RIT Official Bulletin

College of Continuing Education

83-84
SAIS PROGRAMS

ACCESS TO THE FUTURE

Rochester Institute of Technology

Snow Days
College of Continuing Education classes are never cancelled—at least not if we can absolutely help it. Occasionally, when snowstorms or other emergencies require us to cancel classes, the decision is made by 3 pm and local radio stations are alerted at that time. If you are in doubt about whether or not your class is going to meet, listen to local radio stations after 3 pm or call us at 475-2234.

If the radio announcement does not specifically say "RIT" evening classes are cancelled, CCE evening classes will meet.

The College of Continuing Education is a member in good standing of the North American Association of Summer Sessions, Association For Continuing Higher Education, Association of Departments of English and National University Continuing Education Association.

Tentative
CCE 1983 - 1984 Calendar

Fall Quarter 83-1

July 11 - Aug. 12	Mail-In Registration
July 11 - Aug. 26	Walk-In Registration
Aug. 31 -Sept. 1	Open Registration
Sept. 2, 5, 6	No advisement or registration
Sept. 7, 8,9, 12, 13	Day students, and CCE in person, late registrations accepted. $15 late fee in effect Sept. 7.
Sept. 7	Fall Quarter classes begin
Nov. 22	Last day of Fall Quarter classes

Winter Quarter 83-2

Oct. 24 - Nov. 4	Mail-In Registration
Oct. 24 - Nov. 18	Walk-In Registration
Nov. 21 - 22	Open Registration
Nov. 23 - 29	No advisement or registration
Nov. 28, 29,30 Dec. 1, 2	Day students, and CCE in person, late registrations accepted. $15 late fee in effect Nov. 28
Nov. 28	Winter Quarter classes begin
Dec. 21	Last Day of Classes before Christmas break
Jan. 3	Classes resume after Christmas break
Feb. 25	Last Day of Winter Quarter classes

Spring Quarter 83-3

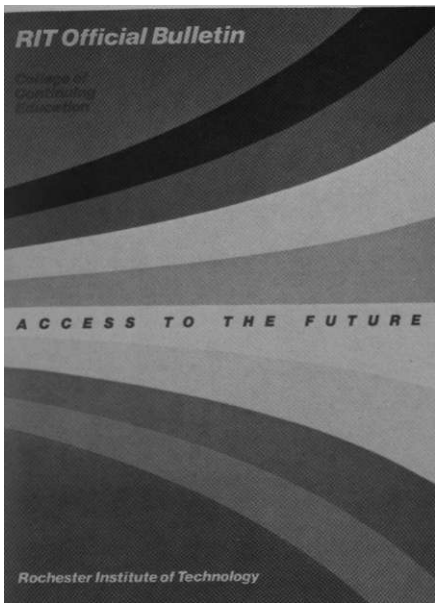
Jan. 30-Feb. 10	Mail-In Registration
Jan. 30 - Feb. 24	Walk-In Registration
Feb. 28, 29	Open Registration
Mar. 1,2	No advisement or registration
Mar. 5 - 9	Day Students, and CCE in-person late registrations accepted. $15 late fee in effect March 5.
Mar. 5	Classes begin
May 19	Last Day of Spring Quarter classes

CCE Summer Quarter 83-4
Eleven Week and First Five Week Session

Apr. 23 - May **4**	Mail-In Registration
Apr. 23-May 18	Walk-In Registration
May 22, 23	Open Registration
May 24, 25	No advisement or registration
May 29 - June 4	Day Students, and CCE in-person, late registrations accepted. $15 late fee in effect May 30.
May 29	Classes Begin
July 2	First Five-Week Session Ends
August 13	11 -Week Session Ends

Second Five Week Session

Apr. 23 - June 22	Mail-In Registration
Apr. 23-July 6	Walk-In Registration
May 22, 23	Open Registration
May 24 - 25	No advisement or registration
July 9-13	Day students, and CCE in-person, late registrations accepted. $15 late fee in effect July 10
July 9	Classes Begin
August 13	Second Five-Week and 11 -Week Sessions End



About this bulletin—

The RIT *Official Bulletin* does not constitute a contract between the Institute and its students on either a collective or individual basis. It represents RIT's best academic, social, and financial planning at the time the *Bulletin* has been printed but before the changes can be incorporated in a later edition of the same publication. Because of this, Rochester Institute of Technology does not assume a contractual obligation with its students for the contents of this *Bulletin.*

RIT admits and hires men and women, veterans and disabled individuals of any race, color, national or ethnic origin, or marital status, in compliance with all appropriate legislation, including the Age Discrimination Act The compliance officer is James Papero.

Programs & Courses
1983-84
College of Continuing Education

Produced by RIT
Communications

For additional information about CCE programs at Rochester Institute of Technology, write or phone:

College of Continuing Education
Rochester Institute of Technology
City Center
50 W. Main Street
Rochester, New York 14614
(716) 262-6266

Contents

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The College of Continuing Education Is Your Access to the Future...

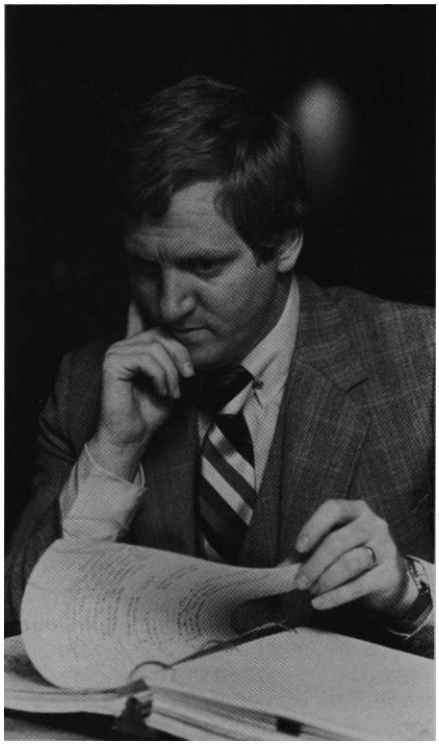
At Rochester Institute of Technology, the College of Continuing Education is your access to the future. With over 150 years of experience in continuing education, we can help you meet your future goals of career and professional advancement and personal satisfaction. At the College of Continuing Education you have access to courses and programs designed to help you keep pace with rapid technological changes. You have access to faculty and staff who are experienced professionals in their fields and in working with adult students like you. You have access to academic advisors who will help you tailor a program to meet your needs. And, you have access to the services and facilities at Rochester Institute of Technology, long known as a forerunner in career education and development.

We know that time, now and in the future, is often your biggest problem. We give you an alternative to full-time study through part-time study at night, on weekends, or during the day. Working closely with the other eight colleges of the Institute, we develop flexible educational opportunities for you. Class hours and course offerings are scheduled to meet specific needs of employers, employees and non-working people alike. As a result, many people like you have attained educational goals not otherwise available.

Our Open Admission Policy allows you to take any course or to pursue any degree for which you have sufficient background. Academic advisors are available throughout the year to answer questions regarding your course or program choices.

If you choose to follow a specific program of study, you have numerous options in fields as diverse as management and photography, machine tool and general education. We also offer you diploma programs in 19 fields, as well as a certificate in management. If you are interested in earning your associate degree in applied science, we have 22 options from which to choose. An associate in arts degree is also available to you in general education.

***WE DEVELOP** flexible educational opportunities for you…*



In addition, you may earn your bachelor of science degree in 14 programs. Or, you may wish to enter one of our programs, designed primarily for transfer students with associate degrees, to earn your bachelor of technology degree in electrical or mechanical technology. If you're a graduate student, the master of science degree is offered in applied and mathematical statistics.

The college also offers you workshops, seminars and short courses to meet specific needs of community groups, professional organizations, agencies, industries, government and business. Non-credit programs include offerings as diverse as career exploration seminars, workshops in professional development for secretaries, breakfast seminars for managers and continuing education for health personnel.

We offer you access to another alternative offered through the College's Summer Session. Along with the opportunity for you to continue work in your chosen academic program, RIT's unique summer offerings also feature learning opportunities for students from other colleges and representatives from business and industry. Concentrated courses combining the resources of the entire Institute are offered in numerous subject areas and unusual formats.

If you want to be ready to meet the future's challenges through career growth, updating skills, or just by keeping abreast with technological and societal changes, then let RIT's College of Continuing Education be your access to the future.

Getting Started in CCE

Accreditation
The Institute is chartered by the legislature of the State of New York and accredited by the Middle States Association of Colleges and Secondary Schools. In addition to institutional accreditation, some curricula are accredited by appropriate professional accreditation bodies. Specific mention of these is included in the program descriptions, where applicable.

The College of Continuing Education holds membership in the Association of Continuing Higher Education and National University Extension Association. CCE's Summer Session holds membership in the North American Association of Summer Sessions.

Admission
The College of Continuing Education maintains an open enrollment policy, which means you may enroll in any course offered by the College. Obviously, some courses are more advanced than others and require that you have some background information to successfully complete them. All of us, for example, need to learn algebra before we proceed to calculus. We encourage you to think seriously, therefore, not only about the subject matter of a course, but its *level* as well. In instances where you may have some doubts about your course selection, we encourage you to arrange a time to discuss your questions with one of our advisors. In only one area, entering mathematics, we require that you take a diagnostic examination to help determine the course that's right for you.

Writing Competency Requirement
Because professional competence requires the ability to communicate effectively, the College of Continuing Education has incorporated a writing competency requirement into its prerequisites for graduation. This was done to assure students that they are prepared to deal with the communicative tasks encountered in their professional lives.

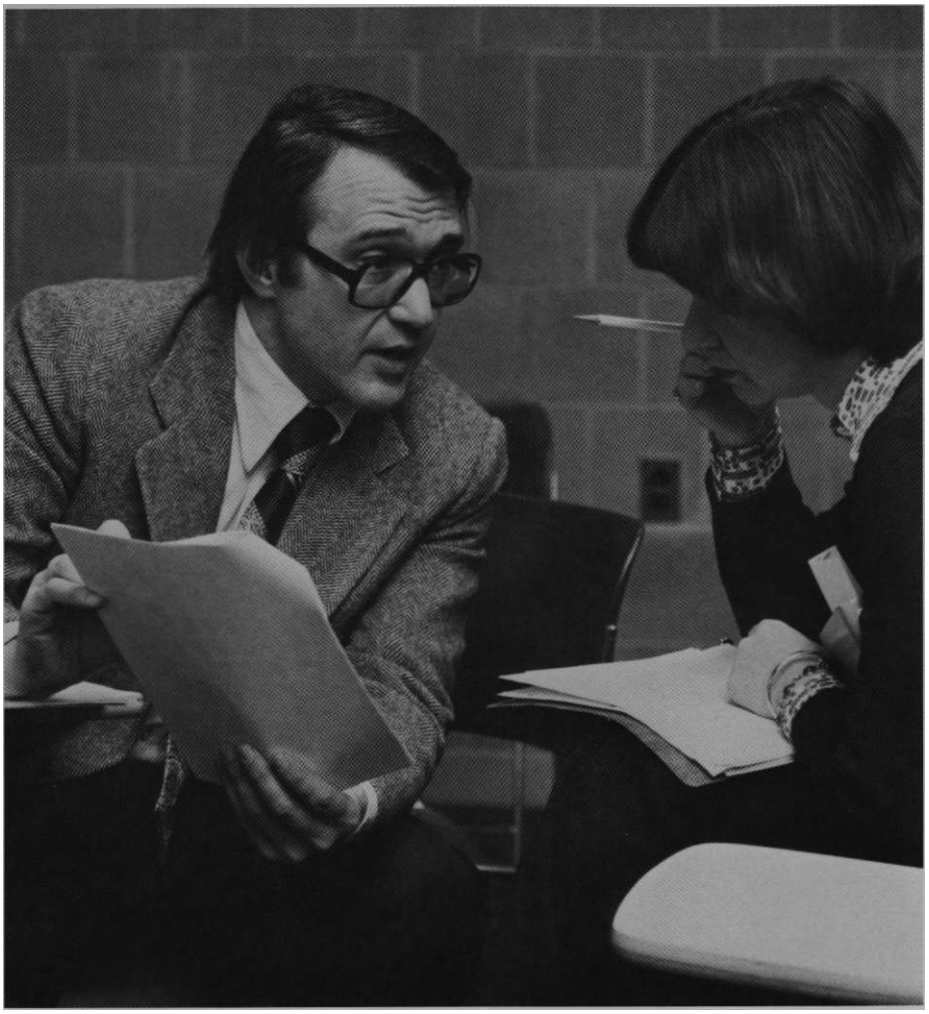
Each student will fulfill the writing competency requirement through the following process:

1. Diagnosis: During the first quarter in which each student is matriculated, he or she must take a writing test. This test will be evaluated by the CCE communications faculty who will recommend the student's appropriate level of placement in the CCE writing program.

2. Advisement: With the assistance of an advisor, each student will develop a writing portfolio during his studies at RIT.

3. Evaluation: A final graduation evaluation will be made of the student's portfolio after he or she has completed 100 credit hours. The portfolio will be judged according to criteria established by the faculty in the student's program area. The portfolio must demonstrate that the student can write at a level that would be acceptable in the workplace.

For assistance in fulfilling the writing competency requirement, students should contact their academic advisor or the chairperson of communications.



Matriculation
Matriculation is not the same as registration. Although you may register for any individual courses in CCE, degree candidates must apply for, or matriculate in, a particular degree program. Courses you have taken before matriculation will be evaluated and applied toward your degree if they meet program requirements at that time. Advising sessions are available by appointment, and advising and matriculation are encouraged early in your educational planning, especially if transfer credit is being requested.

In order to initiate the matriculation procedure, you should submit an application form which you may obtain from the CCE office, CCE academic advisors, or the Institute admission office.

A $25 fee is charged all students matriculating in a degree program for the first time.

Transfer students

CCE welcomes transfer students. A large percentage of our current students began their post-secondary education at other colleges. Several of our programs are specifically upper-division, designed to enable junior/communicty college or technical institute graduates to continue their education.

If you are applying for a CCE program as a transfer student, you are urged to have all your previous college transcripts sent to the Institute Admissions Office so that you will be placed appropriately in our program.

Usually, we will accept 90 quarter hours of transfer credits if you have earned an associate's degree (AAS, AS or AA) comparable to an RIT program.

If you have ever attended college but have not completed a program of study or will be making a significant program change when you come to RIT, your transferable credits will be determined by an evaluation of individual courses in which you have earned a "C" grade or better.

As a transfer student, you must complete a minimum of your last 45 quarter credits at RIT and in CCE before you receive a degree. Please see your advisor for details.

Grading system

Grades representing the students' progress in each of the courses for which they are registered are given on a grade report form at the end of each quarter of attendance.

The letter grades are as follows:

A Excellent
B Good
C Satisfactory
D Minimum Passing
E Conditional Failure
F Failure
I Incomplete
R Registered
S Satisfactory (non-credit)
W Withdrawn
Z Audit

A grade of "W" will be assigned in courses from which a student officially withdraws beginning the first week of classes. A "W" may be assigned only through the end of the eighth week of the quarter.

The grade of "I" is issued when you are unable to finish a course on schedule. It is your responsibility to contact your instructor to request an incomplete grade. If the work is not

completed by the end of the second quarter following the course, your grade will be changed from "I" to "F".

An "X" grade indicates successful completion of an external or Institute examination, provided such examination covers or parallels the objectives and content of the indicated course. Credit must be assigned in advance of any credit received through registration for the indicated course.

For exact policy and procedural statements on the above see the Education Policy and Procedures Manual available in the Student Association Office or on reserve in the Wallace Memorial Library.

Quality Points

Each course has credit hour value based upon the number of hours per week in class, laboratory or studio, and the amount of outside work expected of the student.

Each letter grade yields quality points per credit hour as follows:

A - 4 quality points
B - 3 quality points
C - 2 quality points
D -1 quality point

E and F count as 0 in computing grade point average (G.P.A.). R, W, Z, S, X and I grades are not used in computing G.P.A.

The grade point average is computed by the following formula:

G.P.A. — Total quality points earned
-r Total Quality hours

What You'll Need For Graduation

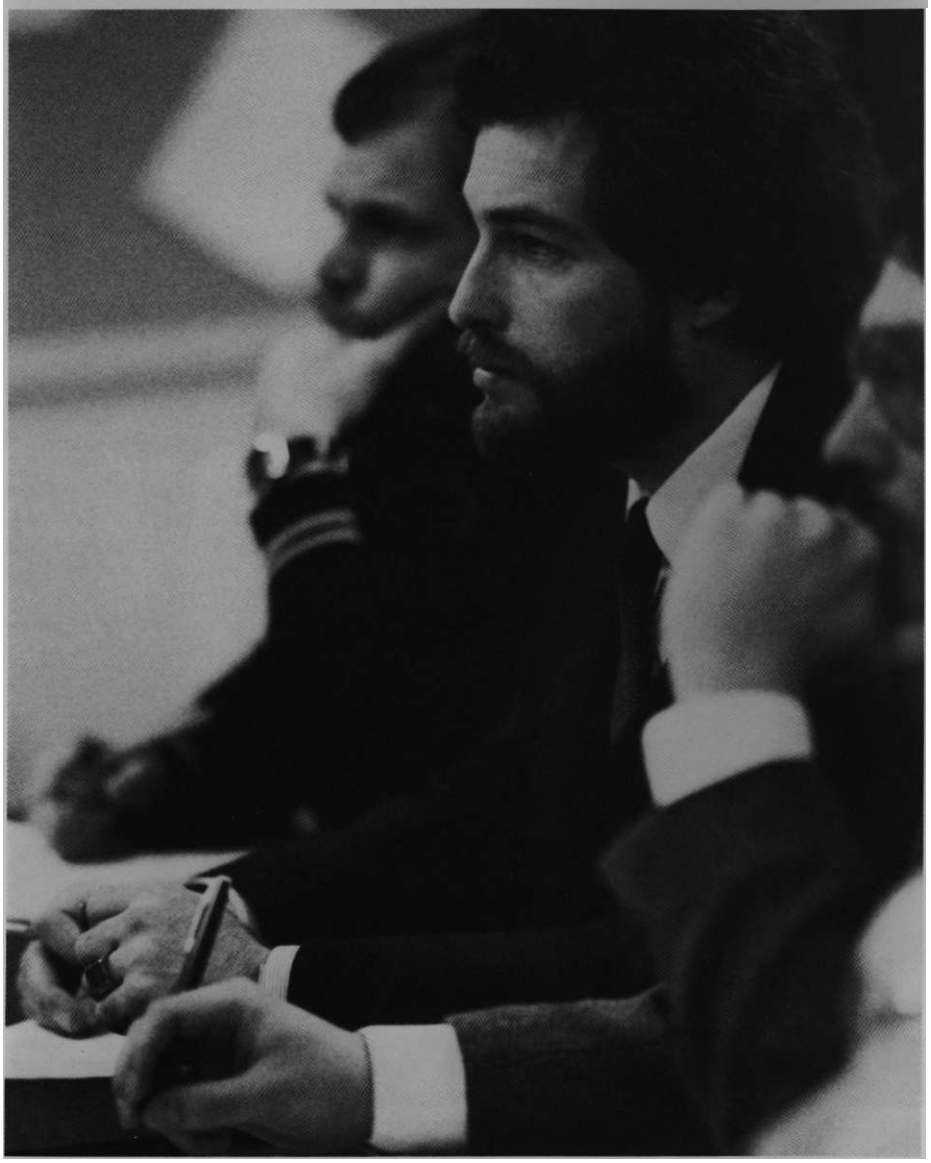
The following general requirements apply to students who are candidates for an undergraduate degree

Certificates and diplomas

1. Satisfactorily meet the program requirements of the College.

Associates's and baccalaureate degrees

1. Successfully complete all required courses of the Institute and college.
2. Full payment or satisfactory adjustment of all financial obligations.
3. A minimum of 45 quarter credit hours shall be successfully completed in residence at the Institute in the college granting the degree (inclusive of service courses). If the student has successfully completed 45 quarter credit hours in residence he or she may petition the dean to study 15 quarter credit hours in absentia in the final year of the degree; a minimum 30 of the final 45



quarter credit hours are to be completed in residence.

4. A program grade point average of 2.00.

5. Minimum number of quarter credit hours as required by that college, but in no case shall this be less than 90 quarter credit hours for the associate's degree and 180 quarter credit hours for the baccalaureate degree.

6. Demonstrate competence in writing skills as established in the Institute's writing policies.

Transcripts

The official academic record of each student is maintained in the Registrar's Office. A transcript of his or her record can usually be obtained by a student within 48 hours after the request is submitted *in writing.* During exam week and the week following exams, it may take longer. All transcripts issued directly to the student are stamped STUDENT COPY. A student must be in good financial standing with the Institute before a transcript request will be processed. The charge for each copy of a transcript is $2.00.

Credit by examination

The College of Continuing Education recognizes that people learn in ways other than through classroom instruction.

If you think you have learned through life's experiences, and that it would be redundant for you to take a particular course, contact an advisor to see if you qualify for an examination for credit in the subject. The fee for examination for credit is $50 per examination and subject examinations are generally given quarterly. Your request for examination for credit must be processed through the cashier in the Bursar's Office prior to the examination, and you must take the examination in the quarter that the form has been processed. If you plan to graduate in May, you should plan to complete all examinations for credit no later than the Fall quarter before your commencement.

The College of Continuing Education also grants credit for satisfactory performance on either the College Level Examination Program or the New York State College Proficiency Examination Program.

If you feel that you have experience or non-collegiate educational background equivalent to courses in your program of study, contact the academic area to determine an appropriate method of evaluation.

Auditing a course

Students taking courses as auditors are not required to take examinations or hand in written work. If you want to audit a class, indicate your choice on your registration form. If you decide to change your status from credit to audit, or from audit to credit, you must complete the appropriate form in the College of Continuing Education office within the first two weeks of the quarter. A grade of Z is recorded for an audited course.

The tuition charge for auditing remains the same as for courses taken for credit.

Academic Probation and Suspension Policy

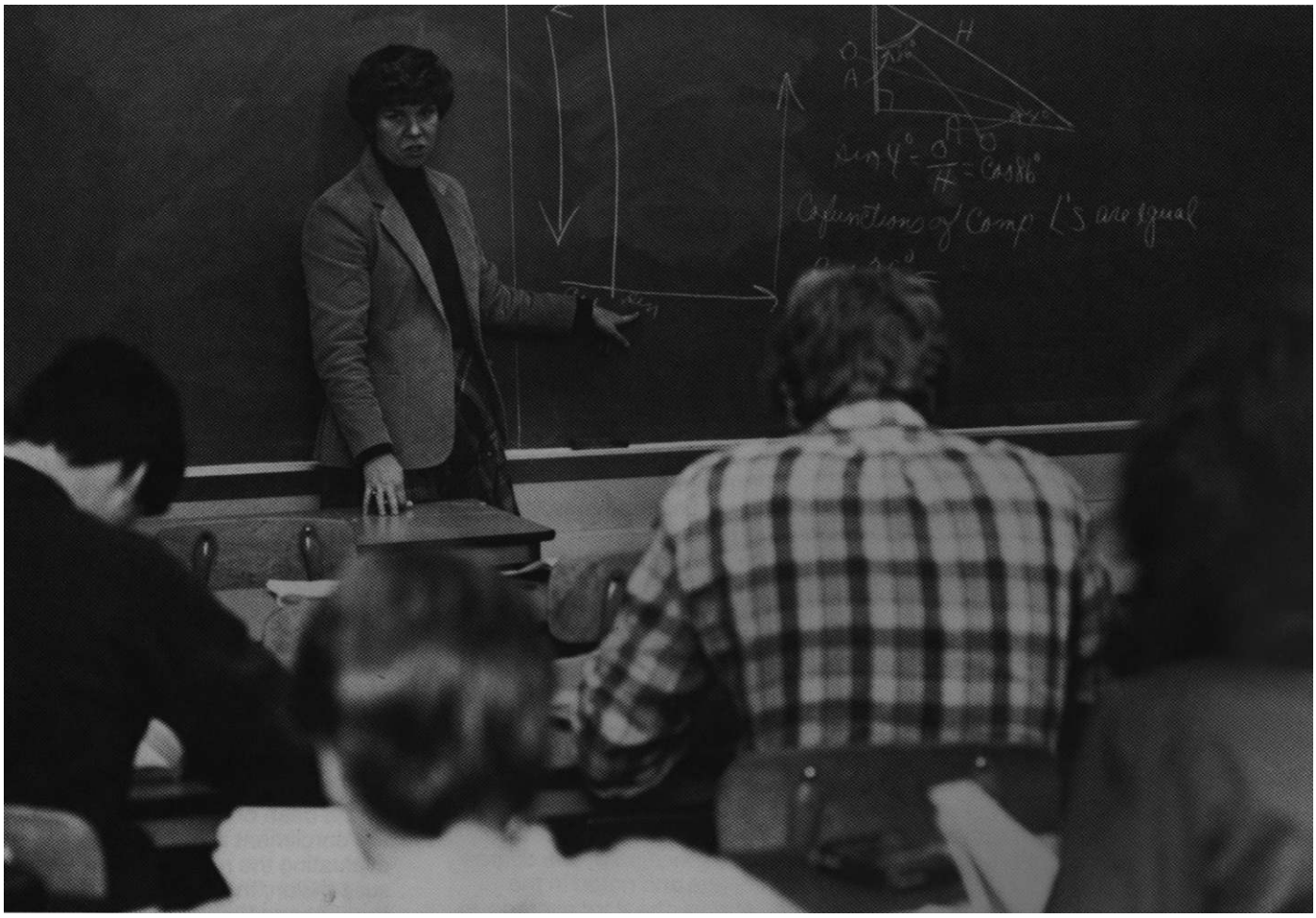
Matriculated undergraduate full-time and part-time degree students will be placed on probation or suspended from the Institute according to the criteria enumerated below. All actions are taken at the end of the quarter, however, a student may petition the dean of the college for reconsideration of probation or suspension should the removal of an incomplete grade (I) raise the appropriate Grade Point Average above those stated below. Each matriculated student will generate three different grade point averages. The *Institute* average reflects all course work completed at RIT. The *Program* average reflects course work completed at RIT applicable to graduation in a student's current academic program. The current academic program refers to the Institute and college degree course requirements specified by the degree granting college and noted in the Institute catalog. The third average, in the *Principal Field of Study,* reflects course work completed in a student's specialized field of study.

