	3
3035	Essential Business Correspondence	2	1	3
		18	7	21
Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
Seventh Term				
1011	Business Communications	3	0	3
1502	Human Relations	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	3	0	3
		17	5	18
Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
Ninth Term				
1020	Effective Speaking	3	0	3
1512	Microeconomics	3	0	3
1521	Introduction to Sociology	3	0	3
1712	Data Entry Systems	2	3	3
2903	Survey of Marketing	3	0	3
2904	Office Management	3	0	3
		17	3	18
Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				106

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Typewriting Electives: 3001, 3006

Word Processing Specialist Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
First Term				
1001	English Composition I	3	0	3
1121	Business Mathematics I	3	0	3
1850	Computerized Business Applications	2	3	3
300x	Typewriting Elective	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
		16	12	20
Second Term				
9200	Professional Practices	1	0	0
9201	Co-Op Employment Business Tech	4	40	3
		5	40	3
Third Term				
1002	English Composition II	3	0	3
1122	Business Mathematics	3	0	3
2925	Business Principles	3	0	3
3002	Typewriting II	2	3	3
3032	Office Proc/Prof Development	2	3	3
3062	Information Records Processing	1	4	3
		14	10	18
Fourth Term				
9202	Co-Op Employment Business Tech	1	40	3
Fifth Term				
1123	Business Mathematics III	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
3035	Essential Business Correspondence	2	1	3
3063	Word/Information Processing II	1	4	3
		16	11	21
Sixth Term				
9203	Co-Op Employment Business Tech	1	40	3
Seventh Term				
1011	Business Communications	3	0	3
1502	Human Relations	3	0	3
2903	Survey of Marketing	3	0	3
2911	Principles of Accounting I	3	2	3
3064	Word/Information Process Simulation	1	4	3
3065	Advanced Word/Information Processing	1	4	3
		14	10	18
Eighth Term				
9204	Co-Op Employment Business Tech	1	40	2
Ninth Term				
1020	Effective Speaking	3	0	3
1521	Introduction to Sociology	3	0	3
1823	Business Law I	3	0	3
2912	Principles of Accounting II	3	2	3
3066	Text Processing	1	4	3
3067	Word/Information Processing Admin	3	0	3
		16	6	18
Tenth Term				
9205	Co-Op Employment Business Tech	1	40	2
				108

Typewriting Electives: 3001, 3006
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 compatible with their level of experience and aptitude.

Engineering Technologies Division

The Engineering Technologies Division is proud of its recognition for instructional excellence and 100 percent graduate placement. In 1984 the Ohio Board of Regents initiated the prestigious Program Excellence Competition among Ohio's publicly supported two-year colleges and four-year universities. Through 1987 only 44 programs out of the nearly 2,000 undergraduate programs offered through the State's colleges and universities have received a Program Excellence Award. Three of the forty-four awards were given to programs in the field of engineering technology. Cincinnati Technical College owns two of the three awards, and is the only college in the state of Ohio who can make such a claim.

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 in each program provides specialized technical instruction in the student's major area of concentration and 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 and others in society.

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

In order to ensure a high degree of success in the technology selected, the student must be able to meet established academic levels in mathematics, communication skills and reading comprehension. To aid in determining these levels, all students planning to enter an engineering technology program must take the college admission 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 begin the admissions and testing process as soon as possible. If any preparatory courses are needed, students may be able to enroll in them during the summer, thereby improving their chance to enter the technology in the September or November terms when most of the technologies' course work begins.

Cooperative Education

The primary mission of the Engineering Technologies Division is to provide associate degree programs that combine classroom and laboratory instruction with practical, hands-on experience in a real work environment. This combination, called cooperative education, prepares graduates for immediate employment after graduation and for potential advancement in technical and mid-management careers.

Because the Engineering Technologies Division believes that cooperative education work experience is of great value, all students are required to earn 10 credit hours in cooperative education. Most students will complete this requirement through on-site cooperative education assignments.

Students with prior related work experience may be permitted to fulfill the cooperative education requirement by applying for one of these alternatives:

* Submit a petition to receive credit for past related work experience. The petition will be reviewed to determine its validity. Students may earn up to 10 credits through this process.
* Arrange and receive permission to complete appropriate courses as a substitute for cooperative education employment.

The Engineering Technologies Division's Office of Cooperative Education will assist students in fulfilling the cooperative education requirements.

Refer to the "Cooperative Education Program" section of the catalog for additional requirements.

Architectural Mechanical Systems Engineering Technology (AMET)

As an Architectural Mechanical Systems Design Technician, you will be work closely with Architects and Engineers as a designer of building systems. Throughout the curriculum, a heavy emphasis is placed on Computer Aided Drafting (CAD) and Computer Assisted Design.

This exciting two year Associate Degree program teaches the design of all mechanical systems that are required in association with architectural building design. This includes the design of heating, venting, and air conditioning (HVAC) systems, electrical distribution and lighting systems, plumbing and piping systems, as well as the electrical and mechanical control of these systems.

In addition to our strong academic component, we also offer an established Cooperative Education program. As a co-op student you will gain one full year of on-the-job experience in the field of Architectural Mechanical Systems Design.

To accommodate access to this program by individuals already working during the day, students can earn their Associate Degree in approximately three years, attending class only two nights per week.

Architectural Mechanical Systems Engineering 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
1502	Human Relations	3	0	3
2291	Physics I	3	2	4
7024	Architectural Drafting I	2	4	4
7911	Introduction to Construction	2	2	2
		17	8	20
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II	3	2	4
7026	Architectural Drafting II	2	3	3
7035	Computer Applications	3	2	3
7524	Structural Analysis	3	2	3
7525	Architectural Mechanical Systems I	3	2	3
		18	11	20
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Fifth Term				
1193	Analytical Geometry & Calculus I	4	0	4
1512	Microeconomics	3	0	3
7027	Computer Aided Drafting I (Architect)	2	3	3
7535	Architectural Mechanical Systems II	4	2	4
7536	Electrical Systems I	3	2	3
7537	Piping Systems I	3	2	3
		19	9	20
■ Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Seventh Term				
1010	Technical Writing I	3	0	3
2293	Physics III	3	2	4
7028	Computer Aided Drafting II(Architect)	2	3	3
7545	Architectural Mechanical Systems III	4	2	4
7546	Electrical Systems II	3	2	3
7547	Piping Systems II	3	2	3
		18	11	20
■ Eighth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Ninth Term				
1015	Technical Writing II	3	0	3
1024	Group Dynamics & Problem Solving	3	0	3
1535	Labor Relations	3	0	3
7555	Architectural Mechanical Systems IV	4	2	4
7556	Electrical Systems III	4	2	4
7557	Architect. Mech. Sys. Design Project	2	3	3
		19	7	20
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				110

Technical Electives: See AMET program chairman for the official list of technical electives.

Aviation Technology

Because of Federal Aviation Agency (FAA) regulations, students enrolled in Aviation Technology must complete six academic terms, with a cumulative grade point average of 2.00 or better, to be eligible for placement in cooperative education assignments.

Aviation Technology (AV)

Aviation Technology is geared toward persons interested in aviation maintenance. The program prepares students to take the tests necessary to receive the aircraft mechanic's license. Half the college time is spent in classes learning how electrical, mechanical, and physical concepts relate to aviation. The other half is spent with hands-on experience working on the six aircraft owned by CTC. A degree in Aviation Technology prepares a student to work in aircraft manufacturing, maintenance, or management.

Aviation Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1191	Algebra & Trigonometry I	4	0	4
2221	Technical Physics I	2	3	3
8100	Aircraft Orientation	4	4	5
8101	Machine & Hand Tools	1	4	3
8102	Basic Aerodynamics & FAA Regulations	3	2	3
		14	13	18
■ Second Term				
1192	Algebra & Trigonometry II	4	0	4
2222	Technical Physics II	2	3	3
8106	Engineering Graphics (AV)	2	2	2
8107	Materials & Processes	5	5	5
8108	Aircraft Electricity	3	2	3
8109	Cleaning & Corrosion Control	2	3	3
		18	15	20
■ Third Term				
1001	English Composition I	3	0	3
2223	Technical Physics III	2	3	3
8130	Airframe Structures I	3	7	5
8131	Welding Processes	1	4	2
8132	Aircraft Electric/Generating Systems	5	5	5
		14	19	18
■ Fourth Term				
1002	English Composition II	3	0	3
8140	Airframe Structures II	3	7	5
8141	Airframe Fuel Systems	1	4	2
8142	Assembly & Rigging	3	7	5
8143	Airframe Hydraulics & Pneumatic System	1	4	2
		11	22	17
■ Fifth Term				
1010	Technical Writing I	3	0	3
1513	Macroeconomics	3	0	3
8150	Instr, Comm, Nav, Util Systems	5	5	5
8151	Airframe Sy, Hyd & Pneu Landing Gear	3	7	5
8152	Flightline Maintenance	1	4	2
		15	16	18
■ Sixth Term				
15xx	Social Science Elective	3	0	3
7035	Computer Applications	3	2	3
8160	Powerplant Theory and Maintenance I	5	5	5
8161	Powerplant Lubrication	4	3	4
8162	Propellers	4	4	4
		19	14	19
■ Seventh Term				
9400	Co-op Employment Engineering Tech	1	40	2
■ Eighth Term				
102x	Oral Communication Election	3	0	3
8170	Powerplant Theory and Maintenance II	5	5	5
8171	Powerplant Fuel Metering System	5	5	5
8172	Ignition Systems	5	5	5
		18	15	18
■ Ninth Term				
1502	Human Relations	3	0	3
8180	Engine Systems	5	5	5
8182	Engine Instruments/Fire Protection	1	4	3
8183	Powerplant Theory & Maintenance III	5	5	5
		14	14	16
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				148

Aviation Maintenance Certificate Programs

Included in the Aviation Maintenance degree program are two certificate programs (Air Agency Certificate No. 105-5). After 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
1192	Algebra & Trigonometry II	4	0	4
2221	Technical Physics I	2	3	3
2222	Technical Physics II	3	2	3
2223	Technical Physics III	2	3	3
8100	Aircraft Orientation	4	4	5
8101	Machine & Hand Tools	1	4	3
8102	Basic Aerodynamics & FAA Regulation	3	2	3
8106	Engineering Graphics (AV)	2	2	2
8107	Materials & Processes	5	5	5
8108	Aircraft Electricity	3	2	3
8109	Cleaning & Corrosion Control	2	3	3
8130	Airframe Structures I	3	7	5
8131	Welding Processes	1	4	2
8132	Aircraft Electrical/Generating System	5	5	5
8140	Airframe Structures	3	7	5
8141	Airframe Fuel Systems	1	4	2
8142	Assembly & Rigging	3	7	5
8143	Airframe Hydraulic & Pneumatic System	1	4	2
8150	Instr, Comm/Nav/Utilities Systems	5	5	5
8151	Airframe Systems, Hyd & Pneu Land Gr	3	7	5
8152	Flightline Maintenance	1	4	2
8155	Airframe Comprehensive	2	1	2
		69	85	87
				87

Powerplant Certification 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
1192	Algebra & Trigonometry I	4	0	4
2221	Technical Physics I	2	3	3
2222	Technical Physics II	3	2	3
2223	Technical Physics III	2	3	3
8100	Aircraft Orientation	4	4	5
8101	Machine & Hand Tools	1	4	3

8102	Basic Aerodynamics & FAA Regulation	3	2	3
8106	Engineering Graphics (AV)	2	2	2
8107	Materials & Processes	5	5	5
8108	Aircraft Electricity	3	2	3
8109	Cleaning & Corrosion Control	2	3	3
8160	Powerplant Theory and Maintenance I	5	5	5
8161	Powerplant Lubrication	4	3	4
8162	Propellers	4	4	4
8170	Powerplant Theory and Maintenance II	5	5	5
8171	Powerplant Fuel Metering System	5	5	5
8172	Ignition Systems	5	5	5
8180	Engine Systems	5	5	5
8182	Engine Instruments & Fire Protection	1	4	3
8183	Powerplant Theory & Maintenance III	3	2	3
8185	Powerplant Comprehensive	2	1	2
		80	69	88
				88

Biomedical Electronics Technology (BMET)

(A TAC/ABET accredited program)

The Biomedical Electronics Technology Program was created because of a need for technicians who repair, maintain, modify and design complex medical instrumentation.

This person is employed by hospitals as well as equipment manufacturers. The BMET graduate will have advanced electronic skills as well as education in the following areas:

- Installation and calibration of Biomedical Equipment.
- Preventative maintenance, repair, and inspection of equipment.
- Operation of safety and maintenance programs.

The Biomedical Electronics Technician is a professional whose broad background in electronics and instrumentation will make the graduate an asset to any organization.

Students pursuing a degree in Biomedical Electronics Engineering Technology must hold on-site, related cooperative education assignments for a minimum of three terms.

Biomedical Electronics 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
2231	Fundamentals of Inorganic Chemistry	3	2	4
7710	DC Circuit Analysis	6	0	5
7711	DC Circuits Lab	0	3	1
7728	Intro to Digital Concepts	3	2	3
		19	7	20
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1192	Algebra and Trigonometry II	4	0	4
4014	Anatomy and Physiology I	3	2	4
7717	Intro to C Programming	3	2	3
7720	AC Circuit Analysis	6	0	5
7721	AC Circuits Lab	0	3	1
7738	Digital Systems I	3	3	4
		19	10	21
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Fifth Term				
1193	Analytic Geometry and Calculus I	4	0	4
2293	Physics III	3	2	4
4015	Anatomy and Physiology II	3	2	4
7730	Electronics I	5	2	5
7748	Digital Systems II	3	3	4
		18	9	21
■ Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Seventh Term				
1010	Technical Writing I	3	0	3
15xx	Social Science Elective	3	0	3
1502	Human Relations	3	0	3
7740	Electronics II	5	2	5
7768	Digital Systems III	3	3	4
		17	5	18
■ Eighth Term				
7749	Biomedical Instrumentation I	3	2	3
9404	Co-Op Employment Engineering Tech	1	40	2
		4	42	5
■ Ninth Term				
1015	Technical Writing II	3	0	3
102x	Oral Communication Elective	3	0	3
1513	Macroeconomics	3	0	3
7750	Electronics III	4	2	4
7759	Biomedical Instrumentation II	3	2	3
		16	4	16
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				109

Courses 7749 and 7759 are normally offered only one term per year in late afternoon or evening.

Civil Engineering Technology (CET)

(A TAC/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 select one of two majors.

Surveying Major

A surveyor is a multi-talented individual possessing skills in mathematics, graphics, law, history, astronomy, computer science and urban planning. Professional surveyors are called upon to perform diverse tasks such as subdivisions, retracing original boundary lines, controlling construction projects, preparing legal descriptions and orienting communications systems by star observations.

Students train on state-of-the-art electronic surveying and computing equipment. Topics covered include instrument usage, computer graphics, document research and resolution, route design, control surveying and subdivision planning.

Construction Management Major

Early in the curriculum, students are learn about materials and methods of construction, architectural drafting, elements of structures, statistics and light construction principles.

Later in the curriculum the principles of construction management are investigated. Topics include heavy construction, project controls, scheduling, contracting and estimating. Civil Engineering Technology fundamentals are conveyed in strength of materials, statics, reinforced concrete and structural steel design.

Many of the courses are supplemented by the use of computers with an emphasis on Computer Aided Design.

Civil Engineering Technology Curriculum Surveying 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	3	2	4
7024	Architectural Drafting I	2	4	4
7910	Surveying Measurements	3	2	3
7911	Introduction to Construction	2	2	2
		17	10	20
Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
Third Term				
1192	Algebra and Trigonometry II	4	0	4
2292	Physics II	3	2	4
7025	Surveying Drafting	2	3	3
7035	Computer Applications	3	2	3
7920	Surveying Calculations	4	2	4
		16	9	18
Fourth Term				
1010	Technical Writing I	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
Fifth Term				
1193	Analytic Geometry & Calculus I	4	0	4
1502	Human Relations	3	0	3
7027	CAD I - Architectural	2	3	3
7930	Route Surveying	3	2	3
7931	Light Construction	3	2	3
7934	Statics	3	2	3
		18	9	19
Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
Seventh Term				
15xx	Social Science Elective	3	0	3
2293	Physics III	3	2	4
7940	Elements of Land Surveying	3	2	3
7946	Municipal Wastewater Treatment Sys	3	2	3
7947	Drainage Control Systems	3	2	3
7948	Subdivision Design	3	2	3
		18	10	19
Eighth Term				
102x	Oral Communication Elective	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
Ninth Term				
1015	Technical Writing II	3	0	3
1513	Macroeconomics	3	0	3
7950	Surveying Field Project	1	6	3
7955	Aoplied Soil Mechanics	2	3	3
7958	Control Surveying	1	6	3
7959	Subdivision Design II	3	2	3
		13	17	18
Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				110

Civil Engineering Technology Curriculum Construction Management 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	3	2	4
7024	Architectural Drafting I	2	4	4
7910	Surveying Measurements	3	2	3
7911	Introduction to Construction	2	2	2
		17	10	20
Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
Third Term				
1192	Algebra and Trigonometry II	4	0	4
2292	Physics II	3	2	4
7025	Surveying Drafting	2	3	3
7035	Computer Applications	3	2	3
7920	Surveying Calculations	4	2	4
		16	9	18
Fourth Term				
1010	Technical Writing I	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
Fifth Term				
1193	Analytical Geometry & Calculus I	4	0	4
1502	Human Relations	3	0	3
7027	CAD - Architectural	2	3	3
7930	Route Surveying	3	2	3
7931	Light Construction	3	2	3
7934	Statics	3	2	3
		18	9	19
Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
Seventh Term				
15xx	Social Science Elective	3	0	3
2293	Physics III	3	2	4
7928	CAD II - Architectural	2	3	3
7942	Construction Management I	3	2	3
7943	Construction Estimating	3	2	3
7944	Strength of Materials - CET	3	2	3
		17	11	19
Eighth Term				
102x	Oral Communication Elective	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
Ninth Term				
1015	Technical Writing II	3	0	3
1513	Macroeconomics	3	0	3
7941	Heavy Construction	3	2	3
7953	Construction Management II	3	2	3
7954	Reinforced Concrete Design	3	2	3
7956	Structural Steel Design	3	2	3
		18	8	18
Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				110

Computer Engineering Technology (CPET)

The purpose of the Computer Engineering Technology program is to educate students in the areas of computer hardware-software design and testing. Course work includes single board and multi-

card microcomputers, operating systems, high level languages and control applications.

A graduate of the program will be capable of working with computer hardware and software engineers. Also, the knowledge and use of test equipment make the graduate an excellent candidate for field service work as well. The introduction to computer communications systems will enable the graduate to install, test and troubleshoot digital communications equipment. The Computer Engineering Technology graduate should fit very well into any organization that uses computer systems to solve engineering problems.

Computer Engineering 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
7710	DC Circuit Analysis	6	0	5
7711	DC Circuit Lab	0	3	1
7717	Introduction to "C" Programming	3	2	3
7728	Introduction to Digital Concepts	3	2	3
		19	7	19
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1192	Algebra and Trigonometry II	4	0	4
7720	AC Circuit Analysis	6	0	5
7721	AC Circuits Lab	0	3	1
7727	Advanced "C" and UNIx	3	2	3
7738	Digital Systems I	3	3	4
		16	8	17
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
2291	Physics I	3	2	4
		4	42	6
■ Fifth Term				
1193	Analytic Geometry & Calculus I	4	0	4
1502	Human Relations	3	0	3
2292	Physics II	3	2	4
7730	Electronics I	5	2	5
7748	Digital Systems II	3	3	4
		18	7	20
■ Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Seventh Term				
1010	Technical Writing I	3	0	3
102x	Oral Communication Elective	3	0	3
2293	Physics III	3	2	4
7742	Computer Aided Drafting (Electrical)	2	3	3
7747	Computer Instrumentation	2	2	3
7768	Digital Systems III	3	3	4
		16	10	20
■ Eighth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Ninth Term				
1015	Technical Writing II	3	0	3
15xx	Social Science Elective	3	0	3
1513	Macroeconomics	3	0	3
7xxx	Technical Elective	0	0	3
7767	Computer Communications	3	2	3
7769	Real Time Applications	3	3	4
		15	5	19
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				109

Technical Electives: 1194, 1195, 2294, 6710, 7144, 7146, 7157, 7740, 7743, 7750, 7753, 7758

Electro-Mechanical Engineering Technology (EMET)

(A TAC/ABET accredited program)

Recipient of a 1986 Ohio Board of Regents Program Excellence award.

The Electro-Mechanical Engineering Technology program is a unique combination of the study of mechanical systems used in industry and the electronic systems used to control them. There is a high demand for graduates in this field.

The curriculum includes theory and applications of analog and digital (computer) electronics, industrial hydraulics and pneumatics, servomechanisms, electric motors and controls, analysis of mechanisms and microprocessor-based computer control.

Electro-Mechanical Systems Technicians test, install, maintain, troubleshoot, repair, modify and operate automated systems such as industrial robots, computer-controlled machine tools and other machine and process systems used in industry. Graduates are equipped to enter careers such as Robotics Technician, Field Service Technician, Electro-Mechanical Systems Technician, and similar fields.

Electro-Mechanical Engineering Technology Curriculum

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1191	Algebra & Trigonometry I	4	0	4
1502	Human Relations	3	0	3
2291	Physics I	3	2	4
7008	Intro to Engineering Drawing	2	3	3
7712	Electrical Circuits I	6	0	5
7713	Electrical Circuits I Lab	0	3	1
		18	8	20
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1001	English Composition I	3	0	3
1192	Algebra & Trigonometry II	4	0	4
7036	Technical Computer Programming	3	2	3
7722	Electrical Circuits II	6	0	5
7723	Electrical Circuits II Lab	0	3	1
7728	Introduction to Digital Concepts	3	2	3
		19	7	19
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Fifth Term				
1193	Analytic Geometry & Calculus I	4	0	4
2292	Physics II	3	2	4
7730	Electronics I	5	2	5
7738	Digital Systems I	3	3	4
7758	Motors and Controls	3	2	3
		18	9	20
■ Sixth Term				
7104	Introduction to Machine Tool Process	3	2	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	42	5

■ Seventh Term				
1010	Technical Writing I	3	0	3
1024	Group Dynamics and Problem Solving	3	0	3
2293	Physics III	3	2	4
7135	Fluid Power Systems	3	2	3
7142	Mechanisms Analysis and Design	3	2	3
7146	Electro-Mechanical Controls I	3	3	4
		18	9	20
■ Eighth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Ninth Term				
1015	Technical Writing II	3	0	3
1513	Macroeconomics	3	0	3
15xx	Social Science Elective	3	0	3
7156	Electro-Mechanical Design	1	4	3
7157	EM Controls II/Robotic Systems	3	3	4
		13	7	16
■ Tenth Term				
9405	Co-Op Employment Engineering Tech	1	40	2
				108

- Recommended Technical Electives: 7144, 7156, 7167, 7740, 7748 (see program chairman for other electives).
- Courses 7008, 7030, 1502 and 15xx may be taken during the previous or following co-op term.
- Courses 7146 and 7157 are available to students in other programs only on a space-available basis.

Electronics Engineering Technology (EET)

Electronics Engineering Technology includes both analog and digital electronics.

College work consists of classes covering the theory and application of electronic systems, including time spent in labs fully equipped for electronic design. Graduates assume positions such as Applications Technician, Software Specialist or Service Technician.

Electronics Engineering 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
7035	Computer Applications	3	2	3
7710	DC Circuit Analysis	6	0	5
7711	DC Circuits Lab	0	3	1
7728	Intro to Digital Concepts	3	2	3
		19	7	19
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1192	Algebra & Trigonometry II	4	0	4
2291	Physics I	3	2	4
7720	AC Circuit Analysis	6	0	5
7721	AC Circuits Lab	0	3	1
7738	Digital Systems I	3	3	4
		16	8	18
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Fifth Term				
1193	Analytic Geometry & Calculus I	4	0	4
1502	Human Relations	3	0	3
2292	Physics II	3	2	4
7730	Electronics I	5	2	5
7748	Digital Systems II	3	3	4
		18	7	20
■ Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Seventh Term				
1010	Technical Writing I	3	0	3
2293	Physics III	3	2	4
7xxx	Technical Elective	0	0	3
7740	Electronics II	5	2	5
7768	Digital Systems III	3	3	4
		14	7	19
■ Eighth Term				
102x	Oral Communication Elective	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
■ Ninth Term				
1015	Technical Writing II	3	0	3
15xx	Social Science Elective	3	0	3
1513	Macroeconomics	3	0	3
7xxx	Technical Elective	0	0	3
7742	Computer Aided Drafting (Electrical)	2	3	3
7750	Electronics III	4	2	4
		15	5	19
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				108

Technical Electives: 1194, 1195, 2294, 7031, 7033, 7160, 7165, 7743, 7767

Laser Electro-Optics Engineering Technology (LEOT)

CTC's Laser Electro-Optics Technology program is the first of its kind in Ohio and one of the few associate degree programs in laser technology in the country.The objectives of the laser electro-optics technology program are to give the student experience and theoretical training in the following areas:

1. the properties of laser light, optical cavities, and laser classification.
2. the reflection and refraction of light and wave optics.
3. an introduction to Optical Components and Laser Electro-Optic devices.
4. light wave fundamental and waveguides, with emphasis on step index fiber, graded index fiber, and attenuation.
5. applications of laser in materials processing, holography, and pollution monitoring.
6. measurements in laser power and energy, with use of monochromators and spectrophotometers, for example.

Graduates of this program will have a good basic background in fundamentals of lasers and electronic principles. They should be able to understand the workings and applications of different types of lasers. The Laser Electro-Optics Technology graduate should fit well in an organization that uses lasers.

Laser Electro-Optics Technology Curriculum

Admission Requirements: Two years of algebra, geometry, chemistry

		Hours Per Week Class	Lab	Credit Hours
■ First Term				
1191	Algebra & Trigonometry I	4	0	4
2291	Physics I	3	2	4
6710	Introduction to Lasers	3	2	4
7710	DC Circuit Analysis	6	0	5
7711	DC Circuits Lab	0	3	1
		16	7	18
■ Second Term				
1001	English Composition I	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
■ Third Term				
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II	3	2	4
6720	Geometrical & Wave Optics	3	3	5
7720	AC Circuit Analysis	6	0	5
7721	AC Circuits Lab	0	3	1
		16	8	19
■ Fourth Term				
100x	English Composition Elective	3	0	3
9400	Co-Op Employment Engineering Tech	1	40	2
		4	40	5
■ Fifth Term				
1193	Analytic Geometry & Calculus I	4	0	4
151x	Economics Elective	3	0	3
6730	Optical Components/Devices	3	3	5
7030	Computer Programming - Basic	3	2	3
7730	Electronics I	5	2	5
		18	7	20
■ Sixth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Seventh Term				
xxxx	Elective/Chairman's Approval Required	3	2	3
102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
6740	Applications of Lasers	3	3	5
7740	Electronics II	5	2	5
		17	7	19
■ Eighth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Ninth Term				
xxxx	Elective/Chairman's Approval Required	3	2	3
101x	Technical Writing Elective	3	0	3
15xx	Social Science Elective	3	0	3
6750	Laser/Electronics Optic Measurement	3	3	5
7750	Electronics III	4	2	4
		16	7	18
■ Tenth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
				110

English Composition Electives: 1002, 1007, 1008, 1009, 1010
Economics Electives: 1512, 1513
Elective/Coordinator Approval Required: 1194, 1195, 2294, 6741, 6745, 6999, 7728, 7738, 7743, 7748, 7768
Oral Communication Electives: 1020, 1024
Social Science Electives: 1521, 1523, 1524, 1525, 1527, 1531, 1535, 1536, 1539, 1599

Manufacturing Engineering Technology (MFGT)

The Manufacturing Engineering Technology (MFGT) program prepares students for the computer revolution currently taking place in manufacturing. Classes use computer software packages related to areas of organizing, planning, directing and controlling the manufacturing process. This practice, along with the cooperative experience will enable the graduate to perform in the following manufacturing areas:

A) Programming
Numerical Control (N/C) manual programming, computer-assisted part programming using language systems such as apt or compact II, and computer assisted CAD/CAM systems. Feeds and speeds obtained from computer data bases.

B) Quality Control
Statistical Process Control (SPC) charts covering attributes and variables. Histograms, frequency distribution curves and pareto diagrams used to assess quality control.

C) Process Planning
Use of a computer to develop a plan to convert raw material to finished product. Includes sequence of operations, standard and estimated times and tooling/fixturing required.

D) CAD/CAM
Use of CAD system to develop piece parts, assemblies, bills of material, tooling and process pictures. Includes rectangular and geometric tolerancing and output of machine-ready code for downloading to production machinery or graphical simulations.

E) Estimating
Use of "Costimator" software to generate an estimate of product costs which include piece part prices, tooling costs, assembly costs, feeds and speeds and weight of parts.
Areas of non-cutting and handling elements are covered in the package. Ability to tailor the estimate to a unique need or process.
The coursework necessary to successfully complete the certified manufacturing technologist and the certified quality technician exams is provided within the Manufacturing Engineering Technology curriculum. The coordinator can provide specific details.

Manufacturing Engineering Technology

		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	3	2	4
7008	Introduction to Engineering Drawing	2	3	3
7415	Computer Application for Mfg.	3	2	3
7417	Manufacturing Processes	3	2	3
		18	9	20
■ Second Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Third Term				
1002	English Composition II	3	0	3
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II	3	2	4
7027	CAD I - Architectural	2	3	3
7144	NC/CNC Programming I	2	3	3
7427	Tool, Jig and Fixture	3	2	3
		17	10	20
■ Fourth Term				
9400	Co-Op Employment Engineering Tech	1	40	2
■ Fifth Term				
1010	Technical Writing I	3	0	3
1179	Introduction to Applied Statistics	4	0	4
7111	Engineering Materials	3	2	3

7154	NC/CNC Programming II	2	3	3
7428	CAD II - Manufacturing	2	3	3
7444	Manufacturing Process Planning	3	2	3
		17	10	19

■ Sixth Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Seventh Term

1535	Intro to Labor Management Relations	3	0	3
2293	Physics III	3	2	4
7441	Statistical Process Control	3	2	3
7449	Computer Aided Manufacturing I	3	2	3
7450	Production Cost Estimating	3	0	3
7707	Electrical Applications	3	2	3
		18	8	19

■ Eighth Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Ninth Term

102x	Oral Communication Elective	3	0	3
15xx	Social Science Elective	3	0	3
1512	Micro Economics	3	0	3
7438	Industrial Engineering Concepts	3	2	3
7454	CAD/CAM Project	3	3	4
7455	Statistical Design Analysis	3	2	3
		18	7	19

■ Tenth Term

9400	Co-Op Employment Engineering Tech	1	40	2
				107

Mechanical Engineering Technology (MET)

(A TAC/ABET accredited program)

Mechanical Engineering Technology produces graduates with the ability to combine problem solving skills and computer aided design skills to create new machine and product designs, and solve problems of existing machine and product designs. Classes concentrate heavily on mathematics and problem solving skills. Computervision, CTC's computer design facility, is used to teach students computer aided design and computer aided drafting. Graduates of the MET program assume positions such as CAD/CAM system operator, machine and product design technician and mechanical systems design technician.

NOTE: An established Mechanical Engineering Technology evening school program exists where the evening school student can complete all of the courses in the MET curriculum in 3 years, attending class two nights per week.