1. Any student whose *Program Quarterly Grade Point Average* falls below a 2.00* *or* whose Cumulative *Grade Point Average in the principal field of study*** (based upon at least 20 credit hours attempted in the principal field at RIT) falls below 2.00 will be *Placed on Probation.*
2. Any student who has been placed on probation according to (1) above is *removed from probation* for achievement of both a 2.00 Program Quarterly Grade Point Average and a 2.00 Cumulative Grade Point Average in the principal field of study, based upon at least 20 credit hours attempted in the principal field at RIT.
3. Any student who is on probation according to (1) above and who is not removed from probation in the two succeeding periods of study in which credit is earned, will be suspended from RIT for a period of not less than one quarter.
4. Any student who has been placed on probation and whose Program Cumulative Grade Point Average is below 2.00 will be suspended. Any student who has been placed on probation after having been removed from probation and whose Program Cumulative Grade Point Average is 2.00 or above will be granted one quarter to be removed from probation or he/she will be suspended from RIT.
5. Any student whose Program Quarterly Grade Point Average falls below 1.00 will be suspended from RIT.
6. Any student who has been readmitted to his or her original program, after having been suspended, and then goes on probation will be suspended from RIT.
7. A suspended student may not enroll in any academic course at the Institute while on suspension. When there is evidence that the student's scholastic problems are the result of inappropriate program choice, or other extenuating circumstances, the suspension may be waived or the student may be admitted to another program or allowed to take courses on a non-matriculated basis if it is approved by the dean of the college in which the enrollment is requested. In evaluating the request for waiver of suspension, the dean may seek the recommendation of the Counseling Center as to the appropriateness of the program for the career goals of the student under consideration.
8. A student may apply to the Dean of Admission for re-admission at the end of his suspension. His readmission must be approved by the dean of the college he wishes to attend upon his return (this may be his original college or another).

**"C" Average*

***The principal field of study is defined to be all courses within the college offering the program. For the Computer Engineering, Packaging, Criminal Justice, Social Work and Printing Systems Management programs, programs within the College of Continuing Education and NTID, and new interdisciplinary programs the appropriate professional courses will be identified (and so indicated in official publications) as being part of the principal field of study.*

fields and in working with adult students like you.



CCE'S Distinguished Alumni

Since 1976 RIT has recognized selected graduates for distinguished achievement in a professional field. CCE's Distinguished Alumni are:

1982 Rozetta Darby McDowell, Esq.
Attorney

1981 Robert Panzer
Manager of Training and Communications, The Lawyers Cooperative Publishing Company

1980 Harold Silloway
Vice President-President of the Board, Monroe Chemical Co., Inc.

1979 Robert Boekhout
Gleason Works

1978 Joseph K. Kremer
Vice President-Plant Mgr.
Great Lakes Press

1977 Bernard J. Kedian, Chairman of the Board, Chemical Bank of Rochester

1976 Emil Muller, Land Developer

CCE's Outstanding Scholars

Each year the Institute honors selected students as "Outstanding RIT Scholars." To qualify for this award, a student must have completed at least 125 quarter credit hours of study and must have maintained at least a 3.85 gradepoint average. CCE's Outstanding Scholars are selected by a committee which reviews applicants' credentials, including employment record, professional and civic activities, references and recommendations. CCE Outstanding Scholars for the past five years are:

1982 Kevin Patrick Ronayne

1981 Anita L. Frey
Kathleen Anne Grubaugh
Loretta May Horn
Margaret E. McGinnis
Cynthia A. Tiberio
Evelyn L. White

1980 Christine L. Fairchild
Cheryl R. Hertzel
James A. Joninas
Gail L. Welch

1979 Julio M. Dajer
Jeffrey C. Davis
Sandra J. Elmslie
Ruth A. Erdmann
Raymond Flo
Anne L. Slaight
Thomas H. Van Griethuysen

1978 David Desch
William Joseph Kiefer
John Paul Gutowski, Jr.
John Joseph Mack, Jr.
Robert Duane Norris
Paul A. Payne
Sandra N. Wright

1977 Robert J. Hutchinson
Richard Osiecki
Timothy S. Pinckney
Rick Sterling
Thomas Tuke

Services Available to You at RIT

Advising

Academic advising for the College of Continuing Education is provided by a staff of qualified individuals who draw upon their experiences in business and industry as well as their experiences in teaching. They provide students with academic advising in all areas of study offered by CCE; their services include:

* Orientation to Academic Policies and Procedures.
* Initial course and/or program selection for students interested in entering a degree or diploma program.
* Course selection for students not interested in a degree or already holding a degree.
* Evaluation of transcripts for students transferring from other educational institutions.
* Advising on elective choices.
* Information and appropriate referral for credit by examination and credit by experience.
* Encouragement and assistance with academic problems.
* Assistance in identifying career information services available within RIT.

Academic advising services are available at no charge to all students attending CCE classes, and to anyone who wishes to inquire about courses or programs offered by CCE.

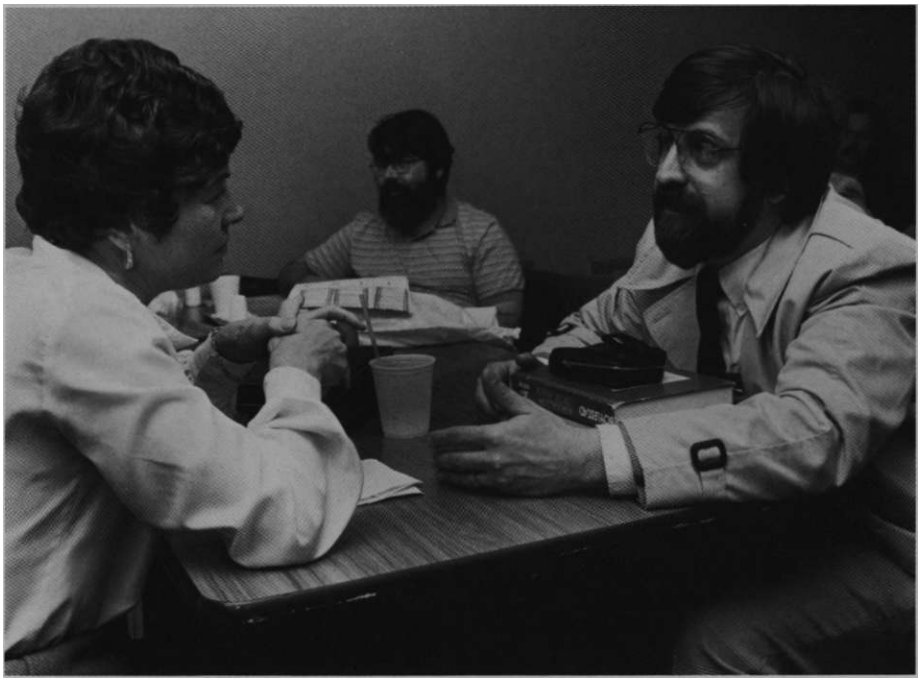
In depth academic advising is by appointment only. To make your appointment please call 475-2471 between the hours of 8:30 a.m. and 9:00 p.m. Monday through Thursday, and Friday between 8:30 a.m. and 4:00 p.m.

RIT Bookstore

The RIT Bookstore is open from 8:30 a.m. to 9:00 p.m. Monday through Thursday; 8:30 a.m. to 4:30 p.m. Friday; and 10:00 a.m. to 3:00 p.m. on Saturday, except during quarter breaks and holidays. For general information call 475-2501.

Physical Education and Athletic Facilities

The RIT athletic facilities are available to you and other students and their families, when the facilities are not being used by regularly scheduled classes or teams. You may bring your own lock and towel, and take it with



you when you leave, or you may obtain a lock and towel from the Athletic Equipment Room by purchasing a Pass from the Cashier. Family ID cards are available in the Student Activities Office.

Center for Cooperative Education and Career Services

The Center, located on the second floor of the Eastman Administration Building, is open from 8:30 a.m. to 4:30 p.m. daily. One of a variety of services available to you through the Center is the job listing, which consists of available positions in business, industry, government and education. For further information, call 475-2301.

College Alumni Union

The College Alumni Union provides a range of facilities and services including evening food service in the Ritskeller and a game room for bowling, billiards and table tennis.

By calling the Information Desk at 475-2307 or 475-2308, you can obtain current phone numbers for all staff and campus organizations. You can also receive hours of operation for campus facilities, as well as information on Talisman films and other campus activities.

The College Union also houses Ingle Auditorium, and the Office of the Vice President for Student Affairs. Multi-purpose rooms and lounges are available to you for group meetings, or relaxation and study. Pay phones are located outside the Alumni Room and the game room, as well as in the lobby outside the cafeteria.

Union hours are: 8 a.m. - 11 p.m., Monday through Thursday; 8 a.m. - 1 a.m., Friday; 9 a.m. - 1 a.m., Saturday; and noon - 11 p.m., Sunday.

Wallace Memorial Library

The Wallace Memorial Library is located between the Union and the College of Science, directly across the walkway from the College of General Studies. Some of the library's services available to you include: reference assistance in locating needed material; interlibrary loan to obtain material not located in this library; borrowing privileges, for up to three weeks for books, sound recordings and pamphlets provided your ID card is validated for the current quarter; and access to over 2,000 current magazines.

Learning Development Center
The RIT Learning Development Center offers you a full supportive program of educational services, including laboratory and individual instruction in speed reading, textbook reading, vocabulary, study skills, writing skills, graduate exam preparation and all levels of mathematics.

For information on current and future offerings, contact the Learning Development Center at 475-2281.

Counseling Center
The RIT Counseling Center provides a variety of vocational and personal counseling services. Hours are 8:30 a.m. - 4:30 p.m., Monday through Friday. For further information, call 475-2261.

The Media Resource Center
The Media Resource Center, located on the library's main floor, provides you with a variety of facilities and services, including: study carrels equipped with audiovisual equipment; videocassette playback equipment; motion picture preview facilities; a collection of approximately 400 16mm films; approximately 70,000 slides; and a large collection of videocassettes, filmstrip/sound and slide/tape units.

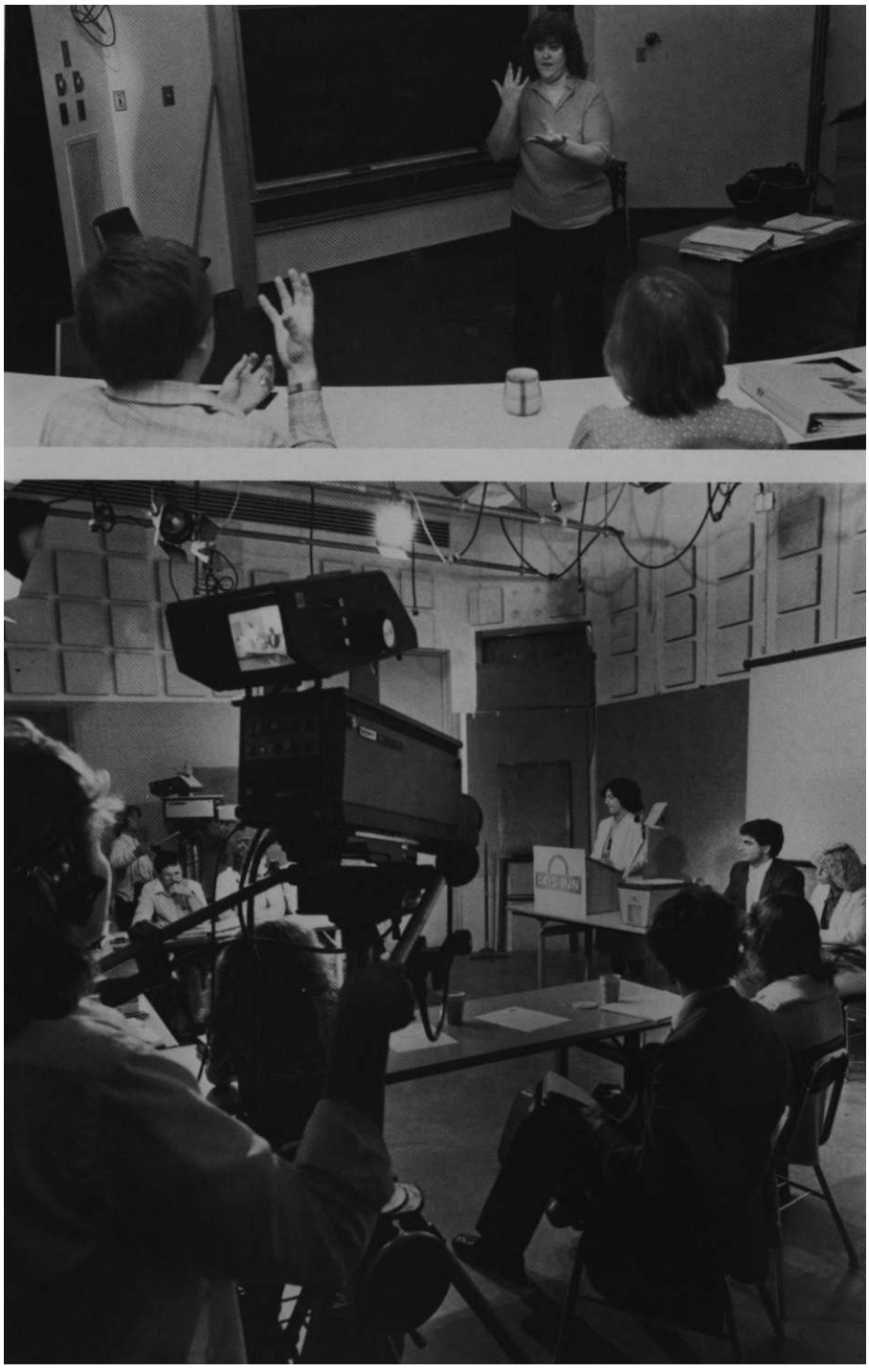
Insurance Coverage
Students who are not covered by accident and health insurance are strongly encouraged to participate in the RIT-sponsored accident and health insurance program. You may enroll in the plan when registering for courses.

Special Arrangements for Handicapped
The College of Continuing Education makes every effort to support the learning of individuals who may have a handicapping condition. If services are to be provided on a timely basis, we appreciate as much advance notice as possible. Pre-registration and early advisement should be accomplished in all cases. If you have questions relative to handicap, please call 262-6288, or (TTY) 262-2706.

Special Services
Special services is a free, federally funded student support service available to all matriculated RIT students. Services available include:

- tutoring
- counseling
- academic and personal skills development
- assistance and advocacy for handicapped
- cultural exchange and enrichment

For more information, call 475-2832 or 475-2833.



We Give You Access to Learning by Bringing Our Programs and Courses to You ...

In an effort to meet your scheduling needs our college offers you several alternatives by bringing programs and courses to you, in your living room, and in several off-campus locations which may be more convenient to you than our City Center and Jefferson Road campuses.

As a leader in using technology to enhance learning, the college offers you courses through cable television.

Rather than driving to campus for class, cable television course students learn through this unique system using televised, printed and personalized teaching materials. Through regular correspondence with an RIT course facilitator via telephone and mail, you can learn and earn college credits in your own living room, occasionally coming to campus for meetings or tests.

With cable telecourses you literally make you own schedule.

Videotaped lessons are also available for both individual viewing at the Media Resource Centers, both in RITs campus library and downtown at City Center.

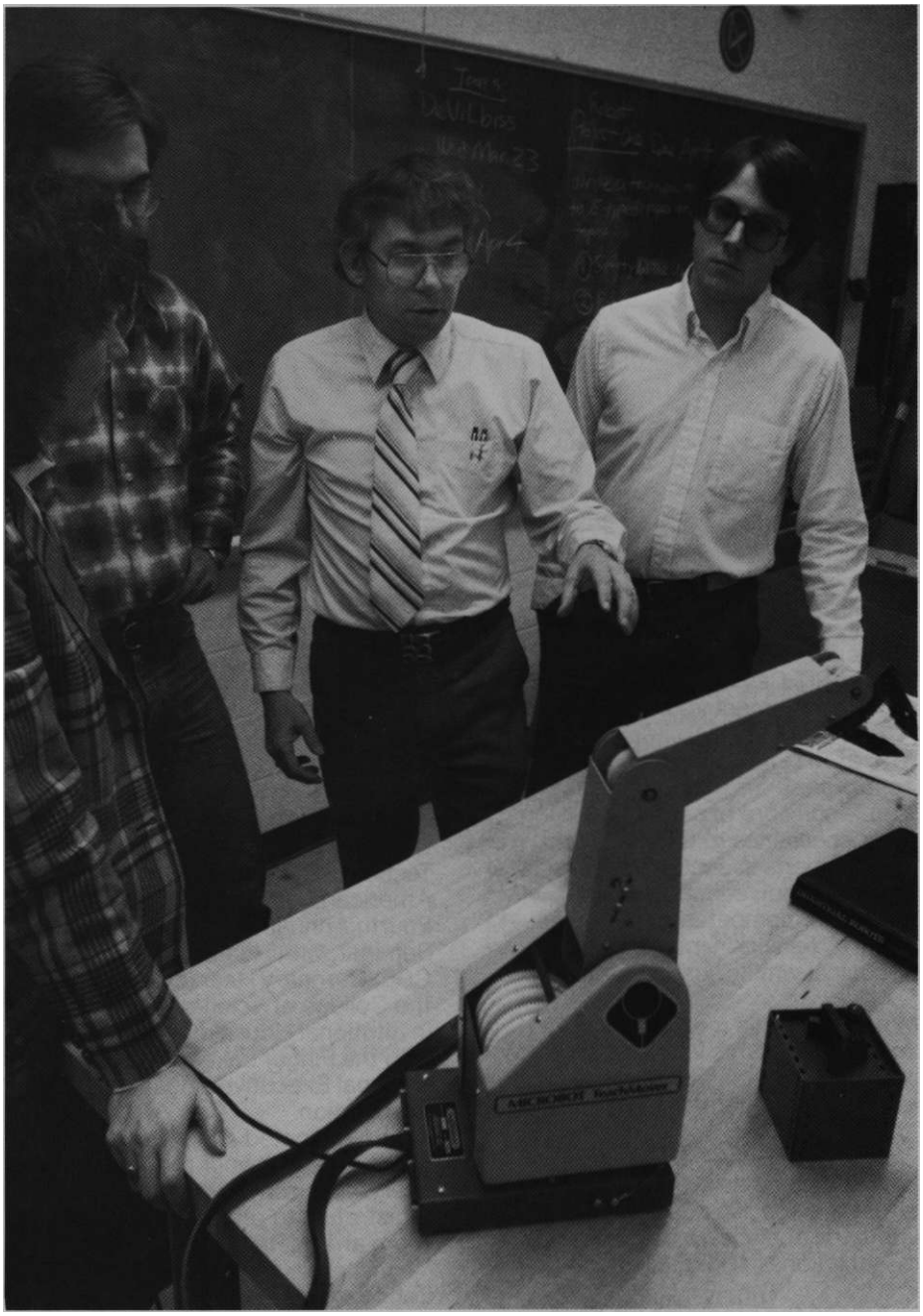
Cable telecourses carry full credit in CCE and are offered during each academic quarter.

Some of the courses offered are:

Contemporary Science: Oceanus
Japan; The Changing Tradition
Personal Financial Management
Psychology: Introduction
Science as a Humanity

Hundreds of students have enjoyed the advantages of telecourse instruction. It's a convenient, economical, and personal way to learn. To join this growing student-body, call 716-262-6283, today.

In addition to our telecourse offerings we give you access to many courses and programs at off-campus locations including West Ridge Community Center, R.L. Thomas High School, Palmyra/Macedon High School, Thompkins Cortland Community College in Dryden, New York, Geneva, New York and Jamestown Community College at Jamestown and Olean, New York. In the Technical Studies area we offer B. Tech. programs in Engineering Technology. Additionally, we offer AAS programs in electromechanical and B. Tech. Programs in-plant at The Ginna and Nine-Mile Point Nuclear Plants.



Our Business courses include electives toward a B.S. in Business Administration. Choose from Financial and Managerial Accounting, Intermediate Accounting, Business Law, Data Processing, Corporate Finance, Personnel Administration and Industrial Management Economics. In addition, we offer upper division courses at our Geneva location in Business Administration and Health Services Management.

In the Humanistic Studies area you will find courses like Business Communications, Technical Communications, Discussion Skills, Sociology, and Industrial Psychology.

For more information on off-campus courses in Business and Management Studies, call 262-6285, in Technical Studies call 262-6289 and in Humanistic Studies, call 262-6287.

Meeting Your Training Needs Through External Programs

We, in the Division of External Program Development, know that yours is a demanding and busy world. We also know that you want to introduce new technology and give your employees and co-workers up-dated skills and career-oriented professional development. But where are you going to find the time and expertise to do it? We can assist you.

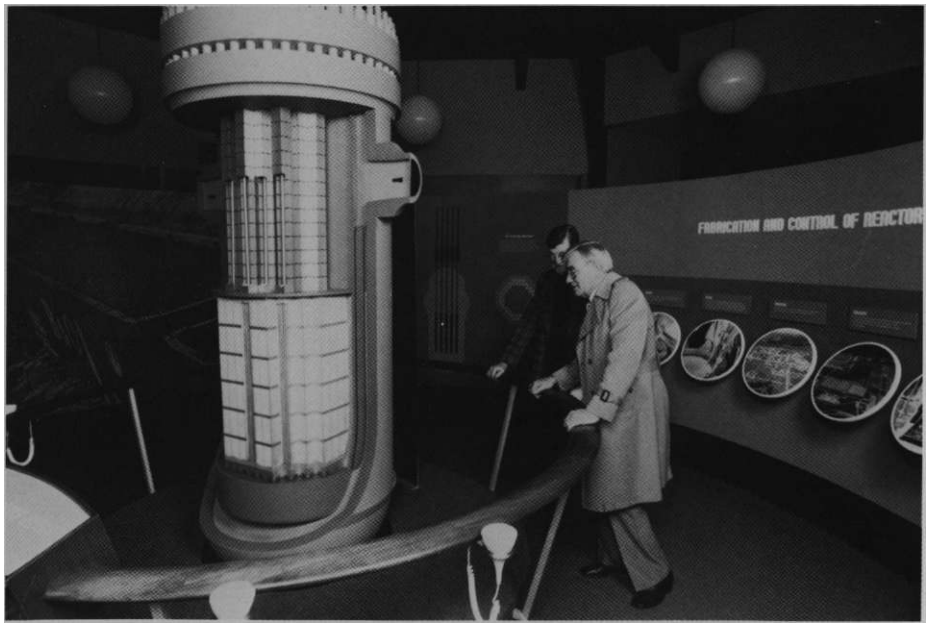
How do we meet your training needs?
We start with you... we know that you know what you need best. One of our consultants, a professional in developing and delivering programs, will bring all the appropriate resources of RIT together in response to your need. We can design short, intensive courses; day-long or weekend seminars; hands-on workshops; full-length courses. We can deliver them to your job-site, your conference site, on the RIT campus, and at RIT-City Center downtown. We schedule to meet your requirements.

We, at RIT, have some impressive resources!
Our faculty are experts in applying their specialties to the real world. We have experts in accounting, business management, communications, computer competency, numerical control, television instruction, and technical writing, just to name a few.

What does this mean to you?
In concrete terms it means we bring you excellent teaching, state-of-the-art course content, and realistic training.

We have a long tradition of designing and delivering programs to meet the specific needs of business, industry, agencies, and professional associations in Rochester.

Among the programs we have developed during the past year are the following: Government Contracts for the small and disadvantaged contractor of the inner city; an in-plant cost accounting course for Sybron Medical Products; staff development for day care employees in Rochester and Monroe County for the YWCA; Career Change for the Rochester Chapter of the School Administrators Association of New York State.



We also collaborated with other organizations in more than fifty of our seminars last year — working together, sharing the responsibilities and the rewards with our co-sponsors. The following are some examples of this collaboration: Software Quality Assurance, with Technical Studies/CCE and the American Society for Quality Control; Fourth Annual Technical Writing Seminar, with Humanistic Studies/ CCE; Coronary Heart Disease, with the College of Science/RIT; Institutional Housekeeping series, with the Finger Lakes Chapter of the National Executive Housekeepers Association.

Our dedicated support team can fill in the details of your program — everything from printed pieces and registration to refreshments and room arrangements.

Let us assist you
Call the Division of External Program Development, (716) 262-6286.

Energy Education and Training Division
As a division of the College of Continuing Education, The Energy Education and Training Division (EETD) brings together training directors, utility managers, regulatory agency representatives and vendors for the purpose of designing appropriate educational programs.

EETD is also an information clearing house, a center to create research projects, and a forum for the assessment of needs and a more universal exchange of ideas. Through these types of cooperative ventures EETD is building a comprehensive educational and training network to help provide the energy industry with sufficient and capable personnel.

EETD currently is working closely with several utilities to provide flexible educational and training programs for personnel in their plants to meet recent federal regulatory and industry requirements and to update the skills necessary for effective power plant operation.

The scope of the EETD is much broader than designing and delivering in-plant educational programs. It is developing proposals for establishing an educational and training center on the RIT campus. Such a center will house full-time programs to prepare students for positions in a broad spectrum of energy industries: fossil and hydro electric generation, petroleum and natural gas processing. Long range plans include developing programs for the synthetic fuels and solar technologies.

For more information contact: Ms. Dorothy K. Paynter, Director, Energy Education and Training Division, College of Continuing Education, (716) 262-6282.

Who to Call About What in CCE

A guide to people and services in the College of Continuing Education

General Information
City Center - 262-6266
Jefferson Road Campus - 475-2234

Registration Information
475-2821

Advising
475-2471

Special Courses
Office of External Program Development
Dr. Richard L. Harris,
Executive Director
262-6276

Summer Session
Betty J. Glasenapp, Administrative Coordinator, 262-6274

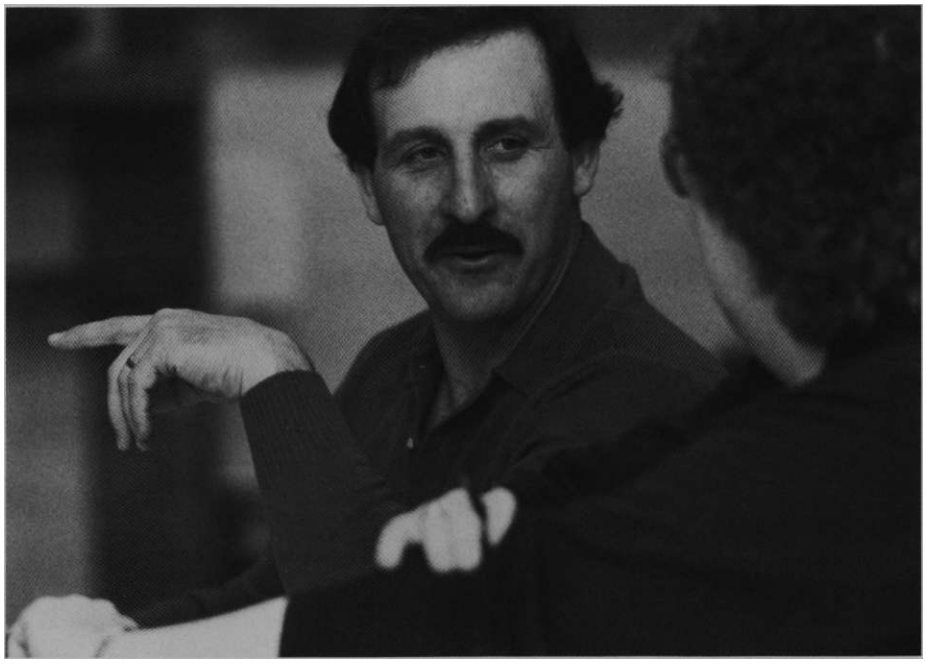
Academic Programs

Business and Management Studies
262-6264
Mathematics and Statistics for Business
Business Law
Personnel Management
Health Institutions Management
Insurance
Real Estate
Traffic and Transportation
Accounting
Data Processing
Finance
General Business Administration and Management
Marketing
Production Management and Industrial Engineering

Humanistic Studies

Behavioral Science
Andrea Walter, 262-6288

Communications
Elizabeth A. Conley, 262-6270



Fine Arts, Design, Crafts
Susan M. Rogers, 262-6283
Frances Welles, 262-3053

Human Services
Arnold Berman, 475-2045

Humanities
Alan Fischler, 262-2747

Sign Language & Manual Communication
Karen L. Finch, 262-6270

School of Applied Industrial Studies
James D. Forman, Director
262-2729

Technical Studies
262-6289
Printing
Archibald D. Provan, 475-2712
Applied and Mathematical Statistics
John D. Hromi, 475-2202
Chemistry, Contemporary Science
262-6289
Photography
Andrew Davidhazy, 475-2592

Mechanical, Mechanical-Industrial Engineering Technology, Mechanical Industrial Technology-Mechanical Manufacturing Engineering Technology
Charles DeRoller, 262-6268
Engineering Drawing
Mario DiQuilio, 262-6269
Mathematics
Frederick P. Frey, Jr., 262-6273
Computer Systems
Physics
Alfred C. Haacke, 262-6275
Electrical Engineering Technology-Electrical, Industrial Technology-Electrical, 262-6289

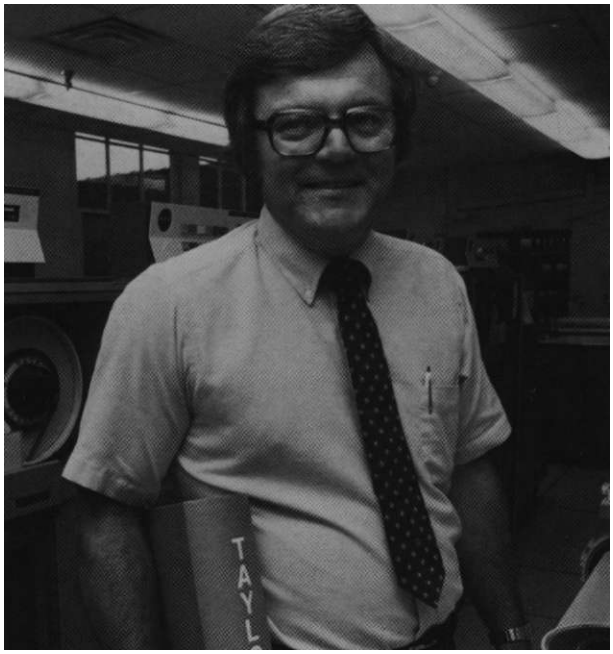
Building Technology
David A. Onesti, 262-6289

Machine Shop
Orville Adler, 262-2741

Robert Klafehn, 262-3091
Electro-Mechanical

What You Can Earn in CCE

Technical Studies	Diploma	Associate's Degree (AAS)	Bachelor's Degree (BS)	Master's Degree (MS)	B. Tech. Degree
	Degree and HEGIS* Code				
Applied & Mathematical Statistics				1702	1702
Applied Science—Chemistry		5305	1905		
Applied Science—Electrical		5399	0909		
Applied Science—Mechanical		5301	0910		
Applied Science Mechanical/1ndustrial		5301	0913		
Architectural Drawing	5304				
Automatic Screw Machine Operation	5312				
Building Technology	5317				
Computer Technology Computer Systems		5101			0701
Electrical Engineering Technology					0925
Electromechanical Technology	5311				
Electronics	5310				
Engineering Science		5609			
Drafting & Design Technology	5303				
Graphic Arts		5012	1002		
Industrial Technology Building Technology		5317			
Industrial Technology Electrical		5310			
Industrial Technology Electromechanical		5311			
Industrial Technology Mechanical		5315			
Instrument Making & Experimental Work	5312				
Machine Shop	5312				
Machine Tool Technology	5301				
Machine Design	5303				
Mechanical Engineering Technology					0925
Manufacturing Engineering Technology		5399			0925
Photographic Science		5007	0999		
Photography	5007				
Professional Photography		5007			
Printing	5009				
Tool & Die Making	5312				
Packaging Machinery Mechanics	5311				
Tool Design	5303				
Tool Engineering	5303				
Turret Lathe & Chucker Operation	5312				



Business & Management Studies	Certificate	Diploma	Associate's Degree (AAS)	Bachelor's Degree (BS)
	Degree and HEGIS* Code			
Accounting			5002	0502
Business Administration			5001	0506
Criminal Justice***				
General Management			5004	0506
Health Services Management				1202
Management Development		5004	5004	
Marketing			5004	0509
Money and Finance			5003	
Personnel Administration			5004	0515
Production Management			5004	0506
Real Estate/Insurance+				
Social Work***				
Traffic & Transportation Management			5004	0510

Humanistic Studies	Diploma	Associate's Degree (AA)	Bachelor's Degree (BS)
	Degree and HEGIS* Code		
Fine and Applied Arts	5012		
General Education		5699	

Do not use HEGIS Code number on Registration Form.

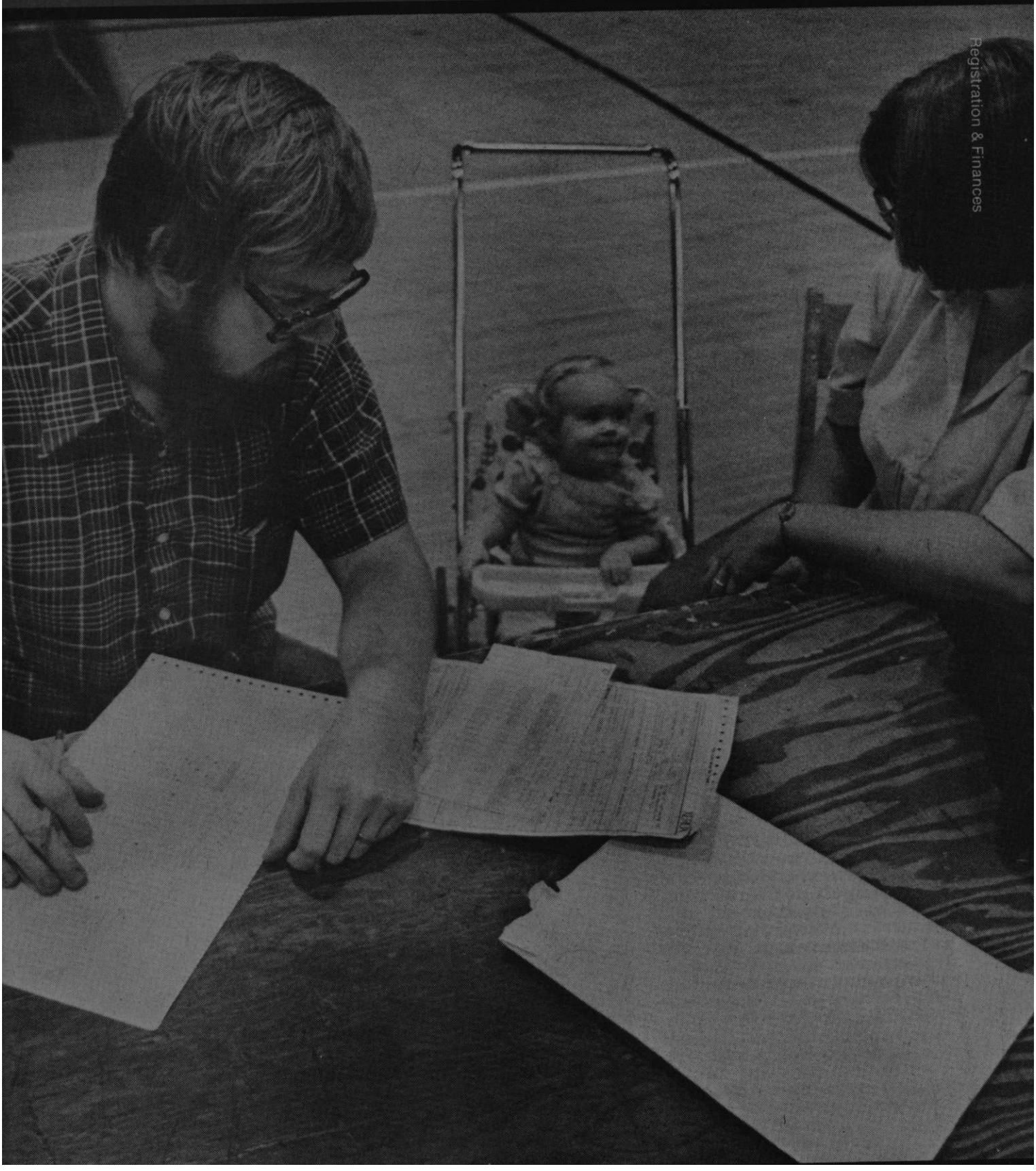
***Bachelor of Technology (B. Tech.) degree*

****Degrees tor these programs are presently conferred by RIT Day Colleges. The College of Continuing Education provides a limited number of courses which may be counted toward degree requirements.*

+Courses offered for New York State Licensing

**AS Degree*

Registration & Finances



Registration in College of Continuing Education courses is open to anyone. A few courses have specific prerequisites, and these are included in the course descriptions. If you would like assistance in making your course choice, please call 475-2471 for an appointment with an advisor.

Registration in person
Registration in person (open registration) for all quarters is according to the calendar on the inside cover...

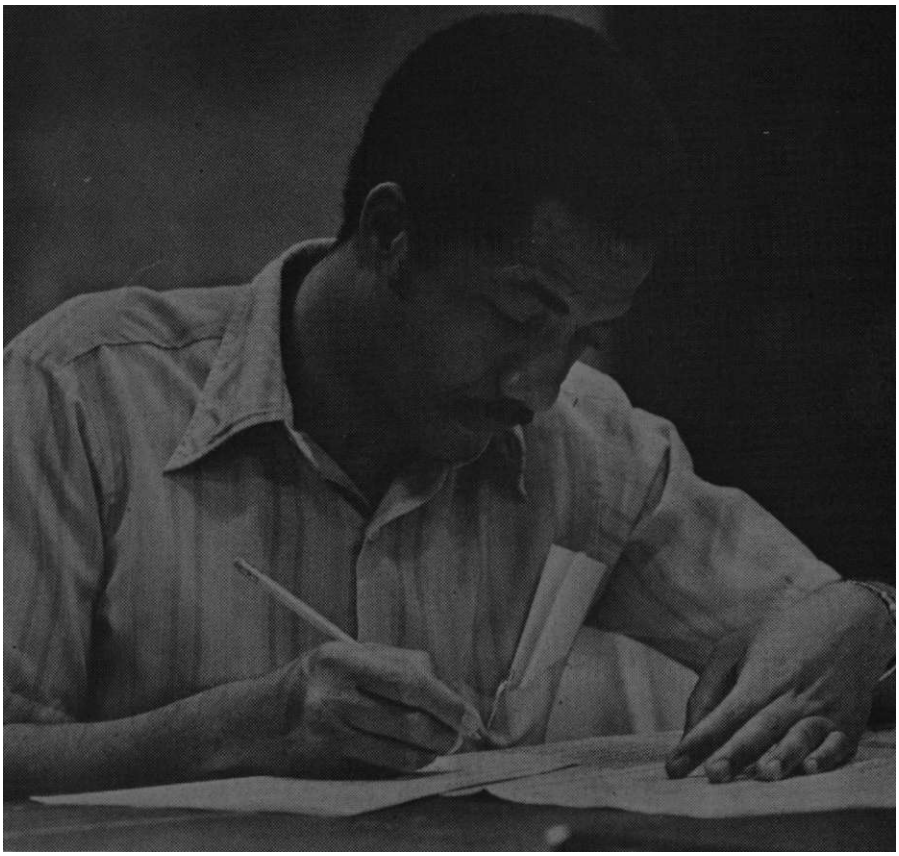
Financial Eligibility to Register
You will be allowed to register for any quarters at RIT only if you have no balance due from prior quarters and have made the appropriate financial commitment for the current quarter.

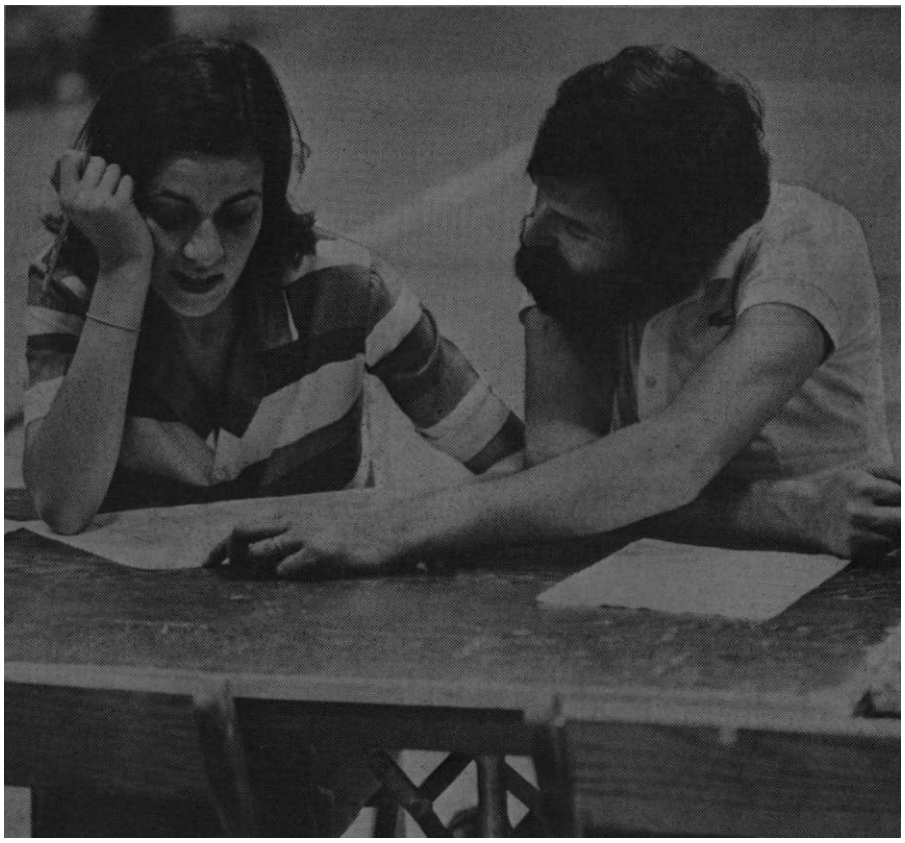
Registration by mail*
You can register by mail for all quarters according to this schedule:

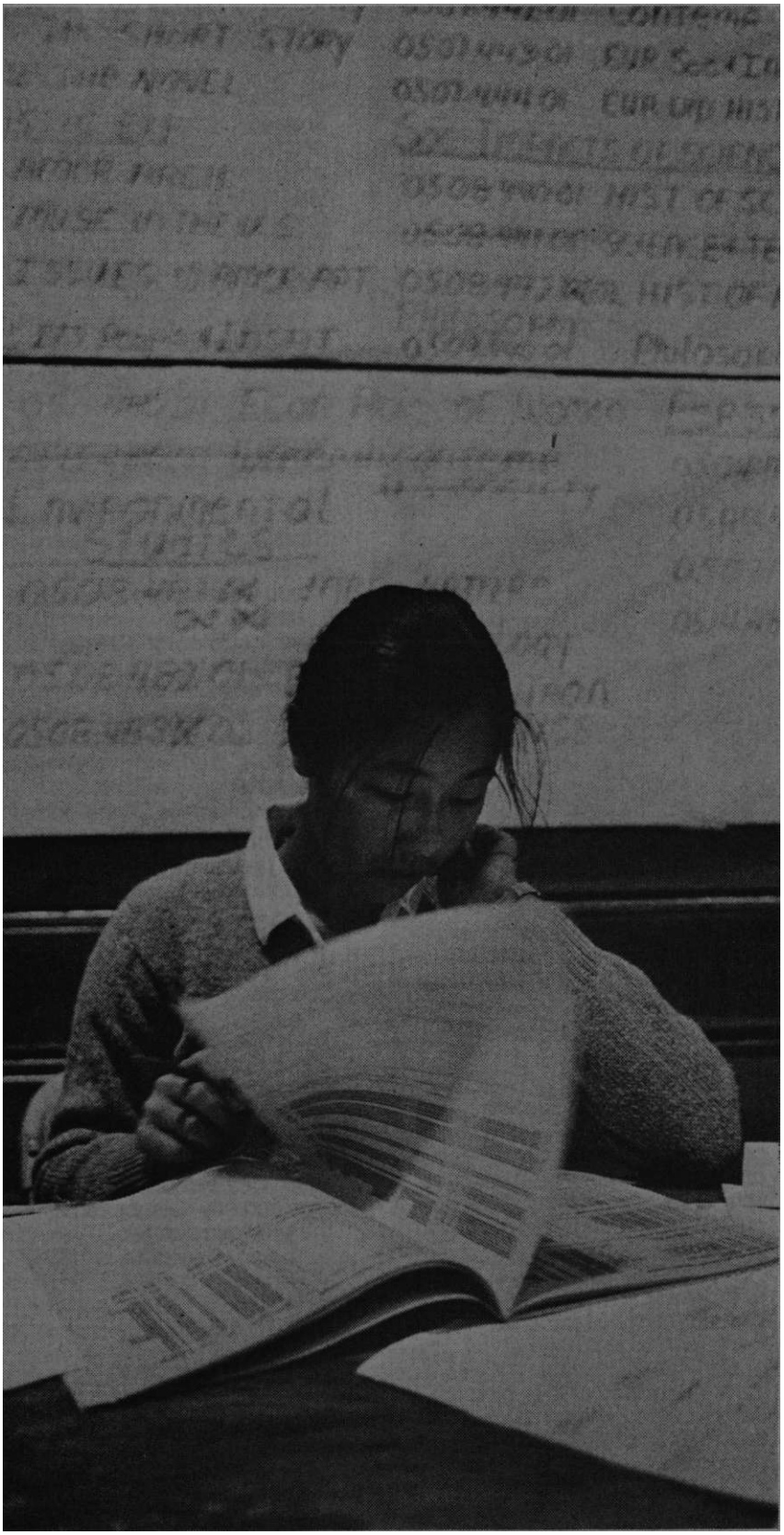
Fall Quarter
If you are new to CCE, or have not taken a CCE course within the past academic year, you can register for fall quarter by completing and returning the form on page 153. If you were registered during the last academic year, you will be sent registration materials which you should use if you want to register by mail. For Fall Quarter your mail-in registration, and your tuition payment must be received at RIT by August 12.

Winter Quarter
If you were registered in a CCE course during the Fall Quarter, you will be sent mail-in registration materials which you should use if you want to register by mail. If you were not registered for Fall Quarter, you can use the form on page 153 to register by mail. Your registration and tuition payment must be received at RIT by November 4.

Spring Quarter
If you were registered in a CCE course during the Winter Quarter, you will be sent registration materials which you should use if you want to register by mail. If you were not registered for Winter Quarter, you can use the form on page 153 to register by mail. Your registration and tuition payment must be received at RIT by February 10.







Summer Quarter
If you were registered in a CCE course during the Spring Quarter, you will be sent registration materials which you should use if you want to register by mail. If you were not registered for Spring Quarter you can use the form on page 153 to register by mail. Your registration and tuition payment must be received at RIT by May 4.

If you're paying your tuition by the Veterans Deferment Plan, you must include your authorized Deferment Card from the Office of Veterans Affairs when you mail your registration form.