Mechanical Engineering 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	3	2	4
7008	Introduction to Engineering Drawing	2	3	3
7035	Computer Applications	3	2	3
7160	Computer Aided Drafting I	2	3	3
		17	10	20

■ Second Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Third Term

1192	Algebra & Trigonometry II	4	0	4
2292	Physics II	3	2	4
7010	Engineering Drawing I	2	3	3
7124	Manufacturing Process W/CAD-CAM	3	2	3
7130	Engineering Mechanics	3	2	3
7165	Computer Aided Drafting II-Mechanical	2	3	3
		17	12	20

■ Fourth Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Fifth Term

1193	Analytic Geometry & Calculus I	4	0	4
1512	Microeconomics	3	0	3
7012	Engineering Drawing II	3	2	3
7111	Engineering Materials	3	2	3
7132	Hydraulics and Pneumatics	3	2	3
7140	Strength of Materials	4	2	4
		20	8	20

■ Sixth Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Seventh Term

1010	Technical Writing I	3	0	3
1502	Human Relations	3	0	3
2293	Physics III	3	2	4
7141	Kinematics & Dynamics of Machines	3	2	3
7150	Machine Design I	4	2	4
7707	Electrical Applications	3	2	3
		19	8	20

■ Eighth Term

9400	Co-Op Employment Engineering Tech	1	40	2

■ Ninth Term

1015	Technical Writing II	3	0	3
1024	Group Dynamics & Problem Solving	3	0	3
1535	Intro to Labor Management Relations	3	0	3
7148	Applied Thermodynamics	3	2	3
7155	Machine Design II	4	2	4
7158	Mechanical Systems Design Project	3	0	3
		19	4	19

■ Tenth Term

9400	Co-Op Employment Engineering Tech	1	40	2
				109

Physical Sciences 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 physical sciences leading the student to a career in industrial laboratory technology.

Course recommendations in the physical sciences and mathematics at CTC are determined according to the readiness of each student. Readiness is determined during the admission process through assessment and an interview. Faculty are chosen for their abilities to communicate effectively with students and their knowledge of subject matter, as well as their experiences in business and industry. As a result, the chances for student success in physics, chemistry and mathematics are greatly enhanced.

Mathematics Readiness and 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 mathematics placement assessment designed for the specific type of technology of interest to the student. It is important for students to realize that the assessment cannot be failed. The assessment 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 service. The results assist the student in choosing a sequence of math courses suited to his or her technology major and general area of interest.

Students who wish 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 about retraining for individuals and corporations. A program may vary from a single course to a series of programs. Resources are available to assist and advise individuals in solving their problems in these areas.

Mathematics and Physical Sciences Courses

Each sequence of mathematics courses 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

Courses Serving Health Technology Students:

1105 Health Mathematics
1170 Introduction to Technical Mathematics
1171 Technical Mathematics I
1179 Introduction to Applied Statistics
1180 Applied Statistical Analysis

Courses Serving Business Technology and Business Programming Students:

1120 Introduction to Business Mathematics
1121 Business Mathematics
1122 Business Mathematics II
1123 Business Mathematics III
1124 Business Algebra
1125 Computerized Financial Analysis
1126 Computer Mathematics
1127 Business Statistics
1128 Business Calculus
1170 Introduction to Technical Mathematics

Courses Serving Engineering Technology & Physical Sciences Technology Students:

1161 Applied Algebra
1162 Applied Geometry & Trigonometry
1171 Technical Mathematics I
1172 Technical Mathematics II
1179 Introduction to Applied Statistics
1180 Applied Statistical Analysis
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 students. The science departments therefore place much emphasis on the laboratory. Care is taken to ensure all laboratories are well supplied with equipment. The laboratory experiences point the way for students by helping them to organize an attack on a problem, to use their own ingenuity and thoughts while carrying the investigation to a conclusion and to prepare a report of the findings.

Introductory Courses Serving General Student Interests:

2200 Introduction to Chemistry
2270 Introduction to Physics

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

Courses for Students With Specific Needs:

2221 Technical Physics I
2222 Technical Physics II
2223 Technical Physics III
2244 Health Physics I
2245 Health Physics II
2263 Physical Science for Graphic Communications

Courses Serving Engineering Technology & Physical Sciences Technology Students:

2291 Physics I
2292 Physics II
2293 Physics III
2294 Physics IV

Computer Science Courses:

1130 Introduction to the Microcomputer
1133 BASIC 2 for Science & Engineering Technologies
1134 Macro FORTRAN & Microcomputers
1135 "C" Programming I
1136 FORTH Programming I
1137 PASCAL Programming I
1138 Introduction to Computer Graphics & Modeling
1139 Introduction to XENIX/UNIX
6101 Introduction to Artificial Intelligence
6135 "C" Programming II
6136 FORTH Programming II
6137 Pascal Programming II

For the student who relates strongly to the sciences and is excited by expanding technology, the Industrial Laboratory Technology program leads to careers which focus on chemical and physical testing techniques and instrumentation.

Industrial Laboratory Technology

The Industrial Laboratory Technology program is designed to prepare the student for employment in a testing laboratory in which the chemical and physical properties of materials are measured. A graduate of the program will be capable of performing a variety of testing and analytical jobs, from the tensile strength testing of steel to the spectrophotometric analysis of medicinal compounds. As a well-prepared lab technician, the graduate will apply the concepts from chemistry, physics, materials science and statistics to the planning and execution of tests and to the taking, compiling, reporting and analysis of measurement data. Because the Industrial Laboratory Technology curriculum has ample chemistry, math and physics requirements, students who are interested in later earining the bachelor of science degree from a university have found the curriculum serves their needs well.

ASQC Certification

Many students may be interested in earning certification through the American Society for Quality Control (ASQC) as a Certified Quality Technician. The coursework necessary to successfully complete the CQT examination is provided within the Industrial Laboratory Technology curriculum. The advisor can provide specific details.

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

Industrial Laboratory 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	3	2	4
6611	Chemistry I & Quantitative Analysis	3	3	4
6629	Industrial Materials Testing I	3	2	4
		16	7	19
■ Second Term				
9600	Co-Op Employment PST Technology	1	40	2
■ Third Term				
100x	English Composition Elective	3	0	3
1192	Algebra & Trigonometry II	4	0	4
2292	Physics II	3	2	4
6619	Computer Analysis of Lab. Data I	2	2	3
6621	Chemistry II & Quantitative Analysis	3	3	4
		15	7	18
■ Fourth Term				
15xx	Social Science Elective	3	0	3
9600	Co-Op Employment PST Technology	1	40	2
		4	40	5
■ Fifth Term				
xxxx	Elective/Coord. Approval Required	2	2	3
1179	Introduction to Applied Statistics	4	0	4
2293	Physics III	3	2	4
6631	Chemistry III & Quantitative Analysis 3	3	4	
6639	Fundamentals of Physical Measure	3	2	4
		15	9	19
■ Sixth Term				
1512	Microeconomics	3	0	3
9600	Co-Op Employment PST Technology	1	40	2
		4	40	5
■ Seventh Term				
101x	Technical Writing Elective	3	0	3
1193	Analytic Geometry and Calculus I	4	0	4
6641	Instrumentation for Chemical Analysis 3	3	4	
6649	Industrial Materials Testing II	3	2	4
74xx	Applied Statistics Elective	2	2	3
		15	7	18
■ Eighth Term				
9600	Co-Op Employment PST Technology	1	40	2
■ Ninth Term				
xxxx	Elective/Coord. Approval Required	2	2	3
1024	Group Dynamics & Problem Solving	3	0	3
15xx	Social Science Elective	3	0	3
2294	Physics IV	3	2	4
6659	Computer Analysis of Lab. Data. II	3	2	4
		14	6	17
■ Tenth Term				
9600	Co-Op Employment PST Technology	1	40	2
				107

Applied Statistics Elective: 7441, 7455
Elective/Coordinator Approval Required: 1133, 1134, 1135, 1136, 1137, 1138, 1194, 1195, 2233, 4000, 4009, 6661, 6710, 6720, 7030, 7031, 7700, 7704, 7708, 7710, 7711
English Composition Elective: 1007, 1010
Social Science Elective: 1502, 1505, 1506, 1521
Technical Writing Elective: 1010, 1015, 1017, 1018

SQC/SPC Training

Increasing demands in industry to implement statistical process control (SPC) as an essential component in the production and manufacturing process have placed 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. CTC also offers SPC in a customized plant-site modular format for direct company implementation. Contact the Manufacturing Engineering Technologies program or the 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 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, Taguchi's loss function, etc. Statistical control charting (X-bar, R, p, np, c, u, etc.) applied to process stability and capability with emphasis on data collection, measurement concepts, chart preparation and chart interpretation. Acceptance sampling and reliability are covered and a state-of-the-art computer software package is used in hands-on PC sessions. 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 is on statistical methods to assure that products and processes 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, linear graphs and signal-to-noise ratio as popularized in Japan by Taguchi. Computer software packages will be used in hands-on PC sessions. As in the previous modules, the applied programs come from a 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.

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 consideration of total individual educational needs and, in cooperation with career consultants from the business/industrial community, provides 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 structureed 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 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 after 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.

In addition, the A.I.S. program in Business and Engineering Technologies (AISB/AISE) are academic preparatory programs. Students receive specialized attention in preparing for acceptance into the Associate Degree programs in the Business and Engineering Technology Divisions. Services available to the student include academic advising, personal and career counseling, job orientation and academic support services. Admission to these programs is through technology referral.

For additional information on the Associate of Individualized Study program contact the Director of Continuing Education 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 to serve those needs. These services may be categorized in the following ways:

Change in Scheduling

To serve the large number of students who are employed full-time, the College has increased evening and Saturday offerings. These classes allow students to pursue different career aspirations while they 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
Industrial Sales Marketing Technology
Loss Control
Management Information Systems
Managerial Accounting
Marketing Management
Office Specialist
Real Estate/Property Management

Communication Skills and Social Science Division
Technical Writing and Editing Technology

Engineering Technologies Division
Architectural Mechanical Systems Engineering Technology
Aviation Technology
Biomedical Electronics Technology
Civil Engineering Technology - Construction Management
Civil Engineering Technology - Surveying
Computer Integrated Manufacturing Engineering Technology
Electro-Mechanical Engineering Technology
Electronics Engineering Technology
Mechanical Engineering Technology

Health Technologies Division
Dietary Managers Certificate
Electrocardiography Certificate
Health Unit Coordinator Certificate
Medical Records Associate Degree
Phlebotomy Certificate
Geriatic Technology
Medical Assisting Certificate

Physical Sciences/Mathematics Division
Industrial Laboratory Technology

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

Change in Location

Students who are working full-time generally have full daily schedules. Travel time and energy for 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 providing concurrent courses through extension centers located within the College service area. CTC extension centers are located at Anderson High School and Oak Hills High School.

The continuing education operations also include recreational and leisure-time courses.

Services For Business and Industry

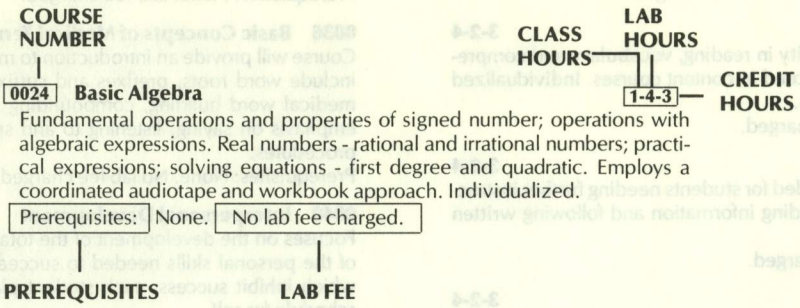
Cincinnati Technical College can respond to the business, industrial, and professional communities' requests to provide on-site courses to upgrade employee skills. In addition, the College works with professional and technical societies, organizations and trade unions to offer short-term and long-term programs for their members. Charges are negotiated on an individual contractual basis dependent upon instructional services, facilities, number of participants and equipment.

Benefits to the employer are programs tailored to meet company needs which are delivered on-site, programs that offer a blend of audience participation, flexibility to meet busy business schedules, reduction of travel costs, time and inconvenience, and guaranteed follow-up after training.

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

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

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

0130 Basic Security Training **0-0-0**
Basic overview of primary security functions that are usually performed by contract guards. Topics covered are: nature and role of private security, note taking and report writing, the criminal justice system, types of security, patrol techniques and procedures, handling emergencies and other subjects as the employer's needs arise.
Prerequisites: None.

0131 Basic Security Supervision **0-0-0**
This course is an outlined overview of all the functions and responsibilities of a supervisor in the day-to-day operations of an agency.
Prerequisites: None.

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.
Prerequisite: None. Lab fee charged.

0192 English Conversation-English as a Second Language **0-0-0**
Conversation and pronunciation class for students who speak English as their second language. The course is for intermediate to advanced students.
Prerequisites: None.

0250 Civil Rights Seminar **3-0-0**
Course will instruct on the History of Segregation, the Role of Government, Role of Private Industry. Fair housing Legislation especially relative to the Civil Rights Act of 1866, the Ohio Civil Rights Law enforcement and Relief Case Law. Included will be a Slide Show and the Practical Application of the Law to Sales Practices and typical Situations.

0261 Graphic Art's Workshop **0-0-0**
This course will consist of the lithographic process and papers' relationship to the flow of printing production.
Prerequisites: None.

0262 Typesetting **1-2-0**
Basic fundamentals of setting boundy type. Operation of the Intertype and Ludlow hot metal machines. Operation of the Comp/Set 510 & 504 and Compugraphic Editwriter 7500 phototypesetters. Emphasis is placed on operation of the phototypesetters and the preparation of camera ready art. Lab projects are required.
Prerequisites: None.

0263 Color Separation **0-0-0**
This course will require five (5) three (3) hour sessions. The first three (3) sessions will deal with color theory and color practices in the printing industry. The last two (2) sessions will be hands-on training of direct color separations using the horizontal camera.
Prerequisites: None. Lab fee charged.

0264 Color Stripping **0-3-0**
Hands-on training in advance color film assembly for the graphic art industry. Students will learn skills in 4 color stripping; choke and sphead; screen tints; drop out drop in color type and pin register systems.
Prerequisites: None. Lab fee charged.

0305 Photography **0-0-0**
This course will provide the student with a working knowledge in color and black/white photography. Students will study composition, design, lighting, special effects and other elements of photography. Requirement is a 35 mm camera. Course is designed for beginners through advanced amateur.
Prerequisites: None.

0500 Certification Review for Medical Assistants **0-0-0**
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.

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 **3-2-4**
An individualized spelling improvement program. Uses multisensory approach to develop desirable spelling attitudes and habits. Also stresses word analysis, word processing, and proofreading.
Prerequisites: None. No lab fee charged.

0003 Basic Writing I **3-2-4**
After an analysis of strengths and weaknesses 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; and 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 critical thinking, flexibility in reading, vocabulary and comprehension strategies needed to succeed in content courses. Individualized lab, group discussion and lectures.
Prerequisites: None. 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 computations. Individualized instruction and practice in the fundamental skills of mathematics. Assignments determined by diagnostic testing. Basic topics available: whole numbers, common fractions, decimals, percent, metric system.
Prerequisites: None. No lab fee charged.

0023 Basic Geometry-Individualized **1-4-3**
Individualized instruction in basic concepts of Geometry for Engineering Technologies. Focuses on the study of the measurement and relationships of lines, angles, plane (flat) figures. Included is the study of angles, triangles, perpendicular lines, tangents, and the study of distance and area.
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. 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**
Review and expand concepts from Basic Algebra I; systems of equations, fractional expressions and equations, radicals, quadratic formula, logarithms, inequalities, employs a coordinated audiotape and workbook approach.
Prerequisites: 0024. No lab fee charged.

0027 Pre-Tech Health Math - Independent **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. This course is offered as a self-paced class.
Prerequistes: 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 experiences.
Prerequisites: None. Lab fee charged.

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

0049 College Orientation **1-0-1**
This course is designed to give students an in-depth orientation into the college, its programs and all student services functions. Representatives from various departments will present their programs to the students. Also college survival skills will be discussed in the class (role playing, class participation). This course is primarily for Developmental Educational students. This course is recommended for first (1st) term students.
Prerequisites: None. No lab fee charged.

0050 Orientation to Business **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.

0057 Pre-Accounting **3-2-4**
This course emphasizes reading strategies, vocabulary terms and math concepts for success in accounting courses. It covers the basic accounting equation, the accounting cycle and related terminology, as well as the Income Statement, the Statement of Owner's Equity and the Balance Sheet.
Prerequisites: None. No 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 fee 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.
Prerequisites: None. Lab fee charged.

1007 Critical Thinking & Writing **3-0-3**
Principles of logical thinking including distinguishing between fact and opinion, differentiating between fact and opinion, distinguishing bias from reason; recognizing statements that are provable, and other concepts. Applications of the theory will be demonstrated through various writing assignments.
Prerequisites: 1001 or 1002. 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 or 1002. No lab fee charged.

1009 Business English **3-0-3**
Current practices in business communication; accuracy is stressed in the areas of grammar, mechanics, usage, spelling, and syntax.
Prerequisites: 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.
Prerequisites: 1001 or 1002 and 12 hours in technical area. Lab fee charged in individualized courses.

1011 Business Communications **3-0-3**
The principles and practices of the more common types of business correspondence; informal and formal business reports; development of style.
Prerequisites: 1001 or equivalent. Lab fee charged in individualized courses.

1015 Technical Writing II **3-0-3**
The principles and practices of researching, organizing, and presenting the various types of reports germane 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 within their program major.
Prerequisites: 1010. No lab fee charged

1017 Project Research **3-3-4**
This course addresses the tasks that technical writers and editors perform as they conduct research. Students will learn to identify, select, and use the most appropriate method that corresponds to the project. Major topics to be explored include interviewing skills, questionnaire design, observation techniques, case studies, and classical experimental design. Literature searches using data bases will also be discussed. Students will prepare primary and secondary research reports, and present an oral report.
Prerequisite: 1007 or Equivalent Preferred. No lab fee charged.

1018 Technical Writing Style & Techniques **2-5-4**
In this course students examine and practice the conventions, style, and structures of technical writing. The course focuses on seven skill areas; economy, emphasis, clarity, correctness, concreteness, unity and coherence, and variety. Students are tested in each skill area and then complete individually-assigned exercises to build proficiency. All exercises must be completed in the CTC Writing Center, using the Automated Language Processing System. Other course topics include audience analysis, readability criteria, and the terminology of technical writing style. Conferences with the instructor are required.
Prerequisite: 3 credits 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.

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.

1025 Group Dynamics within Organizations **3-0-3**
Investigation of methods groups can use to operate successfully within any given organizational structure. Problem solving between groups and the organization, decision making, recommendation and implementation are major areas studied.
Prerequisites: 1024. 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 am 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 vocalulary.
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 charge .

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.

1037 Technical French for Culinary Professionals **2-2-3**
This course will provide the student with an introduction to the fundamentals of French grammar and pronunciation, with an emphasis on vocabulary used in the culinary professions.
Prerequisites: None. No lab fee charged.

1099 Special Problems in Communication Skills **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 Division.
Prerequisites: 6 hours in Communication Skills. No lab fee charged.

1100 Math Placement Assessment **0-0-0**
The results of the assessment will enable a faculty advisor to make the proper course recommendation for each student. Following the assessment, 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.
Prerequisites: None. No lab fee charged.

1105 Health Mathematics **2-0-2**
This course is primarliy for the health technologist whose work environment implies use of measurement concepts. The prime thrust is problem solving experiences within the health field. This includes: applications of elementary mathematics such as solving simple algebraic equations, ratio & proportion and percent; work with units (metric, apothecary and household systems) including conversions; dosage and concentration calculations. Use of an electronic calculator is required.
Prerequisite: Recommendation of coordinator/advisor. No lab fee charged.

1120 Introduction to Business Mathematics **3-0-3**
Fundamental mathematical skills as applied in the business professions, with major emphasis given to percents and their applications. Topics include: a review of decimals, bank reconciliaton, operations with percents, markup, markdown, and simple interest. Use of an electronic calculator is required.
Prerequisite: 0020 or skills assessment. No lab fee charged.

1121 Business Mathematics **4-0-4**
The first of a sequence of courses designed to cover the many applications of mathematics in the business world. Introductory topics on equations, formulas, ratios and a review of percents. Mathematics of business topics include: graphs, trade and cash discounts, payroll, insurance, and taxes. Use of an electronic calculator is required.
Prerequisites: 1120 or as indicated by skills assessment. No lab fee charged.

1122 Business Mathematics II **3-0-3**
A continuation of business mathematics. Topics include: markups, markdowns, depreciation, inventory, financial reports, simple interest, and bank discounts. Use of an electronic calculator is required.
Prerequisites: 1121. No lab fee charged.

1123 Business Mathematics III **3-0-3**
A continuation of business mathematics topics with emphasis on financial math. Topics included are: compound interest, multiple payment plans, annuities, amortizations, stocks and bonds, and statistics. Use of an electronic calculator is required. No lab fee charged.
Prerequisites: 1122. No lab fee charged.

1124 Business Algebra **4-0-4**
Review of the basic laws of algebra. Linear and exponential equations with business applications in compound interest, annuities, etc. Graphing as a problem solving method. Simultaneous equations. Linear inequalities.
Prerequisites: 0024 or equivalent. No lab fee charged.

1125 Computerized Financial Analysis **2-2-3**
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: 1861, 1123. Lab fee charged.

1126 Computer Mathematics and Business Data Structures **4-0-4**
Review of Business Algebra. Matrices with applications in Business. Number systems and arithmetic used in computing including an analysis of errors. Algorithms, logic and sets as applied to the design of computer programs. Boolean Algebra.
Prerequisites: 1124 or math placement. No lab fee charged.

1127 Business Statistics **4-0-4**
An introduction to the quantitative techniques of probability and statistics as applied to modern business problems. Organization of data and graphical displays. Descriptive measures including mean, median, standard deviation and z-scores. Probability concepts, and distributions including the binomial and normal. Sampling techniques and size determination. Hypothesis testing and decision making. Forecasting, linear regression and correlation. This course is business application oriented. A sciencific calculator (preferably with STAT capabilities) is required.
Prerequisites: 1124 or equivalent. No lab fee charged.

1128 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 the Microcomputer **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 probabiltity 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 II for Science and Engineering Technologies **2-2-3**
An intermedicate 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 Macrofortran/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, discs, 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/0 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. It's portability is making it increasingly popular for applications programs. This course will cover structured programming concepts, input/output operations, arrays and data structures, 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, etc. 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 anl 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 adaptation of the UNIx operating system 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/0, system commands, and shell programming. Familiarity with these techniques is ensured through laboratory exercises.
Prerequisites: Some programming experience. 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.
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 functions. Systems of linear inequalities. Linear programming techniques.
Prerequisites: 1140 or equivalent. No lab fee charged.

1142 Probability and Introduction to Quantative 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 Operations Research **4-0-4**
Decision Theory, Model Construction; network, transportation, simplex and other programming, dynamic programming, queuing, Markov analysis, past, present, future methods.
Prerequisites: 141 and 1142 or equivalent. No lab fee charged.

1150 Introduction to Science Mathematics **4-0-4**
Fundamental skills of mathematics as applied in the health professions. Covered topics include: operations with percent, geometry, metric system, Apothecaries' system, solving simple algebraic equations, ratios & proportions, reading measuring devices & dial scales, interpretation & construction of graphs and introduction to statistics. Use of an electronic calculator is required. This course is offered both as a traditional lecture class and as a self-paced class.
Prerequisites: 0020, 0024 or indicated by skills assessment. No lab fee charged.

1151 Pre-Calculus Math: Algebra **4-0-4**
Covered topics include: real numbers, exponents, basic equation solving methods, factoring, quadratic equations, fractional equations, graphing, straight lines, systems of equations, determinants and Cramer's Rule.
Prerequisites: High school algebra. 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, exponential and logarithmic functions, conic sections.
Prerequisites: Two years of high school math. No lab fee charged.

1154 Calculus I **4-0-4**
Functions and functional notation, limits and continuity. Tangents, slope and the derivative. Basic derivative 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 trigonometric, logarithmic and exponetial functions. Integration by parts, by separation of variables, by trigonometric substitution. Partial derivatives. Multiple integration.
Prerequisites: 1152, 1154. No lab fee charged.

1161 Applied Algebra **3-2-4**
A course designed to build an awareness of the practical uses of algebra in engineering technology and basic science applications. Covered topics include: manipulation of measured values and variables in formulas; relationship between formulas and real devices; construction & reading of graphs and lab exercises reading numbers from technical drawings & from measuring devices. Use of a scientific calculator is required.
Prerequisites: Recommendation of coordinator/advisor. No lab fee charged.

1162 Applied Geometry & Trigonometry **3-2-4**
A course designed to build an awareness of the practical uses of geometry and trigonometry in engineering technology and basic science applications. Covered topics include: manipulation of the formulas of geometry and trigonometry; use of geometric facts; the relationship between geometry & trigonometry and lab exercises reading numbers from technical drawings & from measuring devices. Use of a scientific calculator is required.
Prerequisites: 0024 or 1161 or equivalent. Corequisites: 2270 or 7008 or equivalent. No lab fee.

1170 Introduction to Technical Mathematics **4-0-4**
Covered topics include: percents, geometric figures, measurement & Geometry, metric system, signed numbers, solving algebraic equations, ratios & proportions, reading measuring instruments & dial scales and interpretation & construction of graphs. Applications will use the tools of the sciences and the engineering technologies; graphs, calipers etc. Use of an electronic calculator is required. This course is offered both as a traditional lecture class and as a self-paced class.
Prerequisites: 0020, 0024 or indicated by skills assessment. No lab fee charged.

1171 Technical Mathematics I **4-0-4**
Covered topics include: order of calculation, scientific notation, accuracy, rounding, unit conversion, formula & equation manipulation, graphing ratio & proportion, area & volume calculation, right triangle trigonometry and simultaneous equations. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: Indicated by skills assessment. No lab fee charged.

1172 Technical Mathematics II **4-0-4**
Covered topics include: quadratic equations, equations involving fractions, oblique triangle trigonometry, solving exponential equations and equations requiring angles in radians. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: 1171 or equivalent. 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.
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. Two-sample hypothesis testing of means, variances and proportions. non parametric statistical techniques including sign and rant tests. One-way and two-way analysis of variance (ANOVA). Experimental design by orthogonal arrays and linear graphs. Use of a statistical software package will be emphasized in hands-on learning sessions. A scientific calculator with STAT capabilities is required.
Prerequisites: 1179. No lab fee charged.

1191 Algebra and Trigonometry I **4-0-4**
Covered topics include: scientific calculations, unit conversions, geometry review, solving algebraic formulas, graphing, right triangle & oblique triangle trigonometry, quadratic equations and simultaneous equations. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: Indicated by skill assessment. No lab fee charged.

1192 Algebra anl Trigonometry II **4-0-4**
Covered topics include: solving exponential & logarithmic equations, complex numbers, solving trigonometric equations, variation, second degree simultaneous equations and graphs of trigonometric functions. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: 1191 or equivalent. No lab fee charged.

1193 Analytic Geometry & Calculus I **4-0-4**
Covered topics include: Analytic geometry involving lines and the conic sections, graphs and analysis of polynomial functions, derivative concept and indefinite & definite integrals. Derivative applications include related rates and finding maximum & minimum points. Integral applications include areas and volumes and related topics. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: 1192 or equivalent. No lab fee charged.

1194 Analytic Geometry & Calculus II **4-0-4**
Covered topics include: Derivatives and integrals of transcendental functions, integration using tables, integration using the computer, double integrals and partial derivatives with application to Least Squares curve fitting. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required. A pocket computer would be helpful.
Prerequisites: 1193. No lab fee charged.

1195 Analytic Geometry & Calculus III **4-0-4**
Covered topics include: Maclaurin Series, Taylor Series, Fourier Series, first order differential equations, linear differential equations, second order differential equations, equations with repeated roots, nonhomogeneous equations, Laplace Transform and numerical methods of solving differential equations. Applications from the sciences and the engineering technologies are used extensively. Use of a scientific calculator is required.
Prerequisites: 1194. No lab fee charged.

1198 Computerized Mathematics Studies for Engineerng and Science Technology **3-2-4**
This course may be used in place of any of the 1191—1195 applied science mathematics courses. The course stresses the same content as the 119x sequence along with computer software enhancements derived from MathCad, Lotus, and True Basic. Other sofftware applcatoins may also be introduced as time permits.
Prerequisites: Advisor approval. 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 **6-3-6**
This complete 120-hour training course fulfills the requirements for certification for Peace Officers Training Council for Private Security Police.
Prerequisites: None. Lab fee charged.

1202 First Aid **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. 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.
Prerequisite: None.

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. 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 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 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, sabatage, 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, forgety 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.

1218 Executive Protection **3-0-3**
This course will provide participants with an understanding of terrorism and the threat it passes to business people, government representatives and other professionals and the companies they represent. It explains modern terrorism, the general characterisitcs of terrorist organizations and their members, their motivation, strategy tactics and modus operandi and activities of specific groups that target business interest. Particular attention is paid to the lessons learned from past terrorist operations, so that personal, family and corporate security is improved.
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 brigrades, train, and use them.
Prerequisites: None. 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 of the hazards, enforcement of the solution. Public relations as affected by fire prevention efforts.
Prerequisites: 1220. Lab fee charged.

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

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

1234 O.S.H.A. I (Occupational Safety & 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 0.S.H.A. II (Occupational Safety & Health Act) **3-0-3**
A study of the Federal Register.
Prerequisites: None. No lab fee charged.

1236 Vehicle Safety **3-0-3**
A study and analysis of the problems and practices of motorfleet 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
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 folder, broadsides and booklets.
Prerequisites: None. Lab fee charged.

1402 Typography **2-6-1**
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.
Prerequisite: None. Lab fee charged.

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

1410 Machine Composition and Newspaper Designing **1-9-4**
An extended study of various typesetting machines, both magnetic tape controlled and punched tape controlled, utilizing hot metal machines. Analysis, evaluation and recommendations based on individual research in order to select the best method 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 kind 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 makeup; 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 operation of various keyboards. The use of electronics, computers, and tape operated controls.
Prerequisites: 1402. Lab fee charged.

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

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, squeegees 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**
Advance 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. Advance training on mounting, platemaking, and finishing operations.
Prerequisites: None. 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 press-room and quality control equipment.
Prerequisites: None. Lab fee charged.

1449 Estimating Preparation **2-3-3**
This course is designed to cover those areas in the printing industry 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: 1449. No lab fee charged.

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

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

1481 Photolithography II **2-3-3**
Follow-up of Photolithography I using advanced techniques. Making color separations and color proofs. Stripping techniques related to multi-color jobs.
Prerequisites: 1480 or 1482. Lab fee charged.

1482 Flexo Photography **2-3-2**
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 halftone 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 1 **3-0-3**
This course presents psychology as the science of understanding behavior. Topics covered are; methods of psychological research, the biological bases of behavior, perception, learning, memory and language; motivation, and emotions.
Prerequisites: None. No lab fee charged.

1506 Introduction to Psychology 2 **3-0-3**
This course discusses the development and growth of people; the personality, the maladjusted patterns of behavior; psychotherapy; social psychology; and applied psychology in terms of business, industry, education, and consumerism.
Prerequisites: 1505 or equivalent. 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 the 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 recommended. No lab fee charged

1508 Psychology: Child Development **3-0-3**
This course discusses the child's life which 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 or equivalent. No lab fee charged.

1509 Psychology: Adult Development **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: 1506 or equivalent. No lab fee charged.

1510 Psychology: Adolescent Development **3-0-3**
Adolescence, the years between 12 and 22, are a period of tremendous changes physically, psychologically and socially. This course will examine these developmental issues as well as self concept, sex roles and identity, relating to parents, peers and achieving independence, value formation, and choosing and preparing for an occupation. Hazards of this age period, such as alcohol and drug abuse, will be discussed.
Prerequisites: 1506 or equivalent. No lab fee charged.

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

1513 Macroeconomics **3-0-3**
This course introduces the basic economic problems 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 acculturation.

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 techniques, 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: Three (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 assist students in understanding how ethics is applied in practical situations. Discussion of ethical principles and procedures is an integral part of the course. 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 of 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.

1538 Case Studies in Labor Relations **3-0-3**
A case study approach to the American Labor relations system and the application of labor law.
Prerequisites: 1535 or equivalent. 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 Laws, etc.
Prerequisites: None. No lab fee charged.