To summarize, mail-in registrations must be received by:
August 12 - Fall Quarter
November 4 - Winter Quarter
February 10 - Spring Quarter
May 4 - Summer Quarter -11 Week and First 5 Week Sessions
June 22 - Second 5 Week Sessions

Walk-in registration will be accepted through:

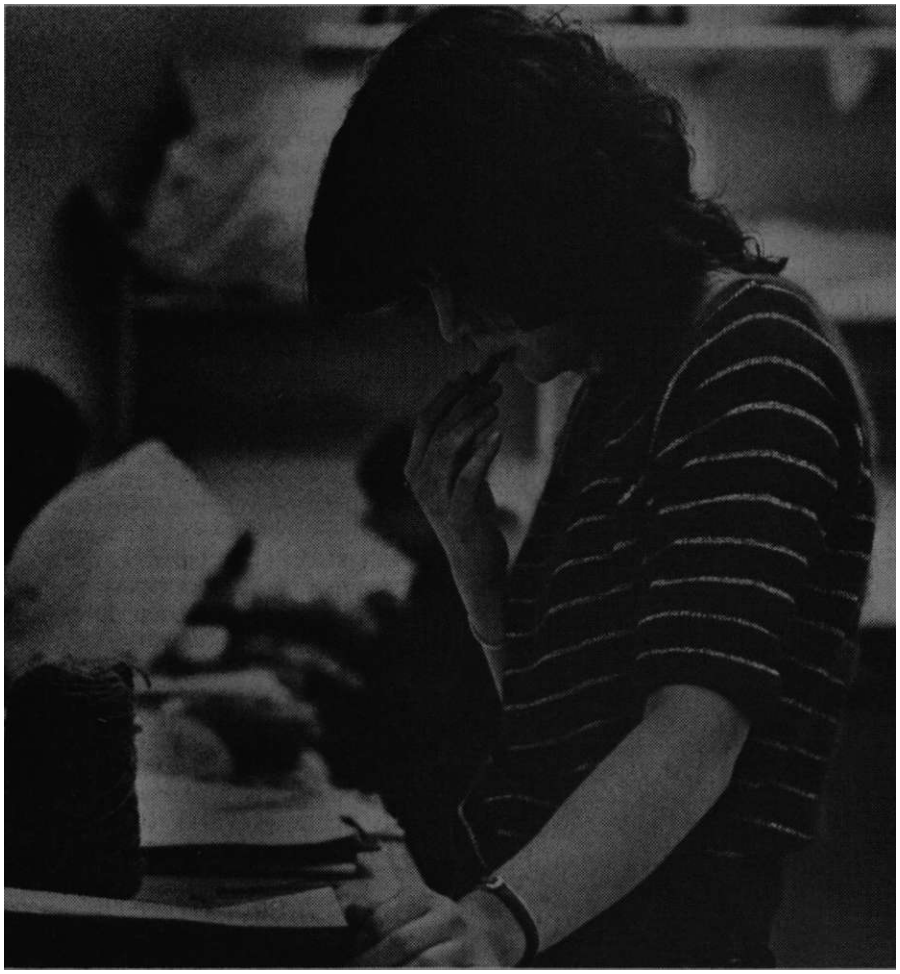
August 26 - Fall Quarter
November 18 - Winter Quarter
February 24 - Spring Quarter
May 18 - Summer Quarter -11 Week and First 5 Week Sessions
July 6 - Summer Quarter - Second Five Week Sessions

A schedule for the four quarters of the 1983 - 84 academic year appears in the back of this manual as a general guide for long range program and course planning. However, each quarter's schedule is reprinted during the year with the most current registration and scheduling information. You can obtain this updated schedule before the start of each quarter by calling or visiting the College of Continuing Education, (716)475-2234.

Tuition
Tuition for College of Continuing Education students is $89 per undergraduate quarter credit hour and $119 per graduate quarter credit hour. Some courses require additional charges to cover laboratory, studio or supply fees. Consult the schedule in the back of this manual to tuition charges for each course.

Current RIT Day College students must use the tuition and fee schedule as outlined in the Undergraduate Bulletin.

The CCE student may pay for a quarter's tuition in a single payment at the time of registration, or by the partial payment plan. Partial



payments are due twice a quarter; 50 percent (plus $10 partial payment processing fee and $1 Evening Student Association fee) at the time of registration, and the remaining 50 percent by the end of the sixth week of classes. A statement of account will be mailed to each student who has a balance due.

A late processing fee of $15 will be charged effective September 7 for the Fall Quarter, November 28 for the Winter Quarter, March 5 for the Spring Quarter, May 30 for the Eleven Week and First Five-Week Sessions of the Summer Quarter, and July 10 for the Second Five Week Session. You may use your VISA or Master-Card for tuition payment.

In certain laboratory and studio courses you may be required to purchase Supply and Breakage Cards for $5 to cover the cost of supplies and possible breakage. These may be purchased from the cashier. Your instructor will inform you the first night of class if these cards are needed for your particular course. Any unused portion of the fee for the cards will be refunded by the cashier upon request.

Matriculated RIT Day College students taking CCE courses will be charged the Day College tuition rate consistent with their day college program. The tuition and fee schedules of such students are outlined in the Undergraduate and Graduate Bulletins.

Withdrawal

You must arrange for withdrawals from courses in person at the College of Continuing Education or with a letter addressed to the college; otherwise you will not receive a tuition refund. You will not be officially withdrawn until you receive the student's copy of the change in Class Schedule form. The postmark date of your letter to the College of Continuing Education's Registration Services, or the date on which the change in Class Schedule form is properly completed, is the date of the official withdrawal used to determine your refund. It's your responsibility (not your instructor's) to contact Registration Services to assure that the withdrawal form and refund are properly processed.

Please note that official withdrawal from courses is required even if you're not eligible for tuition refund. Your final grade is determined by your offical withdrawal.

NOTE: Non-attendance does not constitute an official withdrawal.

Your partial payment and Evening Student Association fees are refundable only if:

1. you withdraw prior to start of classes
2. you register for a sequential course and later find you have failed the prerequisite course in the previous quarter. (Students generally register for the following quarter before grades for the previous quarter are available.)
3. your course is Cancelled or Filled.

No withdrawals can be processed after the eighth week of the quarter. Last date of withdrawal for:

Fall Quarter, October 28,1983
Winter Quarter, February 3,1984
Spring Quarter, April 27,1984
Summer Quarter, July 20,1984

Tuition Refunds

Should you find it necessary to withdraw from a course, a net refund will be calculated in accordance with the quarterly payment received, the tuition charged as outlined in the schedule below, any current quarter fees and any balance remaining from the previous quarter.

% of Reduction of Quarterly Tuition	**Fall 1983**
100%	Prior to September 7
90%	September 7-13
75%	September 14-20
60%	September 21 - 27
50%	September 28 - Oct. 4
0%	October 5 and after

If you consider yourself eligible for either Veterans' benefits or Veterans' Dependents' benefits, please contact the RIT OVA Office. Benefits will be paid according to the eligibility category you are entitled to. Generally, payments are received monthly and the amount of such payments is dependent upon the approved program of study, present student status, tuition cost, marital status and number of dependents. These benefits may be used ten years following separation from active duty; however, there are exceptions for persons with mental or physical handicaps which would have prevented normal use of benefits of use for that period. Benefit eligibility generally is one and one-half months of benefits available for each month served eighteen months on continuous active duty would, however, be eligible to receive forty-five months of entitlement.

For additional information, call 475-6641 or visit the Office of Veterans' Affairs.

College of Continuing Education Scholarships

CCE students who show scholarship (or potential) and financial need, are eligible to apply for a CCE Scholarship. Scholarship award amounts vary and are made through the assessment of information provided by the student on a scholarship application. Applications are available in the RIT College of Continuing Education.

For further information about financial assistance for continuing education students, please call 475-2246.

RIT Standards of Satisfactory Progress and Academic Pursuit For the Purpose of Determining Eligibility For Tuition Assistance Program

The following charts apply only to New York State residents who are full-time matriculated students in CCE in the certificate, diploma, or degree programs applying for TAP.

For example a student must have earned at least 3 quarter credits and earned a gradepoint of .50 to be eligible for the second quarter TAP payment. In order to receive the 3rd quarter TAP payment a student must have earned at least 9 quarter credits and a gradepoint of .75, etc.

For more information on the Standards of Progress, call the Financial Aid office at 475-2186.

Winter 1984	
100%	Prior to November 28
90%	November 28 - Dec. 4
75%	December 5-11
60%	December 12-18
50%	December 19 - Jan. 8
0%	January 9 and after

Spring 1984	
100%	Prior to March 5
90%	March 5-11
75%	March 12-18
60%	March 19-25
50%	March 26 - April 1
0%	April 2 and after

Refunds will be made by a RIT check and mailed approximately three weeks from the date in which you report your withdrawal to the College of Continuing Education, Registration Services. Advance deposits and Institute fees are non-refundable.

Appeals Process

An official appeals process exists for those who feel that individual circumstances warrant exceptions from published policy. The initial inquiry in this process should be made to Mrs. Janet Switzer, Assistant Registrar/CCE. Matters which cannot be resolved will be referred, for further action to Mr. Richard B. Schonblom, Bursar.

Books and Supplies

These vary widely with the program followed, and to some extent the electives chosen. The expenses will average $5 - $50 per course for textbooks and supplies.

Financial Aid

The following federal and state financial aid is available for the part-time/full-time CCE student. Before applying for aid, all programs require a student to:

1. Formally declare an educational goal, i.e., diploma, certificate or degree in a particular program.
2. Provide CCE Registration Services with written intent to meet the declared goal (matriculation).
3. Register for at least six quarter credit hours (half-time).
4. Plan to attend classes for the school year (Fall, Winter, Spring Quarters).
5. Show evidence of having achieved a high school diploma or its equivalent. A student may have this requirement waived by an academic advisor.

Guaranteed Student Loan Program

This major loan program enables you to borrow up to $2,500 for the first year of study. If satisfactory academic progress is made the loan may also be renewed at a maximum of $2,500 per year for up to four additional years. Full-time students may borrow a maximum of $2,500 per year for up to 5 years and part-time students may borrow up to half the amounts allowable for that year. Principle and interest payments begin six to nine months after graduation or termination of attendance with up to 10 years to repay the loan. Effective October 1,1981, students whose adjusted family income exceeds $30,000 per year must demonstrate financial need in order to have loans approved. Further information on the needs test may be obtained from the Financial Aid Office. Applications for a loan and the required needs test form may be obtained at any bank. After completing the personal data requested, you must then take the application to the RIT Financial Aid Office. Financial Aid will certify the required school enrollment information and will forward the application to your bank. The loan will be awarded to you by the bank.

Pell Grant (BEOG)

Pell Grant (BEOG) offers an outright grant to eligible students for full-time or part-time study. Amounts of the award range from $135 to $1,800 per year. Awards for the part-time student are based on the number of hours taken. After notification of an award has been received by the student, the amount of the award is calculated using an "eligibility index" (scale) in the RIT Financial Aid Office. Applications are available in the Financial Aid Office or in CCE

Veteran's Benefits

Veterans are eligible to apply for their educational benefits through the Office of Veterans' Affairs. The Office of Veterans' Affairs is located in the Basement, College Union (Bldg. 4) room 19-262. The Office is open from 8 a.m. to 8 p.m. daily except Fridays, 8 a.m. to 4:30 p.m.

Financial Aid at a Glance

Scholarship/Grant	Eligibility	Amounts	Where to Apply
Regents College Scholarship (New York State)	New York State residents who plan to attend college and qualify through an examination in the senior year of high school.	$250 per year.	N.Y.S. Higher Education Services Corp., Tower Bldg. Empire State Plaza Albany, N.Y. 12223
Tuition Assistance Program (New York State)	New York State residents who show ability to pursue full-time programs.	$250 to $2,200 (Undergraduates) $100 to $600 (Graduates)	N.Y.S. Higher Education Services Corp., Tower Bldg. Empire State Plaza Albany, N.Y. 12223
Regents Awards for Children of Deceased and Disabled Veterans (New York State)	New York State residents who are children of certain deceased and disabled veterans.	$450 per year.	N.Y.S. Higher Education Services Corp., Tower Bldg. Empire State Plaza Albany, N.Y. 12223
Pell Grant (Federal)	Undergraduate students who are pursuing their first bachelor's degree, in financial need, attending post-secondary institutions.	$t35 to $1,800	File Financial Aid Form requesting submission to Pell Grant.
Supplemental Educational Opportunity Grants (Federal)	Students of academic promise who are accepted for college study and who are in exceptional financial need.	$200 to $2,000 per year.	Through RIT by use of the Financial Aid Form filed between Jan. 1 and March 1 (prior to the next year of attendance).
War Orphans Educational Assistance (Federal)	Children of certain deceased or disabled veterans.	Up to $220 per month.	Veterans Administration
Social Security Education Assistance	Student whose parent(s) is deceased or retired. Student must begin full-time study prior to 5/82.	Amounts per month vary.	Social Security Administration
ROTC	Students enrolling in ROTC and who are academically qualified.	Tuition, fees, books, and monthly stipend.	RIT Department of Military Science
Veterans Benefits	Veterans	Amounts per month vary upon full-time/part-time status and number of dependents.	RIT Veteran Affairs Office
RIT Scholarships and Grants	Eligibility varies.	Amounts vary.	File Financial Aid Form between Jan. 1 and March 1 (prior to the next year of attendance).
Higher Education Opportunities Program (HEOP)	Economically and academically disadvantaged residents of New York State.	Amounts vary.	Director of HEOP at RIT
Other State Grants	Eligibility varies.	Amounts vary.	Consult your state s education department.
Student Loans			
New York State Higher Education Services Corporation Student Loans	New York State residents in full- and part-time degree programs	Undergraduates, up to $2,500 per year, depending on level of study. Graduates, up to S5.000 per year for master s.	Most banks in New York State and N.Y.S. Higher Ed. Services Corp., Tower Bldg. Empire State Plaza Albany, N.Y. 12223
Other State Loans	Eligibility varies	Usually $1,000 to $2,500 per year.	Consult your state s education department.
National Direct Student Loans	College students in full- and part-time degree programs in financial need.	Up to $3,000 for first 2 years of undergraduate study. Maximum of $6,000 for 4 years of undergraduate study. Graduate students may also apply.	Through RIT by use of the Financial Aid Form filed between Jan. 1 and March 1 (prior to the next year of attendance).
Employment			
College Work Study Program (Federal)	College students in full- and part-time degree programs who meet financial need requirements established by Federal Government.	Varies, depending on hours and wage rate.	Through RIT by use of the Financial Aid Form and through the Central Placement Office.
Other college part-time work	Considerable variation in kinds of positions, hours and wages.		Consult other RIT publications and RIT Central Placement Office.

Standard of Satisfactory Progress for the Purpose of Determining Eligibility for State Student Aid

Baccalaureate Degree - Quarter System

Before Being Certified For This Payment	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
A Student Must Have Accrued at Least This Many Credits	0	3	9	20	32	44	56	68	80	92	104	116	132	148	164
With at Least This Cumulative Grade Point Average	0	.50	.75	1.00	1.20	1.30	1.40	1.50	1.60	1.65	1.70	1.75	1.80	1.85	1.90

**Only students in the HEOP program at RIT are eligible for more than 12 quarters of undergraduate awards.*

Standard of Satisfactory Progress for the Purpose of Determining Eligibility for State Student Aid

Certificate and Diploma Award - Quarter System

Before Being Certified For This Payment	1st	2nd	3rd	4th	5th	6th
A Student Must Have Accrued at Least This Many Credits	0	3	9	20	32	44
With at Least This Cumulative Grade Point Average	0	.50	.75	1.00	1.20	1.30

Standard of Satisfactory Progress for the Purpose of Determining Eligibility for State Student Aid

Associate Degree - Quarter System

Before Being Certified For This Payment	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
A Student Must Have Accrued at Least This Many Credits	0	3	9	20	32	44	56	68	80
With at Least This Cumulative Grade Point Average	0	.50	.75	1.00	1.20	1.30	1.40	1.60	1.80

Standard of Satisfactory Progress for the Purpose of Determining Eligibility for State Student Aid

Masters Degree - Quarter System

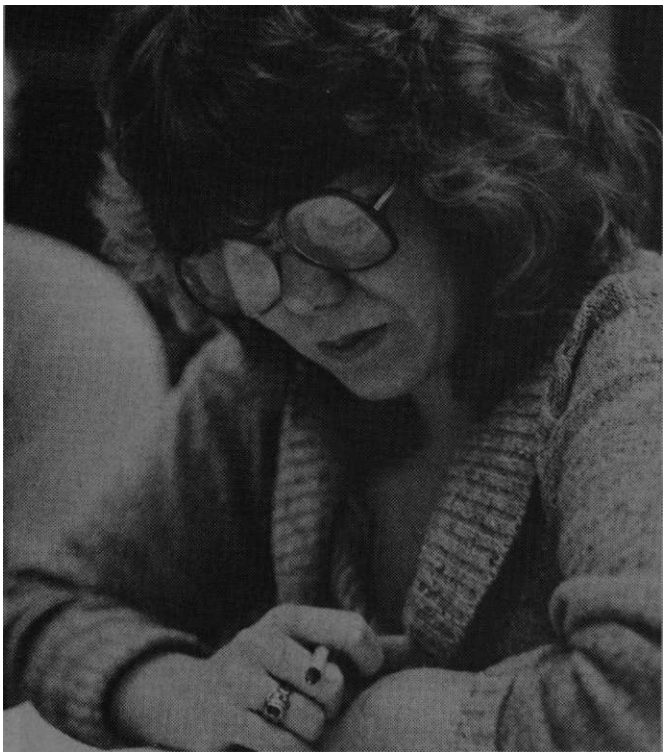
Before Being Certified For This Payment	1st	2nd	3rd	4th	5th	6th
A Student Must Have Accrued at Least This Many Credits	0	12	24	36	48	60
With at Least This Cumulative Grade Point Average	0	2.00	2.50	2.70	2.80	2.90

Program Information

Business and Management Studies

Humanistic Studies

Technical Studies



Course Numbering

In addition to its title each course is identified by two numbers.

The alpha-numeric course number directly to the left of the course title is the official Institute course number. This number will appear on grade reports, transcripts, and other official correspondence. This is what the alpha-numeric number means:

First letter: College offering the course

Second and Third letters: School or department of that college

Fourth letter: Discipline of interest

First number: Course level: 0 = Non-credit, 1 = Diploma; 2 or 3 = Lower level degree courses; 4, 5 and 6 — Upper level undergraduate degree courses; 7 or 8 — Courses for graduate credit.

Second and Third Numbers: Course differentiation and sequencing

Directly below the alpha-numeric number in the course description is the **Registration number.** You must use this number when you register for a course, because the Institute's computer cannot read the alpha-numeric number.

Course Number
CBCA-201

-Course Sequence
-Course Level
-Discipline
-Business and Management Studies
-College of Continuing Education

0201-201
Registration Number

Please refer back to this page for course numbering information on all programs in this catalog.

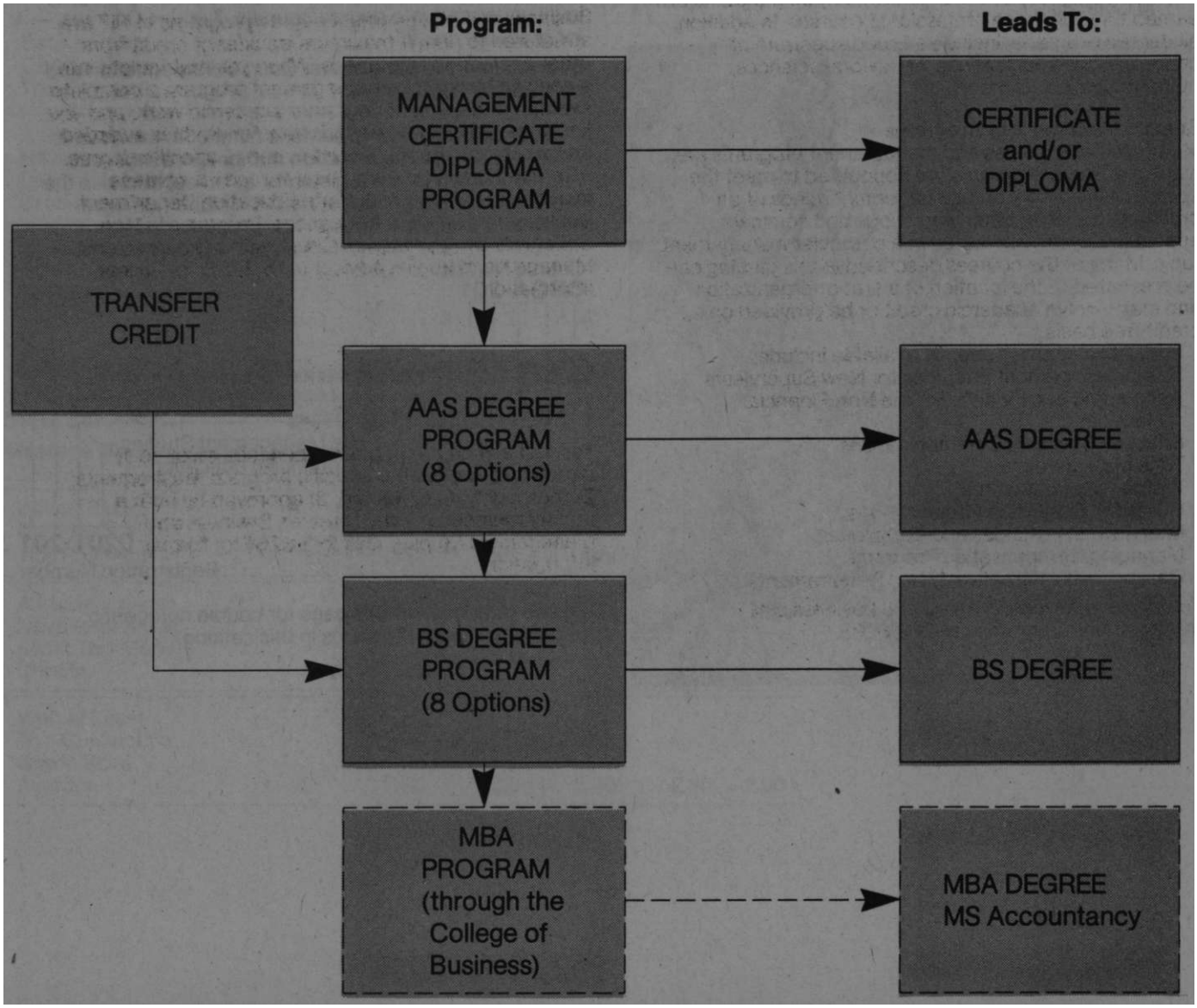
Business and Management Studies

What's Available?

Approximately 100 courses in Business and Management Studies subjects are available through the College of Continuing Education.

Programs leading to the AAS and BS degrees are available in business administration, general management, accounting, marketing, production management, personnel management, and traffic and transportation management. An upper-division BS transfer program is available in health services management. If you're interested in specializing on a shorter term basis in one of these business or management fields, CCE offers a Management Development Program leading to a management certificate and management diploma.

Business/Management Program Paths



The Management Development Program
This program has two components—first, a year-long 14 credit course (The Management Process, CBCE-200) in practical supervision, management, and communication skills, leading to a management certificate; and second, further study totalling 20 quarter credits in one of 13 areas of concentration for a management diploma (see page 29 for further description). You can apply all management certificate and diploma credits to appropriate MS and BS degree programs.

Business and Management degree programs
Programs leading to an AAS and BS degree in Business Administration are available in Accounting and Business Administration. AAS and BS degree programs in Management are offered in General Management, Marketing, Personnel Administration, Production Management, and Traffic and Transportation. An upper division transfer program leading to a BS degree in Management is available in Health Services Management. All business and management degree programs include a core group of business courses in organization and management, accounting, data processing and business law common to all programs. Approximately half of the credits in degree programs are earned through these professional courses. In addition, all degree programs include a broad spectrum of courses in communications, behavioral sciences, humanities, and science.

Special Management Programs
Many special business and management programs are available. Some programs are conducted to meet the specific supervisory and management needs of an organization, while other workshops and seminars appeal to anyone interested in a particular management topic. Many of the courses described in this catalog can be presented at the location of a firm or organization and may involve academic credit or be provided on a credit-free basis.

Special programs currently available include:
- Basic Management Practices for New Supervisors
- Accounting and Finance for the Non-Financial Manager
- Effective Business Communications
- Time Management
- Women in Management
- Resolving Conflict in Organizations
- Interviewing Practices and Techniques
- Managing Compensation Programs
- Dealing with Affirmative Action Requirements

For further information on special business and management programs call 262-6293.

What are the Requirements for a Degree in Business or Management?

Some of the general guidelines applicable to all business and management programs are:
- You'll need to complete at least 92 quarter credits (96 quarter credits for Accounting Option) to earn an AAS degree, and 184 quarter credits (192 quarter credits for Accounting Option) for a BS degree.
- You should follow the program outline when selecting courses.
- You should plan to complete all AAS level courses before taking BS level courses. However, you may take courses in any sequence as long as you have met the prerequisites.

What About Transfer Credit From Other Schools?

Business and management degree programs at RIT are structured to permit maximum transfer of credit from other accredited institutions. When you matriculate into a specific business or management program a complete evaluation is made of your prior academic work; and you know immediately how much transfer credit is awarded and what courses you'll need to earn a specific degree.

Transfer credit may also be awarded for courses included in the new York State Education Department Publication, "Guide to Educational Programs in Non-Collegiate Organizations." Check with a Business and Management Studies advisor (475-2471) for further information.

Can I Earn Credit Based on Prior Experience

Yes, but any credit for prior experience must be 1) directly related to your specific program requirements; 2) thoroughly documented; 3) approved by both a faculty member and the Director, Business and Management Studies. Call 262-6264 for further information.

Who Teaches Business and Management Courses?

Most business and management courses are conducted by men and women who teach what they do professionally. Our faculty are selected based on their professional competence, academic background and teaching ability. Business and management faculty teach because of their enthusiasm for their subject, their interest in seeing others develop personally and professionally, and their own need for a creative outlet for their energy and competence.

Do the Views of Business and Management Students Count?

Yes! Every business and management course is evaluated by each student. Also business and management faculty visit each other's classes to share ideas with the goal of improving instructional quality. Workshops on teaching effectiveness are also provided regularly.

If you have a concern about any aspect of a business or management course first talk it over with your instructor. He or she is interested in your view. If you have a problem which cannot be resolved with your instructor, call the Director, Business and Management Studies 262-6264 or make an appointment with an advisor (475-2471).

Courses of Special Interest

You may want to consider taking one or more Business and Management Studies courses which will help you advance in your career, enable you to enter a new career, or just add to your understanding of an area which interests you. Here are several courses which are particularly popular with those who want to...