1541 Role of the Army Officer **1-1-1**
Introduces the student to the ROTC Program and gives the student a better understanding of the role of in the military structure. Benefits and requirements of the ROTC Program are discussed.
Prerequisites: None. No lab fee charged.

1542 Introduction to Leadership **1-1-1**
Study and application of basic principles and techniques of counselling, communication skills and human relations skills.
Prerequisites: None. No lab fee charged.

1543 Fundamental of Leadership **1-1-1**
Introduces the student to a better understanding of organizational leadership. Improves the student's understanding of sociological and psychological influences on human behavior. It discusses human needs, motivation, and the nature of groups and members of the groups. Emphasis is placed on application in the military.
Prerequisites: None. No lab fee charged.

1546 Leadership in Small Unit I **1-1-1**
This course emphasizes the functional approach to the study of leaderhsip. The course is composed of lecture and discussion. The course also contains an introduction to the basic organization of Army units, Company, Platoon and Squad. This knowledge will assist the students in further studies and also enable them to understand the organizational structure of the Army at small unit level.
Prerequisites: 1541, 1542, 1543. No lab fee charged.

1547 Leadership in Small Unit II **1-1-1**
Provide the student withinformation on leadership topics through lecture, conference and analytical discussions of prerecorded TV tapes. Also during this course, students will review and expand upon basic map reading knowledge.
Prerequisites: 1541, 1542, 1543. No lab fee charged.

1548 Today's Army **1-1-1**
This course is designed to give the student an overview of today's Army and show the trends in improving the quality of the soldier's life. It explains the mission, organization, and deployment of the regular and reserve Army forces. Each student will have the opportunity to familiarize himself with Army career fields, customs and traditions of military service, service benefits, and the Army Officer as a professional.
Prerequisites: 1541, 1542, 1543. 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 Division.
Prerequisites: None. 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 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. Lab fee charged.

1712 Data Entry Systems **2-3-3**
This course is designed to give students a basic understanding of data entry with the knowledge and skills to effectively practice with a database management tool in a data management environment.
Prerequisites: High school typing or 3001. Lab fee charged.

1721 Programming Logic & Methods **2-3-3**
The course is designed to give the student initial exposure to programming logic methods and programming documentation. Emphasis is on structured 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: None. Corequisites: 1701. No 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, 1721 and 1702. Lab fee charged.

1723 Assembler Language I **2-4-4**
The first course in assembler coding techniques utilizing micro-computer assembler instructions. Program problems are assigned to utilize I/O processing, direct and indirect addressing, and peripheral equipment and table manipulation.
Prerequisites: 1721. Lab fee charged.

1731 Advanced Computer 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 and 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 microcomputers.
Prerequisites: "C" or better in 1701 or 1850. Lab fee charged.

1739 Operating Systems **2-3-3**
The standard functions of supervisory routines, including introduction to; run control, I/0 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: "C" or better in 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 systems and time sharing.
Prerequisites: "C" or better in 1740. 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 and 1721. Lab fee charged.

1752 Real Time Systems & Data Communications **2-3-3**
The Systems Analysis student will enter into man-machine interactions through a teleprocessing based on data processing system. Topics will include tele-communications hardward and the appropriate (related) programming languages. Emphasis will be placed on the current timesharing 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 I **3-2-3**
The course is designed to give the student an understanding of the scope of business data communications. It will also explain basic terminology and concepts that apply to the operation and design data communications systems and to provide a logical approach to recognizing communication problems.
Prerequisites: "C" or better in 1701 or 1850. Lab fee charged.

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

1762 COBOL Programming II **3-7-5**
Advanced COBOL techniques using randomly processel 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 & Design **2-3-3**
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 and 1721. Lab fee charged.

1764 Data Communications II **3-2-4**
The course is designed to follow 1754 Data Communications I. The student will understand how communication protocols operate and how Local Area Networks and office automation are designed and installed. These concepts will be reinforced by practical laboratory problems.
Prerequisites: "C" or better in 1701, 1702, 1754. Lab fee charged.

1769 Programming Data Base Applications **2-3-3**
The programmer will be introduced to the concepts of DataBase Management Systems, both Hierarchical and Relational. Problems will be assigned using the cobol database implementation.
Prerequisites: 1762. Lab fee charged.

1771 Data Base Management Systems **2-3-3**
Manipulating data to extract required information through the use of external database managers. Topics include designing the database, 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 and 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 & 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 orientei 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 and 1721. No lab fee charged.

1784 Networking **3-2-4**
The course is designed to present the methodologies of data transmission and networks, highlighting software and data bases. The details of physical, electrical and procedural communication system interfaces will be discussed. Network planning and management guidelines will be used to accomplish laboratory projects.
Prerequisites: 1746, 1771. Corequisites: 1752. 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. 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 education for those students whose major interest is in some other area of marketing.
Prerequisites: None. No lab fee charged.

1812 Salesmanship II **2-0-2**
Study of the selling process. A point by point observation of the steps of a sale and 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: 1846, 1847, 1813. No lab fee charged.

1818 Advanced Purchasing **3-0-3**
A detailed study of purchasing's role in the overall operation of company activities. Examine relationships between purchasing and other company departments.
Prerequisites: 1817. No lab fee charged.

1819 Contemporary Purchasing Issues **2-1-3**
Current purchasing trends, market cost and value analysis, buying decisions. Course will incorporate use of microcomputers.
Prerequisites: 1817, 1818, 1850. 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 lasws 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 a personnel office, such as job evaluation, recruitment, interviewing, training, employee and union relations, employee services, and of specific concepts concerning human relations and organizational behavior.
Prerequisites: 2926. No lab fee charged.

1836 Principles of Wholesaling **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.

1842 Advertising & 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 midmanagement employment. Case studies are introluced to give the students practical operating experiences.
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: Keyboarding knowledge or 3007. Lab fee charged.

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

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 pracicing auditor or manager with a limited background in computers; or (2) a student usually of fourth or fifth term standing.
Prerequisites: 1851. Lab fee charged.

1860 Management Software for Professionals **2-2-3**
This course is designed to acquaint students with Symphony, a fully integrated software package. Students will be introduced to three of Symphony's five microcomputer software applications; spreadsheet, word processing, and data management.
Prequisites: Basic microcomputer operations & keyboarding. Lab fee charged.

1861 Electronic Spreadsheets (Lotus 1-2-3) **2-2-3**
Lotus Development Corps. 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 chart generator and a file manager in one integrated package.
Prerequisites: Keyboarding knowledge or 3007. Lab fee charged.

1862 Advanced Elelctronic Spreadsheets **2-1-3**
This course teaches advanced concepts in spreadsheet applications utilizing LOTUS 1-2-3. The topics include macros, the command language, advanced data commands, advanced graph commands, transferring files, advanced functions, and LOTUS add-ins.
Prerequisites: 1861. Lab fee charged.

1866 Computer Literacy **2-2-3**
This course gives the student an overview of business applications software. Students gain "hands on" experience with electronic spreadsheets, word processing, and data base management.
Prerequisites: None. No lab fee charged.

1867 Word Processing **2-2-3**
A "hands on" course in the basic operation and management of word processing. Topics include how to enter and format text, how to use the special math features, and how to build project files.
Prerequisites: None. No lab fee charged.

1868 Spreadsheet **2-2-3**
This "hands on" course acquaints students with the concept of electronic spreadsheets. Topics include how to build a spreadsheet, use the major spreadsheet manipulation commands, use the special mathematical functions, use project processing and design, and print graphs.

1869 Data Manager **2-2-3**
This "hands on" course acquaints students witht he concept of data base management. This includes how to create a data base, set up data entry procedures, manipulate data, generate reports, and set up project files.
Prerequisites: None. No lab fee charged.

1870 Desktop Publishing **2-1-3**
The program is designed to provide high quality training in the field of Desktop Publishing with PC Pagemaker. The student is expected to become proficient in Pagemaker skills to build reports, build newsletters and create display ads using the IBM Personal Computer.

Prerequisites: 3007 or keyboarding knowledge. Lab fee charged.

1872 Offshore Sourcing **3-0-3**
The purpose of this course is to help the student understand the planning and procedures necessary to participate in International Purchasing. Discussions include import/export activities, quotas and tarriff regulations.
Prerequisites: 1817, 1818. No lab fee charged.

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

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

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

2011 Industrial Hygiene Oontrol **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-2-4**
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 Introcution to 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, radio-activity, 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.)
Prerequisites: None. Corequisites: 1150 or 1170 (Competency test may be waived.)Lab fee charged.

2209 Mechnical 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.

2221 Technical Physics I **2-3-3**
The major emphasis will be placed on the theory of basic electricity, circuit building and analysis, and VOM instruments. The fundamental of analog and digital electrics are presented. The topics of measurement, mass and weight will be examined.
Prerequisites: None. Corequisites: 1161 or 1170. Lab fee charged.

2222 Technical Physics II **2-3-3**
The topics of mechanics, pressure, density and heat will be examined. The treatment of mechanics with emphasis on kinematics and dynamics of moving objects, including rotational motion and machines. Heat with emphasis on temperature scales; expansion; energy; specific heat; latent heat; heat of combustion; and the gas laws.
Prerequisites: 2221. Lab fee charged.

2223 Technical Physics III **2-3-3**
Topics to be examined include the structure of matter, the laws of thermodynamics, energy conversions, engines, ideal gases, properties of waves, doppler effect, electromagnetic waves, optics, and modern physics.
Prerequisites: 2221. Lab fee charged.

2231 Fundamentals of Inorganic Chemistry **3-2-4**
A course in college level general chemistry; for those interested in the structure and properties of matter, changes in matter, chemical bonding, chemical reactions, equilibrium.
Prerequisites: high school chemistry or 2200. Lab fee charged.

2232 Fundamentals of Organic Chemistry **3-2-4**
A course in college level organic chemistry as a foundation of biochemistry—carbon bonding; saturated, unsaturaged aromatic hydrocarbons; alcohols; phenols; aldehydes; ketones; acids; amines.
Prerequisites: 2231 or 2200. Lab fee charged.

2233 Fundamentals of Biochemistry **3-2-4**
A course in college level 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 **3-2-4**
Selected topics as applied to the allied health profession. Pressure forces and addition of vector quantitites 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; electromagentic 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 **5-2-3**
Selected topics from those not covered in course number 2244.
Prerequisites: 2244. 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 two 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: None. Corequisites: 1161 or math assessment. Lab fee charged.

2291 Physics I **3-2-4**
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 **3-2-4**
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 **3-2-4**
Electromagnetic radiation with emphasis on the Wave Nature: Basic Wave properties; the Electormagnetic 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 **3-2-4**
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, 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. 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: 2501. 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. 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. 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: 2501, 2502, 2503, 2504. Lab fee charged.

2506 Machine & Hand Tool Lab **2-3-3**
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.

2508 Techniques of Welding **2-3-3**
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. No lab fee charged.

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

2801 Food & Beverage Sanitation, Safety, Service **3-0-3**
History, objectives, economics, scope and social importance of the industry. Emphasis on sanitation and safety techniques in the kitchen with lab experience. Students in the Chef Apprenticeship program may elect to take OJT in lieu of lab.
Prerequisites: None. No lab fee charged.

2802 Food & Beverage Cost Controls **3-0-3**
An application of accounting theory to foodservice management. This course is offered to set up systems that can be implemented to control major costs in the foodservice industry.
Prerequisites: None. No lab fee charged.

2803 Menu Production & Purchasing **3-0-3**
Examination & Production of a full service menu to develop a food service purchasing system.
Prerequisites: None. No lab fee charged.

2804 Catering Banquets 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: None. 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 hospitatlity refreshments.
Prerequisites: None. Lab fee charged.

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

2808 Food and Beverage Lab I **0-4-1**
A practical application of service and kitchen duties in a full service restaurant.
Prerequisites/Corequisites: 2801. Lab fee charged.

2809 Food and Beverage Lab II **0-4-1**
A practical application of service and kitchen duties in a full service restaurant.
Prerequisites: 2801, 2808. Lab fee charged.

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

2812 Hotel 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 Managementlst; **1/4x3-0-3**
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, confectionery, menu planning.
Prerequisites: 2822, 2827. Lab fee charged.

2824 Chef Advance Cookery I **2-4-3**
Through lab and lecture, you will gain a working knowledge of the following; classical soups, sauces, classical meat, poultry, fish dishes, garne manger, buffet work.
Prerequisites: 2822, 2823, 2827. Lab fee charged.

2825 Pastry & Confectionary **4-8-6**
Through lab and lecture, you will gain a working knowledge of the following; pastry and confectionary 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, 2823, 2824. Lab fee charged.

2826 Classical Cookery **2-4-3**
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: 2822, 2823, 2824, 2825, 2827. 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: 2822. 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 Credit & 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.

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 suceeded. 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: 3007 or keyboarding knowledge. 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, 1850. 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, 1850. No lab fee charged.

2914 Cost Accounting I **3-0-3**
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: 2912. No lab fee charged.

2915 Cost Accounting II **3-0-3**
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 **3-0-3**
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 **3-0-3**
A study of Federal Taxation dealing with advanced topics, partnerships and corporations.
Prerequisites: 2917. No lab fee charged.

2919 Intermediate Accounting I **3-0-3**
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: 2913. No lab fee charged.

2920 Intermediate Accounting II **3-0-3**
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 **3-0-3**
Determining cost and revenue relationships for management, managerial uses of quantitative techniques and financial statement analysis in managerial decision making.
Prerequisites: 2913. No lab fee charged.

2923 Marketing Concepts & Applications **3-0-3**
Advanced marketing concepts and applications using both a traditional lecture approach and microcomputer applications in order to better understand the scope of the marketing environment.
Prerequisites: 2901, 2902, 1850. No lab fee charged.

2925 Business Principles **3-0-3**
A study of the nature of business, forms of business ownership, produc-

tion problems and financing, forecasting, budgeting, governmental regulation 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 countersmeasures, 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 expenses, 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: 2912. No lab fee charged.

2929 Audit Procedures **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 **3-0-3**
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 **3-0-3**
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 **3-0-3**
Techniques for successful management of property at the executive level. This course encompasses objectives of ownership, use of data and statistics, analysis of 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 course 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 systesm; 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 nonconstructionist, 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 requirel 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
Prerequisites: 2951, 2953. No lab fee charged.

2955 Real Estate Appraisal I - Residential **3-0-3**
Methodolgy of appraising; residential property. Theory of appraisal techniques. The three basic approaches of appraising; market comparison, cost of replacement, and income capitalization. Required by the state of Ohio prior to taking the brokers license exam.
Prerequisites: 2951, 2952, 2953. 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, 2952, 2953, 2954, 2955, 2956. 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: None. 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 Principles of Investments **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: 2960. No lab fee charged.

2963 Investment Tax **3-0-3**
Course content will cover tax treatment of all savings and investment vehicles including IRA's 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 Contemporary Management Concepts **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.

2971 Small Business Management I **3-0-3**
This is a beginning course in the ownership and operation of a small business, covering the areas of formation and start-up. The course also includes your basic sources of funding and financial management as well as location and layout.
Prerequisites: 2926. No lab fee charged.

2972 Small Business Management II **3-0-3**
This is the second course in the ownership and operation of a small business, covering the elements of management and control. The course also includes marketing as well as legal implications and government regulations that affect a small business owner.
Prerequisites: 2971. No lab fee charged.

2975 Business Management Seminar **2-3-3**
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. 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 rough 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.

3006 Typewriting Skill Development **2-3-3**
A typing course designed for those students who have had previous instruction on the typewriter and know the keyboard, but who have not achieved proficiency in speed and accuracy to continue on to Typewriting II. The Cortez Peters system of diagnostic testing and analyzation is used to improve speed and accuracy.
Prerequisites: Keyboarding knowledge or permission of instructor. Lab fee charged.

3007 Introduction To Keyboarding **1-4-2**
A keyboarding class designed for all Business Technologies students who do not have a basic keyboarding skill. This course emphasizes keyboarding on computers.
Prerequisites: None.

3021 Office Procedures **2-3-3**
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. 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 include electronic typewriters, standalone display editing word processors, and multi-terminal word processors.
Prerequisites: 3001 or permission of the coordinator. Lab fee charged.

3023 Machine Transcription **3-0-3**
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 **3-0-3**
Business information applicable to office employment. Emphasis on important responsibilities of the office worker pertaining to business communications, travel, meetings, reference and preparation of reports, including a continuation of the operations/applications of machine transcription emphasizing correct grammar, punctuation and spelling.
Prerequisites: 3021. No lab fee charged.

3025 Legal Secretarial Procedures I **2-3-3**
Among topics to be studied are legal correspondence and filing, judicial procedures, law books and other reference materials, introductory research techniques, probate procedures, civil suits, public relations, and seeking, keeping or changing jobs.
Prerequisites: Shorthand III or IV with a grade of "C" or better, 1823. Lab fee charged.

3027 Office Practicum **2-3-3**
Designed for the student who has elected to follow the General Secretarial Curriculum. Each student's program is to individually designed to futher develop the necessary skills required to secure a position in his or her chosen field, including basic office routines, human relations, and individual responsibilities.
Prerequisites: None. Lab fee charged.

3028 Secretarial Practicum **3-7-5**
An intensive course in secretarial practicum emphasizing the area of business that is of particular interest to the student. Each student's program is to be individually designed to provide an opportunity to strengthen those areas where he may need additional training as well as to provide realistic practice in his chosen field, incluling decision-making responsibility, creative work, and human relations.
Prerequisites: 3027. No 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.

3035 Essential Business Correspondence **2-1-3**
An office specialist technologies' basic business correspondence course that involves proofreading, spelling, vocabulary building, and business correspondence—origination, formatting, and distribution.
Prerequisites: 3001 or 3006. Lab fee charged.

3045 Legal Research Projects I **2-8-4**
Individualized projects to equip the student with the techniques for law search and research.
Prerequisites: 1823 and permission of coordinator. 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. Lab fee charged.

3049 Word Processing Opertions 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 unformattel 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. Lab fee charged.

3050 Word Processing I **1-4-3**
An introduction to word processing will present a historical overview of the development of automatic recording and transcribing equipment to show why word processors are an asset to businesses. This course will offer some "hands on" experience for the student.
Prerequisites: 3001. Lab fee charged.

3051 Word Processing II **1-4-3**
The student will be introduced to the basic concepts of text management. They will become familiar with the IBM Document Composition Facility distributed shared-logic system and also various pieces of standalone information/word processors and become knowledgeable enough to process simple documents. Five weeks of 3051 will be spent on the IBM DCF system and five weeks will be spent on a rotational basis utilizing the standalone information processors.
Prerequisites: 3050. Lab fee charged.

3052 Text Management **1-4-3**
The student will continue the study of standalone word processing equipment introduced in Word Processing II. They will learn how to input documents from hard copy and/or a dictation system. They will use codes and formatting controls to edit and manipulate text for final output.
Prerequisites: Grade of "C" or better from 3051 and 3023 or corequisite 3023. Lab fee charged.

3060 Introduction to Word/Information Processing **2-0-2**
This course will present a 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: Keyboarding knowledge or 3007. 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 permission of 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 permission of 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 permission of 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 permission of coordinator. Corequisite: 3064. Lab fee charged.

3066 Text Processing **1-4-3**
This course is designed for students to perform advanced functions in the manipulation of text on personal computers.
Prerequisites: 3001, 3060, 3061, 3062, 3063, 3064, 3065, 3023, or permission of coordinator. Lab fee charged.

3067 Word/Information Processing Administration **3-0-3**
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, 3023, 3061, 3062, 3063, 3064, and 3065. No 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 permission of the coordinator. Lab fee charged.

3081 Shorthand: Speed Development **2-3-3**
Designed for those students who have had previous speedwriting training and can transcribe within a 5 percent error allowance from shorthand notes dictated at the rate of 60 words per minute. The student is introduced to dictation from material which is not familiar. Emphasis is on speed development.
Prerequisties: Minimum grade of "C" in 3080 or permission of 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 is emphasized. The student is introduced to writing shorthand and transcribing on the typewriter from shorthand notes.
Prerequisites: 3001 or permission of the coordinator. Lab fee charged.

3083 Shorthand II - C21 **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 permission of 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 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 permission of 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 material.
Prerequisites: Minimum grade of "C" in 3081, 3083, or 3085 or permission of 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 skill. Emphasis is on the development of mailable transcription, with a review of punctuation and spelling.
Prerequisties: Minimum grade of "C" in 3086 or 3089 or permission of coordinator. Lab fee charged.

3088 Transcription II - Speedwriting/C21/Gregg **2-8-5**
Continuation of 3087. Emphasis on mailable transcription. Integration of office-style dictaiton and the mailable letter to meet office standards.
Prerequisites: Minimum grade of "C" in 3087 or permission of 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 place in advanced shorthand. Emphasis is on speed development from familiar and unfamiliar material and development of mailable transcription.
Prerequisites: Minimum grade of "C" in 3086 or permission of coordina-

tor. Lab fee charged.

3090 Shorthand Transcription **2-8-5**
A continuation of shorthand with emphasis placed on mailable transcription with a review of punctuation and spelling.
Prerequisites: "C" or better in 3081 or permission of 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 **2-2-3**
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 plantings.
Prerequisites: None. No lab fee charged.

3506 Nursery Management **2-2-3**
An introduction to techniques and practices used in the commercial production of herbaceous and woody plants. Plant propagation, field and container production, and marketing are emphasized.
Prerequisites: None. Lab fee charged.

3507 Arboriculture **3-2-3**
A study of the commercial aboriculture business. The diagnosis and treatment of tree ills, 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 techniques 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: None. No lab fee charged.

3516 Herbaceous Plants II **2-3-3**
A continuation of Herbaceous Plants I, with emphasis on annual and biennial flowers, and fall flowering perennials. Landscape use of herbaceous plants is studied and design and growth of flower borders is practiced.
Prerequisites: None. No lab fee charged.

3518 Advanced Landscape Design **2-4-3**
A continuation of the principles of Landscape Design, with progressively difficulty 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 presentation. 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 & 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.

3525 Plant Propagation **2-2-3**
Principles and practices involved in reproducing both woody and herbaceous plant materials. Equipment used in propagation practices will also be covered.
Prerequisites: 3502. 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.

3530 Horticulture Seminar I **1-1-1**
Guest speakers and field trips dealing with current industry topics. "For first year students."
Prerequisites: None. No lab fee charged.

3531 Horticulture Seminar II **1-1-1**
Guest speakers and field trips dealing with current industry topics. "For second year students."
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.

3533 Landscape Irrigation **2-3-3**
A study of the design, construction, installation and use of landscape irrigation systems.
Prerequisites: 3501, 3508. Lab fee charged.

3534 Interior Plantscaping **2-2-3**
Identification, culture, and maintenance of tropical plants used in residential and commercial interior plantings. Field trips required.
Prerequisites: None. No lab fee charged.

3535 Woody Plant Materials III **2-3-3**
A course emphasizing plants commercially available and widely used in the landscape and nursery industry. Special emphasis will be on cultivar distinctions and landscape use.
Prerequisites: 3504, 3515. No lab fee charged.

3540 Introduction to Foral Design **2-3-3**
A basic course dealing with principles of making simple flower arrangements and corsages. Types of design, style, principle tools, equipment, materials, foliage and flower types are covered.
Prerequisites: None. Lab fee charged.

3541 Floriculture Production I **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 fall and winter months.
Prerequisites: 3501, 3502, 3528. Lab fee charged.

3542 Retail Florist Management **1-5-3**
Principles and practices in management and operations of the retail flower shops and garden centers. Advertising, pricing, displays, marketing, inventory, and planning are some of the topics emphasized. Field

trips and retailing projects required.
Prerequisites: 3540. No lab fee charged.

3543 Floriculture Production II **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 and early spring months.
Prerequisites: 3501, 3502 and 3528. 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 pronounciation 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 Technologies **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.

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 discussed 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 gastro-intestinal system, metabolism, the renal system, fluids and electrocytes, acid-base 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, inflammation, 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.

4025 Kinesiology **2-2-3**
A study of the movement of body parts stressing the relationship to rehabilitation therapy.
Prerequisites: 4014, 4015 or permission of instructor. Corequisite: 4613, 4623. 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 evaluation and 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: Ten 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 Heath 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 inititated 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. This course is approved for "S" and "U" grades.
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. Corequisites: 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 Assessment. Course used 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: 2231, 4113, 4015. No lab fee charged.

4105 Introduction to Clinical Nutrition **2-2-3**
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: 4130. 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. Corequisites: 4114, 2232 and 4016. No lab fee charged.

4107 Clinical Nutrition III **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. Corequisites: 4115, 2233, 4017. No lab fee charged.

4108 Community Nutrition **4-0-4**
A study of nutritional needs and assessment techniques within community willness, and health maintenance programs. High risk groups such as infants, adolescnets, pregnant and lactating women, and senior citizens are studied.
Prerequisites: 4107. Corequisites: 4116. Lab fee charged.

4109 Dietetics Seminar **2-0-2**
Comprehensive examination of nutrition care knowledge. Evaluation of field experiences, job trends and opportunities, community resources and professional organizations.
Prerequisites: Completion of all Dietetic Technician courses or in final term. No lab fee charged.

4111 Dietetics Orientation & Directel 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 **0-8-1**
Nutrition care rotation in a health care facility parallel to didactics covered in Normal Nutrition.
Prerequisites: 4111, 4102. 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 Practice V **0-10-2**
Nutrition care rotation in a health care facility parallel to didactics coverd in Diet Therapy.
Prerequisites: 4114. Corequisites: 4107. No 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 experience. The student will be responsible for visiting, assessing, developing care plans and educating patients and nurses within the patients home under the guidance of a clinical instructor and the home care nursing staff.
This course will be graded using:
U - Unsatisfactory, and
S - Satisfactory
Prerequisites: 4113. No lab fee charged.

4121 Food Management **2-6-4**
The fundamentals of household food preparation and meal management. Topics include; food composition related to nutritional value, principles of menu planning, food economics and time management. Laboratory includes: preparation and evaluation of all food groups and a meal presentation to a small group.
Prerequisites: None. Lab fee charged.

4122 Institutional Food Systems I **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. Corequisites: 4143. No lab fee charged.

4123 Institutional Menu Planning **3-3-4**
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 Certificate **2-0-2**
This course includes all aspects of institutional food service sanitation for both the commerical 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 invovling 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: 4121. Corequisites: 4143. Lab fee charged.

4126 Records & Cost Control **2-0-2**
Record keeping and controls needed in health care food service operations. Health care applications of Accounting I and II principles are incorporated.
Prerequisites: 2912. Corequisites: None. No lab fee charged.

4127 Institutional Food Service Equipment, Layout, and 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: 4122. Corequisite: 4146. No lab fee charged.

4128 Food Service and Catering **2-3-3**
Determination of the type of service best suited for an operation. Planning, implementing and evaluating meals served for special activities.
Prerequisites: 4122, 4125, 4145. No lab fee charged.

4129 Institutional Food Systems II **1-5-3**
This course is a continuation and implementation of the principles learned in 4122 as well as a correlation of principles from personnel management quantity food production, sanitation, marketing and food presentation. Quality control of the total food service delivery system will be experienced and analyzed through the operation of a small dining room.
Prerequisites: 4031, 4122, 4125. 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 **2-0-2**
Nutritional science and its effect on human physiology with applications to all population groups. Nutrient composition, digestion absorption and metabolism for normal states are studied.

Prerequisites: None. No lab fee charged.

4132 Basic Diet Therapy **2-0-2**
A study of nutritional therapy and diet modification for pathological states of the various body systems. Basic nutritional assessment and counseling techniques are covered in this course.
Prerequisites: 4131. No lab fee charged.

4133 Food Science **2-3-3**
The study of the chemical, physical and microbiological properties of food and the effect of processing and handling on its properties. This course is designated for the student with basic science and some food preparation background. Lab will include experimentation that will support lecture material.
Prerequisites: 4100, 4120, High School Chemistry or 2200. Lab fee charged.

4141 Dietary Manager's Orientation **1-3-2**
This course is designed to orientate the new student to Health Care Food Management. It includes standards and regulations as defined by federal, state and accreditation recommendations and how these standards impact on dietetic care in hospitals and care centers. The roles and professional interrelationships of health care providors is discussed so that the Dietary Manager student knows his/her responsibilities and appropriate role. Information gathering techniques are initiated, including resource material gathering and client interviewing.
Prerequisites: None. No lab fee charged.

4143 Food Systems Management Directed Practice III **1-8-2**
Food service management rotation in a health care facility parallel to didactics studied in quantity food production. Approved for grade of S or U.
Prerequisites: 4112. Corequisites: 4122. Lab fee charged.

4144 Food Service Management Directed Practice IV **2-8-3**
Food service management rotation in a health care facility parallel to didactics studied in institutional Menu Planning. Approved for grade of S or U.
Prerequisites: 4143. Corequisites: 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 Precurement Systems.
Prerequisites: 4144. 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. Corequisites: 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 Managers certification examination. Test taking skills will be discussed and practiced.
Prerequisites: None. No lab fee charged.

4155 Basic Management Techniques for Food Service **2-0-2**
This course is designed to provide applied dietary management skills for persons employed in small hospitals and nursing homes. Content will cover practical knowledge needed for recruiting, hiring, training, and disciplining personnel. Organizational structure will be addressed along with policy and procedure writing, effective communication and leadership skills.
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-1-4**
A student initiated academic pursuit, mutually agree 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. This course is approved for "S" and "U" grades.
Prerequisites: None. No lab fee charged.

4200 Medical Office Practice I **2-3-3**
Course will include the following content areas: Medical Law & Ethics, Communication skills, team working relationships, career & professional characteristics and behavior. Students will begin working through Laboratory practice modules simulating office practices for performing administrative functions.
Prerequisites: 3002 or equivalent. No lab fee charged.

4201 Medical Office Practice II **2-3-3**
Fundamentals of patient reception, appointment making, mail handling, telephone techniques, inventory procedures, care of equipment and supplies, medical-legal relationships of the medical office and the assistant's responsibility.
Prerequisites: 4200. Lab fee charged.

4202 Clinical Procedures I **2-3-3**
Fundamentals of patient preparation, history taking, positioning, draping, taking and recording the vital signs, assisting the physician with the examinations, caring for the physician's bag, caring for the examination room before and after a patient.
Prerequisites: Acceptance into the Medical Assisting program. Lab fee charged.

4203 Clinical Procedures II **2-3-3**
Course will include the following content areas: medicaitons, sterile procedures, assisting in monor 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**
This course includes modular units in the following content areas: the use of basic laboratory equipment, specimen collection and hematology procedures, coagulation tests, blood group and rh typing and basic serology testing.
Prerequisites: 4041. Lab fee charged.

4205 Medical Laboratory Procedures II **2-3-3**
Continuation of Medical Procedures I with emphasis on urinalysis, including microscopics, microbiology, blood chemistry testing including glucose, cholesterol and BUN; and other diagnostic techniques such as electrocardiography, X-ray procedures, ultrasound, CAT scan, radionuclides and pulmonary function testing.
Prerequisites: 4204. Lab fee charged.

4206 Medical Laboratory Procedures III **2-3-3**
Special diagnostic procedures and techniques including ECG interpretation, microbiology diagnostic techniques, ova and parasites, uses of standards and controls, troubleshooting x-ray procedures and techniques.
Prerequisites: 4205. Lab fee charged.

4208 Insurance & 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 **2-4-3**
In this course, student preparation for entry-level position in the professional field is stressed through competency testing, student seminar presentations, certification testing, and student-run clinics.
Prerequisites: Permission of instructor. Lab fee charged.

4211 Medical Assisting Clinical Experience I **0-21-3**
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: 4200, 4201, 4202, 4203, 4204, or permission of instructor. Lab fee charged.

4212 Medical Assisting Clinical Experience II **0-21-3**
Clinical practice in the physician's office, health centers and clinics, hospital out-patient department, performing function related to medical assisting. The student will spend an equal number of hours in clinical and administrative assisting. Students will not receive remuneration for these experiences.
Prerequisites: 4208, 4205, 4441, 4211, or permission of instructor. No lab fee charged.

4213 Medical Assisting Clinical Experience III **0-21-3**
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: 4211, 4212 or permission of instructor. No lab fee charged.

4224 Advanced Clinical Procedures **2-3-3**
Course will include areas related to specialties and special patient con-

cerns. Included will be information related to geriatrics, pediatrics, ophthalmology, orthopedics and ENT.
Prerequisites: 4203. Lab fee charged.

4270 Orientation to Health Unit Coordinating 3-0-3
This course will discuss the gradual evolution of Health Unit Coordinating, while orienting the student to the organization and structure of health care facilities. Legal and ethical issues of Health Unit Coordinating, patients admissions, transfers, and discharges are included.
Prerequisites: Acceptance into Unit Coord program. No lab fee charged.

4271 Health Unit Coordinating I and Directed Practice 2-4-4
The course incorporates concepts presented in course number 4270 into the area of transcribing physician orders. The course will provide special emphasis on transcription of orders involving medications. Directed practice in a health care facility paralleled to didactics.
Prerequisites: 4270. Lab fee charged.

4272 Health Unit Coordinating II 2-4-4
This course is a continuation of course 4271, and focuses on skills involving transcription of orders for diagnostic and therapeutic procedures. Directed practice in a health care facility paralleled to didactics.
Prerequisites: 4271. Lab fee charged.

4273 Health Unit Coordinating III 2-0-2
This course will briefly review the role of the Health Unit Coordinator in specialty nursing units within the hospital. Consideration and study of current skills and topics in Health Unit Coordinating is also included.
Prerequisites: 4272, or permission of instructor. No lab fee charged.

4280 Health Unit Coordinator Practicum 0-20-4
This course is designed to be a learning experience in which the student will be involved in the application of principles learned in the classroom to actual performance of those principles at an off campus site.
Prerequisites: Permission of instructor. Lab fee charged.

4281 Health Unit Coordinator Practicum 0-20-6
This course is designed to be a learning experience in which the student will be involved in the application of principles learned in the classroom to actual performance of those principles in a health care faciltiy. The clinical rotation is parallel to didactics covered on campus.
Prerequisites: Permission of instructor. Lab fee charged.

4293 Certification Exam Review Workshop for Health Unit Coordinators 3-0-3
Examination review workshop is designed for entry level exam candidates and others who wish a reveiw of health unit coordinator (clerk) practice and procedures. The course will feature lecture and discussion sessions regarding the national exam for unit coordinators and review test taking skills.
Prerequisites: None. No 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-1-4
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. This course is approved for "S" and "U" grades.
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 speciman collection and handling.
Prerequisites: Acceptance into tech courses of ML Program. Lab fee charged.

4302 Basic Hematology & Urinalysis 4-6-6
Study of the theory and practice of hematology, coagulation, and urinalysis with emphasis on routine procedures in these areas.
Prerequisites: Taken concurrent with or subsequent to 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: 2231, 2232, 4301. Corequisites: 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, crossmatching, antibody screening, cell panels and routine serologic procedures.
Prerequisites: 4023, 4301. 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, 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, spinal fluids, 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 and 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 cxperience in performance of routine manual and automated procedures in clinical chemistry. Emphasis on workload organization, record keeping, quality control, routine maintenance and trouble-shooting for related instrumentation.
Prerequisites: Must be taken 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.
Prerequisites: Must be taken concurrent with or subsequent to 4305. Lab fee charged.

4314 Clinical Applications IV - Clinical Microbiology 0-6-2
Practical experience in routine clinical microbilogy procedures. The practicum will stress workload organization, record keeping and quality control applied to the microbiology lab.
Prerequisites: Must be taken concurrent with or subsequent to 4306. Lab fee charged.

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 trouble-shooting of related instrumentation. Approved for grade of S or U.
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, record keeping, and quality control. Approved for grade of S or U.
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, speciman collection and handling with emphasis on phlebotomy experience.
Prerequisites: 4301. Lab fee charged.

4351 Clinical Experience I 1-24-4
Students are assigned to a 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 scheduled 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 scheduled 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 a patient-oriented atmosphere. Students are required to complete a minimum of 400 hours. This may necessitate make-up work to accommodate scheduled college holidays. Approved for grade of S or U.
Prerequisites: 4315, 4350. No lab fee charged.

4380 Introduction to Phlebotomy 3-0-3
The course is designed to familiarize the student with health care issues directly related to the phlebotomist. An overview of health care organizations, legal aspects, professional development, as well as laboratory tests and their clinical significance are discussed.
Prerequisites: Acceptance into phlebotomy program. No lab fee charged.

4390 Basic Phlebotomy 5-0-5
This course introduces the student to blood drawing. Topics include terminology, anatomy and physiology appropriate to phlebotomy; techniques of veni puncture and capillary sampling; professional responsibilities. 10 hours of practice with techniques.
Prerequisites: 4380. Lab fee charged.

4391 Phlebotomy Clinical Practice 1-10-2
Students are assigned to a local health care facility for practical experience in adult phlebotomy. Course requies 100 hours of clinical practice and attendance at scheduled seminars.
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-1-4
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carriel 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.

4401 Medical Record Science I 3-4-4
(Introduction to Medical Record Technology and Case Record Analysis.) The history of advances in medicine and medical education, hospitals and the profession of Medical Records, organization and functions of Medical Record Department; roles of RRA and ART; admitting office procedures and numbering and filing systems.
Prerequisites: None. Lab fee charged.

4402 Medical Record Science II 3-2-4
Coding according to ICD-9 CM. Introduction to other classification systems including SNDO, SNOP, CPT, DSM-11 and Cancer Registry and Manual of Tumor Nomenclature and Coding.
Prerequisites: 4000, 4401. Lab fee charged.

4403 Medical Record Science III 3-2-4
(Health Statistics.)Statistical procedures including calculations of daily-census, monthly census and percentages. Analysis of reports including simple narration of comparative data. Vital statistics including preparation of birth and death certificates and reporting of communicable diseases. Health data retrieval.
Prerequisites: 4401. Lab fee charged.

4404 Medical Record Science IV 3-0-3
The medical record as a legal document; confidential communication, consents and authorizations for release of medical information, preparation and presentation of the record in court; microfilming and record retention; record keeping in nursing homes and intermediate care facilities including Medicare and Medicaid Laws and J.C.A.H. standards.
Prerequisites: 4401. No lab fee charged.

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: 4401, 4402, 4403, 4404. No lab fee charged.

4414 Record Science, Filing Systems and 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 J.C.A.H. standards for these facilities.
Prerequisites: 4414. No lab fee charged.

4416 Coding of Diagnoses, Operation and Procedures 5-5-7
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 and 4416. Lab fee charged.

4418 Tumor Registry, Utilization Review & Quality 4-0-4 Assurance
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 approprite length of stay by Diagnosis and/or Operative Procedure; federal and JCAH requirements. Computer applications to Tumor Registry and Utilization Review.
Prerequisites: 4414, 4416, 4417. Lab fee charged.

4419 Advanced Coding
Further understanding of coding classification according to ICD-9-CM. Includes an introduction to the Prospective Payment System, DRG coding procedures and the computer applications available to increase coding productivity. Provides an additional overview of other major coding classification systems such as SNDO, CPT and DSM-III.
Prerequisites: 4416 or 4445 & 4446 or permission of coordinator/instructor. No 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.
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. Approved for grade of S or U.
Prerequisites: None. No lab fee charged.

4441 Medical Word Processing Operations I 1-4-3
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 **1-4-3**
Medical word processing and text management operation; medical terminology and transcription related to diseases and operations encountered in transcription of various types of medical specialty reports; autopsy reports.
Prerequisites: 4000, 4441. Lab fee charged.

4445 Coding of Diagnoses, Operations and Procedures - Pt. 1 **2-3-4**
Coding classification according to ICD-9-CM. Introduction to other major coding systems including SNDO, DRG, SNOP, DMS-11.
This course is the first half of course 4416.
Prerequisites: 4000, 4014, or permission of instructor. Corequisites: 4408. No lab fee charged.

4446 Coding of Diagnoses, Operations and Procedures - Pt. 2 **2-3-4**
Coding classification according to ICD-9-CM. Introduction to other major coding systems including SNDO, DRG, SNOP, DSM-11.
This course is the second half of course 4416.
Prerequisites: 4445. No lab fee charged.

4494 Workshops in Medical Records **3-0-3**
Consideration and study of selected issues and topics in the medical records area designed to meet current needs. Content and emphasis varies from year to year.
Prerequisites: None. Lab fee charged.

4499 Special Studies - Medical Records **Var-Var-1-4**
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. This course is approved for "S" and "U" grades.
Prerequisites: None. 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, elecrtrosurgical unit, catheders/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 instructor. No lab fee charged.

4531 General Surgery I **4-0-4**
Course content will include discussion of laparotomy opening and closure, hernias of the abdominal region, biliary and gastric surgery. Students will focus upon an analysis of associated pathological conditions in relationship to normal anatomy and physiology and integrate diagnostic tests commonly utilized to confirm existing pathology.
Prerequistes: 4506. No lab fee charged.

4532 General Surgery II **4-0-4**
Course content will include discussion of bowel, breast, obstetrical and gynecological operative procedures. Students will focus upon an analysis of associated pathological conditions in relationship to normal anatomy and physiology and integrate diagnostic tests commonly utilized to confirm the existing pathology.
Prerequisites: 4531. No lab fee charged.

4533 Surgical Specialties I **4-0-4**
This course incorporates the study of selected specialized areas of surgery, namely cardio-thoracic surgery and associated pulmonary and cardiac pathology; opthalmic surgery and pathology; ear, nose and throat surgery and related pathology. Each specialty area is introduced with a review of the respective anatomy and physiology.
Prerequisites: 4532 or permission of instructor. No lab fee charged.

4534 Surgical Specialties II **5-0-5**
Course content includes the study of additional specialized areas of surgery, plastic reconstructive otorhinolargyngology and oral surgery, neurosurgery, peripheral vascular and cardio-thoracic operative procedures. Anatomy, physiology and pathophysiology is integrated into the discussion of each speciality.
Prerequisites: 4533. No lab fee charged.

4538 ST Seminar **3-0-3**
The course consist of a comprehensive review of surgical technology.
Prerequisites: 4534. No lab fee charged.

4541 ST Surgery Lab **0-2-1**
This lab experience introduces the student to the actual operating room suite and supportive hospital departments. Students are oriented to the furnishings of an operating room, OR attire, transportation of patients and basic aseptic techniques. Tours of facilities which provide sterile supplies to the operating room are arranged by the instructor. Sterile technique utilized for the handling of sterile supplies will be demonstrated. The course provides supervised practice of beginning level OR skills with a mock OR setting on-campus and also with the actual operating room of an affiliated hospital.
Prerequisites: 4505, 4506. Lab fee charged.

4542 ST Clinical Experience I **0-5-2**
This course involves supervised practice of selected circulator skills within a simulated lab on campus and also within the operating room of an affiliated hospital. Demonstration of patient skin preps, catheterization, scrubbing, gowning and gloving will be presented.
Prerequisites: 4541. Lab fee charged.

4543 ST Clinical Experience II **0-5-2**
This course is a continuation of 4542. Students will gain additional experience in selected circulator skills. Students will then focus upon the scrub rule; The application of sterile techniques, scrubbing, gowning, gloving, patient draping, back table and mayo set-ups, passing of surgical instruments and sutures. Demonstrations of the preparation of medications and irrigating solutions will also be provided.
Prerequisites: 4542. Lab fee charged.

4544 ST Clinical Experience III **0-5-2**
This course is a continuation of 4543. The course will primarily focus upon the application of the basic scrub role skills in the clinical setting.
Prerequisites: 4543. Lab fee charged.

4551 ST Clinical Practice I **1-40-7**
Students are assigned to an affiliated hospital where previously learned concepts and procedures are applied daily during operative procedures. Students will be required to demonstrate competency in first position scrub skills for a variety of general surgery procedures. Students also attend a one hour weekly seminar, on-campus, relating to the field experience.
Prerequisites: Permission of instructor. Lab fee charged.

4552 ST Clinical Practice II **1-40-7**
The course is a continuation of 4551. The course will focus on specialty operative procedures. Students also attend a one hour weekly seminar, on-campus, relating to the field experience.
Prerequisites: 4551. No lab fee charged.

4553 ST Clinical Practice III **1-40-7**
This course is a continuation of 4552 and continues to focus on surgical specialties. Students may be rotated to other affiliating hospitals. Students also attend a one hour weekly seminar, on-campus, relating to the field experience.
Prerequisites: 4552. No lab fee charged.

4594 Fundamentals of Operating Room Nursing **3-2-4**
The Fundamentals 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 O.R. environment, patient preparation and supplies such as sutures, needles and basic instruments, anesthesia and O.R. drugs are included.
Prerequisites: For senior level nursing students and registered nurses. Lab fee charged.

4599 Special Studies - Surgical Technology **Var-Var-1-4**
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. This course is approved for "S" and "U" grades.
Prerequisites: None. No lab fee charged.

4600 Introduction to Occupational Therapy 2-3-3
Course surveys the history, philosophy, and development of the profession and its relationship to other Allied Health pfofessions. The role and function of the Occupational Therapist and Occupational Therapy Assistant are defined; team approach is defined. The student is introduced to current practice areas of Occupational Therapy through observation in community Occupational Therapy settings.
Prerequisites: Acceptance into OTA program. No lab fee charged.

4610 Theory of Occupational Therapy 3-0-3
Introduction to the developmental process of human performance; exploration of occupational tasks and roles from birth to death; instruction in age-appropriate balance of work, self-care, play/leisure; introduction to the impact of disease and function in human occupation; and development of the therapeutic use of self.
Prerequisites: 4600. No lab fee charged.

4611 Occupational Therapy Concepts and Skills - Psychosocial 3-0-3
Introduction to the role of Occupational Therapy in the treatment of adults in a mental health setting; development of analysis and observational skills; use of self and group for therapeutic intervention and application of group process. Communication and interpersonal skills are developed. Documentation skills are developed.
Prerequisites: 1505, 1506, 4014, 4600, 4610. No lab fee charged.

4612 Occupational Therapy Concepts and Skills - Infants and Children 3-0-3
Introduction to the role of Occupational Therapy in the treatment of children with physical and/or psychological dysfunction. Emphasis is on normal development and developmental disabilities and the selection of occupational performance age-appropriate treatment interventions. Documentation skills are developed. Team approach is explored.
Prerequisites: 4014, 4015, 4600, 4610. Corequisites: 1508. No lab fee charged.

4613 Occupational Therapy Concepts and Skills - Phys Disabilities 3-0-3
Introduction to the role of Occupational Therapy in the treatment of adults with physical dysfunction to include acute care and rehabilitation. Emphasis is an understanding the treatment techniques utilized for various disabling conditions. Treatment planning and implementation are developed along with documentation skills. Emphasis is on adolescence through adulthood.
Prerequisites: 4014, 4015, 4016, 4600, 4610. Corequisites: 4025. No lab fee charged.

4614 Occupational Therapy Concepts and Skills - Gerontology 3-0-3
Introduction to the role of Occupational Therapy with the elderly population. Emphasis is on understanding the aging process and function pertinent to the elderly. The role of the OT assistant in non-traditional settings is explored.
Prerequisites: 1509, 4014, 4015, 4016, 4600, 4610. No lab fee charged.

4620 Techniques of Occupational Therapy 0-4-2
Instruction in the use of crafts and activity as therapeutic modalities in treatment toward function. The concepts of activity analysis and therapeutic adaptations are emphasized. Problem-solving skills are developed.
Prerequisites: 4600. Lab fee charged.

4621 Occupational Therapy Media - Psychosocial 0-4-2
Instruction in therapeutic intervention for adults in a mental health setting to include development of leadership skills necessary for a group setting, application of group process and use of purposeful activity and crafts as therapeutic tools. Emphasis is on adolescence through adulthood.
Prerequisites: 4600, 4620. Lab fee charged.

4622 Therapeutic Media - Infants and Children 0-4-2
Instruction in therapeutic intervention with infants and children to include the use of play as a therapeutic tool, evaluation of other occupational performance skills, adaptive equipment, therapeutic techniques for positioning, handling, feeding, and basic developmental screening. Problem solving skills are emphasized.
Prerequisites: 4600, 4620, 4621. Lab fee charged.

4623 Therapeutic Media for Occupational Therapy - Phys Disabilities 0-4-2
Instruction in therapeutic intervention for physically disablied adults in acute care and rehabilitation settings to include techniques related to activities of daily living, therapeutic adaptations, orthotics, and use of adaptive/assistive equipment. Problem solving is emphasized.
Prerequisites: 4600, 4620, 4622. Lab fee charged.

4624 Occupational Therapy Therapeutic Media - Gerontology 0-4-2
Instruction in therapeutic intervention for elderly individuals in a geriatric setting to include selection of role and age appropriate occupational performance, use of recreational/leisure activity, and application of group process. Occupational Therapy treatment approaches in non-traditional settings are explored.
Prerequisites: 4600, 4620, 4623. Lab fee charged.

4625 Survey of Therapeutic Media for Occupational Therapy 0-6-3
Instruction in the use of various crafts and activities, cost analysis, and application in various clinical settings. Teaching and in-servicing skills are developed.
Prerequisites: 4609, 4620. Corequisites: 4631. Lab fee charged.

4631 Occupational Therapy Fundamentals Practice 3-0-3
Issues concerning licensure, liability, professionalism, continuing education, and national registration are discussed. The relationships are explored and participation in the promotion of OT is discussed. Preparation is begun for Level II Field Work Experience.
Prerequisites: 4025, 4020, 4600, 4610. No lab fee charged.

4651 Occupational Therapy Assisting Field Work 1 (Level I) 1-8-2
Provides the opportunity for directed observation and participation in a community Occupational Therapy setting.
Prerequisites: 4600. Corequisites: 4007. Lab fee charged.

4652 Occupational Therapy Assisting Field Work 2 (Level I) 1-8-2
Provides the opportunity for directed observation and participation in a community Occupational Therapy setting.
Prerequisites: 4651, 4007. No lab fee charged.

4653 Occupational Therapy Assisting Field Work 3 (Level I) 1-8-2
Provides the opportunity for directed observation and participation in a community Occupational Therapy setting.
Prerequisites: 4007, 4651, 4652. No lab fee charged.

4660 Occupational Therapy Assisting Field Work 4 (Level II) 2-32-6
A clinical practicum in Occupational Therapy settings. An 8 week period of full time work experiences under the supervision of a registered occupational therapist provides the student with in-depth experience in the delivery of Occupational Therapy services to a variety of ages and conditions.
Prerequisites: Completion of all 46xx level courses and permission of instructor. Lab fee charged.

4661 Occupational Therapy Assisting Field Word 5 2-32-6
A clinical practicum in Occupational Therapy settings. An 8 week period of full time work experience under the supervision of a registered occupational therapist provides the student with in-depth experience in the delivery of Occupational Therapy service to a variety of ages and conditions.
Prerequisites: Completion of all 46xx level courses. No lab fee charged.

4699 Special Studies - OTA Var-Var-1-4
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. This course is approved for "S" and "U" grades.
Prerequisites: None. No lab fee charged.

4700 Introduction to Respiratory Therapy 1-0-1
History of respiratory therapy profession including: job descriptions, information about respiratory therapy professional organizatoins, and the future directions of respiratory therapy.
Prerequisites: Acceptance into Respiratory Therapy Program. No lab fee charged.

4701 Respiratory Therapy Science I 4-3-2
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 mechanics and isolation procedures.
Prerequisites: Acceptance into RT program and 4014. 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, 02 and aerosol therapy and chest physiotherapy. Pharmacology applicable to respiratory therapy procedures is treated. Pediatric applications will also be dis-

cussed.
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 reconition, assembly and function of equipment and routine monitoring under supervision. Pediatric applications will be discussed.
Prerequisites: 4702, 4015. Lab fee charged.

4704 Respiratory Therapy Science IV **3-2-4**
A continuation of 4703. Additional emphasis is placed upon clinical assessment of patients on mechanical ventilators.
Prerequisites: 4703. Lab fee charged.

4705 Respiratory Therapy Science V **3-2-4**
Pulmonary function testing at the bedside and in the laboratory. Emphasis is placed on the theory of pulmonary measurement, equipment and application of test results to patient care. Theory, design and application of pulmonary rehabilitation techniques is introduced.
Prerequisites: 4704. Lab fee charged.

4706 Respiratory Therapy Science VI **3-2-4**
This course is a review of cardiopulmonary anatomy and physiology. Care of the critically ill patient and the significance of hemodynamic monitoring techniques are also discussed.
Prerequisites: 4705, 4016. No lab fee charged.

4707 Respiratory Therapy Science VII **3-0-3**
In depth study of specialized areas of respiratory care including pulmonary rehab, pulmonary function testing, pediatrics intensive care etc. These areas are subject to change each year to correspond to the changing job description of the respiratory therapist. Use of computerized clinical simulations.
Prerequisites: 4706. Lab fee charged.

4711 Respiratory Therapy Clinical Practice I **0-8-1**
An introduction to the hospital environment with practical application of 02 delivery apparatus, cleaning, disinfection, sterilization, and airway management.
Prerequisites: 4701, 4720. Lab fee charged.

4712 Respiratory Therapy Clinical Practice II **0-8-1**
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 **0-24-4**
A continuation of 4712. Neonatal applications are also treated.
Prerequisites: 4712, 4703. No lab fee charged.

4714 Respiratory Therapy Clinical Practice IV **0-32-5**
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 V **0-16-3**
Application of advanced respiratory care techniques. Emphasis on patients in the critical care setting.
Prerequisites: 4706. Lab fee charged.

4716 Respiratory Therapy Clinical Practice VI **0-16-3**
A clinical practicum which provides experience with advanced respiratory care techniques. Home care techniques, supervisory and training experiences also included.
Prerequisites: 4707, 4715. No lab fee charged.

4718 Pulmondary Diseases I **2-0-2**
In depth 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, 02 and CO2 transport, red cell physiology, EKG and neonatal cardiopulmonary anatomy and physiology, renal physiology and acid-base balance.
Prerequisites: None. Lab fee charged.

4723 Respiratory Therapy Seminar **2-2-3**
Practice in NBRC testing techniques. Student presentation of research topic. Discussion of current issues relating to the respiratory care profession.
Prerequisites: None. Lab fee charged.

4770 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 prepatation, recognizing and correcting distortion problems, mounting and filing of the ECG, special patients and other procedures.
Prerequisites: 4000 and acceptance into ECG program. Lab fee charged.

4771 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 (Dyshrythmias).
Prerequisites: 4770 or experience with ECG. No lab fee charged.
4780 Electrocardiography 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: 4770. 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.

4795 Workshop in RT II **Var-Var-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. No lab fee charged.

4799 Special Studies - Respiratory Therapy **Var-Var-1-4**
A student initiated academic pursuit, mutually agreed upon by the student and faculty member and carriel 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. This course is approved for "S" and "U" grades.
Prerequisites: None. No lab fee charged.

4800 Introduction to Geriatric Technology **3-2-4**
In this course, the students will study the demographics of aging, its impact on the social, economic and cultural components of American Society. Discussion will also include topics regarding current services rendered by health care institutions to the senior client. Some lab will be conducted at local health care facilities.
Prerequisites: Acceptance into program. No lab fee charged

4805 Activity Therapy **2-2-3**
The course prepares the student to use activity as therapy for the elderly in group settings.
Prerequisites: None. Lab fee charged.

4815 Physiology of Aging **3-0-3**
This course will focus on the physiological theories of aging, life expectancy, senescence of body systems and the normal developmental aspects of early, middle and old age.
Prerequisites: 4014, 4015. Corequisites: 4016.

4820 Aging and Disease **5-0-5**
The pathophysiological conditions of aging are examined in this course. Also the therapeutic measures includihng medication regimens and associated problems.
Prerequisites: 4020, 4815. No lab fee charged.

4830 Mental Health and the Elderly **3-2-4**
This course is designed to acquaint the student with the manifestations of aging including changes in mental health status, psychological alterations and the necessary therapeutic activities for maintaining the mental health of the senior client. Includes practice in facilitating and motivation individual and group activities.
Prerequisites: 1505, 1509. No lab fee charged.

4850 Geriatic Care Seminar **5-0-5**
A survey of current issues in geriatric health care are conducted via discussions, case management activities, guest speakers and field trips.
Prerequisites: Permission of instructor. No lab fee charged.

4899 Special Studies - GER **Var-Var-1-4**
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.

4999 Special Studies - NUR **Var-Var-1-4**
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.

5001 Introduction to Technical Writing & Editing Careers **1-2-2**
While introducing students to career requirements and options in technical writing and editing, this course also offers opportunities to assess prior life and work experience in order to set realistic career goals. Course activities include interviews with professionals in the field of technical communication; assessment of student learning style, personality type, and writing and editing capabilities; directed reading and journal-writing; and development of a resume, job application letter, portfolio of work samples, and other career-related support materials. Conferences with the instructor are required.
Prerequisites: None. No lab fee charged.

5002 Introduction Computer-Assisted Writing **2-2-3**
This course provides the beginning computer user an overview of skills needed to operate the personal computers in the CTC Writing Center, with emphasis on the use of word processing and graphics software. Laboratory work includes effective use of software applications to produce documents, integrate graphics with text, and produce documents on dot matrix and laser printers.
Prerequisites: 3007 or equivalent. Lab fee charged.

5010 Planning and Preparing Illustrations **2-2-3**
In this course students learn effective ways to display statistical data graphically and to use illustrations as integral parts of documents. Students will review methods of scientific inquiry; identify statistical methods and terminology; determine kinds and styles of illustrations; develop and maintain resource files for illustrations; review principles of design and typography; and prepare tables, charts, and graphs.
Prerequisites: 1017. No lab fee charged.

5015 Technical Publication Production **2-2-3**
An introductory course for writers and editors, covering the principles and techniques needed to professionally design and produce a variety of printed materials. Students will learn the vocabulary and practice the skills used by typesetters, printers, graphic artists, and other print publication specialists. Laboratory work includes both traditional and computer-assisted publication tools.
Prerequisites: None. Lab fee charged.

5016 Computer-Assisted Publishing **2-2-3**
This course presents an in-depth study of page layout software for personal computers Students will apply computer-assisted page layout skills for material such as brochures, posters, newsletters, and reports. Students will also practice formatting text, positioning graphics, and sizing and cropping graphics.
Prerequisites: 5002. Lab fee charged.

5022 Technical Presentations **3-2-4**
Technical communicators must use presentational communication to advocate points of view, report the outcomes of projects, or sell particular services or products. This course emphasizes the analysis, management, styles, and evaluation of various forms of presentational communication used in business and professional settings. Course work includes a variety of interpersonal, group, and public communication situations, using audio or visual aids.
Prerequisites: None. No lab fee charged.

5032 Writing Instructional Documents **2-5-4**
In this course, students focus on development of instructional materials for varied audiences. Topics include the requirements and restraints of the instructional process, audience analysis, and process and mechanism description. Students will prepare one or more manuals for general and technical products. Confrernces with the instructor are required.
Prerequisites: 1018 & 5010. Lab fee charged.

5033 Writing Promotional Documents **2-5-4**
In this course, students analyze and practice writing narrative, expository, persuasive, and promotional prose as applied to a variety of technical communication projects. Topics include audience ananlysis, definitions, and marketing communication techniques. Students will produce memos and reports, solicited or unsolicited proposals, press releases, and brochures or newsletters.
Prerequisites: 1018 & 5010. Lab fee charged.

5040 Critical and Creative Thinking **2-3-3**
Technical writers and editors must consider many options and implement many decisions as they plan, write, and edit documents. In this course students are encouraged to understand and practice using a variety of thinking tools, including analyzing, selecting, interpreting, grouping, evaluating, and establishing order and relation. Students will use these tools to assess and solve abstract and practial problems.
Prerequisites: 3 credits English composition. No lab fee charged.

5041 Technical Editing Methods and Techniques I **2-2-3**
This course explores skills and techniques that are essential to the editorial process. Topics include theory and application of the levels of edit approach, proofreading and copy marking, the editor/author relationship, the editorial assessment process, editorial stylebooks and other resource materials, and editorial behaviors. Students will proofread and edit a variety of manuscripts.
Prerequisites: 5040 & 1018. No lab fee charged.

5042 Technical Editing Methods and Techniques II **2-2-3**
Students will continue analyzing issues and practicing techniques of technical editing. Activities include understanding the interaction between editors and other publications specialists, editing large manuscripts, preparing stylebooks, and performing special editorial tasks such as preparation of abstracts, indexes, and bibliographies. Students will proofread and edit a variety of manuscripts.
Prerequisites: 5041. No lab fee charged.

5051 Organizational Dynamics and Career Assessment **3-1-3**
This course analyzes organizational structures and management techniques. Topics include organizational development, leadership styles, and time and stress management. Students will assess their personal and career goals, compare these goals to organizational needs and practices, and review job-seeking skills.
Prerequisites: 5040 & 1018. No lab fee charged

5089 Technical Communication Seminar - Review of Products and Processes **1-6-3**
In this course, which must be taken last in the Technical Writing & Editing program, each student prepares a professional portfolio developed from his or her previous academic, cooperative employment, and other experience. Students are required to review their portfolios, informally and through formal oral presentation, with a panel of professional technical communicators from local business and industry. The panel members will assess whether the individual students could be able to acquire entry-level positions as technical communicators. Extensive laboratory work and conference with instructors are required.
Prerequisites: Successful completion of all TWE core courses. No lab fee charged.

5099 Special Problems in Technical Writing **1/5-1/4-1/5**
Individual study and special projects pertaining to the student's technology are assigned. This course is open to students wishing advanced standing, independent study, or implementation of specialized writing projects. This course is arranged with the coordinator, with the approval of the Dean of the Communication Skills Division. Course grades are "S", "U", or "K."
Prerequisites: None. No lab fee charged.

6101 Introduction to Artificial Intelligence - Expert Systems **2-2-3**
This course presents the concepts central to Artificial Intelligence with emphasis on Expert Systems. Prolog/e is used as a laboratory vehicle to provide first-hand experience with rule-based programming. Backward and forward chaining, breadth-first and depth-first search, confidence factors, heuristics, inference engine, knowledge base, knowledge representation are covered.
Prerequisites: Basic or Cobol, etc. Lab fee charged.

6106 Modular Programming **2-2-3**
This course is an introduction to programming for those who have not had Pascal, C, or PL/1. Students will use a collection of prewritten modules to write their own programs. Class work will focus on the data structures, data flow and module arrangement for each program. This course is intended for students who will go on to programming in Pascal, C, and other newer languages.
Prerequisites: None. 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. Uisng 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 specification. Bugs will be documentel 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 manintenance 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 ILMP 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 or experience. 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 antomation 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 learnei in "C" programming. It will also provide an opportunity to use some of the advanced features of "C" including file I/0, 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/0, 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 vasic 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 Chemistry I & Quantitative Analysis **3-3-4**
This course is the first of a 3-term sequence in college chemistry. Topics include measurement systems, classifications of matter and energy, chemical reactions and their quantitative relationships. Laboratory techniques are emphasized and include burner and balance use, the handling and transferring of reagents, filtering and gravimetric analysis of samples.
Prerequisites: High school chemistry or equivalent and high school algebra or equivalent. Lab fee charged.

6619 Computer Analysis of Laboratory Data I **2-2-3**
Examination of the Personal Computer and software as a laboratory tool for technicians. Course begins with introduction to DS (Disk Operating System) and leads into applications programs with emphasis on Lotus 1-2-3 as data analysis package and Labtech Notebook for data acquisition. Much hands-on experience with the PC involved. Other software packages to be examined as well.
Prerequisites: None. Lab fee charged.