Become a Supervisor or Improve Supervisory Skills
CBCE-200 The Management Process (p. 35)
CBCI-224 Interviewing Techniques (p. 37)

Own, Manage or Invest in a Small Business
CBCE-221 New Venture Development (p. 35)
CBCE-222 Small Business Management & Finance (p. 35)
CBCE-223 Small Business Marketing & Planning (p. 35)

Improve Management of Your Own Personal Finances
CBCD-204 Personal Financial Management (p. 34)
CBCD-404 Personal Financial Decision Making (p. 34)

Sharpen Your Sales and Marketing Techniques
CBCG-210 Effective Selling (p. 36)
CBCG-216 Sales Management (p. 36)
CBCG-213 Advertising Principles (p. 36)

Be a More Effective Administrator
CBCE-200 The Management Process (p. 35)
CBCI-229 Personnel Administration (p. 37)
CBCI-324 Resolving Conflict Within Organizations (p. 29)

Learn More About Not-for-Profit Organizations
CBCA-271 Accounting for Not-for-Profit Organizations (p.)
CBCF-241 Health Institutions Management I (p. 35)
CBCF-242 Health Institutions Management II (p. 35)
CBCF-341 Health Administration Functions I (p. 36)
CBCF-342 Health Administration Functions II (p. 36)

Prepare for New York State License Exams in Real Estate and Insurance
CBCM-201 Basic Real Estate Principles (p. 39)
CBCM-202 Advanced Real Estate Principles (p. 39)
CBCN-271 Principles of Insurance (p. 39)
CBCN-272 Principles of Insurance II (p. 39)

The two courses in Real Estate and the two courses in Principles of Insurance are approved by the New York State Division of Licenses as preparation for the broker's licenses examination in real estate and insurance. These courses will provide you with an excellent foundation for a career in these fields.

New Course Offerings
CBCC-599 BASIC Programming for Business (p. 34)
CBCD-404 Personal Financial Decision Making (p. 34)
CBCG-218 Principles of Retailing (p. 36)
CBCG-423 Publicity and Public Relations (p. 36)

For More Information

Major areas of study are listed below. Call 262-6264 for further information.

Accounting*
Business Law
Data Processing
Finance
General Business Administration and Management*
Health Services Management*
Insurance
Marketing*
Mathematics and Statistics for Business
Personnel Administration*
Production Management and Industrial Engineering*
Real Estate
Small Business Management
Traffic and Distribution Management*

**Bachelor of Science (BS) degree programs.*

Management Development Program

The Management Development Program is designed to help you acquire more effective supervisory and management skills and develop a better understanding of one of 13 professional fields.

The program has two levels or phases of study: a management certificate level and a management diploma level. You can complete both phases in less than two years of part-time study. You can apply all credits earned in the Management Development Program toward appropriate AAS and BS degree programs in the College of Continuing Education*

THE MANAGEMENT CERTIFICATE LEVEL

You can earn a management certificate by completing a single 14 credit course, The Management Process. This nine-month course (extending over three academic quarters) provides an excellent introduction to supervision and management by focusing on:

Personal Self-Development—emphasis on developing communication skills, understanding typical problems facing any supervisor, and developing techniques for managing more effectively.

Practical Applications of Management Theories—including an understanding of important organizational theories, their application in various types of organizations, and emphasis on the major functions of management.

Management Problems and Issues—covering current topics related to performance appraisal, current legislation affecting business and emerging issues affecting management.

Approximately 50 topics of current importance to supervisors are covered including: increasing employee motivation; managing your time more effectively; reducing tension and conflict; leadership styles; getting your point across; and many more topics emphasizing important practical principles of supervision and management.

The Management Process utilizes a variety of presentation methods—formal instruction, panel discussions, small study groups, management simulation games, and audiovisual presentations—designed to make the course interesting as well as informative.

You will associate with others who have similar job responsibilities and career goals and work on a project (perhaps outside the classroom) related to your own management interests.

Instruction is usually provided by a team of management specialists, rather than a single instructor.

DIPLOMA LEVEL

A Management Diploma may be earned by completing a total of 20 additional quarter credits in one of the following areas of concentration:

Accounting
Applied Science
Communications
Criminal Justice
Data Processing
Finance
General Management
Industrial Management
Marketing
Personnel Administration
Purchasing
Social Work
Traffic and Transportation

Only credits earned while taking the Management Process (CBCE-200) or completed after you have earned a Management Certificate are applicable to the Management Diploma. You can also earn up to four of the 20 credits for a Management Diploma through demonstrated management responsibilities you have accomplished outside the classroom.

**The Management Process (CBCE-200, 201, 202) may be substituted tor the following:*

	Qtr. Cr.
Organization & Management (CBCE-203)	4
Dynamic Communications I (CHGL-204)	4
Professional Elective	6
	14

In sequentially numbered courses, the lower numbered course is prerequisite.

Core Requirements, All Business and Management Programs

Below are the core requirements for all business and management degree programs to which professional program requirements are added and listed on pages 30 and 31 except for Health Services Management (see p. 32).

	Professional Courses	Qtr. Cr.	General Ed. Courses	Qtr. Cr.	Math, Statistics & Science	Qtr. Cr.
Associate in Applied Science Degree Program	Organization & Mgmt. . . . CBCE-203	4	Dynamic Comm. I. CHGL-204	4	Science Electives (2).	12
	Financial Accounting I & 11(1) CBCA-201, 202	8	Dynamic Comm. II. CHGL-205	4	Math for Business... CBCH-201,202	8
	Managerial Acct. CBCA-203	4	Economics. CHGS-221,222	8		
	Business Law. CBCB-301,302	8	Psychology. CHGS-211	4	Statistics. CBCH-351,352	8
	Data Proc. Principles CBCC-321	4				
	Professional Concentration Courses (see p. 30).	16				
	Total:	44	Total:	20	Total:	28

	Professional Courses	Qtr. Cr.	General Ed. Courses	Qtr. Cr.	Math, Statistics & Science	Qtr. Cr.
Bachelor of Science Degree Level	Data Proc. Systems CBCC-322	4	Discussion Skills & Leadership. CHGL-302	4	Science, Technology & Humanity Electives (STH) (3).	8
	"Strategic Process I&II. CBCE-401,402 (4)	8	Sociology. CHGS-231	4		
	Professional Concentration Courses (see p. 30).	36	Business Comm. CHGL-307	4		
			Communications Electives.	4		
			Humanities Electives.	12		
			Behavioral Science Electives.	8		
	Total:	48	Total:	36	Total:	8

(1) Accounting tor Engineers, CBCA-207. 208 may be substituted tor Financial Accounting, CBCA-201, 202 in the following programs: marketing, personnel administration, traffic t transportation.

(2) Science electives may include any three-quarter sequence of the following:
Contemporary Science/Biology CTCS-221
Contemporary Science/Chemistry C TCS-222
Contemporary Science/Physics CTCS-223
Engineering Chemistry CTCC-241, 242, 243 or College Physics CTCP-201, 202, 203.

(3) See p. 48 tor descriptions of Science, Technology, and Humanity electives.

(4) Formerly Business Policy I and II.

Business and Management Programs (Professional Concentration Courses)

Accounting, CBCA

This comprehensive program includes cost accounting, income tax accounting, and advanced accounting, and is particularly appropriate if you're seeking a broad background in accounting or are interested in seeking New York State CPA certification.

Accounting Prof—Ional Concentration Courses	Qtr. Cr. Required for: AAS level	BS level
Intermediate Accounting I. II. III. CBCA-308, 309,310	12	
Professional Electives*.	8	4
Cost Accounting. CBCA-420		4
TaxAccountingI.iI. CBCA-422,424		8
Auditing. CBCA-504		4
Advanced Accounting I, II... CBCA-505, 506		8
CPA Business Law. CBCB-303		4
Corporation Finance. CBCD-441		4
Financial Problems. CBCD-503		4
	20	40

Business Administration, CBCE

Designed to provide you with a general understanding of and competency in essential business management principles and techniques. Professional courses cover several business areas including general management, marketing, law, data processing, personnel administration and finance.

Business Administration Professional Concentration Courses	Qtr. Cr. Required For: AAS level	BS level
Professional Electives*.	16	20
Marketing. CBCG-361		4
Money & Banking. CBCD-281		4
Personnel Administration. CBCI-229		4
Corporation Finance. CBCD-441		4
	16	36

General Management, CBCT

Similar to the Business Administration program, yet provides maximum opportunity for you to select specific management courses which meet your career goals. If you're transferring to RIT from another college, you will find this program flexible in accommodating transfer credit.

General Management Professional Concentration Courses		Qtr. Cr. Required For: AAS level	BS level
Professional Electives*		16	36
		16	36

Marketing, CBCG

Designed for preparing you for marketing, sales, or sales management careers. Emphasis is placed on the practical aspects of developing improved skills in salesmanship, sales management, and marketing research for products and services in both consumer and industrial markets.

Marketing Professional Concentration Courses		Qtr. Cr. Required For: AAS level	BS level
Marketing	CBCG-361	4	
Effective Selling	CBCG-210	4	
Advertising Principles	CBCG-213	4	
Professional Electives*		4	28
Sales Management	CBCG-216		4
Contemporary Issues in Marketing (Adv.)	CBCG-414		4
		16	36

Personnel Administration, CBCI

Deals with a range of personnel management concerns. You'll learn current techniques and practices in courses on interviewing techniques, industrial relations, compensation administration and labor law.

Personnel Administration Option Professional Concentration Courses		Qtr. Cr. Required For: AAS level	BS level
Personnel Administration	CBCI-229	4	
Interviewing Techniques	CBCI-224	4	
Professional Electives*		8	24
Compensation Administration	CBCI-323		4
Personnel Administration (Adv.)	CBCI-434		4
Labor Law	CBCI-437		4
		16	36

Production Management, CBCJ

Includes a wide variety of production and industrial engineering areas including production management, quality control, materials management, purchasing, and current industrial engineering techniques. All instructors of courses in this area hold management positions in the production field.

Production Management Professional Concentration Courses		Qtr. Cr. Required For: AAS level	BS level
Production Management	CBCJ-209	4	
Fundamentals of Industrial Engineering	CBCJ-305	4	
Industrial Engineering Economy	CBCJ-306	4	
Professional Electives*		4	24
Personnel Administration	CBCI-229		4
Operations Research	CBCC-451,452		8
		16	36

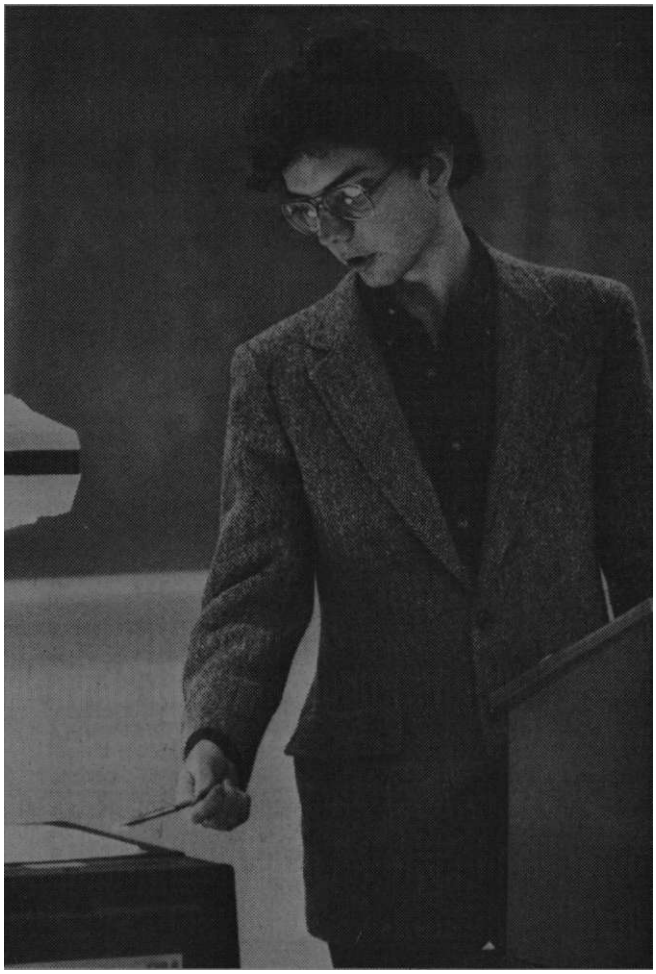
**Professional electives may include any course, not included as a program requirement, in the following areas: accounting, data processing, finance, general business administration and management, health services management, marketing, personnel management, production management and industrial engineering, traffic and transportation, real estate, insurance, computer systems.*

In sequentially numbered courses, the lower number course is prerequisite.

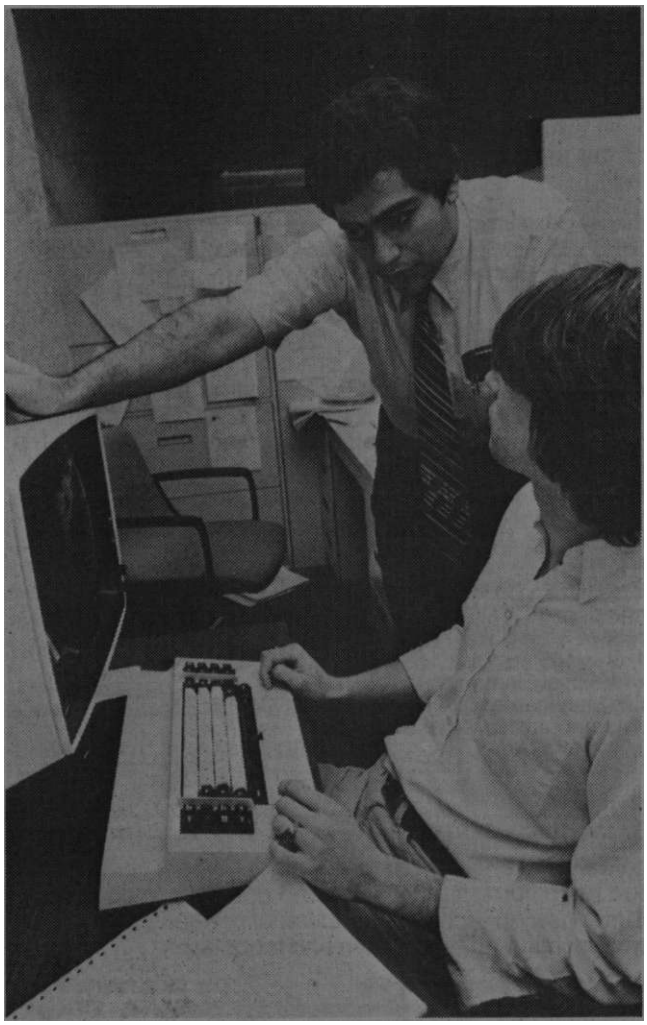
Traffic and Transportation, CBCM

Provides practical study of the dynamic, complex and vital transportation industry including the nature, economics, management and policy dimensions of comprehensive transportation and distribution systems.

Traffic and Transportation Professional Concentration Courses		Qtr. Cr. Required For: AAS level	BS level
Traffic & Trans. Management Principles & Practices	CBCL-234	4	
Traffic & Transportation Rates & Classifications	CBCL-239	4	
Professional Electives		8	20
Transportation Law	CBCL-334		4
Materials Management	CBCL-314,315		8
Traffic & Transportation Case Problems	CBCL-431		4
		16	36



Health Services Management



The growth of health care systems and facilities has led to new opportunities in management for health care professionals. Hospitals, HMO's, nursing homes, ambulatory surgical units, hospices, maternity centers, group practices, neighborhood care centers, and regulatory, voluntary, and home-care agencies all need skilled professionals who can combine technical knowledge with sound supervisory and managerial practices, in positions such as nurse-manager, unit or department manager, staff consultant, or program coordinator. By bringing together the study of management practices and functions, interpersonal and organizational behavior and communication, and the operations of health-related institutions, RIT's Health Services Management Program is designed to give health care professionals the administrative and managerial competencies required in these new positions.

The Health Services Management Program-an upper division program—is intended primarily for health care professionals (or those wishing to enter the field) who have an associate's degree (or equivalent) in an allied health field. Allied health professions include, for example: respiratory, radiation, occupational, physical, or speech therapy; radiologic, ophthalmic, or nuclear medicine technology; medical records; dental hygiene; mental health; physician assistant; and nursing. The program leads to a Bachelor of Science degree and may be completed entirely in part-time evening study.

Course Requirements

UPPER DIVISION PROGRAM IN HEALTH SERVICES MANAGEMENT

Business/Management Courses		Qtr. Cr.
Health Institutions Management	CBCF-241,242	8
Legal Aspects of Health Care	CBCF-340	4
Health Administration Functions	CBCF-341,342	8
Accounting for Not-for-Profit Organizations	CBCA-271	4
Corporation Finance	CBCD-441	4
Personnel Administration	CBCD-229	4
Professional Electives		12
		44

Math/Science Courses		Qtr. Cr.
Statistics	CBCH-351,352	8
Computer Science Elective		8
Science, Technology and Humanity Elective		4
		20

General Education Courses		Qtr. Cr.
Discussion Skills & Leadership	CHGL-302	4
Business Communications	CHGL-307	4
Economics	CHGS-221	4
Behavioral Science Electives		8
Humanities Electives		8
		28

Total Quarter Credits = 92

Business and Management Studies

Course Descriptions

Accounting

CBCA-201, 202 Financial Accounting
Registration #0201-201, 202
Emphasis is placed on analyzing and recording business transactions, and understanding the results of these transactions. Preparations of basic financial statements required by any business are included.

Credit: 4/Qtr.

CBCA-203 Managerial Accounting
Registration #0201-203
The functions and uses of accounting information are presented. Emphasis is placed on the preparation and operation of dynamic budget and the use of accounting data for control and profit planning.

Prerequisite: CBCA-202 or CBCA-208

Credit: 4

CBCA-207, 208 Accounting for Engineers
Registration #0201-207, 208
A survey of basic accounting principles for those interested in a general understanding of accounting terminology, its functions within an organization and the application of accounting data in decision making.

Credit: 4/Qtr.

CBCA-271 Accounting for Not-For-Profit
Registration #0201-271 Organizations
A survey of accounting practices typically used by not-for-profit organizations, including accounting on an accrual basis. Balance sheet construction and analysis, internal and external reporting considerations, and tax reporting.
NOTE: Not recommended for Accounting majors.

Credit: 4

CBCA-308, 309,310 Intermediate Accounting
Registration #0201-308, 309, 310
Designed to broaden understanding of accounting practices and improve skills in gathering, analyzing, reporting, and evaluating accounting data. Emphasis is placed on accounting theory and concepts as they relate to business problems.

Prerequisite: CBCA-203

Credit: 4/Qtr.

CBCA-420 Cost Accounting
Registration #0201-420
Emphasis on the use of cost accounting theory and techniques as tools for effective decision making. Specific topics include: cost-volume-profit relationship, use of standard costs, relevant costs, budgetary control, the contribution approach, capital budgeting, cost allocation, inventories and decision models.

Prerequisite: CBCA-203 or equivalent

Credit: 4

CBCA-422, 424 Income Tax Accounting
Registration #0201-422, 424
A comprehensive examination of current income tax laws related to individual, partnership, and corporate tax returns, and the accountant's role in establishing good tax practices.

Prerequisite: CBCA-202 or equivalent

Credit: 4/Qtr.

CBCA-504 Auditing
Registration #0201-504
An analysis of the role of the auditor, the evolution of auditing theory and techniques, with concentration on current theory and principles of auditing. The appropriateness of specific auditing procedures is presented.

Prerequisite: CBCA-310 or equivalent

Credit: 4

CBCA-505, 506 Advanced Accounting
Registration #0201-505, 506
An appraisal of more advanced techniques dealing with consolidated statements, statements of funds, price level changes, foreign exchange.

Prerequisite: CBCA-310 or equivalent

Credit: 4/Qtr.

CBCA-508 CPA Problems
Registration #0201-508
A general review of accounting theory and practice designed both to assist students preparing for the CPA examination and to review and improve their grasp of the various aspects and applications of accounting. Emphasis is on the analytical reasoning required in problem solving.

Prerequisite: CBCA-506 or equivalent

Credit: **4**

CBCA-554 Seminar in Accounting
Registration #0201-554
Individualized study in accounting for advanced level students. Topic for an Independent Study Project in Accounting is selected by student, often in cooperation with a faculty member and submitted to Director, Business and Management Studies. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies.

Credit: **4**

Business Law-CBCB

CBCB-301 Business Law I
Registration #0202-301
Introductory course in business law including basic legal principles and procedures, criminal law, torts, contracts, sales, and real property.

Credit: **4**

CBCB-302 Business Law II
Registration #0202-302
Continuation of CBCB-301 includes law of agency, partnerships, corporations, insurance and bankruptcy. Also presents survey of commercial paper, secured transactions, and bank deposits.

Prerequisite: CBCB-301

Credit: **4**

CBCB-303 CPA Business Law
Registration #0202-303
A preparatory course in law for those planning careers as CPA's. Topics include contracts, agency, Uniform Commercial Code, sales, letters of credit, bulk transfers, investment securities, estates, trusts, suretyship and guaranty, creditor's rights, corporation and partnership law.

Prerequisite: CBCA-302

Credit: **4**

Data Processing and Systems Analysis-CBCC

CBCC-321 Data Processing Principles
Registration #0203-321
Introduction to computer technology including an examination of the concepts, functions, and techniques associated with modern data processing. While this course does not include any programming, the inter-related areas of operation, programming, and systems analysis are discussed.

Credit: **4**

CBCC-322 Data Processing Systems
Registration #0203-322
Covers the spectrum of management considerations pertaining to the use of computers in business systems. Provides a methodology for effective planning, development, installation, and management of computer-based business information systems.

Prerequisite: CBCC-321 or equivalent

Credit: 4

CBCC-451, 452 Operations Research
Registration #0203-451, 452
Application of operation research techniques including: digital computer simulation probability, queuing, network analysis, decision theory, linear programming, dynamic programming, game theory and inventory theory. The computer center is utilized, and no prior computer experience is required.

Prerequisite: CBCH-352 and CBCC-322, or equivalent

Credit: 4/Qtr.

CBCC-599 BASIC Programming for Business
Registration #0203-599
An introduction to computers and computer programming for business students. After a brief survey of computer systems and terminology, students will learn to utilize a timeshared computer system. The introduction to BASIC programming covers all major functions; problems and examples will be drawn from business applications.

NOTE: Not for Computer Science majors.

Credit: 2

Finance-CBCD

CBCD-204 Personal Financial Management
Registration #0204-204
The main objective of this course is to enable you to manage your personal finances more effectively. The course deals with personal budgeting, protection of personal assets, consumer credit, investments, and estate planning.

Credit: 4

CBCD-281 Money and Banking
Registration #0204-281
An introduction to the study of money, credit and financial institutions. Major emphasis is placed on the influence of monetary and fiscal policy on economic stability and growth, and the role of the commercial banking system.

Prerequisite: CHGS-221, 222

Credit: 4

CBCD-404 Personal Financial Decision Making
Registration #0204-404
The course will focus on the financial decision-making process from an individual planning perspective to include basic tax planning concepts, accumulation, and retirement planning models. This course will expand on the topics presented in Personal Financial Management (CBCD-204), with particular emphasis on planning for decisions related to insurance, investment, and estate transfer. Throughout the course basic mathematical concepts (compounding, discounting, etc.) and the effect of taxation will be applied to each area.

Credit: 4

CBCD-441 Corporation Finance
Registration #0204-441
The financial operations of a business firm are presented, including financial considerations involved in forecasting, planning, and control. Course focuses on how to analyze a corporate financial statement and provides an understanding of the basic corporate tax structure.

Prerequisite: CBCA-202 or CBCA-208

Credit: 4

CBCD-451 Corporate and Business Taxes
Registration #0204-451
Introductory study of federal income, estate and gift taxation laws and regulations as they apply to various types of business entities. Emphasis on business expenses, gains on the sale of capital and business assets and depreciation.

Prerequisite: CBCA-202 or equivalent

Credit: 4

CBCD-481 International Banking and Finance
Registration #0204-481
The basic elements of international banking and finance are presented including: the basis of international trade; balance of payments concepts, the international monetary system, international banking activities, and the various ways international trade is financed.

Credit: 4

CBCD-503 Financial Problems
Registration #0204-503
An examination of problems encountered in many areas of corporate finance. The emphasis is on analytical and decision making techniques used to develop acceptable solutions. The case approach is used extensively.

Prerequisite: Corporation Finance CBCD-441

Credit: 4

CBCD-507 Security Analysis
Registration #0204-507
An introduction to investment markets with emphasis on the selection of common stocks and bonds. Specific types of securities are examined. Industry and corporation analysis are presented with emphasis on current investment topics.

Credit: 4

CBCD-508 Financial Management
Registration #0204-508
A management-oriented approach to the finance function of the corporation with particular emphasis on capital planning, procurement, distribution and techniques for evaluating investment decisions.

Credit: 4

CBCD-509 Investment Management
Registration #0204-509
The objective and characteristics of effective investment portfolios for both individuals and institutions are presented. Consideration is given to economic and technical analysis, investment diversification, institutional investment requirements, and the elements of capital market theory. The student is given guidance in establishing his or her own investment objectives and in formulating a long-term portfolio strategy.