6621 Chemistry II & Quantitative Analysis **3-3-4**
This course depends on 6611 knowledge and skills. It emphasizes atomic and molecular structure, bonding, intermolecular forces in liquids and solids, dynamic equilibrium, solution chemistry, and acid-base theories. Laboratory techniques stress solution preparation and quantitative volumetric analysis.
Prerequisites: 6611. Lab fee charged.

6629 Industrial Materials Testing 1 **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 tensils, creep, hardness, torque and impact. Metallographic specimens are mounted, then polished and examined using a metallurgical microscope. Corequisites: 1191. Lab fee charged.

6631 Chemistry III & Quantitative Analysis **3-3-4**
This course compliments the two previous college courses in the sequence. Topics include precipitation chemistry, oxidation-reduction reactions, and descriptive chemistry of the transition elements and carbon compounds. The organic chemistry stresses functional group classification, nomenclature, physical and chemical properties and polymer chemistry, both that of natural and synthetic polymers. The organic laboratory experiments involve separation and purification techniques and synthesis reactions.
Prerequisites: 6621. Lab fee charged.

6639 Fundamentals of Physical Measurement **1/4x3-2-4**
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 through computerized data spreadsheets. Basic electricity is taught to the extent that the student can understand the fundamental operation of the laboratory equipment used.
Prerequisites: 6619, 6629, 1192. Lab fee charged.

6641 Instrumental Chemical Analysis **3-3-4**
This course emphasizes the instrumentation aspect of chemical analysis of both inorganic and organic compounds. Lab procedures include specific ion analysis using ion selective electrodes, potentiometric titrations, gas chromatography, visible and UV spectrophotometry, infrared spectrophotometry, high performance liquid chromatography.
Prerequisites: 6631. Lab fee charged.

6649 Industrial Materials Testing II **3-2-4**
A continuation of the concepts developed in 6629 and 6639. Materials such as concrete, fabrics and paper prolucts 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.

6651 Descriptive Physical Chemistry **3-0-3**
This course covers the descriptive chemistry of metals, nonmetals and transition elements. The bonding and structure of molecular and crystalline solids, fibers and other polymers silicates and composites will be studied.
Prerequisites: 6631. No lab fee charged.

6659 Computerized Analysis of Laboratory Data II **3-2-4**
Use of electronic spreadsheets to analyze and summarize laboratory data on the microcomputer. Emphasis is on mathematical, statistical, and graphical manipulation of the data using Lotus 1-2-3 in order to check

accuracy of results. Much hands-on experience with computers. No programming language required.
Prerequisites: 1179, 1191, 6619, 6631. Lab fee charged.

6661 Chemical Contaminants 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.

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.

6699 Technical Laboratory Problems Var-Var-1-5
Special problems, projects, seminars and individual study assignments pertinent to technical laboratory areas. Arranged only with approval of coordinator and dean. Approved for "IP" grade.
Prerequisites: None. No lab fee charged.

6710 Introduction to Lasers 3-2-4
Emission and absorption of photons, elements of the laser, properties of laser light, optical cavities, helium-neno gas lasers, laser classifications and characteristics, introduction to laser safety. Prerequisites/Corequisites: 1172 or 1191. Lab fee charged.

6720 Geometrical and Wave Optics 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 Optical Components and Devices 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 Applications of Lasers 3-3-5
Laser material processing, curring, drilling, and welding. Air pollution monitoring with lasers. Holography, holographic non-destructive testing.
Prerequisites: 6730. Lab fee charged.

6741 Introduction to Fiber Optics 3-3-5
Optics Review-Lenses, Imaging, Numerical Aperature, Diffraction. Light wave fundamentals-dispersion, pulse distortion, reflection at a plane boundary and critical-angle reflections. Wave guides-Modes in symmetric slab wave guide. Optic Fiber wave guides-step index fiber, graded index fiber, atlenuction. Modes in step-index fiber, distortion in step-index fiber. Couplers and connectors-connector principles, lateral misalignment, angular misalignment, end separations. Splices.
Prerequisites: 6710. Lab fee charged.

6745 Optical System Design 3-3-5
Co-axial system of two thin lenses, thick lenses, cardinal points. Refraction matrix, translation system matrix, lens matrix. System matrix of two thin lenses. System matrix of combination of lenses. Granssian constants and their physical significance. Lens aberrations.
Prerequisites: 6720 Lab fee charged.

6750 Laser Electro-Optic Measurements 3-3-5
Laser power and energy measurements; wavelength; dispersion and refractive index measurements; use of monochromators and spectrophotometers; use of Fabry-Perot. Michaelson. Nd: YAG Laser.
Prerequisites: 6740. Lab fee charged.

6999 Special Project Seminar Var-Var-1-5
Individual study and/or special project assigned in students' technical field of study. Available to fourth and fifth term students by special arrangement with coordinator and dean.
Prerequisites: None. No lab fee charged.

7000 Engineering Technologies Orientation 1-0-1
Designed to familiarize the engineering student with the operations and policies of the Engineering Division, his career field, employment trends and cooperative employment responsibilities. Topics to include: academic requirements, program option, recommended and nontechnical 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.

7001 Computer Concepts 2-1-2
Introduction to computers, including keyboarding, hardware, disk operating systems, basic word processing, elementary programming.
Prerequisites: None. No lab fee charged.

7002 Graphic Concepts 1-2-2
This course offers preliminary instruction in basic drafting techniques such as line quality, lettering and geometric construction. The primary objective is to prepare students for success in ET 7008 and CET 7024.
Prerequisites: None. Lab fee charged.

7003 Engineering Science Concepts 3-0-2
An introductory course to the principles of engineering technology. An overview of the various areas of engineering technology, including units of measurement and basic formula.
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 definel and applied in a logical sequence for each new principle.
Prerequisites: None. Lab fee charged.

7008 Intro to Engineering Drawing 2-3-3
A beginning course which covers the the techniques and functions of drafting. Topics include equipment, lettering, line quality, line types, orthographic projection, sectioning, dimensioning, and fastener hole types either tolerances.
Prerequisites: None. 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 2-3-3
Emphasis on continued development of drafting skills. Concepts include: secondary auxiliary views, sectioning, class of fit, surface finish designations, tolerancing and welding representations. Course projects will include assembly, sheetmetal, weldment, pattern drawing and bills of material. Stack up analysis and geometric feature control will be introduced.
Prerequisites: 7008. Corequisites: 1192. Lab fee charged.

7012 Engineering Drawing II 2-3-2
A study of the design process as it relates to Mechanical Engineering Technology and related disciplines. Emphasis is placed on working drawings and supporting documentation and selection of commercially available components. Geometric Feature Control and Stack Up analysis are employed in establishing detail specifications which will provide product function at a reduced manufacturing cost (Design for Manufacturability). A major course project requires a complete set of assembly and detail drawings.
Prerequisites: 7010. Corequisites: 7111. Lab fee charged.

7016 Construction Drawing 2-4-3
Emphasis on floor plans, electrical and plumbing layouts, and blueprint reading.
Prerequisites: 7024. Lab fee charged.

7018 Electrical Drafting 2-4-3
Provides a drawing knowledge of electrical power symbols (ANSI designations) and 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, and basic architectural symbols, electronic schematics and digital logic liagrams.
Prerequisites: None. Lab fee charged.

7023 Architectural Drawing-Residential 2-4-3
Residential Drawings to include: floor plans, section views, building elevations, and typical architechtural details, symbols, abbreviations, and dimensioning methods. Emphasis on developing a set of residential working drawings.
Prerequisites: None. Corequisite: 1171 or 1191. Lab fee charged.

7024 Architectural Drafting I 2-4-4
An open-forum drawing lab will introduce architectural drafting concepts and review the residential construction process. Through the preparation of a set of residential working drawings, the student will learn architectural symbols, details, abbreviations, and dimensioning methods. An emphasis will be placed on residential design and building materials with

respect to aesthetics, economics, and their relation to energy efficiency.
Prerequisites: None. Lab fee charged.

7025 Survey Drafting **2-3-3**
Surveying drafting to include: contour maps from field notes, cross sections, grading plans, deed abstracts and boundary plots. Computer terrain models.
Prerequisites: 7024, 4910. Corequisites: 1171, 1191 or equivalent. Lab fee charged.

7026 Architectural Drafting II **2-3-3**
Architectural related drafting with emphasis on base floor plans and the inclusion of all of the Architectural Mechanical Systems (Heating, Ventilating, Air Conditioning, Electrical, Lighting, and Plumbing).
Prerequisites: 7024. Corequisites: 7525. No lab fee charged.

7027 Computer Aided Drafting I (Architectural) **2-3-3**
A first course in Architectural Computer Aided Design/Drafting in which the student will become familiar with CAD/D drawing and editing and dimensioning commands and will create architectural and surveying working drawings. Students will also investigate other CAD/D techniques such as block and new definitions.
Prerequisites: 7024, 7035. Corequisites: 1172 or 1191. Lab fee charged.

7028 Computer Aided Drafting II (Architectural) **2-3-3**
A continuation course in Computer Aided Design/Drafting in which the student will explore some of the advanced features of Architectural drafting on the computer including three-dimensional techniques such as developing utilizing a special symbols library and other customizing techniques.
Prerequisites: 7027. Lab fee charged.

7030 Computer Programming (BASIC) **3-2-3**
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 documents) 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.
Prerequisites/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/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/0 busses with transducers, DC motors, Robots, and other peripherals.
Prerequisites: 7030. No lab fee charged.

7034 Computer Applications in MET **3-2-3**
A course in software usage and BASIC language programming, with emphasis on word processing, data bases, IBM-DOS manipulation and advanced BASIC (BASICA) programming. Emphasis will be on software usage and programming as it applies to Mechanical Engineering Technology.
Prerequisites: 2291. Corequisites: 1192. Lab fee charged.

7035 Computer Applications **3-2-3**
Application software usage with emphasis on word processsing, spreadsheets and data bases on microcomputer systems.
Prerequisites: None. Lab fee charged.

7036 Technical Computer Programming **3-2-3**
The PASCAL computer programming language has gained wide acceptance in industry due to its "structered" control capabilities, simplicity, modularity, and self-documenting code. This course will use PASCAL to write structured technical programs which are directly applicable to both electronic and mechanical problems. The course will cover the basics of the PASCAL language, writing of structured programs, and use of procedures and techniques.
Prerequisites: 1172 or 1191: and 7710 or 7712. Lab fee charged.

7040 Supervision & Management **3-0-3**
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 goals.
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 & 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 manuel and NC equipment. Corequistes: 1171 or 1191. Lab fee charged.

7111 Engineering Materials **3-2-3**
The atomic arrangement and properties of common alloys are defined and discussed; steel and cast iron are emphasized, including their response to industrial strengthening processes. Topics of study to include the crystalline structure of solid materials, physical and mechanical properties of materials and the tests which measure these properties, alloying and phase diagrams, heat treatment, and industrial material classifications. Characteristics and processing of plastics, ceramics, and composite materials are also discussed.
Prerequisites: 7104 or 7416. No lab fee charged.

7124 Manufacturing Process W/CADCAM **3-2-3**
Students evaluate a broad variety of manufacturing process capabilities as they relate to finished part configuration and function. High and Low Production processes are reviewed in terms of production cost and process capability to provide end product dimensional control specifications. Conventional, Non-Conventional and Plastics manufacturing processes are explored for their intrinsic capabilities. Computer Numerical Control Equipment is used in an extensive CAD/CAPP/CAM Application. Precision measuring tools are used to evaluate manufacturing process capabilities.
Prerequisites: 7008,7160. No lab fee charged.

7130 Engineering Mechanics **3-2-3**
Vector algebra is employed to calculate forces and moments and their effect on machine parts, frames, and structures in static equilibrium. Topics of study include free body diagrams, couples, equilibrium, trusses, frames, two and three dimensional force systems, friction, centroids and moment of inertia.
Prerequisites: None. Corequisites: 1192, 2292. No lab fee charged.

7132 Hydraulics & Pneumatics **3-2-3**
Fluid transport and power studies of liquid and gas systems, emphasizing hydraulic and pneumatic pumps, compressors, control logic, actuators, motors, reservoirs, safety concerns and piping components. The student will create machine control schematics with ANSI symbols and use pressure, directional and flow control valves in those circuits.
Prerequisites: 1192 and 2292. 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 or 7722. Corequisites: 7730. No lab fee charged.

7135 Fluid Power Systems **3-2-3**
Basic principles of hydraulics and pneumatics. Covers the generation, distribution and control of fulid power and fluid transport systems. 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: 1191, 2291. No lab fee charged.

7140 Strength of Materials **4-2-4**
Through the application of force and moment analysis techniques acquired in Engineering Mechanics, Strength of Materials covers the analysis of stresses and strains which occur within machine and structural elements subjected to various types of loads. Machine element dimensions and material specifications will be determined or verified. Topics of study include simple, shear, torsional and bending stresses; deflection and combined stresses.
Prerequisites: 7130, 1192, 2292. No lab fee charged.

7141 Kinematics & Dynamics of Machines **3-2-3**
A course in the analysis of mechanisms. Mathematical, Computer Aided Design and graphical-calculus solutions, machine kinematics and dynamics. Topics include linear and angular/rotary displacement, velocity, accelertion, work, force, horsepower, harmonic motion, moment of inertia and dynamic balance. Emphasis is placed on piston machines with an introduction to cams and gear trains.
Prerequisites: 2292, 7165. Corequisites: 1193. 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. An introduction to gears, gear trains, and cam analysis is included. In this course, students will complete mechanisms project.
Prerequisites: 1193, 2291, 2292, 7008, 7036, 7104. Corequisites: 1010, 7146. 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 2 1/2 axes NC milling machine, 2 axes CNC lathe, and 2 1/2 axes CNC mill.
Prerequisites: 1191, 7104 or equivalent. Lab fee charged.

7145 Statics & 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 Controls I (Servomechanisms) **3-3-4**
This course is divided into two parts: Part I deals with circuitry found in the industry. Topics include: Transistor Drivers, Push-Pull Amplifiers, Bipolar/VMOS Bridge Drivers. Relay driving, resistive and inductive load considerations, power supply and power line conditioning and Triac applications. Part II deals with Programmable Controllers. Topics include contact-coil ladder logic. Also counter-timer and sequence logic are discussed as they apply to on/off control logic.
Prerequisites: 7036, 7730, 7738, 7558. Corequisites: 1010, 7142. Lab fee charged.

7148 Applied Thermodynamics **3-2-3**
The application of the first and second laws of thermodynamics the energy equation of gases, mollier diagrams, energy utilization and heat transfer. Topics include specific heat, the carnot cycle, entropy, enthalpy and adiabatic processes. System studies include steam generation and turbines, internal combustion engines and mechanical refrigeration.
Prerequisites: 2292. Corequisites: 1193. No lab fee charged.

7149 Computer Aided Manufacturing **3-2-3**
An introductory course in the application of computers to the modern manufacturing environment. Topics include: computer-aided design/computer-aided manufacturing (CAD/CAM), numerical control (NC), computer numerical control (CNC), distributive numerical control (DNC), group technology and flexible manufacturing systems.
Prerequisites: None. No lab fee charged.

7150 Machine Design I **4-2-4**
The application of the principles of engineering mechanics and strength of materials to the analysis and selection of mechanical elements and components. Topics include Treska's and Von Mises' theories of failure, tolerances and fits, keys and couplings, shaft design, columns, and springs. Emphasis will not be entirely on force analysis and calculations, but will also include: Economics, Installation, Safety, Servicing, and Computer Aided Design/Selection Applications.
Prerequisites: 7034, 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, multivariable systems and nonlinear systems.
Prerequisites: 7143. No lab fee charged.

7154 CNC Programming II **2-3-3**
A continuation of CNC I. Emphasis on more complex problems, including tool libraries, tool offsets, threading. Programming and operating production machines will also be introduced.
Prerequisites: 7144. Lab fee charged.

7155 Machine Design II **4-2-4**
A continuation of Machine Design I. Topics include: spur, helical, bevel and worm gearing, belts and chains, plain surface and rolling contact bearings, power and ball screws, bolted and welded connections, and machine frames and structures. Various short term design problems are assigned.
Prerequisites: 7150. Corequisites: 7158. No lab fee charged.

7156 Electro-Mechanical Systems **1-4-3**
A course intended to exercise the student's knowledge of electromechanical systems. It provides the time and opportunity for a student to work on the design, fabrication, assembly and troubleshooting of electro-mechanical devices and systems. The design is to include ideas covered in most of the student's previous core courses of study. The purpose is to promote independent study, initiative, and creativity by requiring the student to develop the design problem with minimal staff supervision.
Prerequisites: 7142, 7146. Corequisites: 7157. Lab fee charged.

7157 Electro-Mechanical Controls II (Automated Systems/Robotics) **3-3-4**
The purpose of this course is to develop the concepts of negative feedback for closed loop servo systems. These techniques are vital to modern industry. Topics include: Transducers for sensing system parameters, proportional feedback systems for positioning control (basic servo loop), stability analysis, velocity feedback for improved system response, mathematical models of systems & writing systems. Transfer functions. The latter section of the course deals with the problems and benefits of computer control of the servo system. Emphasis is on simple closed loop algorithms to allow computer control of systems.
Prerequisites: 1024 or 1020, 7146. Corequisite: 1015. Lab fee charged.

7158 Mechanical Systems Design Project **3-2-3**
A parallel course to Machine Design II which requires the design, selection, fabrication, assembly and troubleshooting of a mechanical device or system. A final oral and written report emcompassing the entire design, including a product demonstration is required.
Prerequisites: 7150, 7707. Corequisites: 7155. No lab fee charged.

7159 Manufacturing Methods & Cost Control **3-2-3**
Starting with a part print, the student learns to select and plan the manufacturing processes and sequence to produce the part, taking into consideration quality, quantity, and cost. To incorporate process engineering techniques.
Prerequisites: 7402, 7113, 7830. No lab fee charged.

7160 Computer Aided Drafting I - Mechnical **2-3-3**
This is a hands-on oriented course designed to make the student proficient in the CAD workstation as a productive engineering tool. The couse will use an approach of learning by doing, and focus on learning the functionality of the CAD technology rather than the skills of producing engineering drawings. It is assumed that the student has already had or is currently taking instruction in engineering drawing.
Prerequisites: None. 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 toally automated factory.
Prerequisites: 7160, 7449. No lab fee charged.

7165 Computer Aided Drafting II - Mechanical **2-3-3**
Continuation of CAD I with emphasis on both wireframe and surfaced 3-D models. Techniques of creating models with oblique surfaces, shading,

and other special CAD features will be covered. Course primarily designed for students in a Mechanical Engineering Technology related major.
Prerequisites: 7160. Lab fee charged.

7167 Introduction to Robotics I **2-2-3**
An introduction to basic concepts of robotics/factory automation where robots are used only as a common tool for better quality and productivity. More specifically, the course will cover such topics as analysis of industrial robotics applications in an automated manufacturing environment, description of mechanical and electrical components, operation and hands-on programming principles, how to select a robot for an industrial application.
Prerequisites: 7930 or equivalent. Lab fee charged.

7168 Robotics II **2-2-3**
Continuation of Course 7167. The course covers robot operations and hands-on programming principles. Includes project work, such as: programming for pick and place operations, palletizing operations, assembly operations, and material handling.
Prerequisites: 7167. Lab fee charged.

7170 Computer Aided Design **3-2-3**
Advanced computer aided drafting and computer applications in mechanical engineering technology to provide the student with a working knowledge in using the computer as a design tool. The student will write programs in BASIC to perform engineering calculations. In addition, the student will use existing engineering software for complex design analysis.
Prerequisites: 7165, 7030. Corequisites: 7140. Lab fee charged.

7199 Special Problems Seminar - Mechanical **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 the coordinator and divisional coordinator of academic affairs. Open to fourth and fifth term students by special arrangements with the instructor and program chair.
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, contrainerization, selection of equipment, economics of a material handling plan or phased improvements; selected industry problems and trends are analyzed.
Prerequisites: None. No lab fee charged.

7411 Processes & 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.

7412 Introduction to Data Analysis **3-2-3**
Designed to acquaint the students with the fundamentals of dimensional metrology along with their applications to the manufacturing system. Topics include data collection and analysis, reading and construction of charts and graphs, and computer aided reports.
Prerequisites/Corequisites: 1171. Lab fee charged.

7415 Computer Applications for Manufacturing **3-2-3**
Computer Applications for Manufacturing and introductory courses to familiarize the student with the personal computer. Application software including word processing, spreadsheets, and data collection will be introduced. Use of Measuring tools and gages as used in data collection will also be discussed.
Prerequisites: None. No lab fee charged.

7416 Manufacturing Processes & Materials I **3-2-3**
A course designed to integrate the various machine tools and processes used in manufacturing with the study of the principles basic to the physical properties fo materials. Topics include applications and tooling for turning, milling, drilling machines along with techniques of testing and examination of materials.
Prerequisites/Corequisites: 1171. Lab fee charged.

7417 Manufacturing Processes **3-2-3**
Designed to acquaint students with the fundamental principles of fabricating materials. With emphasis on metal removing processes of turning, milling, drilling and grinding. Lasers, edm and other nontraditional processes are covered along with iron and steel castings, dies and cutting tools.
Prerequisites: None. No lab fee charged.

7425 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.

7426 Manufacturing Processes & Materials II **3-2-3**
A continuation of Manufacturing Processes & Materials I where the various machine tools and manufacturing processes are integrated with the principles basic to the physical, mechanical and chemical properties of materials, machinability, castability, formability and weldability concepts are applied.
Prerequisites: 7416. Lab fee charged.

7427 Tool, Jig and Fixture **3-2-3**
Designed to acquaint students with the fundamental principles of tooling, jigs, fixtures and other hardware employed in the manufacture of consumer and industrial goods. With emphasis on cutting tools, tool holders, locating and clamping, fasteners and jig, fixture, gage and die designs.
Prerequisites: 7008, 7417 or equivalent.

7428 Computer Aided Drafting II - Manufacturing **2-3-3**
A continuation course in computer aided design/drafting in which the student will explore some of the advanced features of bills of material, assembly drawings, detail drawings and geometric tolerancing as they apply to areas of manufacturing.
Prerequisites: 7027, 7424 or equivalent. 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. No lab fee charged.

7438 Industrial Engineering Concepts **3-2-3**
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 & material handling elements will be applied in planning and managing the manufacturing areas.
Prerequisites: 1171 or 1191. No lab fee charged.

7440 Industrial Processes & Plant Layout **3-3-4**
Project course with emphasis on the most efficient araangement 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 sequences of Flow and/or Assembly. Facilities audit.
Prerequisites: None. No lab fee charged.

7441 Statistical Process Control **3-2-3**
Applications of statistics and probabilities to basic quality control problems with emphasis on variable attribute control charts. Techniques of fishbone and pareto charts alnog with a review of histograms and sampling plans applications to quality prolems. Heavy computer useage in areas of data input and compiling of various charts for studies of results round out the course.
Prerequisites: 1179 or equivalent. No lab fee charged.

7443 Manufacturing Methods & 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 manufacturing design.
Prequisites: 7411. No lab fee charged.

7444 Manufacturing Process Planning **3-2-3**
A course designed to enable the student to process a part/or product from raw to finish condition. Techniques include application of manufacturing processes, sequence of operations, fixtures, tooling, quality, quantity and cost as applied to the engineering drawing and specifications.
Prerequisites: 7010, 7144, 7438. Corequisties: 7441. No lab fee charged.

7449 Computer Aided Manufacturing **3-2-3**
This course covers the high technology hardware involved with using computers in automated factory. Numerical Control (DNC), Robotics, Flexible Manufacturing Systems (FMS), and other Computer Aided Manufacturing systems are discussed. Computer-Assisted part programming is introduced.
Prerequisites: 7415. No lab fee charged.

7450 Production Cost Estimating **3-2-3**
Development of cost estimation techniques, practical application of production cost theory, control of material and labor cost, overhead application, time requirements, estimation of production costs and impact of production mix on costs. Estimates are compiled and printed by "costimator" computer systems.
Prerequisites: 7444. 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. No lab fee charged.

7453 Manufacturing Methods and Cost Analysis II **3-2-3**
Implementation of the manufacturing plan with emphasis in areas of detailed parts, assembles, 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.

7454 CAD/CAM Project **3-3-4**
A course designed to require the student to involve computer techniques in the planning and managing process of a design/manufacturing project. Cooperation with other technologies will be stressed toward a final solution.
Prerequisites: 7444, 7449. Corequisites: 7450. Lab fee charged.

7455 Statistical Design Analysis **3-2-3**
This course presents an introduction to quality engineering (off-line quality control) as it affects production quality engineering. Beginning with a brief review of elementary applied statistics the course moves from one-sample to two-sample hypothesis testing to an introduction of analysis of variance (anova). One-way and two-way anova layouts are examined including repetitions, interactions, ect. An introduction to experimental design follows: the approach being that of orthogonal arrays and linear graphs as popularized in Japan by Taguchi. His signal to noise ratio is also explored.
Prerequisites: 1179 or equivalent. 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 utilization 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.

7524 Structural Analysis **3-2-3**
Basic principles of architectural structure systems are introduced including space frames, membranes, thin shells and cable structures. The response of these systems to loading is analyzed theoretically and conceptually.
Prerequisites: 1191,2291. Corequisites: 1192, 2292 No lab fee charged.

7525 Architectural Mechanical Systems I **3-2-3**
An introduction to the heating and air conditioning mechanical systems used in conjunctiion with architectural projects. Topics covered include: terminology, units and conversions, principles of refrigeration, the components of refrigeration systems, Gas Laws, Laws of Thermodynamics, refrigerants, gas and oil burners, and boilers.
Prerequisites: 1191. Corequisites: 7026. No lab fee.

7535 Architectural Mechanical Systems II **4-2-4**
A study of Psychrometrics (the properties of the mixture of dry air and water vapor) comfort and health conditions as the relate to desihning the indoor environment, means of heat transfer and heat transmission in common building materials.
Prerequisites: 1192, 7525 No lab fee charged.

7536 Electrical Systems I **3-2-3**
An introduction to electricity and electrical circuit analysis. Topics include D.C. circuits, A.C. circuits, single phase systems, three phase systems, switches, relays, transformers and logic and control circuits.
Prerequisites: 1192. No lab fee charged.

7537 Piping Systems I **3-2-3**
Study of steam, water, refrigerant and pneumatic piping systems, including pumps, compressors, valves, flanges, couplings, controls, traps, vents, piping supports aand insulation. The water piping is as used for condensate, chilled water, cooling water, fire sprinklers and domestic plumbing. Head, friction, erosion, corrosion, water hammer and pipe stress are covered.
Prerequisites: 2292. Corequisites: 1193. No lab fee charged.

7545 Architectural Mechanical Systems III **4-2-4**
A study of all of the factors which have an influence on the design of the systems for controlling the indoor environment. Topics include: Earth's motion about the Sun, Time Zones, solar angles and solar radiation, indoor design conditions, outdoor design conditions, calculation the Heat Loss of a structure for heating conditions and calculating the heat gain of a structure for cooling conditions.
Prerequisites: 7535. No lab fee charged.

7546 Electrical Systems II **3-2-3**
Fundamentals, applications and selection of single phase and three phase A.C. motors control circuits using relay logic and solid state logic, power circuitry including conductor sizing and protective devices, and applicable provisions of the National Electrical Code.
Prerequisites: 1192, 7536. No lab fee charged.

7547 Piping Systems II **3-2-3**
Advanced study of piping systems used in building construction. The student will prepare a process and instrument diagram (P&ID) with supporting piping, equipment and control specifications, applying ASA, ANSI and building code standards as appropriate. Pneumatic control circuits including master and submaster thermostats, modulating flow control valves and damper motors are included. The student will also select piping specifications for other services not on the P&ID. An introduction to energy balance diagrams and process flow diagrams is included.
Prerequisites: 1193. Corequisites: 2293. No lab fee charged..

7555 Architectural Mechanical Systems IV **4-2-4**
A study of control systems and the determination of air quantities required to achieve the indoor environment design parameters as determined from the Heat Gain/Loss calculations. Topics include: theory of control, methods of control, sensors, instruments, air transport and distribution, duct work design, friction and resistance to air flow and methods for calculating these effects.
Prerequisites: 7545, 7546. No lab fee charged.

7556 Electrical Systems III **4-2-4**
Lighting systems design and electrical distribution design. Covers overcurrent and short circuit protection, conductors and conductor types, grounding, wiring methods, branch circuit design, load calculations and provisions of the National Electrical Code.
Prerequisites: 7546. No lab fee charged.

7557 Architectural Mechanical Systems Design Project **2-3-3**
The student will design architectural mechanical systems for a selected building (design) and prepare the required construction drawings and specifications for the mechanical systems.
Prerequisites: 7547. Corequisites: 7555, 7556. 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.
Prerequisites: Corequisites: 1171 or 1191. No lab fee charged.

7701 Electronic Fundamentals I **4-2-4**
Introduces the basic laws of AC and DC electricity and their applications. In addition power distribution, magnetic principles, control system fun-

damentals, component testing and troubleshooting are covered.
Prerequisites: Corequisites: 1171 or 1191. No lab fee charged.

7702 Electronic Fundamentals II **4-2-4**
A continuation of Fundamentals of Electronics I covering basic of AC Circuits, Linear and Digital Electronic Circuits and Microcomputers. Also covered will be oscilloscope use as a measuring device and introduction to Hardware Troubleshooting Techniques.
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 0 AC motors and components replacement with emphasis on safe troubleshooting and repair of power and control circuits.
Prerequisites: None. Lab fee charged.

7707 Electrical Applications **3-2-3**
This course is designed for students in a non-electrical degree program. Topics include electrical control components, reading schematic and wiring diagrams, applied electrical basics, electro-magnetism, AC and DC motor characteristics and applications, typical factory power, connecting and checking motors, control and power circuit troubleshooting procedures, logic concepts and programmable controllers.
Prerequisites: 1192. No lab fee charged.

7708 Electrical Fundamentals & Controls **3-2-3**
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 DC Circuit Analysis **6-0-5**
This course introduces the concept 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.
Prerequisites: Corequisites: 1191 or 1172, 7711. 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 and VTVM's.
Prerequisites: None. Corequisites: 7710. No lab fee charged.

7712 Electrical Circuits I **6-0-5**
This course introduces basic electrical concepts, laws, and devices, including: charge, direct and alternating current, voltage, resistance, capacitance, rectification, power, efficiency, Ohm's Law, and Kirchoff's Laws. Analysis and introduction to troubleshooting of direct current series, paralles, series-parallel, and complex networks will be covered, with emphasis on applications of these circuits. Classroom lecture and exercises ae supplemented by hands-on circuit projects.
Prerequisites/Corequisites: 1191 or 1172, 7713. Lab fee charged.

7713 Electrical Circuits I Lab **0-3-1**
Laboratory exercises and evaluation in the proper use of techniques and instruments commonly used by electromechanical technicians. Includes safety considerations, schematic diagrams, capacitive time constants, soldering techniques, introduction to circuit fault analysis and troubleshooting, and protective devices.
Prerequisites/Corequisites: 7712. 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. Coorequisites: 1171 or 1191. No lab fee charged.

7717 Introduction to C Programming **3-2-3**
This course is an introduction to the C language. Course covers: variable declarations, variable types, memory considerations, program looping, decision statements, arrays, strings and simple function calls. The Unix editor and compiler will be used throughout the course.
Prerequisites: None. Lab fee charged.

7720 AC Circuit Analysis **6-0-5**
This course introduces inductance 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 oscilloscope, function genrator and V.T.V.M. for application in A.C. circuits.
Prerequisites: 7710, 7711. Corequisites: 1192, 7721. 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 Oscilloscopes, signal generators and VTVM's.
Prerequisites: 7710, 7711. Coorequisites: 7720. No lab fee charged.

7722 Electrical Circuits II **6-0-5**
This course is a continuation of 7712, Electrical Circuits I. Introduces magnetism, inductance, alternating current (AC) wafeforms, reactance, impedance, phasor analysis of AC series, parallel, and series-parallel circuits, AC power, resonance, filters, transformers, and three-phase AC systems. Emphasis will be placed on applications and troubleshooting. Classroom lecture and exercises are supplemented by hands-on circuit projects.
Prerequisites: 7712, 7713, 7710, 7711. Corequisites: 1192, 7723. Lab fee charged.

7723 Electrical Circuits II Lab **0-3-1**
Laboratory exeercises and evaluation in the proper use of techniques and instruments commonly used by electromechanical technicians. Includes safety considerations, use of oscilloscope, use of signal generator and measuring instruments, inductive time constants, resonance, frequency response, filters, rectifier and power supply circuits, transformers, three-phase systems, and introduction to the National Electric Code.
Prerequisites: 7712, 7713 or 7710, 7711. Corequisites: 7722. No lab fee charged.

7727 Advanced "C" and UNIx **2-2-3**
This course is a continuation of 7717. Topics include: structured variables, character strings, string function, pointer, bit operations, preprocessor operation, and dish I/O routines. Also included is an introduction to the UNIx operating system.
Prerequisites: 7717. Corequisites: 7738. 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: None. Corequisites: 1191 or 1172; 7710 or 7712. No lab fee charged.

7730 Electronics I **5-2-5**
Semiconductor theory, DN junctions, and diodes. Introduction to basic power supply circuits. Operational amplifiers, positive and negative feedback, inverting and non-inverting amplifiers, comparators, differentiators and integrators, instrumentation and bridge amplifiers, active filters, sleu rate limiting, and frequency response.
Prerequisites/Corequisites: 7720, 7721; or 7722, 7723. 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 specifications are studied to increase circuit reliability.
Prerequisites: None. Corequisites: 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: 7728. Corequesites: 7720. Lab fee charged.

7740 Electronics II **4-2-4**
Rectifier circuits, zener diodes, light emitting diodes, power supply filtering, regulators, clippers and clampers. Bipolar transistor theory, bipolar switch, bipolar biasing circuits. Class A small signal and power amplifiers, class B amplifiers, field effect transistors, FET biasing, FET amplifiers, frequency response of amplifiers.
Prerequisites: 7730. No lab fee charged.

7742 Computer Aided Drafting (Electrical) **2-3-3**
An introduction to computer aided design and drafting for Electrical Engineering based Technologies. Use of computer graphics to create, store,

copy, and alter schematic designs. Schematic capture, circuits simulation, printed circuit board layout, artwork generation, component libraries, bill of materials, cost, and related data for analysis of circuit designs.
Prerequisites: 7030, 7738. Lab fee charged.

7743 Communication Systems I **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, Anetnnas, and simple broadcasting station requirements.
Prerequisites: 7730. No lab fee charged.

7747 Computer Instrumentation **2-2-3**
This course is an introduction to basic transducers. In this course students will apply analog-to-digital techniques to sensors for the purpose of creating data acquisition systems. The course also includes types of sensor-computer integration for the purpose of creating intelligent stand alone sensors. Students will construct sensor-computer interfaces and write software to acquire sensor data. Course also includes techniques for manipulation of acquired data such as integration and differentiation.
Prerequisites: 7727, 7748. No lab fee charged.

7748 Digital Systems II **3-3-4**
Microprocessor hardware and software for the Motorla 6800 family of chips. Topics include: basic microprocessor hardware, number systems, software architecture, introduction to the 68000 instruction set, addressing modes, suboutlines, educational computer board, system hardware and timing, and memory and I/O expansion techniques.
Prerequisites: 7738. Lab fee charged.

7749 Biomedical Instrumentation I **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, hear 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 lab fee charged.

7750 Electronics III **4-2-4**
Discrete power amplifiers, integrated power amplifiers, SCR's, triacs, and power FET's. Swirhing regulators, integrated circuit filters, and other single chip devices. Modulation techniques, optical devices, phase locked loops, tone encoders, and deloders.
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.

7755 Electrical Estimating **2-2-3**
Blueprint reading take-off techniques, specificaitons, estimating procedure, unit pricing, pricing sheets, summary sheets, proposals, checking methods, computerized estimating techniques.
Prerequisites: None. No Lab fee charged.

7756 Power Generation & Transmission **3-1-3**
Survey of coal, oil, nuclear, and hydroelectric generation; circuit constants, assemblies of power system components, load flow studies, transients, power limits for stability, faults on power systems, instrumentation, relays and interrupting devices, insulation, tower design, and effective grounding techniques.
Prerequisites: None. 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: 7722 and 7723; or 7720 and 7721. No lab fee charged.

7759 Biomedical Instrumentation II **3-2-3**
Course presents a survey of the more complex and specialized medical devices used for patient care and diagnosis. Advanced equipment malfunction isolation and test instrumentations is 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.

7767 Computer Communications **3-2-3**
This course will discuss the various topics and methods of computer communications. The course will deal with the following topics: Local and global micro busses, parallel communicaitons, Async vs. Sync communications, serial communication standards, modems, networking techniques, fiber optic systems.
Prerequisites: 7768, 7727, 7747. No lab fee charged.

7768 Digital Systems III **3-3-4**
Advanced topics on microprocessor hardware and software for the Motorola 6800 family of chips. Topics include assembly language programming, use of vi editor in UNIX, simple parallel expansion, analog-to-digital and digital-to-analog conversion, parallel interface timer (PIT) chip, serial I/O, parallel I/O with handshaking, interrupts, and timers.
Prerequisites: 7748. No lab fee charged.

7769 Real Time Applications **3-3-4**
This course deals with the problems of programming for real time control. Discussions will include: Interrupt driven tasks, timed control of tasks and data acquisition, introduction to real time operating systems, methods for writing software to respond to multiple interrupts, techniques for generating ROM based code and stand alone systems.
Prerequisites: 7747, 7768. Corequisites: 7757. No lab fee charged.

7799 Special Problems Seminar-Electrical **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 instructor and program chair.
Prerequisites: None. No lab fee charged.

7810 Welding Skills **3-3-4**
Basic gas welding. Safe and correct methods of assembling and operating of welding equipment. Introluces 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 SMAU 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 **3-2-3**
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.
Prerequisites: None. Corequisites: 1171 or 1191. No lab fee charged.

7911 Introduction to Construction **2-2-2**
Introduces the student to the construction industry analyzing the contractural relationships between the owner, architect/engineer, and contractor. Introduces the materials and methods of construction through the perspective of the CSI format. Material investigated include wood, concrete, masonry, and steel. Methods investigated include light framing, masonry, steel frame, and reinforced concrete.
Prerequisites: None. No lab fee charged.

7912 Survey of Construction **3-0-3**
A survey of the construciton industry to include the following topics: management in construction, contracting methods, contracts and specifications, estimating, scheduling, construction methods and materials, blueprint reading, and surveying.
Prerequisites: None. No lab fee charged.

7920 Surveying Calculations **4-2-4**
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. " COGO" Computer Program.
Prerequisites: 7910. No lab fee charged.

7930 Route Surveying **3-2-3**
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, "COGO Program.".
Prerequisites: 7920. Corequisite: 7025. No lab fee charged.

7931 Light Construction **3-3-3**
Introduces to the student concepts of residential planning. Investigates construction methods such as platform framing, brick veneer, lightweight steel, and masonry construction. Includes structural member selection, footing design, and typical construction detailing. Presents the dynamics of heat loss and heat gain.
Prerequisites: 1192, 7911. No lab fee charged.

7934 Statics (Civil) **3-2-3**
A continuation and application of principles of physics to engineering analysis. Topics of instruction are limited to force analysis applied to civil engineering structures, static friction and centroids and moments of inertia. Course objectives are accomplished through lecture, visual aids, example calculations, literature references, and handouts.
Prerequisites: 1192, 2292. No lab fee charged.

7940 Elements of Land Surveying **3-2-3**
Advanced course in the elements of boundary surveys, with emphasis on; document research, deed descriptions, U.S. public lands survey system, Ohio land subdivisions, legal aspects of land surveys.
Prerequisites: 7920. No lab fee charged.

7942 Construction Management I **3-2-3**
The student will investigate the evolution of the construction management process and compare this process to the traditional method of general contracting. The student will examine the theoretical and contractural relationship that exists between the construction manager, owner, architect/engineer and prime contractor. The concepts of planning and scheduling are introduced, including CPM scheduling.
Prerequisites: None. No lab fee charged.

7943 Construction Estimating **3-2-3**
A technical course designed to give the student a confident knowledge of estimating. Various types of construction estimates are discussed in addition to bidding procedures, quantity takeoff of materials, and their relationship to different types of construction contracts. Each student will perform a detailed estimate from a set of working drawings prepared by the student in a previous course. Other topics include feasibility studies, project controls, and time value of money.
Prerequisites: 7931. No lab fee charged.

7944 Strength of Materials (Civil) **3-2-3**
An introductory course in the application of statics to the properties of materials used in Civil Engineering structures. Topics will include Hooke's Law, temperature effects, welds, biaxial stress conditions, combined stress and prestressed beams, and stress concentration. Course objectives are accomplished through lecture, visual aids, demonstrations, example calculations, case studies, literature references, and extensive handouts.
Prerequisites: 7934, 1191. Corequisites: 7945. No lab fee charged.

7946 Municipal Wastewater Treatment Systems **3-2-3**
Introduction to concepts of wastewater treatment and design of waste handling systems for residential lots and subdivisions.
Prerequisites: None. Corequisites: 7948.

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 channels, median swales, culverts, gutters, and pipe networks using computer application. Emphasis will be on control of erosion and sedimentation. Course objectives are accomplished through lecture, visual aids, example calculations, literature references, and handouts.
Prerequisites: 1191. No lab fee charged.

7948 Subdivision Design I **3-2-3**
Introductory course in residential subdivision design with emphasis on general zoning and subdivision regulations; lot, street and easement design using a coordinated geometry computer program.
Prerequisites: 7025, 7930. Corequisites: 7946, 7947. No lab fee charged.

7950 Surveying Field Project **1-6-3**
Specialized project utilizing fundamental theories and standard practices involved in surveying. To include courthouse research, field reconnaissance and measurements, resolution, platting and astronomic observations.
Prerequisites: 7930, 7940. No lab fee charged.

7951 Heavy Construction **3-2-3**
Heavy construction includes large commercial buildings, industrial facilities, and highway construction. This course analyzes construction techniques involving heavy timbers, structural steel, reinforced concrete, and combinations thereof. Emphasis is placed on commercial construction from site work and shoring to curtain walls, glazing, and interior finishes.
Prerequisites: 7911. 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 II **3-2-3**
The student will continue to study the construction management movement in the constuction industry. Critical Path Method Scheduling is emphasized in this course from network diagramming to the crashing process. Other topics include phasing and work packaging, valve engineering, project controls, labor relations, project management, quality control, and safety management.
Prerequisites: 7942. No lab fee charged.

7954 Structural Design II **3-2-3**
A course presenting the fundamentals of statics to reinforced concrete design. Topics of instruction include the ACI Strength Method of reinforced concrete design, and an introduction to computer solutions of analysis and design. The laboratory presents the ACI weight proportioning method of mix design, an introduction to superplasticizers, and the use of steel fibers. Course objectives are accomplished through lectures, example calculations, literature references, laboratory experience, and extensive handouts.
Prerequisites: 7934, 7944, 7945, 1192. No lab fee charged.

7955 Applied Soils Mechanics **3-2-3**
This course is an introduction to the properties of soil as a material used in construction. Topics of instruction will include routine laboratory tests, soil classification, compaction, slope stability, soil strength and geotextile materials. Course objectives are accomplished through lecture, laboratory experience, example calculations, case studies, literature references, and extensive handouts.
Prerequisites: 7934. No lab fee charged.

7956 Structural Steel Design **3-2-3**
An introductory course in which the fundamentals of structural steel design per the AISC code are studied. Topics of instruction include the design of tension members, beam analysis and design, deflection analysis, and column design. Course objectives are accomplished through lectures, visual aids, example calculatoins, and handouts.
Prerequisites: 7934, 7944, 1192. Corequisites: 7954. No lab fee charged.

7957 Environmental Engineering Technology **3-2-3**
An introductory overview of environmental concerns seen from the perspective of engineering technology. The course is built on an environmentalist's concern for public health and safety. Much of the course content is built upon the work of the Environmental Protection Agency, but is also supplemented by reasoned critiques of their efforts. Major topics of study include solid and hazardous waste, and potable and wastewater treatment. Course objectives are accomplished through lecture, field trips, laboratory demonstration, visual aids, case studies, literature references, and extensive handouts.
Prerequisites: None. Corequisites: 7947. No lab fee charged.

7958 Control Surveying **1-6-3**
Introduction to control surveying. Topics of instruction include: state plane coordinates, astronomic observations, control surveying standards and techniques, total stations and data collectors, computer calculations and graphics, and aerial phtotgrammetry control.
Prerequisites: 7930, 1192. No lab fee charged.

7959 Subdivision Design II **3-2-3**
Second course in residential subdivision design with emphasis on earthwork calculations; designing of a water system; and labeling of a final plan using "COGO" and "CAD" programs.
Prerequisites: 7947, 7948, 7027. Corequisites: 7955. No lab fee charged.

7961 Introduction to Hazardous Waste Management **3-2-3**
An introductory course exploring the current practices and problems associated with management of hazardous substances. Several case histories will be presentel. 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 the instructor and program chair.
Prerequisites: None. No lab fee charged.

8100 Aircraft Orientation **4-4-5**
Learn to perform ground engine run-up and flight control movement check and taxi procedure. Learn aircraft physical laws and perform numerical computations including aircraft weight and balance calculations.
Prequisites: None. No lab fee charged.

8101 Machine & Hand Tools **1-4-3**
Identify and select proper hand tools for particular applications. Hand form, layout and bend sheetmetal. Perform precision measurements.
Prerequisites: None. Lab fee charged.

8102 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 Regulation Lift, thrust and drag. Stability of aircraft.
Prerequisites: None. No lab fee charged.

8106 Engineering Graphics (Aviation) **2-2-2**
Read drawings, symbols and schematic diagrams. Draw sketches of repairs and alterations. Apply blueprint information. Use graphs and charts.
Prerequisites: 8100. No lab fee charged.

8107 Materials & Processes **5-5-5**
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. Fabricate and install rigid and flexible lines and fittings.
Prerequisites: 8100, 8101. Lab fee charged.

8108 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.

8109 Cleaning & 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.

8130 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, 2221, 8102. Lab fee charged.

8131 Welding Processes **1-4-2**
To include soldering, brazing and gas arc-welding steel. Fabrication of tubular structures, soldering of stainless steel, welding stainless steel and aluminums, magnesium and titanium. Inspect and check welds.
Prerequisites: 8102, 8107. Lab fee charged.

8132 Airframe Electrical & 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 shut generators, alternators, starters, and starter-generators. Check and adjust generating output regulation. Repair and/or replace fuses, circuit-breaker, switches, high and low tension wiring, terminals and terminal blocks, magnetic switches and transformers.
Prerequisites: 8102, 8106, 8108. No lab fee charged.

8140 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: 8130. No lab fee charged.

8141 Airframe Fuel Systems **1-4-2**
Inspect, check and repair pressure fueling, transfer, defueling, and 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: 8130. No lab fee charged.

8142 Assembly & Rigging **3-7-5**
Rig fixed-wing aircraft. Assemble, balance and rig aircraft and control surface. Using inspection forms, perform a 100 hour inspection. Perform check of aircraft pertaining to specifications and A.D. note compliance. Make repairs and adjustments found to be necessary during inspection. Check and perform weight and balance of aircraft.
Prerequisites: 1191, 8102, 8107. Lab fee charged.

8143 Airframe Hydraulic & 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, 2222. No lab fee charged.

8150 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 autopilot, approach control and communication and navigation systems. Inspect and repair antenna and electronic equipment. Inspect, check and service speed and take-off warning system electrical brake controls, anti-skid system and carbon monoxide detection systems. Inspect, check and service ice and rain control system. Inspect, check, troubleshoot, service and repair landing gear position and warning system and aircraft fire detection and extinguishing systems.
Prerequisites: 8107, 8132, 8140, 8143. No lab fee charged.

8151 Airframe Systems, Hydraulic & 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 anit-skid electrical brakes. Controls, landing gear position indicating and warning systems.
Prerequisites: 8143. No lab fee charged.

8152 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: 1192, 2223, 8140, 8142. Corequisites: 8150, 8151. No lab fee charged.

8155 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 & airframe courses. No lab fee charged.

8160 Powerplant Theory & Maintenance I **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: 1172 or 1191, 2221, 8102. No lab fee charged.

8161 Powerplant Lubrication **4-3-4**
Identify and select proper lubricants. Inspect, check, service, troubleshoot and repair powerplants.
Prerequisites: 2221, 8102, 8106. Corequisites: 8160. No lab fee charged.

8162 Propellers **4-4-4**
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, 2221, 8109. Corequisite: 8161. No lab fee charged.

8170 Powerplant Theory & Maintenance II **5-5-5**
Inspect and repair reciprocating engines. Inspect, check service and repair opposed and radial engines and reciprocating engine installations.
Prequisites: 8160. No lab fee charged.

8171 Powerplant Fuel Metering Systems I **5-5-5**
Inspect, check and service water injection systems. Overhaul a carburetor. Repair fuel metering components. Inspect, check, service, troubleshoot and repair reciprocating carburetor systems and induction manifolds. Inspect, check, troubleshoot, service and repair reciprocating fuel injection systems.
Prerequisites: 8160. No lab fee charged.

8172 Ignition Systems **5-5-5**
Overhaul magneto and ignition harness. Repair engine ignition system components. Inspect, check, service, troubleshoot and repair powerplant ignition systems.
Prerequisites: 8108, 8160. No lab fee charged.

8180 Engine Systems & Inspection **5-5-5**
Inspect, check, troubleshoot, service and repair engine induction cooling exhaust and electrical systems and components.
Prerequisites: 8101, 8170. Corequisites: 8183. No lab fee charged.

8182 Engine Instruments & Fire Protection **1-4-3**
Install, check and service engine electrical wiring, controls, switches, indicators, and protective devices. Inspect, check, service, troubleshoot and repair engine temperature, pressure and RPM .
Prerequisites: 8108, 8170. Corequisites: 8183. No lab fee charged.

8183 Powerplant Theory & Maintenance III **5-5-5**
Install, troubleshoot and remove reciprocating engines. Overhaul turbine engines, inspect, check, service and repair turbine engine installations. Remove, install and troubleshoot turbine engines.
Prerequisites: 1192, 2223, 8170. No lab fee charged.

8185 Powerplant 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 powerplant courses. No lab fee charged.

8190 Aviation Make-Up **0-0-0**
Opportunity for students to make up N.A.A. required time. Laboratory, written or reading requirements or extra time on lab projects will be performed during this time.
Prerequisites: None. No lab fee charged.

8580 Residential Wiring **2-2-4**
The course covers basic house wiring fundamental electrical concepts, practical Ohm's law, residential sections of national electrical code, basic circuitry layout for lights, switches, receptacles, and equipment. Also provides rudimentary understanding of circuit loading, service entrance calculations, and basic hands-on skills needed to install electrical components and devices.
Prerequisites: None. No lab fee charged.

9000 Career Development **3-0-3**
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.

9005 College Success Strategies for Returning Adults **3-0-3**
Are you afraid of failure; are you unsure about your career and personal goals; are you concerned about the adequacy of you acedemic and study skills for college success? We have an answer for coping with those fears and uncertainties. Beginning in the June term we will be offering a new class, "College Success Strategies", tailored to meet the needs of the adult student, to provide valuable support and dispel those crippling fears. This course will help you to learn more about yourself and your skill potential and will include: Library skills, values and goal setting, college support services, career exploration, decision making, taking control of your life, study skills, time management, self-esteem and confidence building activities, as well as skill assessment in math, English and reading.
Prerequisites: None. No lab fee charged.

9010 Nontraditional Careers for Women **3-0-3**
The course is designed to meet the special needs of women, including single parents and homemakers who are searching for better paying jobs in male-dominated or nontraditional professions. Traditionally, men and women have selected specific careers based on socially defined traits. The student will acquire skills needed to overcome stereotypical barriers which prevent them from entering well paid nontraditional careers. Emphasis on overcoming Math/Science anxiety, how to study Math, Nontraditional career exploration reducing the home/career conflict.
Prerequisites: None. No lab fee charged.

9200 Professional Practices **1-0-0**
The purpose of this course is to prepare the students for the interview process, heighten the students' awareness of the work environment, and provide skills which will ensure the students' success as a professional.
Prerequisites: None. No lab fee charged.

9201 Cooperative Employment **1-40-3**
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.

9202 Cooperative Employment **1-40-3**
Usually on an alternating term basis, the business student is placed on a full-time (32-40) job that ileally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquirel 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.

9203 Cooperative Employment **1-40-3**
Usually on an alternating term basis, the business student is placel 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 op 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.

9204 Cooperative Employment **1-40-2**
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 acquirel 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.

9205 Cooperative Employment **1-40-2**
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.

9300 Cooperative Employment/Health Technologies 1-40-2
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term, the student ideally is able to assume more 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.

9301 Cooperative Employment 1-40-3
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term. the student ideally is able to assume more 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 acquirel 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.

9302 Cooperative Employment 1-40-3
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term. the student ideally is able to assume more 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.

9303 Cooperative Employment 1-40-3
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term. the student ideally is able to assume more 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.

9304 Cooperative Employment 1-40-2
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term. the student ideally is able to assume more 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 requirel to earn co-op credit.
Prerequisites: None. No lab fee charged.

9305 Cooperative Employment 1-40-2
Usually on an alternating term basis, the health student is placed on a full-time (32-40 hour) job that ideally relates to his or her class work. This affords the student the opportunity to make practical application of the knowledge and skills acquired in his or her class work. With each succeeding co-op term. the student ideally is able to assume more 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.

9400 Co-op Employment/Engineering Technologies 1-40-2
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.

9401 Cooperative Employment/Engineering Technologies 1-40-2
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.

9402 Cooperative Employment/Engineering Technologies 1-40-2
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.

9403 Cooperative Employment/Engineering Technologies 1-40-2
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.

9404 Cooperative Employment/Engineering Technologies 1-40-2
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.

9405 Cooperative Employment/Engineering Technologies 1-40-2
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 Cooperative Employment 1-40-3
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.

9502 Cooperative Employment 1-40-3
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 learnel 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.

9503 Cooperative Employment 1-40-3
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.

9504 Cooperative Employment 1-40-2
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.

9600 Physical Science and Mathematics Division Cooperative Employment 1-40-2
Usually on an alternating term basis, the 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 Science Technology Division co-op policies and procedures required to earn credit. Approved for "IP", "S" and "U" grades.
Prerequisites: None. No lab fee charged.

9601 Cooperative Employment Physical Science/Mathematics Division 1-40-3
Usually on an alternating term basis, the 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 Science Technology Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

9602 Cooperative Employment Physical Science/Mathematics Division 1-40-3
Usually on an alternating term basis, the 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 Science Technology Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

9603 Cooperative Employment Physical Science/Mathematics Division 1-40-3
Usually on an alternating term basis, the 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 the added knowledge and skills acquired in each school term. Adherence to Science Technology Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

9604 Cooperative Employment Physical Science/Mathematics Division 1-40-2
Usually on an alternating term basis, the Science Technology student is placed on full-time (32-40 hour) job that 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 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 Science Technology Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

9605 Cooperative Employment Physical Science/Mathematics Division 1-40-2
Usually on an alternating term basis, the 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 ter. Adherence to Science Technology Division co-op policies and procedures required to earn credit.
Prerequisites: None. No lab fee charged.

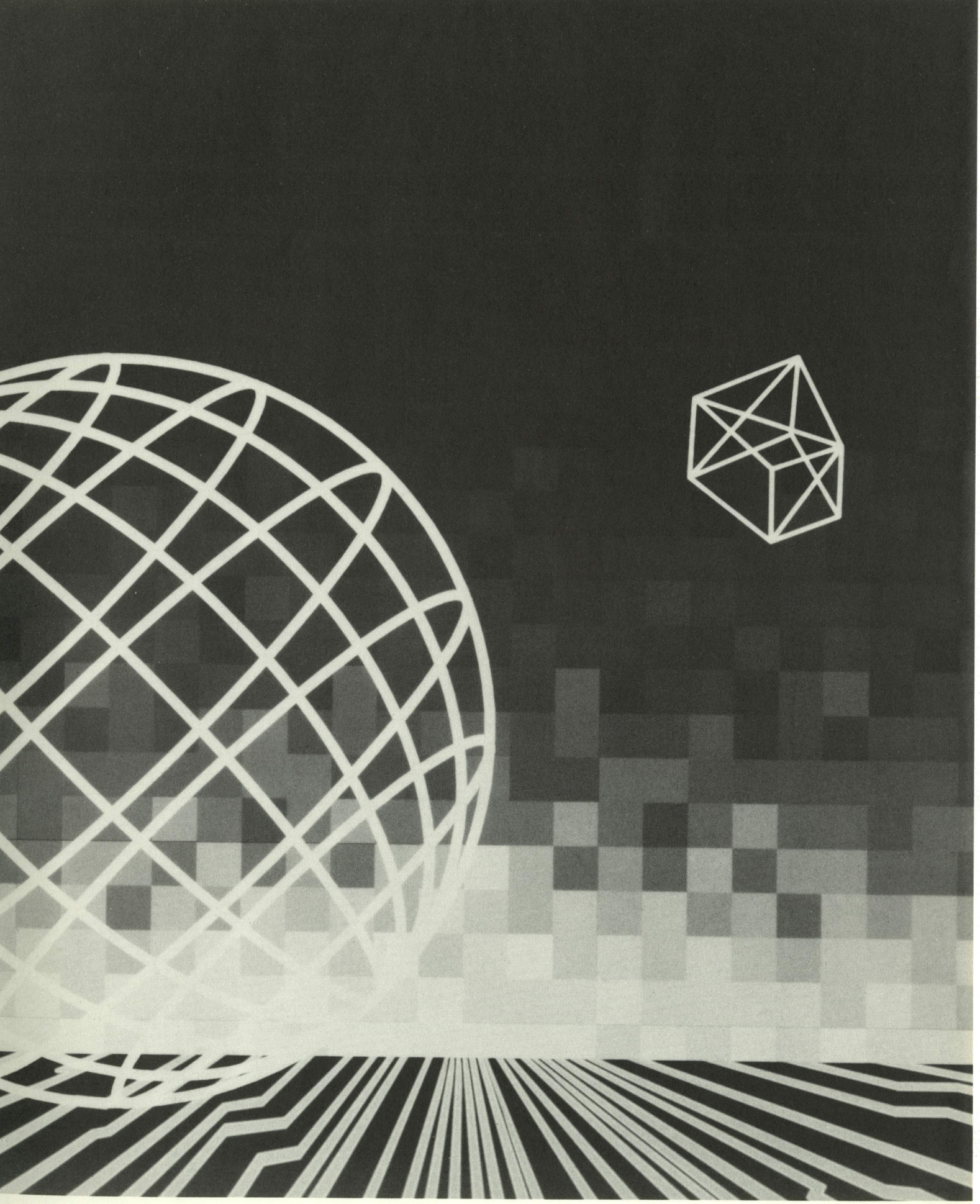
9701 Cooperative Employment/ Communication Skills Division 1-40-3
The Technical Writing & Editing Technology student is placed on a job that provides the opportunity to apply knowledge and skills acquired in classes. Job assignments may be either part-time (20 to 32 hours per week) for two consecutive terms or full-time (32 to 40 hours per week) for one term. The student must adhere to Communication Skills Division co-op policies and procedures to earn credit.
Prerequisites: None. No lab fee charged.

9702 Cooperative Employment/ Communication Skills Division 1-40-3
The Technical Writing & Editing Technology student is placed on a job that provides the opportunity to apply knowledge and skills acquired in classes. Job assignments may be either part-time (20 to 32 hours per week) for two consecutive terms or full-time (32 to 40 hours per week) for one term. The student must adhere to Communication Skills Division co-op policies and procedures to earn credit.
Prerequisites: None. No lab fee charged.

9703 Cooperative Employment/ Communication Skills Division 1-40-3
The Technical Writing & Editing Technology student is placed on a job that provides the opportunity to apply knowledge and skills acquired in classes. Job assignments may be either part-time (20 to 32 hours per week) for two consecutive terms or full-time (32 to 40 hours per week) for one term. The student must adhere to Communication Skills Division co-op policies and procedures to earn credit.
Prerequisites: None. No lab fee charged.

9704 Cooperative Employment/ Communication Skills Division 1-40-2

The Technical Writing & Editing Technology student is placed on a job that provides the opportunity to apply knowledge and skills acquired in classes. Job assignments may be either part-time (20 to 32 hours per week) for two consecutive terms or full-time (32 to 40 hours per week) for one term. The student must adhere to Communication Skills Division co-op policies and procedures to earn credit.
Prerequisites: None. No lab fee charged.