Credit: 4

CBCD-599 Independent Study Project in Finance
Registration #0204-599
Individualized study in finance for advanced level students. Topic for an Independent Study Project in Finance is selected by student, often in cooperation with a faculty member and submitted to Director, Business and Management Studies. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies.

Credit: 4-8

General Management

CBCE-101, 102, 103 Human Relations
Registration #0205-101, 102, 103
Designed to acquaint both employees and supervisors with basic principles of human behavior: motivation, morale, leadership, communication, emotional understanding, and organizational behavior. Managerial aspects common to all supervisory positions emphasized. An identical daytime class also available for shift workers.

Credit: 2/Qtr.

CBCE-200, 201, 202 The Management Process
Registration #0205-200, 201, 202
A comprehensive course in effective supervision and management for supervisors and potential supervisors. Approximately 50 topics of current importance to supervisors are presented, as well as essential management principles, business communications, and practical supervision techniques. Specific supervisory problems of course participants are discussed in informal sessions and through projects conducted outside the classroom. Instruction is usually guided by a team of management specialists. Lecture-discussion, panel presentations, audiovisual presentations, simulation exercises and case studies. (Course extends over three consecutive quarters and should be taken in sequence.) A management certificate is awarded for successful completion of the course. See p. 29 for further information.

Credit: 14

CBCE-203 Organization and Management
Registration #0205-203
A general introduction to the major management functions and the organization of business. Topics include business and personal planning, organizing, staffing, implementing, directing, control, time management, appraisal, compensation, organizational theories, decision making, problem solving, influences on managerial decision making, communication, management styles and motivation. Extensive use is made of learning groups in which students work together in small groups to discuss and apply concepts. Some out of class time is required to prepare for a learning group presentation.

Credit: 4

CBCE-599 Independent Study Project
Registration #0205-599 In General Management
Individualized study in general management for advanced level students. Topic for an Independent Study Project in General Management is selected by student, often in cooperation with a faculty member and submitted to Director, Business and Management Studies. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies.

Credit: 4 - 8

Small Business Management

CBCE-221 New Venture Development
Registration #0205-221
Course presents factors to be considered by those interested in the ownership or management of small business enterprises. Includes who should be an entrepreneur, guidelines for starting a new business, basic legal considerations, and approaches for obtaining capital and credit.

Credit: 4

CBCE-222 Small Business Management
Registration #0205-222 and Finance
The functions required to successfully manage and finance a small business are presented. A variety of topics including staffing a small business, purchasing and supplier relations, customer credit policies, and the financial and administrative controls necessary to minimize business risk.

Credit: 4

CBCE Small Business Marketing
Registration #0205-223 and Planning
The planning and execution of successful small business marketing approaches including market determination, distribution and pricing are presented. The regulatory environment facing small business is included along with techniques for planning growth.

Credit: 4

Business Strategy and Planning

CBCE-401 Strategic Process I
Registration #0205-401
Provides an examination and analysis of managing all human institutions, as well as the business firm. Involves the determination of objectives and strategies for the future of the institution, and the determination of approaches to the implementation of these objectives and strategies.

Prerequisite: CBCA-202 or CBCA-208; CBCH-202; CBCB-302 CBCC-322 (Senior students only)

Credit: 4

CBCE-402 Strategic Process II
Registration #0205-402
Develop information necessary to analyze the strategic process of an institution and includes the preparation of a work project utilizing the approaches developed in Strategic Process I.

Prerequisite: CBCE-401 (Senior students only)

Credit: 4

CBCE-456 Management Systems Concept
Registration #0205-456
Designed to provide an understanding of systems theory and the systems approach with an emphasis on theory, principles and their application in differing situations. Topics covered include scientific methods, systems applications, PERT/CPM, systems approach, decision analysis, major systems, PPBS and social systems.

Prerequisite: CBCC-322 or equivalent (Senior students only)

Credit: 4

CBCE-461 Government and Business
Registration #0205-461 Relationships
An introductory presentation of the problems involved in government-business relations. Emphasis is placed on the different powers of the government and the constitutional limitations that restrict government in regulating business. Various administrative agencies are examined for specific industries and types of business.

Credit: **4**

CBCE-554 Management Seminar: Ethical Issues
Registration #0205-554 in Business
Investigates the interrelations between ethics and business decisions. An approach to normative ethics—a guide to action promoting human welfare and the process of managerial practices.

Credit: **4** (Senior students only)

Health Services Management—CBCF

CBCF-241,242 Health Institutions Management
Registration #0206-241, 242
Introductory survey of administration in health care facilities including roles, functions, and responsibilities; organization structure; health care focusing on patient care, education and research; supervisory management for hospitals and related care facilities, emphasizing managerial planning, span of supervision, financing and coordination of public and private efforts.

Credit: 4/Qtr.

CBCF-340 Legal Aspects of Health Care
Registration #0206-340 Administration
An overview of legislation as it applies to health facilities. All levels of law-federal, state and local—discussed. Social Security, National Labor Relations, New York State Disability and Workmen's Compensation, minimum wage, and Code of the New York State Health Department are examples of regulatory procedures to be analyzed. The role of the state and local governments in licensing and accrediting, and the standard of accreditation by major professional bodies will be reviewed.

Credit: 4

CBCF-341, 342 Health Administration Functions
Registration #0206-341, 342
Course examines contemporary issues in health care management. Emphasis is placed on the daily operational situations and decisions encountered in managing a health care unit, including personnel administration, financial management, and organization planning and administration.

Credit: 4/Qtr.

CBCF-599 Independent Study Project in Health
Registration #0206-599 Institutions Management
Individualized study in health institutions management for advanced level students. Topic for an independent Study Project in Health Institutions Management is selected by student, often in cooperation with a faculty member and submitted to chairperson, Health Services Management. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Health Services Management Chairperson.

Credit: 4 - 8

Marketing—CBCG

CBCG-210 Effective Selling
Registration #0207-210
Investigates the importance of the sales function and the necessary general characteristics of a successful salesperson. The practical applications of effective sales presentation are discussed. Audiovisual materials are utilized extensively with video feedback of student sales presentations.

Credit: 4

CBCG-213 Advertising Principles
Registration #0207-213
Social, economic and mass communication aspects of advertising with special emphasis on the role of advertising in the marketing mix. Special topics include agency/client relationship, radio and TV ratings, history of advertising, the creative process and psychographics. Guest lectures discuss corporate campaigns.

Credit: 4

CBCG-214 Advertising Evaluation and
Registration #0207-214 Techniques
Course presents basic approaches used in the planning, preparation and evaluation of advertising and sales promotional materials. Course incorporates a number of projects involving writing/layout/production for print, broadcast and specialized media advertising.

Credit: 4

CBCG-216 Sales Management
Registration #0207-216
The essential skills of the sales manager are discussed and the recruiting and selection of sales people are analyzed. Compensation, motivation, and evaluation techniques for the sales force are presented. Course utilizes films, guest speakers, and current case studies in effective sales management.

Prerequisite: CBCG-210

Credit: 4

CBCG-217 Marketing Research
Registration #0207-217
The role of marketing research within the business community is presented including the application of marketing research techniques to new product development, advertising, and product evaluation. Survey techniques including test marketing, sampling, and statistical analysis are stressed.

Prerequisite: CBCG-361, CBCH-352, or equivalent

Credit: 4

CBCG-218 Principles of Retailing
Registration #0207-218
This course provides the student with an understanding of the fundamental techniques involved in the field of Retailing and how to apply these techniques in the "real business world" via the case study method. The overall importance of the retailer as a significant member of the traditional channel of distribution will be examined and studied. Specific aspects of retailing will be examined: retailing mix, site location, store design & layout, people management, merchandising management & control, buying, pricing, sales promotion, etc. The course will include guest speakers from local retail establishments.

Credit: 4

CBCG-361 Marketing
Registration #0207-361
An introductory course in marketing design to provide a better awareness of the function of marketing and how marketing relates to other areas of business. Topics include developing a product strategy, behavior aspects of the consumer and industrial markets, and current marketing issues.

Credit: 4

CBCG-413 Promotional Principles and
Registration #0207-413 Strategies
Course presents the basic marketing promotional tools-advertising, personal selling, sales promotion, and publicity-with emphasis on the integration of these tools into effective marketing strategies. Promotion will be analyzed as a basic element of a firm's marketing mix and a thorough analysis of each element of the promotional mix will be an integral part of the course.

Prerequisite: CBCG-213, CBCG-361

Credit: 4

CBCG-414 Contemporary Issues in Marketing
Registration #0207-414 (IND.) (Advanced)
Examination of industrial marketing at an advanced level. Typically course will include a major term paper dealing with an area of industrial marketing of particular interest to the student.

Prerequisite: CBCG-361 or equivalent

Credit: 4

CBCG-423 Publicity and Public Relations
Registration #0207-423
The course will concentrate on the publicity process for both the profit and non-profit sectors, and include basic public relations techniques as applied to marketing and direct selling of a product, service, or organization image. It will: develop student skills in writing and placing news releases and feature articles; explore the different types of publicity releases and their use; focus on the concept of positive customer relations as a business communications tool.

Credit: 4

CBCG-461 Packaging (Principles and Practices)
Registration #0207-461
An introduction to packaging types, styles, materials, regulations, and costs, specifications and shipping requirements. Guest speakers and field trips included.

Credit: **4**

CBCG-501 International Marketing
Registration #0207-501
A study of selling and doing business abroad for the small, medium and large company from exporting to establishing branches and manufacturing overseas. Emphasis on current trends with practical operating procedures and systems stressed.

Credit: 4

CBCG-502 Marketing II
Registration #0207-502
A continuation of basic Marketing (CBCG-361) in which the student now has the opportunity of applying the major areas of basic Marketing to real life situations. Working as a team with your fellow classmates, you will develop a new product or service through the various marketing strategies and then make a presentation at the end of the course to a panel of faculty and community Marketing professionals.

Prerequisite: CBCG-361

Credit: 4

CBCG-503 Consumer Behavior
Registration #0207-503
This examines the individual influences of consumer behavior as perception, motivation, personality, learning, attitudes and the environmental influences as roles, family, reference groups, social class, culture and sub-culture. A conceptual framework for understanding the consumer decision-problem solving process is analyzed.

Prerequisite: CBCG-361

Credit: 4

CBCG-504 Marketing Case Studies
Registration #0207-504
Case study approach to understanding and solving marketing and management problems. The study of actual business cases will allow the student to become familiar with business principles and methods as they are employed in various industries; to exercise decision-making skills and defend the position taken; to think independently as well as cooperate in a committee-like situation.

Prerequisite: CBCG-502

Credit: 4

CBCG-599 independent Study Project
Registration #0207-599 in Marketing
Individualized study of marketing for advanced level students. Topic for an Independent Study Project in Marketing as selected by student often in cooperation with a faculty member and submitted to Director, Business and Management Studies. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies.

Credit: 4 - 8

Mathematics and Statistics for Business-CBCH

CBCH-201,202* Mathematics for Business
Registration #0208-201, 202
An introduction to mathematical concepts and quantitative methods required in business management. Included are: sets and the real number system, linear, non-linear and exponential functions, and systems of equations and inequalities. Differential and integrated calculus is introduced plus some special topics in quantitative analysis such as linear programming and simulation.

Credit: 4/Qtr.

CBCH-351,352 Business Statistics
Registration #0208-351, 352
An introduction to the basic tools of statistical analysis used in business including charts, ratios, frequency distributions, averages, dispersion, probability theory, sampling and decision trees. Logical procedures for making business decisions under conditions of uncertainty are emphasized.

Prerequisite: CBCH-202

Credit: 4/Qtr.

Personnel Administration-CBCI

CBCI-224 Interviewing Techniques
Registration #0209-224
A practical approach to interviewing techniques with emphasis on role plays and case studies. Coverage includes employment, disciplinary, counseling, and performance appraisal interviews.

Credit: 4

CBCI-229 Personnel Administration
Registration #0209-229
An introduction to the functions of personnel administration, including administration of employment, training job analysis, evaluation, appraisal, development, merit rating, compensation plans, adjustment of grievances, and collective bargaining.

Credit: 4

CBCI-323 Compensation Administration
Registration #0209-323
The course is designed to acquaint the student with the practical problems of employee compensation. Topics covered include: compensation issues and theory, wage and salary levels and structures, individual wage determination, and indirect compensation.

Prerequisite: CBCI-229

Credit: 4

CBCI-324 Resolving Conflict Within
Registration #0209-324 Organizations
The ability to deal with concepts and techniques to change conflict situations into problem solving opportunities is the central purpose of this course. Topics include types and sources of conflict, methods of conflict resolution and problem solving within an organization, and organizing for conflict or cooperation are discussed.

Credit: 4

CBCI-423 Benefits Administration
Registration #0209-423
A study of the theory, design, and practical administration of employee benefit plans including: paid excused time, health care, capital accumulation plans, life insurance, retirement. Social Security and other related benefits. Government regulations as well as issues and trends will also be covered.

Prerequisite: CBCI-229

Credit: 4

CBCI-434 Personnel Administration (Advanced)
Registration #020-434
Study of the application of advanced principles and techniques of personnel administration to particular firms and special personnel problems. Extensive use of both individual and group projects, as well as case studies.

Prerequisite: CBCI-229 or equivalent

Credit: 4

CBCI-437, 438 Labor Law
Registration #0209-437, 438
Detailed study of labor problems and laws which affect them: strikes, secondary boycotts, union organization, National Labor Relations Board, Taylor Act, and workmen's compensation. Case studies utilized.

Credit: 4/Qtr.

CBCI-439 Labor Law (Collective Bargaining)
Registration #020-439
A study of the collective bargaining process and its relationship to the economy. Course includes analysis of contract negotiations, the grievance and arbitration procedure in a management-union relationship. A role-playing technique is utilized with student participation in planning, negotiating, and reaching agreement on typical contract clauses.

Prerequisite: CBCI-438 or equivalent

Credit: 4

Entering students who want to register tor CBCH-201 are required* **to take a diagnostic examination *to determine the level at which they may start* **the** *sequence. (See page 48 lor further information.) Students who have had previous college level mathematics courses should consult with an advisor.*

In sequentially numbered courses, the lower number course is prerequisite.

CBCI-599 Independent Study Project in
Registration #0209-599 Personnel Administration
Individualized study in personnel administration for advanced level student. Topic for an Independent Study Project in Personnel Administration is selected by student, often in cooperation with a faculty member, and submitted to Director, Business and Management Studies. The scope of the project, time-table for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies

Credit: 4 - 8

Production Management and Industrial Engineering

CBCJ-209 Production Management
Registration #0210-209
The organization of production functions with emphasis on management responsibilities. All levels of factory operations are discussed and the relationships between various aspects of production are presented.

Credit: 4

CBCJ-305 Fundamentals of Industrial Engineering
Registration #0210-305
An overview of industrial engineering problems and techniques is presented including facilities selection and layout, methods analysis, work measurement, operations planning and control materials handling and an introduction to operations research.
Credit: 4

CBCJ-306 Industrial Engineering Economy
Registration #0210-306
The economic factors required for rational decision are presented. Emphasis is placed on analytical tools used in manufacturing environment including evaluation of capital spending alternatives, replacement alternatives, break-even analysis, effects of different depreciation methods, decision making under risk conditions, and value analysis methods.

Prerequisite: CBCJ-305

Credit: 4

CBCJ-408,409 Current Industrial
Registration #0210-408,409 Engineering Techniques
Application of advanced industrial engineering techniques including: financial analysis, linear programming, waiting line theory, simulation, and critical path methods. Objective is to apply above techniques to practical applications: purchase of capital equipment production planning, scheduling, inventory control and project management.

Prerequisite: CBCJ-306 or equivalent

Credit: 4/Qtr.

CBCJ-599 Independent Study Project in
Registration #0210-599 Industrial Management
Individualized study in industrial management for advanced level students. Topic for an Independent Study Project in Industrial Management is selected by student, often in cooperation with a faculty member, and submitted to Director, Business and Management Studies. The scope of the project timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies

Credit: 4 - 8

Transportation, Traffic and Distribution Management—CBCL

CBCL-234 Traffic and Transportation Management
Registration #0212-234 (Principles and Practices)
A study of traffic management and its relationship to other corporate functions. Includes a review of the elements of sound shipping practices with emphasis on securing the most economical mode of transportation.

Credit: 4

CBCL-239.240 Traffic and Transportation Management
Registration #0212-239,240 (Rates and Classifications)
Discussion and practice in the use of freight rates and classifications, the interpretation and determination of freight rates and charges, and analysis of best as well as most economical means of moving materials: extensive use of tariff materials as applied to actual case situations.

Prerequisite: CBCL-234 or equivalent

Credit: 4/Qtr.

CBCL-314,315 Materials Management
Registration #0212-314,315
Principles of materials management, organization, and objectives; discussion of legal phases, planning, and forecasting. Detailed analysis of the basic materials functions; major emphasis on the efficient and economical planning, procuring, scheduling, and handling of materials used in manufacturing processes; case studies used.

Credit: 4/Qtr.

CBCL-316 Distribution Management
Registration #0212-316
Provides students with knowledge of all "Distribution Management" areas, e.g. finished goods inventory control, warehousing, packaging, materials handling, transportation, plus the critical interface/trade-offs between these functions and the sales department. Impacts on the marketplace and Distribution cost savings methods are also covered.

Prerequisite: CBCL-315

Credit: 4

CBCL-334 Transportation Law
Registration #0212-334
Legal problems of transportation and traffic including evolution, construction, interpretation, and applications of the Interstate Commerce Commission Act. The Organization of the Interstate Commerce Commission and a review of its decisions are presented.

Credit: 4

CBCL-369 Purchasing Principles and Practices
Registration #0212-369
Principles and practices in purchasing and materials management. Major emphasis on organization, personnel selection, data processing, buyer-supplier relationship, records management, price and vendor problems. Developed in cooperation with Purchasing Agents' Association of Rochester. Guest lectures and a plant visitation are normally scheduled.

Credit: 4

CBCL-420 Traffic and Transportation Management
Registration #0212-420 (Domestic Transportation)
An overview of the practical aspects of the day-to-day administration of a typical traffic organization. Selected field trips and outside speakers are included.

Credit: 4

CBCL-432 Traffic and Transportation
Registration #0212-432 (Case Problems)
Case study method used to analyze current traffic and transportation problems. Emphasis on problem analysis and decision making.

Prerequisite: CBCL-240 or equivalent

Credit: 4/Qtr.

CBCL-435 International Transportation
Registration #0212-435
A comparative study of international transportation systems; their operations, problems, and policies. Course covers aspects of international traffic including ocean rates and regulations, containerization, air cargo, freight forwarding, documentation, international banking, and governmental agencies.

Credit: 4

CBCL-599 Independent Study Project in Traffic and Transportation Management
Registration #0212-599
Individualized study in traffic and transportation management for advanced level students. Topic for an Independent Study Project in Traffic and Transportation Administration is selected by student, often in cooperation with a faculty member, and submitted to Director, Business and Management Studies. The scope of the project, timetable for completion, and proposed credit are established prior to registration.

Prerequisite: Approval of Director, Business and Management Studies.

Credit: 4 - 8

Real Estate-CBCM

CBCM-201 Basic Real Estate Principles
Registration #0213-201
Comprehensive study of real estate principles including: valuation and appraisal, subdivisions and development, interests in realty, real estate contracts, liens and easements, deeds, bonds and mortgages, license law, agency, leases and ethics. Completion of this course satisfies New York State license requirements for real estate salespersons.

Credit: 4

CBCM-202 Advanced Real Estate Principles
Registration #0213-202
A study of topics related to real estate including: operation of real estate broker's office, construction, subdivision development, taxes, alienations, property management, rent regulations, and appraisal. Completion of Basic Real Estate Principles and this course satisfy New York State license requirements for real estate brokers.

Prerequisite: CBCM-201

Credit: 4

CBCM-203 Real Estate Investment and Finance
Registration #0213-203
An introduction to real estate investment with emphasis on the purchase and sale of real estate, the acquisition of financing, the selection of appropriate ownership forms, and the use of statistical data in making real estate decisions.

Credit: 4

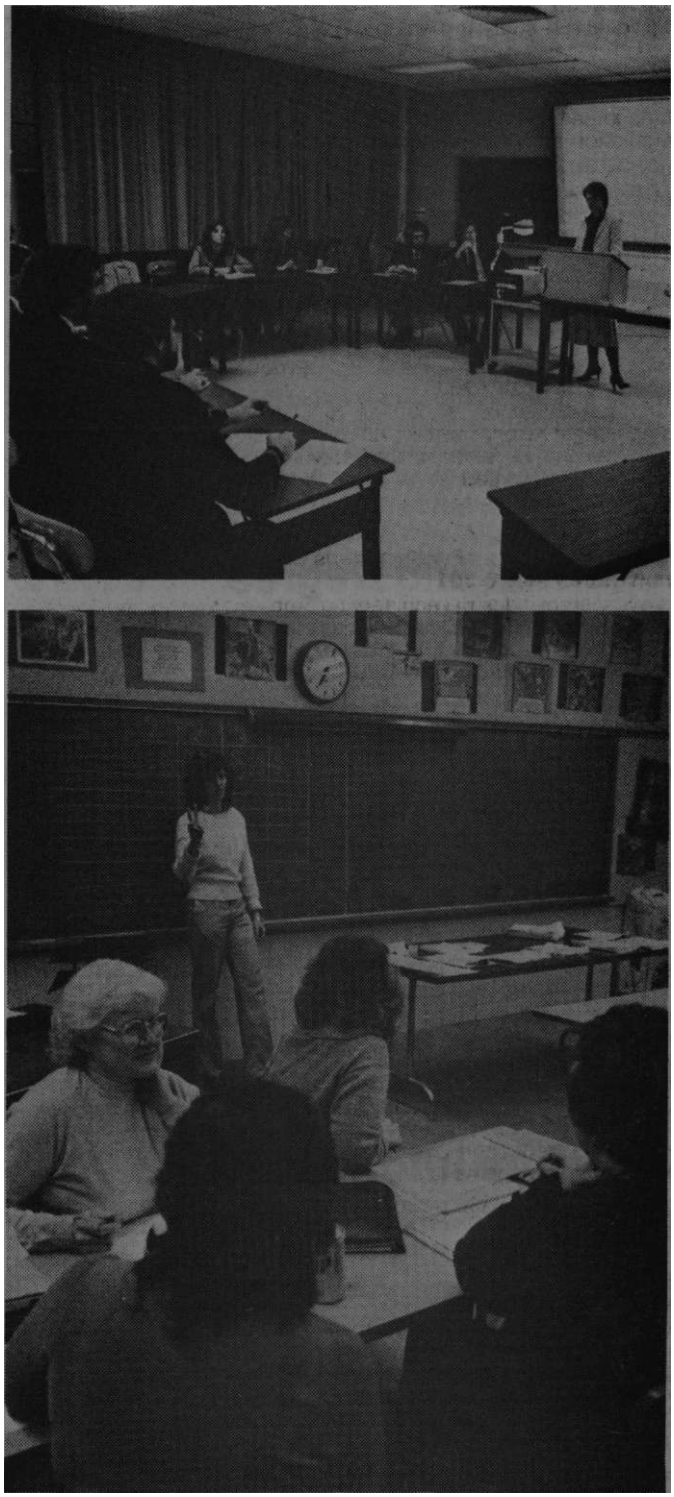
CBCM-204 Real Estate Evaluation, Operation,
Registration #0213-204 and Placement
The valuation of real estate through appraisal and analysis, basic considerations in real estate operation, and the advantages of various types of real estate investments are discussed.

Credit: 4

Insurance—CBCN

CBCN-271,272 Principles of Insurance
Registration #0214-271, 272
This two quarter sequence course leads to qualification for taking the New York State agents and brokers examination for Casualty and Property Insurance licenses. All casualty and property forms of insurance are covered in the class. Emphasis is placed on providing students with practical working knowledge of insurance policies and coverages. The course offers practical insight for **b**oth insurance professionals and insurance buyers.

Credit: 4/Qtr.



Humanistic Studies

Humanistic Studies serves a pivotal function within all programs of the College of Continuing Education. This program provides the foundation upon which professional knowledge is built. The faculty introduces you to the basic concepts and skills of the arts, humanities, communications, and the behavioral sciences.

General Education

Each professional program within CCE selects from the Humanistic Studies offering those courses essential to developing professional and personal competence. Students are then given a range of free electives to fill out personal interests.

Diploma and Degree Programs

Humanistic Studies also offers programs providing credentials which take advantage of RIT's strengths within the arts and humanities. Diploma options are offered in the fine and applied arts (CHAA), crafts (CHAC), as well as the Associate in Arts Degree in General Education (CHGE).

Non-Credit Courses

We also undertake to present to matriculated students, as well as to individuals within the Community, a broad range of credit-free offerings which provide new information in the arts, communications and the behavioral sciences, for professional development and for personal and aesthetic growth. For information call the Office of External Program Development,

For More Information

Humanistic Studies Programs are listed below. Call the following chairperson for additional information.