FACULTY & STAFF

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Faculty & Program Advisory Committees

Acito, Joseph .....Adjunct Instructor, Communications Skills/ Social Sciences Division
A.B., Xavier University
M.Ed., Xavier University

Airaghi, JoAnn, R.D......Adjunct Instructor, Health Technologies Division
B.S., Webster College
M.Ed., University of Cincinnati
R.D., University of Chicago Hospital

Alexander, Genevieve, M.T. (ASCP) .....Adjunct Instructor, Health Technologies Division

Attenborough, Laura .....Developmental Reading/English Instructor, Developmental Education
B.A. in Philosophy, Case Western Reserve University
M. Ed., Antioch University

Bach, Connie.....Instructor, Engineering Technologies Division
A.A.S., Cincinnati Technical College
B.S.M.E., Tri-State College

Barney, Michael .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Xavier University
M.Ed., Xavier University

Baskind, Marc A. .....Instructor, Business Technologies Division
B.A., Washington University
M.A., Indiana University

Batra, Prem N......Program Chair, Engineering Technologies Division
M.S., University of Cincinnati
Ph.D., University of Cincinnati

Battistone, Carmen .....Professor Emeritus, Communication Skills/Social Science Division
B.A., Kent State University
M.Ed., Xavier University

Battistone, John.....Writing Center Manager, Communication Skills/Social Sciences Division
B.A., Rutgers College

Baum, Howard .....Adjunct Instructor, Physical Sciences/Mathematics Division
A.A.S., Ohio College of Applied Science
B.S., University of Cincinnati

Bechtel, Becky .....Coordinator, Business Technologies Division
B.S.Ed., Ohio State University

Bechtold, Diane, M.T. (ASCP) .....Adjunct Clinical Instructor, Medical Laboratory Program Our Lady of Mercy Hospital
B.S., Xavier University

Bell, Athealia, R.D.H......Counselor/Coordinator, Health Technologies Division
A.S., Raymond Walters College
B.S., University of Cincinnati
M. Ed., University of Cincinnati

Besco, Fred, Jr., P.E. .....Instructor Engineering Technologies Division
B.E.E., Ohio State University
M.S.E.E., University of Cincinnati
Registered Professional Engineer, State of Ohio

Besterman, Jay, R.R.T......Adjunct Clinical Instructor, Health Technologies Division

Beyene, Michael .....Adjunct Clinical Instructor, Medical Record Program Good Samaritan Hospital

Bilharz, Diana, R.R.A......Adjunct Clinical Instructor, Medical Record Program St. Luke's Hospital
B.S. Ohio Northern University

Bissonette, Elise, R.R.A......Clinical Adjunct Instructor, Medical Record Program The Deaconess Hospital
B.S., Ohio State University

Blocher, Sally, R.R.T. .....Program Director, Health Technologies Division
B.S., Ohio Northern University

Bolinger, Bonnie .....Adjunct Clinical Instructor, Respiratory Therapy Program Nightengale Medical Service

Bonem, Stewart J......Instructor, Business Technologies Division
B.A., Miami University
M.B.A., Miami University

Bonner, Lois .....Adjunct Clinical Instructor, Medical Laboratory Technician Program
B.S., Trenton State College

Borden, Douglas, R.N......Adjunct Clinical Instructor, Surgical Technology Program Bethesda Hospital

Boswell, Mary C......Instructor, Communication Skills/Social Sciences Division
B.A., George Washington University
M.A.T., George Washington University

Brand, Joan .....Instructor, Developmental Education
B.S., Atlantic Christian College
M.Ed., Xavier University

Branson, Patty, RRT.....Adjunct Clinical Instructor, Respiratory Therapy Program Children's Hospital Medical Center

Brauntz, Lois.....Adjunct Instructor, Physical Sciences/ Mathematics Division
A.B., Thomas More College

Brinkman, Thomas J. .....Coordinator, Business Technologies Division

Bronstrup, James.....Instructor, Physical Sciences/ Mathematics Division
A.A.S., Cincinnati Technical College
A.B., Xavier University
M.Ed., Xavier University

Brosz, Martha .....Program Chair, Physical Sciences/Mathematics Division
B.S., College of Mt. St. Joseph

Brown, J. Terry.....Director, Cooperative Education & Graduate Placement Engineering Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Brown, Queen, R.D. .....Adjunct Clinical Instructor, Dietetics Program Jewish Hospital
B.S., Miami University
R.D., Good Samaritan Hospital

Brown, Richard D. .....Director of Administration, Business Technologies Division
B.S., Franklin University
M.Ed., University of Cincinnati

Brown, Sharon S. .....Coordinator, Business Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Burns, Tom, P.E......Instructor
B.S.C.E., University of Cincinnati Engineering Technologies Division
M.S.C.E., University of Cincinnati

Buschle, Patricia, M.T. (ASCP).....Adjunct Clinical Instructor, Medical Laboratory Program St. Luke's Hospital
A.A.S., Cincinnati Technical College
B.S., Edgecliff College
M.T., St. Elizabeth Medical Center

Buttelwerth, John W......Instructor, Engineering Technologies Division

B.S.C.M., University of Cincinnati
M.Ed., Xavier University

Campbell, Bob, R.R.T. .....Adjunct Clinical Instructor, Health Technologies Division

Campbell, Connie L. .....Coordinator, Business Technologies Division
B.S., Campbellsville College
M.Ed., University of Cincinnati

Capal, David .....Adjunct Instructor, Engineering Technologies Division
A.A.S., Cincinnati Technical College
B.S.M.E.T., University of Cincinnati

Carrington, Vickey, R.N. .....Adjunct Clinical Instructor, Surgical Technology Program Brown County General Hospital

Carroll, Michael T. ..... Instructor, Engineering Technologies Division
A.A.S., Cincinnati Technical College

Cayse, Dan A., CPA .....Dean, Business Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Chaney-Land, Pamela.....Instructor, Communication Skills/ Social Sciences Division
B.A., College of New Rochelle

Christen, Ellen, M.T. (ASCP) .....Adjunct Clinical Instructor, Medical Laboratory Technician Program Clinton County Memorial Hospital
B.S., Wright State

Clark, Rosemary V., R.R.A......Professor Emeritus Health Technologies Division
B.A., Edgecliff College
M.A., Xavier University
R.R.A., St. Louis University

Coad, Mark.....Adjunct Instructor, Communication Skills/ Social Sciences Division
B.A., University of Cincinnati
M.A., Univeristy of Cincinnati

Coffe-Findlay, Eileen I., R.D. .....Program Director, Health Technologies Division
B.S., University of Manitoba
R.D., University of Michigan
M.A., College of Mt. St. Joseph

Coil, Robert.....Coordinator, Business Technologies Division
B.S., University of Cincinnati
A.A.S., Cincinnati Technical College

Collier, Alan.....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.A., Miami University, Oxford,OH

Corey, Mary .....Adjunct Instructor, Communication Skills/ Social Sciences Division
B.S., Boston College

Cover, David W......Learning Specialist Developmental Education
B.A., Morehead State University
M.H.Ed., Morehead State University

Craigo, Robert W. .....Dean Emeritus, Engineering Technologies Division
B.S., West Virginia Institute of Technology
M.S., University of Cincinnati

Cummings, Cheryl S.....Instructor Developmental Education D.E., Learning Lab Manager
B.S.E., Arkansas State University

Dadey, Donald .....Professor Emeritus, Business Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Davidson, Carolyn .Coordinator, Industrial Relations & Training, Business Technologies Division
B.S., University of Cincinnati

Davidson, Ronald A., M.T.(ASCP) .....Instructor, Health Technologies Division
B.S., University of Cincinnati
M.Ed., Xavier University

Davis, Paul.....Coordinator, Business Technologies Division
B.A., University of Cincinnati

Davis, Sharon.....D.E. Counselor, Developmental Education
B.A., Kent State University
M.Ed., Kent State University

Decker, James, P.S......Instructor, Engineering Technologies Division
A.A.S., Cincinnati Technical College
Registered Professional Surveyor, State of Ohio

Dekker, Edward Sr., P.E. .....Instructor, Engineering Technologies Division
B.B.A., University of Wisconsin
B.S.M.E., University of Wisconsin

Dennler, Ron .....Adjunct Clinical Instructor, Respiratory Therapy Program Deaconess Hospital

Denson, Jeannine, R.N. .....Adjunct Instructor, Health Technologies Division
R.N., Community Hospital School of Nursing

DeNu, Paul A., P.S......Assistant Dean, Engineering Technologies Division
B.S.C.E., University of Cincinnati
M.S.C.E, Purdue University

DeVol, Vincent J. .....Instructor, Engineering Technologies Division
Certificate, Parks College of St. Louis University
Air Frame and Powerplant Technician License

DiPilla, Reginangelo A. .....Program Chair, Engineering Technologies Division
B.S.A.E., Parks College of St. Louis University
M.S.A.E., Air Force Institute of Technology

Disher, Teresa, M.T. (ASCP) .....Adjunct Clinical Instructor, Medical Laboratory Technician Program Clermont Mercy Hospital
B.S., Georgetown College

Dortin, David, Jr., D.O. .....Adjunct Clinical Instructor & Medical Director, Respiratory Therapy Program Jewish Hospital
B.A., Youngstown State University
D.O., Kansas City College of Osteopathic Medicine

Duffy, Robert .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Xavier University
M.Ed., University of Cincinnati

Dyer, Pamela, M.T. (ASCP).....Adjunct Clinical Instructor, Medical Laboratory Technician Program Veterans Administration Hospital
B.S., Indiana University

Eberlein, R.R.A......Adjunct Clinical Instructor, Medical Records Program Mercy Hospital, Hamilton

Ecker, Pamela S......Program Director, Communication Skills/Social Sciences
B.A., Hanover College
M.A., Bowling Green State University

Ehrlinger, Claire .....Coordinator, Business Technologies Division
B.S., Michigan State University

Eilers, Al.....Adjunct Instructor, Health Technologies Division
B.S.Ed., University of Cincinnati
M.Ed., University of Cincinnati
M.B.A., Xavier University

Elder, Sr. Mary Clarita, ART .....Adjunct Clinical Instructor, Medical Record Program St. Francis-St. George Hospital

Ellis, Patrick.....Assistant Extension Director

B.S., Case Western Reserve University
B.S., Ohio State University
M.B.A., University of Cincinnati

Elmer, Robert V. ..... Professor Emeritus, Business Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Enderle, Carol, R.N. ..... Adjunct Clinical Instructor, Surgical Technology Program Mercy Hospital of Hamilton

English, Eileen ..... Program Chair Engineering Technologies Division
B.S.B.A., Xavier University

Ennis, Chris H. ..... Adjunct Instructor, Physical Sciences/ Mathematics Division
A.A.S., Miami University
B. Ed., Miami University

Ennis, Constance ..... Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Miami University

Enyeart, Peter, M.D. ..... Adjunct Clinical Instructor & Medical Director, Respiratory Therapy Program Bethesda Hospital
M.D., University of Cincinnati

Enzweiler, Philip ..... Adjunct Instructor, Communication Skills/Social Sciences Division
A.B., Xavier University

Erwin, Judith, ART ..... Adjunct Clinical Instructor, Medical Record Program Careunit Hospital of Cincinnati

Evert, Beverly, D.V.M. ..... Instructor Health Technologies Division
B.S., University of Cincinnati
D.V.M., The Ohio State University

Eveslage, Robert W., R.R.T. ..... Instructor, Health Technologies Division
B.S., University of Cincinnati
M.S., Indiana University

Falconi, Ronald ..... Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Miami University

Farrer, James A. ..... Instructor, Physical Sciences/Mathematics Division
A.E., Southern Technical Institute
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Fehrenbach, Dorothy, ART ..... Adjunct Clinical Instructor, Medical Record Program Our Lady of Mercy Hospital

Fennell, Diane, ART ..... Clinical Adjunct Instructor, Medical Record Program Millcreek Psychiatric Institute

Flodder, Beth, M.T. (ASCP) ..... Clinical Adjunct Supervisor, Medical Laboratory Program Deaconess Hospital
B.S., Indiana University

Froehlich, Jerry A. ..... Co-Op Coordinator, Engineering Technologies Division
A.A.S., Ohio College of Applied Science
B.S., University of Cincinnati
M.Ed., Xavier University

Funk, Hal G. ..... Professor Emeritus, Engineering Technologies Division
B.S., Ohio State University
M.Ed., University of Cincinnati

Gambrell, Karen L. ..... Instructor, Business Technologies Division
B.S., Clemson University

Glenn, Terrence J. ... Vice President for Administrative Services
B.S., Xavier University
M.Ed., Xavier University
Ed.D., University of Cincinnati

Goelz, John F. ..... Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., University of Cincinnati
Ph.D., University of Cincinnati

Gohn, A. Janelle, M.T. (ASCP), S.M. ..... Coordinator, Health Technologies Division
B.S., Indiana University
M.A., College of Mt. St. Joseph

Gohn, Robert, M.T. (ASCP) ..... Adjunct Instructor, Health Technologies Division
B.S., Indiana University

Graff, Daryl ..... Adjunct Instructor, Engineering Technologies Division
A.S., Ohio College of Applied Science

Graff, Gary A. ..... Director, Industrial Training & Extended Services Engineering Technologies Division
A.A.S., Ohio College of Applied Science
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Gratton, Alfred. ..... Professor Emeritus, Business Technologies Division
B.S., Clarkson College
M.B.A., Xavier University

Green, Marcus M. ..... Instructor, Communication Skills/Social Sciences Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Gunkel, Ann ..... Adjunct Faculty,Physical Science Mathematics Division
A.A. in Chemistry, Thomas More College
B.A. in Biology, Thomas More College

Hardy, Pat, R.N., M.S.N. ..... Adjunct Instructor, Bethesda Hospital School of Nursing
R.N., Mercy Hospital School of Nursing
B.S.N., University of Cincinnati
M.S.N., University of Cincinnati

Harrier, Peggy D. ..... Assistant Dean, Business Technologies Division
B.A., St. Mary's College/University of Notre Dame
M.Ed., Xavier University

Hassan, James ..... Instructor, Communication Skills/ Social Sciences Division
B.A., Georgetown College
M.A., Eastern Kentucky University

Hauck, Raymond A. ..... Adjunct Instructor, Physical Sciences/ Mathematics Division
B.A., Miami University
M.S., University of Cincinnati

Haun, Michael, R.N. ..... Adjunct Clinical Instructor, Surgical Technology Program Bethesda North Hospital

Heck, Brenda, R.N., M.S.N. ..... Adjunct Instructor, Bethesda Hospital School of Nursing
A.A.S., University of Kentucky
B.S.N., University of Cincinnati
M.S.N., University of Cincinnati

Heink, Harry R. ..... Professor Emeritus Communication Skills/Social Sciences Division
A.B., Eastern Kentucky State College
M.Ed., Xavier University

Hendrix, Richard E., C.H.A. ..... Coordinator, Business Technologies Division
B.S., Bowling Green State University
M.Ed., Xavier University

Hennekes, Gayle, P.A.-C ..... Adjunct Clinical Instructor, Health Technologies Division
A.A.S., Cincinnati Technical College
B.A., St. Mary of the Woods College

Herr, Gregory ..... Adjunct Instructor, Engineering Technologies Division

Hils, Neal C. ..... Instructor, Business Technologies Division

B.S., University of Cincinnati

Hilton, Carla, R.N. .....Adjunct Clinical Instructor, Surgical Technology Program St. Luke Hospital

Hirsch, Edward A. .....Adjunct Instructor, Physical Sciences/ Mathematics Division

B.S., Salmon P. Chase College

Hodges, Wanda, R.N. .....Coordinator, Health Technologies Division

B.S.N., University of Cincinnati

Hoeweler, Janice L. .....Instructor, Physical Sciences/ Mathematics Division

B.S., University of Illinois
M. Ed., Xavier University

Holland, Randy, R.N. .....Adjunct Clinical Instructor, Surgical Technology Program St. Francis-St. George Hospital

Hollstegge, Linda S. .....Adjunct Instructor, Engineering Technologies Division

A.A.S., Cincinnati Technical College
B.A., University of Cincinnati

Hoog, Linda .....Adjunct Instructor, Physical Sciences/ Mathematics Division

B.S., University of Cincinnati

Howes, Mary Lee. .....Instructor, Communication Skills/ Social Sciences Division

B.A., Edgecliff College

Hubbard, John H., P.E. .....Professor Emeritus, Engineering Technologies Division

B.S.C.E., Tufts University
M.S., University of Pittsburgh

Huelsman, Linda. .....Instructor Business Technologies Division

A.A.B, University of Cincinnati
B.S., University of Cincinnati
M.S.Ed., University of Cincinnati

Hutchins, Judy, R.R.A. .....Adjunct Clinical Instructor Medical Records Program University Hospital

B.S., Ohio State University

Huffman, Elodie, R.D. .....Professor Emeritus Health Technologies Division

B.S., Cornell University
M.Ed., University of Cincinnati
R.D., Oklahoma State University

Huge, Terrence .....Instructor, Physical Sciences/ Mathematics

B.S., University of Cincinnati
M.S., University of Cincinnati
A.S.Q.C. Certified Quality Engineer

Hunley-Belanger, Marcha ...Instructor, Communication Skills/ Social Sciences Division

B.S.Ed., University of Cincinnati
M.A.I.R., University of Cincinnati

Huwel, William .....Coordinator, Business Technologies Division

M.B.A., Xavier University

Iacobucci, Frank A. .....Professor Emeritus, Physical Sciences/ Mathematics Division

B.S., United States Military Academy
M.Ed., Xavier University

Jackson, Joan .....Instructor, Physical Sciences/ Mathematics Division

A.B., DePauw University
M.Ed., Virginia Commonwealth University

James, Carol. .....Adjunct Faculty Developmental Education

A.B., Morehead State University

James, Judd H., CMfgE .....Program Chair, Engineering Technologies Division

B.S.M.E., University of Cincinnati

Jonas, Charles E. .....Instructor, Engineering Technologies Division

B.S., Ball State University
M.Ed., University of Cincinnati

Jones, Michael H. .....Instructor, Communication Skills/ Social Sciences Division

B.F.A., University of Cincinnati

Kaminski, Geraldine M., M.T. (ASCP) .....Dean, Health Technologies Division

B.S., University of Dayton
M.T.S., Catholic University of America
D.A., Catholic University of America

Keenan, Joseph N. .....Coordinator, Business Technologies Division

B.S., University of Cincinnati
M.Ed., University of Cincinnati

Kelly, Robert H., CRB, CA-S ....Coordinator & Program Chair, Business Technologies Division

A.B., University of Cincinnati
Certified Residential Broker, Realtors Nat'l. Marketing Institute
Sr. Certified Appraiser, American Assn. of Certified Appraisers

Kelly, Sue .....Co-op Coordinator, Engineering Technologies Division

B.S., Edgecliff College
M. Ed., Xavier University

Kindle, Joyce .....Adjunct Instructor, Communication Skills/ Social Sciences

B.A., Nazareth College
M.A., New York University

Kinne, Susan .....Adjunct Instructor Engineering Technologies Division

A.A.S., Cincinnati Technical College
B.A., University of Cincinnati
M.A., University of Cincinnati

Kinsella, John .....Coordinator, Business Technologies Division

Certified Master Chef, American Culinary Federation
Certified Chef, City & Guilds of London Institute
Royal Institute of Public Health & Hygiene
Certified Chef, Irish Panel of Chefs
Certified Executive Chef, American Culinary Federation
Certified Culinary Educator, American Culinary Federation

Kinzie, Paul W. .....Professor Emeritus, Business Technologies Division

B.S., University of Cincinnati
M.Ed., University of Cincinnati

Knepp, Linda. .....Instructor, Developmental Education

B.S., Capital University
B.Ed., Capital University

Kobberdahl, C.E. .....Coordinator, Business Technologies Division

B.S., University of North Dakota
M.Ed., University of Cincinnati

Kober, Thomas E. .....Assistant Dean, Health Technologies Division

B.A., Earlham College
M.S., University of Cincinnati
Ph.D., University of Cincinnati

Koester, Norbert. .....Adjunct Instructor, Physical Sciences/ Mathematics Division

A.A.S., Ohio College of Applied Science (O.M.I.)
B.S., University of Cincinnati

Kraus, Stephen, M.T. (ASCP) .....Adjunct Clinical Instructor, Medical Laboratory Technician Program Dearborn County Hospital, IN

B.S., Eastern Kentucky University

Krismer, Marianne, R.D. .....Program Director, Health Technologies Division

B.S., Edgecliff College
M.Ed., University of Cincinnati
R.D., University of Cincinnati General Hospital

Kuehn, Irvin C. .....Professor Emeritus, Business Technologies Division

B.S., Eastern Kentucky University

M.A., Eastern Kentucky University

Laemmle, Carolyn G., M.T. (ASCP), C.L.S. .Program Director, Health Technologies Division
B.A., Edgecliff College
M.T. (ASCP), St. Mary's Memorial Hospital School of Medical Technology
M.S., College of Mt. St. Joseph

Lalley, John .....Instructor, Physical Sciences/ Mathematics Division
B.S., Thomas More College

Lamey, Robert W. .....Instructor, Engineering Technologies Division
A.A.S., Cincinnati Technical College
B.S., University of Cincinnati

Lawrence, Yolanda C......Coordinator, Veterans Affairs Student Services Division
A.A.S., Northwood Institute
B.S.B.A., Xavier University

Leicht, Albert G. .....Coordinator, Business Technologies Division
B.S., West Virginia Institute of Technology
M.S., South Dakota State University

Leinginger, Donald .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S.M.E., University of Cincinnati

Lepp, Candace, R.R.A......Adjunct Clinical Instructor, Medical Record Program Providence Hospital
B.A., Ohio State University

Levy, Liliane.....Adjunct Instructor, Health Technologies Division
Ed.D., Berkendael, Brussels Belgium

Lewis, Carla, R.R.T......Adjunct Clinical Instructor, Health Technologies Division

Libis, Joseph, Jr......Adjunct Instructor, Communication Skills/ Social Sciences Division
B.S., Xavier University
M.Ed., Xavier University

Lieberman, Hope.....Instructor, Developmental Education
B.S., Wright State University
M.Ed., University of Cincinnati

Lierl, Debbie, R.R.T. .....Clinical Director, Respiratory Therapy Program Health Technologies Division
B.S., University of Cincinnati

Liette, Beth, R.R.A......Adjunct Clinical Instructor, Medical Record Program
B.S., Indiana University

Link, Dennis .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.A., University of Cincinnati

Littell, Timothy L......Instructor, Business Technologies Division
A.A.S., Cincinnati Bible College

Lower, Joe R......Professor Emeritus, Business Technologies Division
B.S., Ohio State University
M.A., Ohio State University

Macke, James .....Coordinator, Business Technologies Division
B.S., Xavier University
B.A., Xavier University
M.B.A., Xavier University

Mains, Keith G......Instructor, Business Technologies Division
Certification, Northern Kentucky University

Marcotte, James A......Director, Developmental Education
A.A.S., Purdue University
B.S., Indiana State University
M.Ed., University of Cincinnati
Ed.D., University of Cincinnati

Marcotte, Susan .....Counselor/Coordinator, Health Technologies Division
B.S., University of Cincinnati
B.S.Ed., University of Cincinnati
M.A., University of Cincinnati

Marsh, Ellen, RRA .....Adjunct Clinical Instructor, Medical Record Program Jewish Hospital
B.S., Eastern Kentucky University

Martin, John .....Adjunct Faculty, Physical Sciences/ Mathematics Division
B.S., Xavier University
M.S., Ph.D., University of Cincinnati

Maschinot, Nancy, R.R.T......Adjunct Clinical Instructor, Health Technologies Division
A.S.S., Cincinnati Technical College

Matillar, Pat.....Adjunct Clinical Instructor, Dietetics Program Cincinnati Health Department
B.S., Purdue University
M.S., Purdue University

McDannold, Cathy, R.R.A......Adjunct Clinical Instructor, Medical Record Program St. Elizabeth Medical Center

McDermott, Tim, R.N......Adjunct Clinical Instructor, Surgical Technology Program St. Elizabeth's Medical Center-North

McFerrin, Lela, R.R.A. .....Adjunct Clinical Instructor, Medical Record Program The Christ Hospital
B.A., Southwestern Memphis
B.S., University of Tennessee

McGee, Gloria, A.R.T.....Adjunct Clinical Instructor, Medical Record Program Glen Manor Home for the Jewish Aged
A.A.S, Cincinnati Technical College

McLain, Robert, P.E......Instructor Engineering Technologies Division
B.S.E.E., University of Cincinnati
M.B.A., University of Cincinnati

Mellinger, Daniel O......Instructor, Communication Skills/ Social Sciences Division
A.B., University of Tennessee
M.Ed., University of Cincinnati

Meyer, Don J., CMfgE .....Instructor, Engineering Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Miller, Tom.....Coordinator, Business Technologies Division
B.S., West Virginia Institute of Technology

Mindhardt, Katye L......Instructor, Business Technologies Division
A.A.B., University of Cincinnati
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Moon, Robert.....Instructor, Physical Sciences/ Mathematics Division
B.S., East Tennessee State University
M.S., University of Cincinnati
M.S., University of North Carolina

Morgan, Bonnie, ART .....Adjunct Clinical Instructor, Medical Record Program Ft. Hamilton-Hughes Memorial Hospital
A.A.S., Cincinnati Technical College

Mullins, Billy D......Instructor, Engineering Technologies Division
B.S.E.E., University of Kentucky

Murray, Robert .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Xavier University

Myatt, James F. .....Coordinator, Business Technologies Division

St. Helen's Technical College
Certified Chef, City & Guilds of London Institute
Royal Institute of Public Health & Hygeine
Chef Patissiere, Union of Lancashire & Cheshire Institute

Nakoff, Michael H., C.S.P. .....Coordinator, Business Technologies Division
B.S., University of Cincinnati

Nevels, Doyle .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Cumberland College
M.Ed., Xavier University

Newbold, Thomas .....Co-op Coordinator, Engineering Technologies Division
A.S., University of Cincinnati
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Nicholson, William .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S.E.S., University of Cincinnati

Nichey, Wilma Jean, ART .....Adjunct Clinical Instructor, Medical Record Program Holmes Hospital
A.A.S., Cincinnati Technical College

Nolan, Timothy D. .....Instructor, Communication Skills/ Social Sciences Division
A.B., Xavier University

Norton, Jude, PA, CST .....Instructor, Health Technologies Division
A.A.S., Cincinnati Technical College
B.A., Northern Kentucky University
M.S., University of Cincinnati

O'Malley, Jane .....Adjunct Clinical Instructor, Medical Records Program Fairfield Center
A.A.S., Cincinnati Technical College

Otchere, Baffour A. .....Adjunct Instructor, Physical Sciences/ Mathematics Division
Diploma B.Ed., Technical Teachers College - Ghana
B.G.S., Xavier University
M.B.A., Xavier University

Otten, Thomas .....Adjunct Instructor, Physical Sciences/ Mathematics Division
A.B., Thomas More College
M.Ed., Xavier University

Owsley, Louis E. .....Instructor, Business Technologies Division
B.S., Xavier University
M.Ed., University of Cincinnati

Penn, Leonard R. .....Instructor, Business Technologies Division
B.A., University of Cincinnati
M.Ed., Xavier University

Perry, Frances, R.N. .....Adjunct Instructor, Health Technologies Division
R.N., Georgia Baptist School of Nursing

Peter, Timothy .....Adjunct Instructor, Communication Skills/ Social Sciences Division
B.A., Otterbein College
M.Ed., Xavier University

Petitto, Diana, R.N. .....Adjunct Clinical Instructor, Surgical Technology Program Clermont Mercy Hospital

Phillips, Verale W., CDP .....Coordinator, Business Technologies Division
A.A., University of Cincinnati
B.S., University of Cincinnati
M.B.A., Xavier University
Certificate, Data Processing, Institute for Certification of Computer Professionals
Certificate, Data Education, Certification Council

Phillips-Estes, Joanne .....Program Director, Occupational Therapy Assistant Program
B.S., Eastern Michigan University
M.S. Candidate, Mercy College of Detroit

Pitman, Jr., Lloyd L. .....Instructor, Business Technologies Division
B.S., University of Cincinnati
M.Ed., Xavier University

Ploehs, John .....Adjunct Instructor, Communication Skills/ Social Sciences Division
B.A., Xavier University

Portune, Alice .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., University of Cincinnati
B.E., University of Cincinnati
M.A.T. in Mathematics, University of Cincinnati

Proffitt, Herbert .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Cumberland College
M.A., Union College
M.M., Utah State University

Pucke, Lawrence E. .....Instructor, Physical Sciences/ Mathematics Division
B.S., Xavier University
M.Ed., Xavier University

Pursley, Philip .....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S., Morehead State University
M.Ed., University of Cincinnati

Raffignone, April, R.R.A. .....Adjunct Clinical Instructor, Medical Record Program Good Samaritan Hospital

Rahmes, Catherine M. .Assistant Dean, Communication Skills/ Social Sciences Division
A.B., Miami University
M.A., Miami University

Rauch, Terrence J. .....Adjunct Instructor Engineering Technologies Division
A.A.S., Cincinnati Technical College

Raymond, Robert .....Adjunct Instructor, Engineering Technologies Division

Reardon, Martin ....Adjunct Instructor, Communication Skills/ Social Sciences Division
B.S., Xavier University
M.Ed., Xavier University

Rhein, William G. .....Professor Emeritus, Engineering Technologies Division
B.S.I.M., University of Cincinnati
M.B.A., University of Cincinnati

Richard, Janette, R.R.A. .....Coordinator, Health Technologies Division
B.S., Ohio State University

Richter, Robert .....Adjunct Instructor, Communications Skills/ Social Sciences Division
B.S., Xavier University

Rieck, Alyce G. .....Instructor, Communication Skills/ Social Sciences Division
A.B., San Diego State University
M.Ed., University of Cincinnati

Rinck, H. Anthony .....Professor Emeritus, Engineering Technologies Division
B.S., Xavier University
M.Ed., Xavier University

Robinson, Daphne T., CHUC .....Coordinator, Health Technologies Division
A.A., University of Cincinnati
B.S., University of Cincinnati

Romano, Robert .....Instructor, Engineering Technologies Division
B.S.E.E., Ohio State University

Rosa, Effie M. .....J.T.P.A. Couselor/Advisor Developmental Education
B.S., Miami University
M.Ed., University of Cincinnati
Ed.D., University of Cincinnati

Rost, Carolyn .....Adjunct Instructor,

Developmental Education
B.S. University of Cincinnati
M.A. Northern Kentucky University

Ruoff, Sandy, CPA .....Coordinator
Business Technologies Division
B.B.A., University of Cincinnati

Rowe, Atron .....Adjunct Instructor, Physical Sciences
Mathematics Division
A.B., University of North Carolina
M.S., North Carolina State

Rupp, Rodney .....Instructor, Physical Sciences/
Mathematics Division
B.S., University of Cincinnati
B.Ed., University of Cincinnati

Samuel, Eugenia.....Instructor,
Developmental Education
B.S., University of Cincinnati

Sanders, Robert .....Adjunct Instructor, Physical Sciences/
Mathematics Division
B.S., Ohio State University
M.A., Ohio State University
M.S., University of New Hampshire

Saunders, Harriet, M.T.(ASCP) ....Adjunct Clinical Instructor,
Medical Laboratory Program
Deaconess Hospital
B.S., University of Cincinnati

Saylor, Janet .....Adjunct Instructor, Communication Skills/
Social Sciences Division
B.S., University of Cincinnati

Saylor, Sondra, ART.....Clinical Adjunct Instructor,
Medical Record Program
Mother Margaret Hall
A.A.S., Cincinnati Technical College

Schaffeld, Linda .....Coordinator,
Business Technologies Division
A.A.B., Cincinnati Technical College
B.B.A. University of Cincinnati

Schaller, Roger N. .....Co-op Coordinator,
Engineering Technologies Division
A.A.S, Cincinnati Technical College
B.S., State University of Wisconsin

Schlueter, Ralph C. .....Professor Emeritus,
Physical Sciences/Mathematics Division
B.S., Xavier University
M.Ed., Xavier University

Schmid, James E. .....Co-op Coordinator & Program Chair,
Engineering Technologies Division
B.S., Embry Riddle Aeronautical University
A&P License, Alabama Aviational Technical College
M.Ed., Xavier University

Schmidt, Ronald, M.T. (ASCP) ....Adjunct Instructor, Physical
Sciences/Mathematics Division
A.A.S., Alfred State Technical College
B.A., University of Buffalo
M.A., Central Michigan University

Schulte, Clifford A., P.E. .....Instructor
Engineering Technologies Division
B.S.E.E., University of Cincinnati

Schwegman, Charlene, R.N......Adjunct Clinical Instructor,
Medical Record Program
McCullough-Hyde Hospital
B.A., College of St. Francis, Illinois

Scott, Sandra, R.D. .....Adjunct Clinical Instructor,
Dietetics Program
Clifton Care Center
B.S., University of Cincinnati
R.D., University of Cincinnati

Sefton, J. Richard .....Instructor,
Business Technologies Division
B.S., University of Cincinnati
M.Ed., University of Cincinnati

Seyed, Shawram.....Adjunct Instructor, Physical Sciences/
Mathematics Division
B.S.E.E., Louisiana State University
M.S.E.E., University of Cincinnati
Ph. D., University of Cincinnati

Shepard, John.....Adjunct Instructor, Physical Sciences/
Mathematics Division
B.S., University of Cincinnati
M.A., University of Cincinnati

Shirk, Peggy, R.D.A. .....Adjunct Clinical Instructor,
Medical Records Program
Mercy Hospital, Fairfield

Simons, Sandy, R.N. .....Adjunct Clinical Instructor,
Surgical Technology Program
Bethesda North Hospital

Sketch, Gregory, P.S. .....Program Chair,
Engineering Technologies Division
A.A.S., Cincinnati Technical College
B.S.C.E., Ohio State University
B.S.S., Ohio State University

Smith, Donna, R.N......Adjunct Clinical Instructor,
Surgical Technology Program
Fort Hamilton Hughes Medical Center

Smith, Gail, ART .....Coordinator,
Health Technologies Division
A.A., Eastern Kentucky University

Smith, Swanya d'Andre .....Coordinator,
Business Technologies Division
A.A.B., Cincinnati Technical College

Sowers, James, A.M.T. .....Adjunct Clinical Instructor,
Medical Laboratory Program
Brown County Hospital
A.M.T., U.S. Army Medical Service School

Speller, Sandra, ART.....Instructor,
Health Technologies Division
A.A. Cincinnati Technical College

Spraley, Judith, A., R.N. .....Program Director,
Health Technologies Division
B.S.N., Mount St. Joseph College
M.Ed., University of Cincinnati

Sprinkle, Russell .....Instructor,
Business Technologies Division
N.I.A.S.E. Certification