Behavioral Science
Andrea C. Walter, 262-6288

Fine Arts and Design
Susan M. Rogers, 262-6283

Crafts
Frances Welles, 262-3053

Communications
Elizabeth Conley, 262-6270

Humanities
Alan Fischler, 262-2747

Deaf Studies
Karen Finch, 262-6270

Diploma Program: Fine and Applied Arts and Crafts (CHAA)
Fine and applied arts courses are designed to contribute to your personal growth and cultural enrichment. You may want to take a course or two or you may want to earn a diploma by following a program in fine and applied arts or crafts.

Both of these options begin with introductory courses to provide you with a basic exploration of the creative process and to help you develop visual organization skills. After taking these courses you will be able to earn a fine and applied arts diploma by completing the requirements in any of five areas. You may want to include printing and photography electives in your program after receiving an advisor's approval. Some electives are offered only in alternate years.

Students enrolled in the Fine & Applied Arts Diploma Program prior to Fall 1980 may elect to follow either the previous program requirements or the new program as listed.

For more information call 262-6287, Department of Humanistic Studies.

*Core requirements are prerequisite for all diploma programs: CHAA and CHAC

Core Requirements:		Qtr. Cr.
Basic Drawing and Media	CHAF-201, 202, 203	6
Basic Design	CHGH-201, 202, 203	6
Art Appreciation	CHGH-210	4
		16

Program Requirements **Craft (CHAC)** In addition to the core requirements each student must become familiar with three of four areas.	Qtr. Cr.
*Core requirements	16
Major craft courses	18
Minor craft courses	6
3rd craft choice	2
Electives	6
	48

Fine Arts (CHAA)		Qtr. Cr.
•Core requirements		16
Drawing (3 quarters)	CHAF-306	6
Basic Figure Drawing	CHAF-207	2
Figure Drawing (2 quarter credit)	CHAF-317	4
Electives with advisor's approval		20
		48

Advertising Design (CHAA)		Qtr. Cr.
•Core requirements		16
Display Design	CHAD-211, 212, 213	4
Lettering & Layout	CHAD-261, 262, 263	6
Graphic Design	CHAD-311,312, 313	6
Advertising Design	CHAD-315, 316,317	6
Basic Figure Drawing	CHAF-207	2
Electives with advisor's approval		8
		48

Fashion Illustration (CHAA)		Qtr. Cr.
*Core requirements		16
Basic Figure Drawing	CHAF-207	2
Figure Drawing (5 qtr.)	CHAF-307	10
Fashion Illustration	CHAD-331, 332, 333	6
Marketing	CBCG-361	4
Lettering and Layout	CHAD-261, 262, 263	6
Electives with advisor's approval		4
		48

Interior Design (CHAA)		Qtr. Cr.
*Core requirements		16
Display Design	CHAD-211, 212, 213	6
Marketing	CBCG-361	4
Interior Design	CHAD-224, 225	4
History of Interior Design	CHAD-222	2
Environmental Design	CHAD-251, 252, 253	6
Elective with advisor's approval		10
		48

International Studies

International Studies courses explore the language, politics, and people of those countries with which the ever-tightening network of world business and technology is bringing Americans into closer contact. These courses are designed to be of interest to the businessman or woman, the prospective traveller, or any student who wishes to broaden his or her own cultural perspective.

Deaf Studies

With the growing awareness and integration of deaf community members, there is a need to understand hearing impaired people.

Many have deaf family members, co-workers, clients, or friends. The courses in the Deaf Studies program are designed to enable hearing persons to communicate with deaf people and to develop some understanding of the experience of being deaf through courses related to the linguistic, psychological, social, and physical aspects of deafness.

Rochester has the second highest population per capita of hearing impaired individuals in the United States, resulting in extensive community and educational resources. Rochester is a center for habitation, rehabilitation, social services, and educational services for deaf people in New York State and across the country.

Degree Program:
Associate in Arts in General Education (CHGE)

Andrea C. Walter 262-6288 Alan Fischler 262-2747

The Associate in Arts is the only liberal arts degree program offered by the College of Continuing Education. You will sample literature, arts, philosophy, history, and the other disciplines that have traditionally been at the core of a college education; at the same time, you will consider the relationship of these studies to 20th century technology and business. Then, after fulfilling the basic course requirements, you will finish the degree by choosing one of two options: you may deepen your understanding of the liberal arts by adding courses in the humanities, communications, and social sciences; or you may take advantage of RIT's extensive opportunities in career training by including in your degree 20 credits of study in a specific career skill. Areas of career study include:

Accounting
Advertising Design
Communications
Fine Arts
Health Services Management
Home Design
Human Development
Personnel Management
General Management & Supervision
Industrial Management
Small Business Management
Real Estate
Marketing
Deaf Studies
Social Work

For more information on the career skills option contact the Director of Humanistic Studies at 262-6287.

Course requirements for General Education, CHGE—AA Degree

		Qtr. Cr.		Qtr. Cr.
Required Courses 52 Credits	Humanities CHGH-201, 202, 203	12	Economics CHGS-221	4
	Literature CHGH-260	4	Psychology CHGS-211	4
	Art Appreciation CHGH-210	4	Philosophy CHGH-270	4
	Music Appreciation CHGH-230	4		
	History CHGH-220	4		
	Political Science CHGS-261	4		
	Contemporary Science Elective	4		
	Science, Technology & Humanity Elective	4		

Students may petition the chairperson for Humanities to apply courses outside the area generally regarded as general education electives. This must be a written request.

Social Work and Criminal Justice

Humanistic Studies offers a series of courses in criminal justice and social work, which may be used towards a bachelor's degree, conferred by the College of General Studies, in either field.

The *Social Work* profession addresses people's social functioning and needs. CCE's courses in social work offer you the opportunity to develop the skills and knowledge you will need for a social work career. These skills include the ability to work with individuals of all ages and backgrounds, families, groups and communities and to confront issues of cultural differences, social problems, and urban problems. The social work program includes an extensive field placement internship.

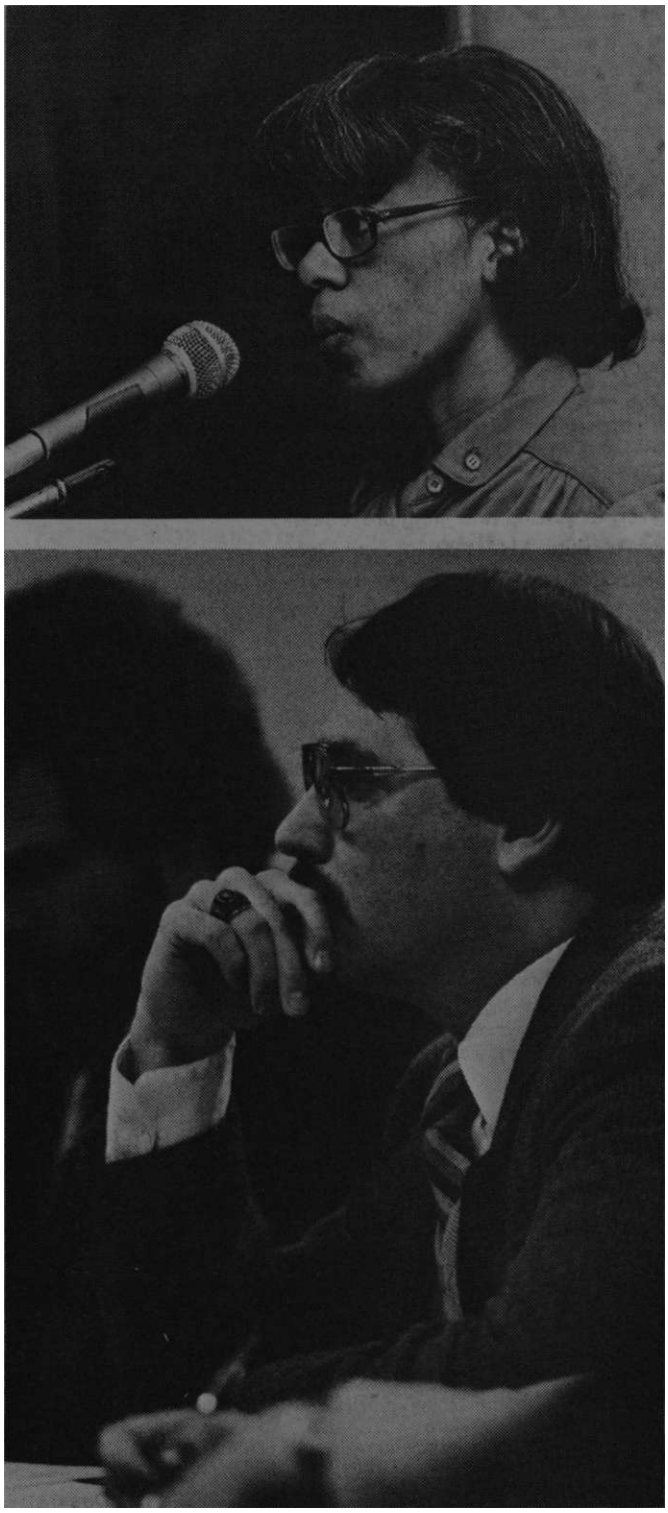
Social Work: Course Requirements for the B.S. Social Work for Transfer Students

0239-210 The Professional Social Work Role
0239-211 Social Welfare: Structure & Function
0239-215 The Family from a Social Work Perspective
0239-302 Social Welfare: History
0239-315 Assessing Community Needs
0239-356 Group Theory in Social Work
0239-411 Interviewing & the Helping Relationship (Methods I)
0239-412 Assessment & Problem Solving (Methods II)
0239-413 Intervention Strategies (Methods III)
0239-421 Field Instruction I
0239-422 Field Instruction II
0239-433 The Supervisory Process
0239-434 Managing Community Services
0239-532 Professional Issues
0239-533 Social Welfare: Policy & Planning
0239-535 Senior Research
Professional Electives (4)
Humanities & Social Science Electives (6)

Students usually transfer into the social work program with previous study in two-year Human Services programs. Students with other educational backgrounds are also encouraged to explore the program. The format above is a model only and will be adapted to the needs and previous education of the individual student.

The *Criminal Justice* program is designed to prepare you for a professional career in the criminal justice system and also to provide continuing education to people who are currently employed in a criminal justice organization. The curriculum is flexible so that you can examine criminal justice as a total system by an exposure to law enforcement, corrections, law and court processes, issues in crime prevention and the social origins of crime, and private security. A field internship will provide you with a unique opportunity for practical experience.

For further information, inquire 475-2045.



Humanistic Studies Course Descriptions

Ceramics

CHAC-201 Introduction to Ceramics
Registration #0222-201
An extensive survey of on and off the wheel forming techniques using stoneware and porcelain clays. Students will be introduced to a variety of decorative methods as well as the basics of glazing and firing finished work. Class projects will emphasize the development of competent skills and good design.
Credit: 2/Qtr.

CHAC-211 Intermediate Ceramics Wheel Throwing
Registration #0222-211
An exploration of Japanese wheel throwing techniques. Students will work in raku stoneware and porcelain, using methods and tools common to the Japanese potter. Class projects will concentrate on production techniques with special emphasis being given to glazing and firing procedures.

Prerequisite: CHAC-201 or equivalent

Credit: 2/Qtr.

CHAC-301 Advanced Ceramics
Registration #0222-301
An introduction to the world of the professional potter. Work will center on advanced forming and decorative techniques ranging from sectional throwing to photo-sensitive emulsion glazing. Special emphasis will be on independent projects which require the potter to master clay and glaze formulation, design, production and firing techniques. Kiln design and construction as well as marketing techniques for finished work will be discussed.

Prerequisite: CHAC-211 or equivalent

Credit: 2/Qtr.

CHAC-295 Independent Study: Ceramics
Registration #0222-295
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program Director. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.

Credit: Variable

CHAC-298 Special Topics: Ceramics
Registration #0222-298
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: Variable

Design

CHAD-201,202,203 Basic Design
Registration #0223-201,202, 203
Study of basic elements of design: line, shape, texture, color, space and their incorporation in design principles as applied to two- and three-dimensional design problems including the graphic arts.

Credit: 2/Qtr.

CHAD-211,212,213 Display Design
Registration #0223-211,212, 213
First quarter examines the fundamentals of three-dimensional design. The second and third quarters apply these principles to develop mechanical, graphic and model making manipulative skills and problem solving approaches used by designers in space planning.

Prerequisite: CHAF-201, 202, 203 and CHAD-201, 202, 203 or equivalent experience

Credit: 2/Qtr.

CHAD-215,216,217 Rendering Techniques
Registration #0223-215,216,217
This course will introduce students to the materials and techniques used by designers in rendering interiors, layouts, products, etc. Marker sketching, perspective, shadowing, media selection, and presentation techniques will be covered. Suggested for all design students.

Prerequisites: CHAF-201,202,203; CHAD-201,202,203 or equivalent

Credit: 2/Qtr.

CHAD-220 Art for Reproduction
Registration #0223-220
This course prepares students to enter the field of graphic design by providing orientation and studio experiences in the presentation of imagery for reproduction. Presentations will include board techniques, materials, tools, mechanical art procedures, printing and bindery processes, etc.

Prerequisite: CHAD-201, 202, 203 or equivalent

Credit: 3

CHAD-222 History of Interior Design
Registration #0223-222
Historical survey of period decoration and furniture styles from antiquity to the present.

Credit: 2

CHAD-224,225 Interior Design
Registration #0223-224,225
Career orientation. Emphasis on practical aspects of the profession. Details of purchasing all furnishings used in a home. Client centered planning and design.

Prerequisite: CHAF-201,202,203; CHAD-201,202,203 or equivalents

Credit: 2/Qtr.

CHAD-231 Color Theory in Art
Registration #0223-231
An opportunity to develop an awareness of and sensitivity to the world of color through slide lectures, class discussion and instructor's evaluation. Emphasis is on the visual impact of color.

Prerequisite: CHAD-201, 202, 203 or equivalent experience

Credit: 2

CHAD-235 Commercial Interior Design
Registration #0223-235
Students will learn to develop a good commercial interior plan given clear specifications and boundaries. Presentation techniques, client relations and fee philosophy will also be discussed with frequent field trips and guest speakers.

Prerequisite: CHAD-224, 225 or equivalent

Credit: 2

CHAD-241,242,243 Model Design
Registration #0223-241,242,243
Study of the materials and techniques of model building. Working in scale, drawing, and construction.

Prerequisite: CHAD-211, 212, 213

Credit: 2/Qtr.

CHAD-251,252,253 Environmental Design
Registration #0223-251,252, 253
The study of enclosed space, using material and the elements of design, line, form, texture, and color to develop living space.

Prerequisite: CHAF-201, 202, 203, and CHAD-201, 202, 203 or equivalent experience

Credit: 2/Qtr.

CHAD-261,262,263 Lettering and Layout
Registration #0223-261,262,263
Study of commercial layout procedures from rough layouts through comprehensives, type selection, copy fitting, pictoral indication and production procedures as related to contemporary practices.

Course emphasizes the design, structure, historical development and techniques of lettering. Proceeds from rough letter indication to development of finished lettering, and application in commercial advertising problems. Typography and photo lettering methods will be studied in relationship to their use in commercial design.

Prerequisite: CHAF-201, 202, 203 and CHAD-201, 202, 203

Credit: 2/Qtr.

CHAD-301,302 Advertising
Registration #0223-301,302
Advertising is planned, created and placed by bright, inquisitive, hard working people in a fast paced, time-conscious business. They work within limits set by budgets, marketing objectives, research, media, competitor's actions and a growing list of government regulations. This course examines the world of advertising and what is required to create advertising campaigns by tracing a campaign development step by step.
Credit: 4/Qtr.

CHAD-311,312,313 Graphic Design
Registration #0223-311,312,313
A contemporary approach to design for printed advertising with the emphasis on creative experience.

Prerequisite: CHAF-201,202,203; CHAD-201,202,203 or equivalents. CHAD-261, 262, 263 recommended.

Credit: 2/Qtr.

CHAD-315,316,317 Advertising Design
Registration #0223-315,316,317
The function and skills of the art director touches on all phases of advertising art from concepts and professional studio procedures to practical approaches in design and production. (Formerly named Advertising Practices)

Prerequisite: CHAF-201, 202, 203 and CHAD-201, 202, 203 or equivalent experience. CHAD-261, 262 263 and 311, 312, 313 recommended.

Credit: 2/Qtr.

CHAD-321,322,323 Design Applications
Registration #0223-321,322,323
Projects in product, furniture, exhibit, interiors and package design developed through visuals, materials, and processes. This course will be tailored to the abilities and needs of the students enrolled.

Credit: 2/Qtr.

CHAD-331,332,333 Fashion Graphics
Registration #0223-331,332,333
Drawing the fashion figure from live models and photographs students will study proportion, anatomy, body movement, line variations, fashion details and accessory drawing. Work on preliminary editorial and store layouts for retail advertising.

Prerequisite: CHAF-201, 202, 203; CHAD-201, 202, 203; CHAF-207 or equivalents

Credit: 2/Qtr.

CHAD-360 Portfolio Workshop
Registration #0223-360
A workshop designed to help students take what they have learned in art classes (or in work situations) and prepare and present a saleable portfolio. Projects will be tailored to the needs of individual students allowing them to compile an accurate representation of their skills in the most concise, positive and beneficial manner possible. Visits from prominent people in the field showing their work and sharing their experiences.

Credit: 2/Qtr.

CHAD-411,412,413 Art and Technology
Registration #0223-411.412,413
An inter-media course in researching and comprising the possibilities of applying and coordinating technology to the arts involving transformation of an idea into a visible form.

Prerequisite: CHAF-201, 202, 203; CHAD-201, 202, 203

Credit: 2/Qtr.

CHAD-295 Independent Study: Design
Registration #0223-295
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director of Humanistic Studies. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.
Credit: Variable

Drawing

CHAF-201,202,203 Basic Drawing and Media
Registration #0224-201,202,203
An intensive study of the fundamentals of drawing and application of media, designed to develop a flexible, creative mind capable of interpreting ideas. Specific emphasis is placed on problems confronting the student who has had little or no drawing experience.

Credit: 2/Qtr.

CHAF-306 Drawing
Registration #0224-306
Drawing in a variety of media, including an introduction to line, form and color as elements of pictorial expression. Presents organic, inorganic, and imaginative stimuli. May be elected more than once for credit.

Prerequisite: CHAF-201,202,203; CHAD-201,202,203 or equivalents

Credit: 2

CHAF-207 Basic Figure Drawing
Registration #0224-207
Drawing from the costumed and nude model. The student makes a visual analysis of action, structure, and gesture through quick sketches. Short poses gradually extend to longer studies so that the student can develop techniques, skills and the control of media.

Prerequisite: CHAF-201, 202, 203 or equivalent

Credit: 2

CHAF-307 Figure Drawing
Registration #0224-307
Drawing from the costumed and nude model for combined action and figure construction. Short poses gradually extended to longer studies for sustained attention to the problem. May be elected more than once for credit.

Prerequisite: CHAF-207 or equivalent

Credit: 2

CHAF-210 Interpretive Landscape Drawing
Registration #0224-210
Students will sketch directly from nature on location during field trips. In subsequent studio sessions compositions translating first impressions using various media will then be developed. Special attention will be given to individual approaches and expression.

Credit: 2

Painting

CHAF-211 Introduction to Painting
Registration #0224-211
Study of the materials and techniques of painting through use of stil-life and nature forms. Basic training and foundation for advanced work.

Prerequisite: CHAF-201,202,203; CHAD-201,202,203 or equivalents

Credit: 2

CHAF-301 **Painting**
Registration #0224-301
Painting with opportunities for gifted and advanced students to explore the media, seek new skills, and develop a new style of expression. The instructor, an accomplished artist, works individually with the student. Models are available on a limited basis. Still-life and sketches will be used for inspiration. May be elected more than once for credit.
Prerequisite: CHAF-211 or equivalent
Credit: 2

CHAF-227 **Figure Painting**
Registration #0224-227
Painting from costumed and nude models. The emphasis is placed on action, structure, gesture, composition, experimental attitudes and techniques. The student is provided with an opportunity to achieve clear understanding of various media in his or her individual search for expression. May be elected more than once for credit.

Prerequisite: CHAF-317 or equivalent

Credit: 2

CHAF-337 **Portrait Painting**
Registration #0224-337
Particular attention is given to the development of anatomical understanding. Several media will be explained. Emphasis will be placed on understanding various aesthetic and craft traditions. Individual attention is supplemented by demonstrations and discussions with the instructor who is an active portrait artist in the community. May be elected more than once for credit.

Prerequisite: CHAF-207 and CHAF-211 or equivalents

Credit: 2

CHAF-341 **Watercolor Painting**
Registration #0224-341
Basic study of watercolor media, methods, and techniques. Student receives individual, as well as group instruction with emphasis on composition, color, and personal expression. Media: watercolor, tempera, and casein. May be elected more than once for credit.

Prerequisite: CHAF-201, 202, 203 or equivalents

Credit: 2

Sculpture

CHAF-247 **Sculpture**
Registration #0224-247
Study of the basic theories of form and space utilizing sculptural processes and techniques. Solutions to problems, traditional and modern, are achieved through exercises using various materials such as clay, wood, plaster, plastic. Through discussion and practice, the student is introduced to the proper use of the sculptor's tool and methods.

Prerequisite: CHAF-201, 202, 203; and CHAD-201, 202, 203 or equivalents

Credit: 2

CHAF-357 **Sculpture Workshop**
Registration #0224-357
An in-depth study of sculptural methods, techniques and materials (clay, wood, plaster, stone and welded metal). Students may concentrate in one material. May be elected more than once for credit.

Prerequisite: CHAF-247

Credit: 2

Illustration

CHAF-361 **Illustration**
Registration #0224-361
Fundamentals of visualization and pictorial organization in terms of advertising and editorial illustration. Emphasis on contemporary graphic procedures. May be elected more than once for credit.

Prerequisite: CHAF-206, 207 or equivalents

Credit: 2

CHAF-263 **Calligraphy**
Registration #0224-263
Students will explore the history of the alphabet through slides, lectures and projects. Italic handwriting with related variations and techniques will be taught.

Credit: 2

CHAF-363 **Calligraphy Workshop**
Registration #0224-363
Further study in the methods and techniques of calligraphy. Students will be able to pursue study in a variety of styles and letter forms in a concentrated manner. May be elected more than once for credit.

Prerequisite: CHAF-263 or equivalent

Credit: 2

Printmaking

CHAF-291 **Serigraphy**
Registration #0224-291
A study of basic screen printing skills as well as development of abilities in the use of color, image perceptions and variational screen printing techniques using both stencil and photographic materials.

Prerequisites: CHAF-201, 202, 203; and CHAD-201, 202, 203 or equivalents

Credit: 2

CHAF-296 **Introduction to Printmaking**
Registration #0224-296
An introduction to the methods, materials, tools, and techniques of printmaking. Areas covered include woodcuts, etching, engraving and lithography. Students are required to pull an edition of prints in each area.

Prerequisite: CHAF-201, 202, 203; and CHAD-201, 202, 203 or equivalents. Additional fee required for supplies.

Credit: 2

CHAF-397 **Printmaking Workshop**
Registration #0224-397
Further study of the methods and techniques of etching, lithography and relief printing. Students may concentrate in one print medium. May be elected more than once for credit.

Prerequisite: CHAF-296. Additional fee required for supplies.

Credit: 2

CHAF-293 **Creative Papermaking**
Registration #0224-293
Students will explore and trace the history of papermaking through ancient devices to modern techniques and trends. Lectures and readings will supplement and expand upon the lab work.

Credit: 2

CHAF-295 **Independent Study: Fine Arts**
Registration #0224-295
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director of Humanistic Studies. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.
Credit: Variable

CHAF-298 **Special Topics: Fine Arts**
Registration #0224-298
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: 2

Metalcrafts and Jewelry

CHAM-201 Introduction to Metalcrafts
Registration #0225-201 and Jewelry
Emphasis will be pjaced on basic jewelry making techniques involving sawing, filing, soldering, hand and machine finishing techniques, simple stone setting and more. Design will be stressed throughout the course. May be elected more than once for credit.

Credit: 2

CHAM-211 Intermediate Metalcrafts
Registration #0225-211 and Jewelry
Work of a more complex nature will be introduced. Some techniques included will be surface treatment of metal, more sophisticated stone setting, basic holloware, casting and more.

Independent and creative statements will be emphasized in keeping with the student's technical and aesthetic development. May be elected more than once for credit.

Prerequisites: 6 credits CHAM-201 or presentation of portfolio.

Credit: 2

CHAM-301 Advanced Metalcrafts and Jewelry
Registration #0225-301
For advanced students in the arts or crafts interested in and capable of exploring a particular area. Content and method decided by conference between student and instructor and directed toward development of student's own creative ability. Advanced level academic credit is variable in proportion to class and outside assignments scheduled. May be elected more than once for credit.

Prerequisite: presentation of portfolio

Credit: 2

CHAM-295 Independent Study:
Registration #0225-295 Metalcrafts/Jewelry
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director of Humanistic Studies. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.

Credit: Variable

CHAM-298 Special Topics:
Registration #0225-298 Metalcrafts and Jewelry
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: Variable

Weaving/Textiles

CHAT-201 Introduction to Weaving
Registration #0226-201
An introduction to the materials, processes and techniques of weaving. Emphasis on basic skills includes fiber analysis, yarn calculations, waiping loom dressing, 4 harness loom techniques, finishing, designing, drafting and color effects. May be elected more than once for credit.