Stark, Thomas J......Dean, Physical Sciences/
Mathematics Division &
Communication Skills/
Social Sciences Division
B.S., Xavier University
M.Ed., Xavier University

Steele, Dewey, ART .....Adjunct Clinical Instructor,
Medical Record Program
Bethesda Oak Hospital

Steidley, V. Kenneth .....Professor Emeritus,
Engineering Technologies Division
B.S., Northeast Missouri State University

Stewart, Briggetta E......Professor Emeritus
Business Technologies Division
A.A.B., Cincinnati Technical College
Certified Protection Personnel, American Society for Industrial
Security

Stewart, Sheryl .....Coordinator,
Business Technologies Division
B.A., Thomas More College

Stock, William.....Coordinator,
Business Technologies Division
A.A.B., Cincinnati Technical College
A.A.S., Cincinnati Technical College
B.S., University of Cincinnati
Certified Food and Beverage Executive, Educational Institute of
American
Hotel & Motel Association
Certified Culinary Educator, American Culinary Federation
Certified Executive Chef, American Culinary Federation

Stoll, Kenneth V......Dean,
Engineering Technologies Division

B.S., Miami University
M.Ed., University of Cincinnati

Stormer, Thomas, R.R.T. .....Coordinator/Instructor, Health Technologies Division
A.A.S., Sinclair Community College
B.S., University of Cincinnati

Stratton, Beverly, ART .....Adjunct Clinical Instructor, Medical Record Program Jewish Hospital

Suddendorf, Lawrence R., Ed.D., M.T.(ASCP) ...Coordinator, Health Technologies Division
B.S.M.T., University of Cincinnati
M.T.(ASCP), Cincinnati General Hospital School of Medical Technology
M.Ed., University of Cincinnati
Ed.D., University of Cincinnati

Suer, Kenneth .....Adjunct Instructor, Communication Skills/ Social Sciences Division
A.A., University of Cincinnati
B.S.Ed., University of Cincinnati
M.Ed., Xavier University

Sulek, Carl E. .....Professor Emeritus, Business Technologies Division
B.S., Ohio University
M.Ed., University of Cincinnati

Sullivan, Elizabeth, CSP .....Coordinator, Business Technologies Division
B.S., Miami University
Certified Systems Professional, Association for Systems Management

Sunderhaus, Edward .....Instructor, Physical Sciences/ Mathematics Division
B.S., Xavier University

Swanson, Richard .....Instructor, Physical Sciences/ Mathematics Division
B.S., University of Cincinnati

Sykes, Rebecca, A.R.T. .....Adjunct Clinical Instructor, Medical Record Program Bethesda Hospital
A.A.S., Eastern Kentucky University
B.S., University of Cincinnati

Taylor, Cindy, R.R.A. .....Clinical Adjunct Instructor, Medical Record Program Providence Hospital
B.S., Eastern Kentucky University

Thomas, Jerri .....Co-op Coordinator, Engineering Technologies Division
A.A.S., Northern Kentucky University
B.S., Northern Kentucky University
M.Ed., University of Cincinnati

Tulloss, William S. .....Instructor, Physical Sciences/ Mathematics Division
B.E.E., Ohio State University
M.S.E.E., Ohio State University
M.S., Xavier University

Uhl, Robert, M.T. (ASCP) .....Adjunct Clinical Instructor, Medical Laboratory Program St. Francis/St. George Hospital
B.A., Thomas More College
M.Ed., Xavier University
M.T. (ASCP), Good Samaritan School of Medical Technology

Umbaugh, Sharon S. .....Adjunct Instructor, Communication Skills/Social Sciences
B.A., Miami University

Van Camp, Clayton, M. .....Professor Emeritus, Engineering Technologies Division
A.A.S., Ohio College of Applied Science

Van Horn, Robert .....Industrial Trainer, Business Technologies Division
B.S., Northern Kentucky State University
Certified Master Automotive Technician

Vetter, Jeffery A. .....Coordinator of Academic Computing Business Technologies Division
A.A.B., Cincinnati Technical College
B.S., Xavier University

von Kampen, Karl N. .....Coordinator, Business Technologies Division
Certified Master Automotive Technician
B.S., Bradley University
M.S., Bradley University

Walston, Cathy, RRT .....Adjunct Clinical Instructor, Respiratory Therapy Program Jewish Hospital

Walters, Nancy L., M.T. (ASCP), CMA .....Coordinator, Health Technologies Division
A.B., Lindenwood College

Walton, Gary .....Coordinator, Business Technologies Division
A.A.B., Cincinnati Technical College
B.S., University of Cincinnati

Ward, Beverly, ART .....Clinical Adjunct Instructor, Medical Record Program Clermont Mercy Hospital
A.A.S., Cincinnati Technical College

Watts, Olivia, R.N. .....Program Director, Health Technologies Division
B.S.N., University of Cincinnati

Weaver, Phyllis, R.R.T. .....Adjunct Clinical Instructor, Respiratory Therapy Program Bethesda Hospital
B.S., University of Cincinnati

Webster, Gary M. .....Program Chair, Engineering Technologies Division
B.S.E.E., Ohio State University

Weichold, Edward .....Adjunct Instructor, Engineering Technologies Division
A & P License, Cincinnati Technical College
A.A.S., Cincinnati Technical College

Weingartner, Paul .....Instructor, Engineering Technologies Division
B.S.E.E.T., University of Cincinnati

Weitmarschen, Jeanne, ART,CTR ..Adjunct Clinical Instructor, Medical Record Program Good Samaritan Hospital
A.A.S., Cincinnati Technical College

White, Sharon .....Coordinator, Business Technologies Division
B.A., Fisk University
M.B.A., Xavier University

Wiebe, Harold, P.E. .....Adjunct Instructor, Engineering Technologies Division
B.S.E.E., University of Cincinnati
M.S.E.E., University of Cincinnati

Wilder, Tim, R.R.T. .....Adjunct Clinical Instructor, Respiratory Therapy Program Bethesda Hospital
B.S., University of Cincinnati

Williams, Henry F., CPA .....Coordinator, Business Technologies Division
B.B.A., University of Cincinnati
M.B.A., Xavier University

Willmore, Sharman, R.D. .....Instructor, Dietetics Program
B.S., Purdue University
M.S., Purdue University

Wilson, Cornelius .....Coordinator, Business Technologies Division
B.A., University of Cincinnati

Wilz, Mary E., M.T.(ASCP) .....Clinical Adjunct Supervisor, Medical Laboratory Program Booth Memorial Hospital
B.H.S., University of Kentucky
M.S., University of Cincinnati

Winkle, LaVerne .....Professor Emeritus, Engineering Technologies Division
E.E., University of Cincinnati

Witt, Brad .....Adjunct Instructor, Communication Skills/ Social Sciences
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Wolf, Ann, R.D. .....Adjunct Clinical Instructor, Dietetics Program Nutrition Consultant
R.D., Michael Ries Hospital
B.S., Incarnate Word College
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R.N., The Christ Hospital School of Nursing
B.S.N., Northern Kentucky University
Wolterman, Deborah .....Adjunct Clinical Instructor Medical Laboratory Program Jewish Hospital
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B.S., Xavier University
M.D., University of Cincinnati
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B.S., Murray State University
M.Ed., Murray State University
Wright, Carol, R.D. .....Adjunct Clinical Instructor, Dietetics Program St. Francis/St. George Hospital
B.S., Illinois State University
R.D., Good Samaritan Hospital
Wunderlich, William ....Adjunct Instructor, Physical Sciences/ Mathematics Division
B.S.M.E., University of Cincinnati
M.S.M.E., University of Cincinnati
M.S.E.D., Xavier University
Wyatt, Walter W. .....Director, Cooperative Education, Business Technologies Division
B.S., Ohio State University
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A.A.S., Cincinnati Technical College
B.S.E.E., Ohio State University
Yoshikawa, Catherine, M.T. (ASCP) Adjunct Clinical Instructor, Medical Laboratory Program Drake Memorial Hospital
B.S., University of Cincinnati
Youngpeter, Donald, CMfgE. .....Program Chair, Engineering Technologies Division
B.S.M.E., University of Cincinnati
M.S.M.E., University of Cincinnati
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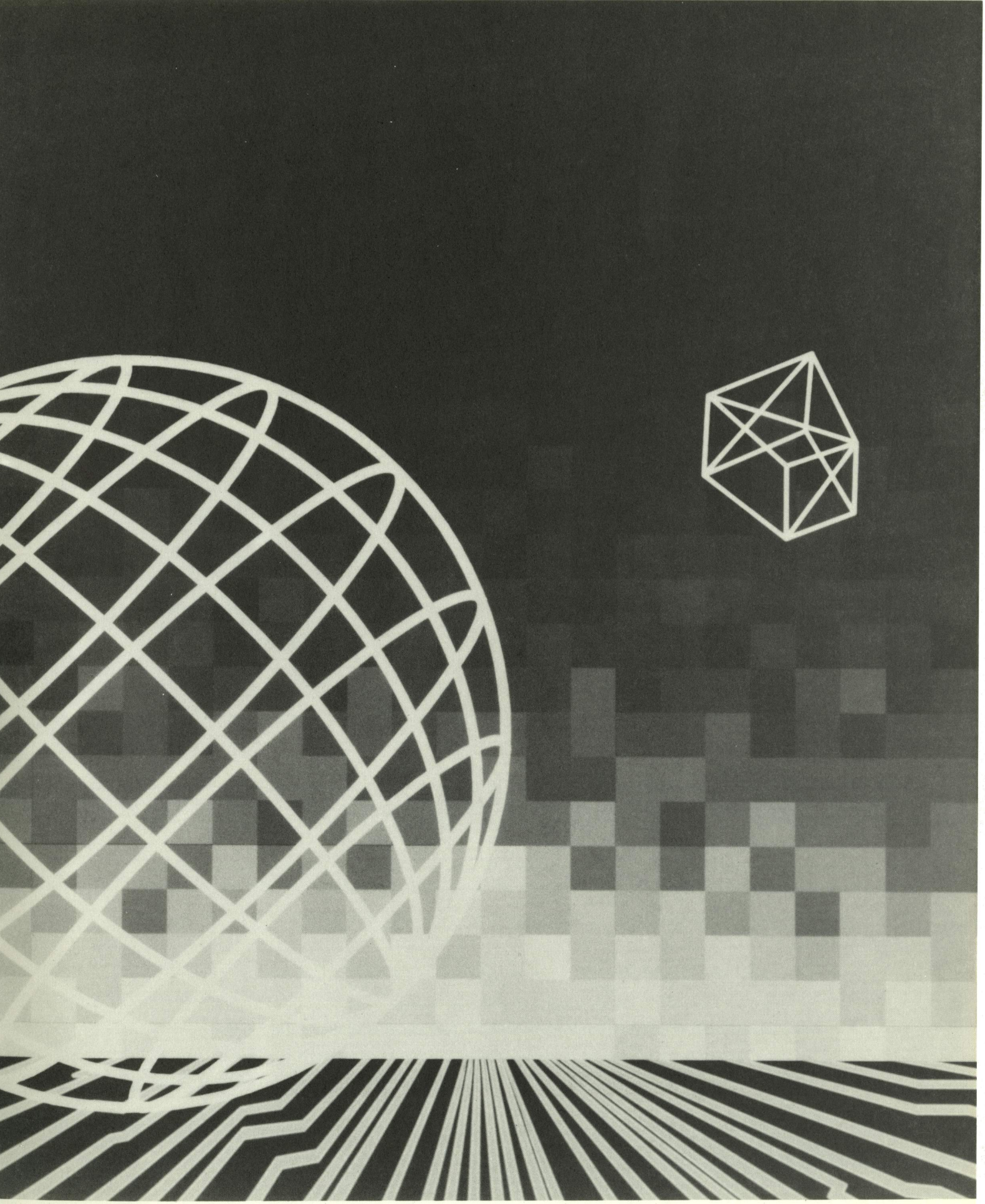

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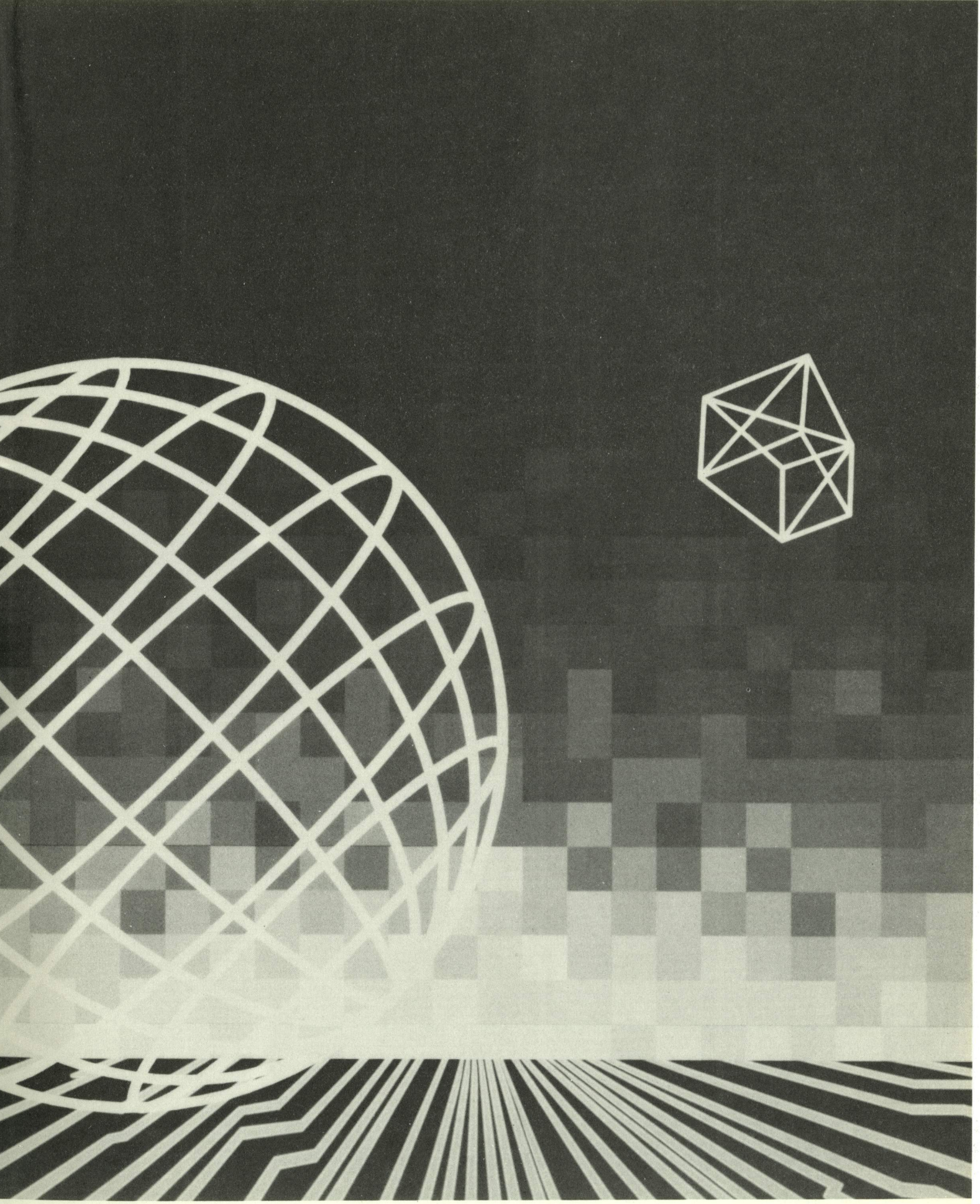

CALENDAR

CALENDAR

SEPTEMBER, 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1 NO CLASSES/OFFICES OPEN OPEN REGISTRATION 8:00 a.m.-4:30 p.m.	**2** June Term Grades Due 4:00 pm	**3**
4	**5** Labor Day/College Closed	**6** No Classes/Offices Open Last day to withdraw with 100% refund—September term Registration 8:00 a.m.-7:00 p.m.	**7** September Term classes begin Senior Citizens Registration Co-op Grades Due	**8** Late fee assessed for registration	**9** June term grades mailed Registration 8:00 a.m.-4:30 p.m.	**10**
11	**12** Registration 8:00 a.m.-4:30 p.m.	**13** Last day to register for September term or add courses except co-op Last day to withdraw with 80% refund—September term Co-op Grades Due June term	**14** Co-op Registration 8:00 a.m.-7:00 p.m.	**15** Co-op Registration Only 8:00 a.m.-4:30 p.m.	**16**	**17**
18 Commencement Music Hall	**19** Co-op Registration Only 8:00 a.m.-4:30 p.m.	**20** Last day to register for co-op FTE reporting date Last day to withdraw with 60% refund—September term	**21** Last day for November Term Pre-registration Last day to petition—November Term graduates No Registration or Drop/Add Activity	**22**	**23**	**24**
25	**26**	**27** Board of Trustees Meeting	**28**	**29**	**30**	

OCTOBER, 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4	5 Bills for November term mailed	6	7	8
9	10	11 Last day to change "I" grades from June term	12	13	14	15
16	17 Course Change — Drop/Add only 8:00 a.m.-4:30 p.m.	18	19 Bills for November term due No pays—voided pre-registration Course Changes — Drop/Adds 8:00 a.m.-4:30 p.m. Cashier Open Until 7:00 p.m.	20 No Registration or Drop/Add Activity	21	22
23	24 No Registration or Drop/Add Activity Graduation Petitions for January Term begins (end November 24)	25 Board of Trustees Meeting	26	27 Last Day to Withdraw With a Grade of "W" for Sept. Term	28	29
30						

NOVEMBER, 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 January term pre-registration begins (ends December 1) January Term schedule available Registration 8:00 a.m.-7:00 p.m.	**2**	**3** Registration 8:00 a.m.-4:30 p.m.	**4**	**5**
6	**7** Registration 8:00 a.m.-7:00 p.m.	**8**	**9** September term classes end Last day to change "IP" grades from June Term	**10** No Classes/Offices Open Registration 8:00 a.m.-4:30 p.m.	**11** College Closed Veterans Day Observed	**12**
13	**14** Last day to withdraw with 100% refund—November term No Classes/Offices Open	**15** November Term Classes begin Senior Citizens Registration September term grades due 4:00 p.m. Registration 8:00 a.m.-7:00 p.m.	**16** Late fee assessed for registration	**17** Registration 8:00 a.m.-4:30 p.m.	**18**	**19**
20	**21** Last day to register for November term or add courses except co-op Last day to withdraw with 80% refund—November term September term grade reports mailed Registration 8:00 a.m.-4:30 p.m.	**22** Board of Trustees Meeting Co-op Registration only 8:00-4:30 p.m.	**23** Sept. Term Co-op Grades Due Co-op Registration only 8:00-7:00 p.m.	**24** Thanksgiving College Closed	**25** College Closed	**26**
27	**28**	**29** Last day to petition–January Term graduates	**30** Last day to withdraw with 60% refund–November term Last day to register for co-op Co-op Registration only 8:00-4:30 p.m.			

DECEMBER, 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1 January term pre-registration ends	2	3
4	5	6	7	8	9	10
11	12	13	14 Bills for January term mailed	15	16	17
18	19	20	21 Last day to change "I" grades from September term	22	23	24
25 Christmas Day	26 College Closed	27 Offices Open	28 Offices Open	29 Offices Open College Closed	30 College Closed	31

No Classes

Student Winter Recess

No Registration or Drop/Add Activity

JANUARY, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 New Year's Day	**2** November term Classes Resume Course Changes - Drop/Adds 8:00 a.m.-4:30 p.m.	**3**	**4** Bills for January term due No pays-voided pre-registration Drop/Add Activity 8:00 a.m.-4:30 p.m. Cashier Open Until 7:00 p.m.	**5** No Registration or Drop/Add Activity	**6**	**7**
8	**9** No Registration or Drop/Add Activity	**10**	**11**	**12** Graduation Petitions for April Term begins (ends February 14)	**13** Last day to withdraw with a "W" for November Term	**14**
15	**16** College Closed Martin Luther King Day Observed	**17** April Term schedule available April term pre-registration begins (ends February 10) Registration 8:00 a.m.-7:00 p.m.	**18**	**19**	**20** Registration 8:00 a.m.-4:30 p.m.	**21**
22	**23** Registration 8:00 a.m.-7:00 p.m.	**24** Board of Trustees Meeting	**25**	**26** Registration 8:00 a.m.-4:30 p.m.	**27** November term classes end Last day to change "IP" grades from September term	**28**
29	**30** Last day to withdraw with 100% refund—January term Registration 8:00 a.m.-7:00 p.m.	**31** January Term Classes begin Senior Citizens Registration November term grades due - 4:00 p.m.				

FEBRUARY, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 Late fee assessed for registration Registration 8:00 a.m.-7:00 p.m.	**2** Registration 8:00 a.m.-4:30 p.m.	**3**	**4**
5	**6** November term grade reports mailed Registration 8:00 a.m.-4:30 p.m.	**7** Co-op Registration 8:00 a.m.-4:30 p.m.	**8** Co-op Registration only 8:00 a.m.-7:00 p.m.	**9** Co-op Registration Only 8:00 a.m.-4:30 p.m.	**10** April term pre-registration ends Nov. Term Co-op Grades Due	**11**
12	**13** Last day to register for co-op Last day to withdraw with 60% refund—January term Co-op Registration only 8:00-4:30 p.m.	**14** Valentines Day Last day to petition April Term graduates	**15**	**16**	**17**	**18**
19	**20** Presidents Day College Closed	**21**	**22**	**23**	**24**	**25**
26	**27**	**28** Board of Trustees Meeting				

MARCH, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 Bills for April term mailed	**2**	**3**	**4**
5	**6**	**7** Last day to change "I" grades from November term	**8**	**9**	**10**	**11**
12	**13** Course Changes — Drop/Adds Only 8:00 a.m.-4:30 p.m.	**14**	**15** Bills for April term due. No pays—voided pre-registration Course Changes Drop/Adds 8:00 a.m.-4:30 a.m. Cashier Open Until 7:00 p.m.	**16** No Registration or Drop/Add Activity	**17**	**18**
19	**20** No Registration or Drop/Add Activity	**21**	**22** Graduation Petitions for June Term begins (ends April 25)	**23** Last day to withdraw with a "W" for Jan. term	**24** Good Friday College Closed	**25**
26 Easter	**27** June term pre-registration begins (ends April 21) June term schedule available	**28** Board of Trustees Meeting Registration 8:00 a.m.-7:00 p.m.	**29**	**30** Registration 8:00 a.m.-4:30 p.m.	**31**	

School Closed

APRIL, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 Registration 8:00 a.m.-7:00 p.m.	4	5	6 January term classes end Last Day to Change "IP" Grades from the Nov. Term Registration 8:00 a.m.-4:30 p.m.	7 No Classes/ Offices Open	8
9	10 Last day to withdraw with 100% refund—April Term No Classes/ Offices Open Registration 8:00 a.m.-7:00 p.m.	11 April term classes begin January term grades due 4:00 p.m.	12	13 Registration 8:00 a.m.-4:30 p.m.	14	15
16	17 Last day to register for April terms or add courses except co-op January term grade reports mailed Last day to withdraw with 80% refund—April term Registration 8:00 a.m.-4:30 p.m.	18 Co-op Registration Only 8:00 a.m.-4:30 p.m.	19 Co-op Registration Only 8:00 a.m.-7:00 p.m.	20 Jan. Term Co-op Grades Due Co-op Registration 8:00 a.m.-4:30 p.m.	21 June term pre-registration ends	22
23 30	24 Last day to withdraw with 60% refund—April Term Last Day to Register for Co-op Co-op Registration 8:00 a.m.-4:30 p.m.	25 Last day to petition June Term graduates Board of Trustess Meeting	26	27	28	29

MAY, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	**2**	**3**	**4**	**5**	**6**
7	**8**	**9**	**10** Bills for June term mailed	**11**	**12**	**13**
14	**15** Last day to change "I" grades from January term	**16**	**17**	**18**	**19**	**20**
21	**22** Course Changes-Drop/Adds Only 8:00 a.m.-4:30 p.m.	**23** Board of Trustees Meeting	**24** Bills for June term due No pays—voided pre-registration Course Changes Drop/Adds 8:00 a.m.-4:30 p.m. Cashier Open Until 7:00 p.m.	**25** No Registration or Drop/Add Activity	**26**	**27**
28	**29** Memorial Day College Closed	**30** Last day to withdraw with a "W" for April term No Registration or Drop/Add Activity	**31** Graduation petitions for September Term begins (ends July 14)			

JUNE, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1 No Registration or Drop/Add Activity	2	3
4	5 September term pre-registration begins (ends July 14) September term schedule available	6 Registration 8:00 a.m.-7:00 p.m.	7	8 Registration 8:00 a.m.-4:30 p.m.	9	10
11	12	13 Last day to change "IP" courses from January term April term classes end Registration 8:00 a.m.-7:00 p.m.	14	15 No Classes/Offices Open Registration 8:00 a.m.-4:30 p.m.	16 April term grades due—4:00 p.m.	17
18	19	20	21 Summer Recess — Offices Open Registration 8:00 a.m.-4:30 p.m.	22 April term grade reports mailed	23	24
25	26 No Classes/Offices Open Registration 8:00 a.m.-7:00 p.m.	27 Last day to withdraw with 100% refund—June Term April Term Co-op Grades Due Board of Trustees Meeting	28 June term classes begin Senior Citizens Registration	29 Late fee assessed for registration Registration 8:00 p.m.-4:30 p.m.	30	

JULY, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 Registration 8:00 a.m.-4:30 p.m.	4 Independence Day College Closed	5 Last day to register for June term or add courses except co-op Last day to withdraw with 80% refund—June Term Registration 8:00 a.m.-4:30 p.m.	6 Co-op Registration Only 8:00 a.m.-4:30 p.m.	7	8
9	10 Co-op Registration Only 8:00 a.m.-4:30 p.m.	11	12 Last day to register for co-op Last day to withdraw with 60% refund—June term Co-op Registration 8:00 a.m.-7:00 p.m.	13	14 September Term pre-registration ends Last day to petition September Term graduates	15
16	17	18	19	20	21	22
23	24	25	26 Bills for September Term mailed	27	28	29
30	31					

AUGUST, 1989

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2 Last day to change "I" grades from April term	3	4	5
6	7 Course Changes-Drop/Adds Only 8:00 a.m.-4:30 p.m.	8	9 Bills for September term due—No pays—voided pre-registration 8:00 a.m.-4:30 p.m. Course Changes Drop/Add Cashier Open Until 7:00 p.m.	10 No Drop/Add Activity No Registration	11	12
13	14 No Registration or Drop/Add Activity	15	16 Graduation Petitions for November Term begins (ends September 20)	17 Last day to withdraw with a grade of "W" for June term	18	19
20	21 November term pre-registration begins (ends September 20) Final November term schedule available	22 Board of Trustees Meeting Registration 8:00 a.m.-7:00 p.m.	23	24 Registration 8:00 a.m.-4:30 p.m.	25	26
27	28	29 Registration 8:00 a.m.-7:00 p.m.	30 June Term Classes end Last day to change "IP" grades from April term	31 No Classes/ Offices Open Registration 8:00 a.m.-4:30 p.m.	(Sept. 1) June Term grades due by 4 p.m.	

Contract Training

Cincinnati Technical College can provide custom-designed programs, short and long-term training, credit and noncredit courses to business, industry, and professional organizations in a variety of areas, including the following:

Communications
- Communicating Credibility
- Communications that Get Results
- Group Dynamics
- Guest/Customer Relations
- Interpersonal Skills
- Listening Skills
- Motivating your Employee
- Negotiating Skills
- Public Speaking & Presentations
- Writing Skills for Technical Professionals

Electrical/Electronics
- Basic Industrial Electricity with Troubleshooting
- Electrical Maintenance
- Electrical Motors and Controls
- Electrical Power Distribution
- Electronic Troubleshooting
- Energy Management
- Process Control
- Programmable Logic Controller

Finance
- Basic Accounting Principles
- Fundamentals of Budgeting
- Finance and Accounting for Non-financial Managers
- Fundamentals of Financial Management

Health
- Certification Review
- EKG Training
- Food Service Management
- Health Care Management Techniques
- Medical Record Coding
- Surgical Techniques
- Unit Clerk Training

Maintenance
- Electrical Troubleshooting
- Mechanical Drives & Linkages
- Safe Use of Hand/Portable Power Tools
- Welding

Management
- Building Leadership Skills
- Coaching and Counseling Skills
- Creative Problem Solving and Decision Making
- Executive Writing
- Increasing Employee Effectiveness
- Interviewing and Hiring the Best Employees
- Leading Productive Meetings
- Leadership Styles
- Management Skills and Techniques for the First Line-Supervisor
- Advanced Management Skills and Techniques for the First-Line Supervisor
- Managing Change
- Managing Conflict
- Managing People
- Managing through Influence
- Performance Appraisals
- Preparing a Business Plan
- Presenting a Positive Executive Image
- Principles of Learning
- Project Management
- Stress Management
- Supervisor Training Groups
- Team Building
- Time Management
- Training the Trainer
- Transitional Management

Manufacturing
- Applied Statistics and Quality Design
- Blueprint Reading
- Computer Assisted Manufacturing (CAM)
- Manufacturing Processes
- Materials Handling
- Measurement and Metrology
- NC/CNC Programming
- Production Costs and Controls
- Shop Math
- Statistical Process Control (SPC)
- Tool-Die-Jig and Fixtures

Marketing/Sales
- Fundamentals of Marketing
- Fundamentals of Sales Management for the Newly-Appointed Manager
- Principles of Professional Selling
- Sales Presentations and Demonstrations

Math/Science
- Programming:
  - Basic
  - "C"
  - FORTH
  - PASCAL

Mechanical
- Computer Aided Design/Drafting (CADD)
- Hydraulics and Pneumatics
- Mechanical Drives & Linkages

Printing Industry Training Programs
- Bindery Method Procedures
- Cold Type Process
- Color Separation
- Color Stripping
- Computer Graphics
- Computer Graphic Typesetting
- Estimating
- Estimating Preparation
- Flexo Photography
- Graphic Arts Processes
- Graphic Arts Workshop
- Layout and Design
- Offset Press Operation
- Photolithography I & II
- Proofreading and Copy Preparation
- Relief Presswork I & II
- Screen Printing
- Survey of Printing Inks

Personal Development
- Setting and Achieving Personal Goals
- Improving Memory
- Beginning French
- Beginning German
- Beginning Italian
- Beginning Spanish

Personnel Administration
- Compensation and Benefits
- Basic Wage and Salary Administration
- Advanced Wage and Salary Administration
- Employee Discipline and Grievance Handling
- How to Practice Affirmative Action
- Issues and Personnel Law
- Negotiating and Administering the Labor Contract
- Simulated Collective Bargaining
- Termination at Will

Purchasing
- Buyer Basics
- Advanced Buyer Basics
- Purchasing and Materials Management

Secretarial
- Communication Skills for Secretaries
- Office Procedures
- Secretary and Administrative Assistant as Manager
- Telephone Techniques

Skills Assessment and/or Development
- Reading Comprehension
- Grammar
- Writing
- Mathematics

Software
- Computer Literacy
- Introduction to Lotus 1-2-3
- Advanced Lotus 1-2-3
- Lotus 1-2-3 and Macros
- Introduction to MultiMate
- Introduction to dBase II
- Introduction to dBase III
- Introduction to Symphony
- Introduction to Wordstar
- Additional software upon request

Other
- Automotive Service Technical Training
- Career Planning
- Culinary Arts
- Hotel-Restaurant Management
- Loss Control/Safety & Security
- Ornamental Horticulture
- Real Estate Principles and Practices
- Real Estate Law

Please contact Paul Callahan, Director of Continuing Education and Extended Services, for further information by calling or writing:

CINCINNATI TECHNICAL COLLEGE
3520 Central Parkway
Cincinnati, OH 45223
569-1500

Cincinnati Technical College
3520 Central Parkway
Cincinnati, Ohio 45223
513-569-1500