Credit: 2

CHAT-211 Intermediate Weaving
Registration #0226-211
A continuation in the development of weaving techniques and design skills through advanced study of color effects, drafting, 4 harness and tapestry techniques. The course will include samples of a particular technique plus home assignments and a final project to satisfy individual needs. May be elected more than once for credit.

Prerequisite: 6 credits CHAT-201 or presentation of portfolio

Credit: 2

CHAT-215 Textile Design
Registration #0226-215
The art and craft of decoration on fabric. Introductory work includes resist processes of dyeing: that is, batik, plangi, and tritik. Also included is instruction in chemical dyes, pattern development, two-dimensional design and color.

Credit: 2

CHAT-301 Advanced Weaving
Registration #0226-301
For advanced students in the arts or crafts interested in and capable of exploring a particular area. Content and method decided before registration by conference between student and instructor and directed toward development of student's own creative ability. Advanced level academic credit is variable in proportion to class and outside assignments scheduled. May be elected more than once for credit.

Prerequisite: presentation of portfolio

Credit: 2

CHAT-295 Independent Study: Weaving/Textiles
Registration #0226-295
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director of Humanistic Studies. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.
Credit: Variable

CHAT-298 Special Topics: Weaving/Textiles
Registration #0226-298
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: 2

Woodworking

CHAW-201 Introduction to Woodworking
Registration #0227-201
Elementary problems in choice of woods, joinery, finishes, use and care of hand tools, and basic procedures in machine woodworking.

Suggested introductory project: Construct a dovetailed box from a hardwood with hand cut dovetails. May be elected more than once for credit.

Credit: 2

CHAW-211 Intermediate Woodworking
Registration #0227-211
Students who have acquired the ability to use hand and power tools will advance at their own pace on an individually challenging technique and project. The development of design skills and technical ability will be emphasized. May be elected more than once for credit.

Prerequisite: CHAW-201

Credit: 2

CHAW-301 Advanced Woodworking
Registration #0227-301
For advanced students in the arts or crafts interested in and capable of exploring a particular area. Content and method decided before registration by conference between student and instructor and directed toward development of student's own creative ability. Advanced level academic credit is variable in proportion to class and outside assignments scheduled. May be elected more than once for credit.

Prerequisite: presentation of portfolio

Credit: 2

CHAW-295 Independent Study: Woodworking
Registration #0227-295
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program Director. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.

Credit: Variable

CHAW-298 Special Topics: Woodworking
Registration #0227-298
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: Variable

Senior Studies

CHGA-501 **Senior Seminar Project**
Registration #0230-501-01
This course enables students to sharpen and demonstrate their ability to define a research task or problem, gather and evaluate scholarly evidence, and present their findings in a paper or project. While the content and focus of the seminar will change from year to year, it will always direct student attention toward a broad issue or aspect of contemporary culture. It will equip them to understand a subject more fully and to investigate one facet of it in depth.

International Studies

CHGI-211 **Chinese Language and Culture:**
Registration #0233-211 **China and the Chinese People**
This course will introduce basic Chinese culture as well as 100 daily conversational sentences. The emphasis in this quarter will be on Chinese cultural characteristics, traditional philosophies and religions, beliefs, family structure, political life, economic system and trade practices, especially when these impact on contemporary practices.

Credit: 4

CHGI-212 **Chinese Language and Culture:**
Registration #0233-212 **Chinese Communism: Ideology and Practice**
This course will introduce Chinese culture as well as 100 daily conversational sentences. This quarter's emphasis is on the special features of Chinese Communism, their trade ideologies and practices, their general relationships with foreign countries, internal development and conflicts.

Credit: 4

CHGI-213 **Chinese Language and Culture:**
Registration #0233-213 **Contemporary Issues**
This course introduces Chinese culture as well as 100 daily conversational sentences. This quarter's emphasis is in the contemporary issues, their relations with the United States, their business practices. During the third quarter more time will be spent on language practice and students' independent work. It is more beneficial if students have had at least one of the two previous courses.

Credit: 4

CHGI-221 **Japan: The Changing**
Registration #0233-221 **Tradition**
What are the foundations of Japan's economic and technological success? This course considers the economy, government, and society of modern Japan and traces its emergence from the first contacts with the West in the 1500's to its present position as a leading economic power. To help Westerners understand the Japanese, Dr. Edwin O. Reischauer, scholar and former Ambassador to Japan, authored the text and aided in developing and producing this course. This course may serve as a behavioral science elective.

Credit: 4

Deaf Studies

CHGD-211 **Sign Language & Manual**
Registration #0234-211 **Communications System I**
This course is designed to develop fluency at a basic level. The course includes introduction and practice of approximately 300 basic signs, theoretical consideration and practice of grammatical features of sign language, fingerspelling and sociolinguistic information regarding the appropriate application of manual communication skills in communicating with deaf persons.

Credit: 2

CHGD-212 **Sign Language & Manual**
Registration #0234-212 **Communications Systems II**
This course is a continuation of conversational signing skill development. The course includes 300 additional basic signs, continued practice with the grammatical features of sign language, fingerspelling practice, and further sociolinguistic information regarding the appropriate use of manual communication skills between deaf and hearing persons.

Prerequisite: CHGD-211 (minimum grade of B) or equivalent sign skill

Credit: 2

CHGD-213 **Sign Language & Manual**
Registration #0234-213 **Communications Systems III**
The third in a series of basic conversational sign language courses. This course introduces the student to approximately 300 additional signs, continues the practice of the grammatical features of sign language, refines fingerspelling skills, and further develops students' sensitivity to the use of manual communication by deaf and hearing persons.

Prerequisite: CHGD-212 (minimum grade of B) or equivalent sign skill

Credit: 2

CHGD-311 **American Sign Language I**
Registration #0234-311
This course is designed to continue sign language skill development as the language is used among deaf community members. Students are exposed to many new signed expressions; grammar, syntax and lexical items of A.S.L. Videotapes, dialogues, language games, lecture and readings are used in presentation of this content.

Prerequisite: CHGD-213 (minimum grade of B) or equivalent sign skill

Credit: 2

CHGD-312 **American Sign Language II**
Registration #0234-312
The second in a series of American Sign Language courses. This course continues the study of grammar, syntax, and lexical items of A.S.L. Cultural aspects of the deaf community are considered as they relate to the language of deaf people.

Prerequisite: CHGD-311 (minimum grade of B) or equivalent sign skill

Credit: 2

CHGD-241 **Aspects & Issues of**
Registration #0234-241 **Deafness I**
This course will develop knowledge and understanding of the effects of hearing impairment, particularly with regard to the audiological, psychological, educational and vocational implications. Class activities include a simulated deafness experience, films, lectures and discussions.

Credit: 3

CHGD-242 **Aspects & Issues of**
Registration #0234-242 **Deafness II**
This course examines deafness from a cultural perspective, focusing on; what constitutes culture, what characterizes deaf culture, dynamics of interaction between the deaf culture and the larger community, and, historical perspectives on deaf heritage. Films, individual case studies, cultural simulation, discussions and lecture will be implemented.

Recommended: CHGD-241

Credit: 3

Humanities

CHGH-201, 202, 203 **Humanities**
Registration #0235-201, 202, 203
These are three interdisciplinary courses in which literature, art, music, and philosophy are related to the historical, economic, and scientific forces that have shaped western civilization. 201 studies the culture of the modern world; 202 deals with ancient Greece, Rome, and the Middle Ages; and 203 traces the development of the Humanities from the Renaissance through the Romantic age.

Credit: 4

CHGH-210 **Introduction to**
Registration #0235-210 **Art Appreciation**
A study of the elements involved in the creation of the visual arts (painting, sculpture, architecture) and of the factors which affect an audience's response to them.

Credit: 4

CHGH-220 **Introduction to History**
Registration #0235-220
This course will broadly survey the major periods of world history and will attempt to define what is unique and distinctive about the historian's approach to reality.

Credit: 4

CHGH-230 Introduction to Music Appreciation
Registration #0235-230
A study of the elements of music (such as rhythm and melody), of different musical styles, and of music in the context of history.

Credit: 4

CHGH-260 Introduction to Literature
Registration #0235-260
A study of works that illustrate the essential nature of poetry, fiction and drama, and of the elements involved in each.

Credit: 4

CHGH-270 Introduction to Philosophy
Registration #0235-270
By introducing major philosophers and the issues that they have traditionally concerned themselves with, this course aims to acquaint students with the methods of philosophical questioning and argumentation.

Credit: 4

CHGH-298 Special Topics: Humanities
Registration #0235-298
Experimental lower-division courses will be offered under this number; titles will appear in each quarter's course listing.

Credit: Variable

CHGH-440 Science as a Humanity (STH)**
Registration #0235-440
This course explores the effect that science has had on the development of modern values - on such matters as creativity, idealism, reason, and faith.

Credit: 4

CHGH-441 Technology in American History (STH)**
Registration #0235-441
This course examines the broad relationship between the historical development of technology and the character of American life.

Credit: 4

CHGH-444 Ascent of Man (STH)**
Registration #0235-444
This multi-disciplinary course views the development of the human race from the perspectives of science, history, and technology. Issues to be studied include biological and cultural adaptation, natural and genetic evolution, and the relationship between human behavior and the environment. The course is based on Jacob Bronowski's television series of the same title.

Credit: 4

CHGH-446 America and the Future of Man (STH)**
Registration #0235-446
An independent study/seminar which explores the American past as a guide to understanding the nation's future challenges. Topics to be covered include the costs and benefits of economic growth, the population problem, inter-relationships within the biosphere, the uses of technology and science, control of human behavior, and coping with change.

Credit: 4

CHGH-447 History of Science (STH)**
Registration #0235-447
The focus of this course will be on significant scientific developments of the last five centuries—since the astronomical and mechanical revolution begun by Copernicus and Galileo-but students will also be made aware of the scientific legacy of the ancient world.

Credit: 4

CHGH-448 Oceans: Our Continuing Frontier (STH)**
Registration #0235-448
This course examines the whole range of human involvement with the sea. It shows how literature and painting have changed man's perception of the sea and how scientific exploration of the sea has changed man's understanding of the history of the earth. The importance to the future of marine pollution, international law, and naval power will also be stressed.

Credit: 4

CHGH-449 COSMOS (STH)**
Registration #0235-449
This course will discuss astronomy in relation to the social and intellectual history of mankind. It is based upon Carl Sagan's television series of the same name.

Credit: 4

CHGH-451 Moral Choices (STH)**
Registration #0235-451
This is an ethics course which makes extensive use of contemporary readings on such issues as capital punishment, racism, women's liberation, suicide, abortion, sexual freedom, and aging. Of particular interest to RIT students is consideration of questions related to law, scientific research, and business.

Credit: **4**

CHGH-452 Science and the Sense of Beauty (STH)**
Registration #0235-452
This course will aim at answering two questions: How do scientists use, and how are they influenced by the sense of beauty? How may all people use their own sense of beauty (which should be developed philosophically in this course) to come to their own conclusions about scientific progress?

Credit: 4

CHGH-456 Science and Speculative Fiction (STH)**
Registration #0235-456
This course deals with conjectural views of human society as remolded by science. Some classics of science fiction will be read, but most attention will be given to works written within the last 10 years.

Credit: 4

CHGH-457 The Arts in Mass Media (STH)**
Registration #0235-457
This course investigates the themes, techniques, and attitudes common to the three most important mass media of the modern world: film, television, and print. Students will learn to recognize the strengths and limitations of each medium and will develop skill in evaluating and interpreting the literary works that each presents.

Credit: **4**

CHGH-595 Independent Study: Humanities
Registration #0235-595
Independent studies may be developed at the upper division level. A proposal should first be made to an instructor and must then be approved by the chairperson for Humanities or the director of Humanistic Studies. Credit may vary from one to five quarter hours. For more information, contact the Humanistic Studies Office.

Credit: Variable

CHGH-598 Special Topics: Humanities
Registration #0235-598
Experimental courses are offered under this number. These will be announced quarterly, with credit varying from one to six quarter hours, depending upon topic.

Credit: Variable

Communications

CHGL-204 Dynamic Communications I
Registration #0236-204
This course deals with the six aspects of communication: reasoning, listening, speaking, reading, writing and information acquisition. Emphasis on each aspect is given throughout the course. Readings on the communicative process, speeches, writing assignments and self-evaluation as well as instructor evaluation are used to develop communicative skills. Special emphasis is given to the skills of written communication.

This course is recommended for entering students.

Credit: 4

***This is a Science, Technology and Humanity elective*

CHGL-205 Dynamic Communications II
Registration #0236-205
This course builds on the skills acquired in Dynamic Communications I. Emphasis will be on organizing and supporting ideas in papers of several paragraphs. The major exercise is the writing of an 8 -10 page researched position paper and an oral defense of the paper's thesis. A study of critical reading techniques will teach students to evaluate the substance, logic, organization, and clarity of their own writing

Prerequisite: CHGL-204 or equivalent

Credit: 4

CHGL-206 Vocabulary
Registration #0236-206
This course will help you improve your vocabulary and its usage. Some aspects of language study which directly apply to vocabulary building will be examined: origins of words, historical development of their forms and meanings, their current usages, and use of dictionary and context to distinguish meanings.

Credit: 1

CHGL-207 Analytic Reading
Registration #0236-207
This course is designed to improve speed, accuracy of comprehension and thoroughness of retention in reading. Through a series of analytical reading exercises the student is exposed to the structure which underlies non-fiction writing. Students will study six basic plans of organization of ideas in persuasive and informational communication, and the relationship of the elements of communication. Sufficient practice is offered the student to assure that this analytical approach becomes habitual.

Credit: 1

CHGL-208 Listening
Registration #0236-208
Through a series of interactive sessions and readings, this course will enable students to develop their listening skills, explore the principles of active and effective listening and study the core processes of listening in interpersonal relations.

Credit: 1

CHGL-298 Special Topics: Communications
Registration #0236-298
Special Topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: Variable

CHGL-301 Effective Speaking
Registration #0236-301
Students will learn the principles of speaking in public and will deliver several speeches ranging from demonstrations to persuasive forms. Self, peer, and instructor critiquing will be used for evaluation of oral, tape-recorded, and TV-monitored speaking experiences.

Credit: 4

CHGL-302 Discussion Skills and
Registration #0236-302 Leadership
Students will study the theory of leadership in small groups and the dynamics of group behavior. The major exercises of the course are leading and participating as members in conferences which simulate those of civic, business, and industrial settings. Peer critiquing and TV tapings allow students to apply theory as they learn to recognize the elements of successful conferences.

Credit: 4

CHGL-307 Business Communications
Registration #0236-307
In Business Communications students will apply the basic principles of effective communication to situations characteristic of the business and industrial setting. Writing assignments and classroom activities include job application, written and oral presentations and interpersonal communications.

Prerequisite: CHGL-204, 205 or equivalent

Credit: 4

CHGL-308 Technical Report Writing
Registration #0236-308
Students will learn to prepare reports of the sort required by practicing engineers and managers in industry and business. They will develop the ability to analyze audiences and purposes, state problems, design reports, and write and edit them. Assigned reports will be discussed and critiqued by peers and instructor.

Credit: 4

CHGL-401 Creative Writing
Registration #0236-401
A workshop course for both the beginner and the more advanced creative writer, for both those interested in self-expression and those interested in professional writing. A wide variety of approaches will be utilized to suit the individual level and goals of each student. The main emphasis will be on the actual writing process; supplementary readings will acquaint students with contemporary trends in short story, "new journalism," the personal essay and poetry.

Prerequisite: CHGL-204, 205 or equivalent

Credit: 4

CHGL-402 Man and Mass Media (STH)**
Registration #0236-402
Communication through the mass media is shaped by many forces (such as economic, technological, and ideological forces) as well as by the nature of the particular medium itself (words, sounds, pictures). This course examines how some of the major mass media—magazines, newspapers, television, film, and radio—are shaped by the forces operating both on and within them, and how these media in turn operate on us to shape our attitudes and behavior.

Prerequisite: CHFL-204, 205 or equivalent

Credit: 4

CHGL-403 Man and His Languages (STH)**
Registration #0236-403
What language is; how and why it works; what it does and what it cannot do; language and other communication systems; and how you can make language work for you.

Prerequisites: CHGL-204, 205 or equivalents
CHGS-201 or 231

Credit: 4

CHGL-404 Effective Persuasion
Registration #0236-404
In this course, you will develop techniques for arguing a position clearly and persuasively. You will learn, through the process of gathering evidence in a systematic and orderly manner, to defend a thesis. As a result, you will enhance your ability to formulate a logical and reasonable presentation that convinces your audience your argument is sound and, if the occasion calls for it, moves them to action. Equal emphasis will be placed on written and oral skills, and the discipline of critical listening also will be examined.

Prerequisite: CHGL-204, 205 or equivalent

Credit: 4

CHGL-595 Independent Study: Communications
Registration #0236-595
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director of Humanistic Studies. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.

Credit: Variable

CHGS-598 Special Topics: Communications
Registration #0236-598
Special topics and experimental courses are offered under this number. Topics and experimental offerings are announced quarterly.

Credit: Variable

"This is a Science, Technology and Humanity elective.

Behavioral Studies

CHGS-201 Anthropology - Introduction
Registration #0237-201
Anthropology studies the similarities and differences between cultures. This course will explore the influences of environment, technology, work, authority, kin and non-kin groups, enculturation, religion, folklore and art in different societies. It will stress the value of cross-cultural comparisons in understanding American culture and society.

Credit: 4

CHGS-211 Psychology - Introduction
Registration #0237-211
Psychologists study a broad range of topics to discover more about how people think, feel, behave, and interact with others. In this survey course students learn how scientific methodology has been used to discover some of the causes and factors involved in sensation, perception, motivation, emotion, stress, learning, development, personality, psychological disorders, and social behavior. Students are encouraged to apply this information to their daily lives.

Credit: 4

CHGS-221 Principles of Economics I
Registration #0237-221
This course covers the basic principles of macro-economics. It traces the development of economics from an historical perspective, the functioning of the American economic system, and covers such topics as money and banking, economic growth and problems of inflation, unemployment, scarcity of resources, business cycles, international trade, and supply and demand.

Credit: 4

CHGS-222 Principles of Economics II
Registration #0237-222
This course covers micro-economic problems such as distribution of income, allocation of resources, price determination under competition, monopolies, supply and demand and their applications to business firms and labor unions. It also deals with the structure of American industry and the roles played by government, business, and individuals viewed in the light of current economic trends.

Credit: 4

CHGS-231 Sociology: Introduction
Registration #0237-231
Sociology deals, in a scientific way, with human beings and their relationships with one another. Consideration is given to the role of the individual in society, social interaction, social institutions and social change. Objectives are to examine the human condi-, tion in the context of social relationships, dispel myths and prejudices, and ascertain practical applications of concepts in sociology.

Credit: 4

CHGS-261 Political Science - Introduction
Registration #0237-261
Political Science is the study of how people behave in political situations. This course applies scientific principles to the examination of voting behavior, leadership, interest group activities, political socialization, and legislative decision making. The student will evaluate the major approaches and methods now used in the study of political processes.

Credit: 4

CHGS-298 Special Topics: Behavioral Science
Registration #0237-298
Special topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit: Variable

CHGS-312 Psychology: Issues & Applications
Registration #0237-312
This course offers students the opportunity to study in greater depth, under the guidance of the instructor, certain topics - their related issues and applications - from the Introductory Psychology course (0237-211).

The instructor will select and identify programs of study for several topics. Students will then choose which topic or topics they will pursue.

Prerequisite: CHGS-211 or equivalent

Credit: 4

CHGS-316 Psychology: Behavior in Industry
Registration #0237-316
Industry presents one environment for understanding human behavior. This course applies psychological and social concepts to the industrial setting. Such topics will be covered as motivation, performance, assessment, quality of work life, group behavior, leadership, organizational structure, communication and decisionmaking.

Prerequisite: CHGS-211

Credit: 4

CHGS-317 Understanding Stress
Registration #0237-317
Physiological, psychological, and social stress can have serious consequences on one's daily life. This course is designed to familiarize students with the basic concepts of stress, the positive and negative ramifications of stress, and examine strategies for managing stress.

Prerequisite: CHGS-211 or equivalent

Credit: 4

CHGS-411 Adult Development and Aging
Registration #0237-411
An undergraduate seminar that will cover the methodological issues and findings from psychological, sociological, and popular literature in adult development and aging. Included are: career choice, dating, marriage, parenting, divorce, mid-life crisis, personality and attitude changes over the life span, aging, and death and dying.

Prerequisite: CHGS-211, 201 or 231

Credit: 4

CHGS-413 Patterns of Development
Registration #0237-413
This course covers the development of the child from before birth through adolescence, permitting students to understand the consequences of maturation throughout a child's life and how a child interacts with both family and peers.

Prerequisite: CHGS-211 or equivalent

Credit: 4

CHGS-421 Macroeconomics
Registration #0237-421
The course is concerned with the overall performance of the economy. It deals with the aggregrated analysis of savings and investment, the level of income, the level of prices. Students also will evaluate governmental monetary and fiscal policies.

Prerequisite: CHGS-221, 222; CBCH-201, 202

Credit: 4

CHGS-422 Microeconomics
Registration #0237-422
A course in economic theory at an intermediate level dealing with the contemporary analysis of price and distribution under conditions of free competition and various degrees of monopoly control. Business applications are given along with the exposition of the theory itself.

Prerequisites: CHGS-221, 222; CBCH-201, 202

Credit: 4

CHGS-440 The Changing Family (STH)**
Registration #0237-440
We will explore choices & decisions about family life that are available in contemporary society. Depending upon the interests and concerns of class members, we will address these questions: what needs and expectations do people bring to intimate relationships? How do couples and families manage conflicts, express intimacy and solve problems together? How do couples and families decide about having children, managing careers and planning for the future? Special attention will be given to questions about adjustments to divorce, death and illness of family members, and the departure of young adults from home.

Prerequisite: CHGS-201, 211 or 231

Credit: 4

CHGS-443 Death and Dying (STH)**
Registration #0237-443
This course examines death from a multi-disciplinary perspective. It will examine how children learn about death and how people respond when terminal illness or death strikes them or loved ones. Among topics to be considered are functions and practices of funerals, the ethical issues involved in abortion, euthanasia, and suicide.

Prerequisite: CHGS-201, 231 orCHGH-251

Credit: 4

CHGS-444 Contemporary Social Problems (STH)**
Registration #0237-444
Through study of such problems as poverty, racism, minority, neglect, inadequate health care and environmental abuse this course will analyze the ways in which the socio-economic structures of American society help to foster such problems and impede their solution. The course will also explore some of the policy options open to a reform-minded society and suggest how different approaches might either help or hurt particular interest groups within the population.

Prerequisite: CHGS-221, 231 or 261

Credit: 4

CHGS-445 Politics and Environmental
Registration #0237-445 Decision Making (STH)**
This course explores the process by which both past and present environmental decisions have been and are currently being made at the local, state, and federal levels. Attention will be given to the parts played in this process by different branches of government and by lobbyists.

Prerequisite: CHGS-221, 231 or 261

Credit: 4

CHGS-446 The American Presidency (STH)**
Registration #0237-446
A historical survey of the American presidency and the chief executives who have held that office with emphasis on the changing nature of the job and its impact on American society.

Prerequisite: CHGS-201, 221 or 261

Credit: 4

CHGH-447 International Relations (STH)**
Registration #0237-447
This course will focus on the theory underlying relations among the global community. Topics to be covered include nationalism, war, international law, and economics.

Prerequisite: CHGS-201, 221 or 261

Credit: 4

CHGS-448 Science and Scientists
Registration #0237-448 in Society
This course examines the relationship between the "common man" and the technological world in which he functions. The role of scientists and engineers in political decisionmaking processes are considered. The course will cover rational decisionmaking in a complex world, technological utopianism, technological phobias and reactions, and philosophies of scientists.

Prerequisites: CHGH-270, CHGS-201 or 261

Credit: **4**

CHGS-595 Independent Study: Behavioral Science
Registration #0237-595
Independent studies may be developed at the upper division level. Projects must be developed with an instructor, subject to the approval of the program chairperson or the Director. Credit may vary from one to five quarter-credits. For information on independent study contact the Humanistic Studies office.

Credit: Variable

CHGS-598 Special Topics: Behavioral Science
Registration #0237-598
Special topics and experimental courses are offered under this number. Topics and experimental offerings are announced quarterly.

Credit: Variable

Social Work

CHGK-210 The Professional Social
Registration #0239-210 Work Role
Designed to assist students in making decisions regarding their careers in social work. The course covers basic exercises for developing self-awareness and professional self-assessment, explores various fields of social work and helps students begin to build their concepts of social work as a profession.

Credit: **4**

CHGK-211 Social Welfare: Structure
Registration #0239-211 and Function
Examines the provision of social services in four major fields of social welfare: public welfare, traditional voluntary agencies, voluntary social movements and the legal system. Course will also explore organization theory as it applies to the structure of these services, as well as major patterns and sources of funding.
Prerequisite: CHGK-210
Credit: **4**

CHGK-215 Family from a Social Work
Registration #0239-215 Perspective
This course is designed to give the social work student a basic understanding of the family. The course will emphasize the various approaches to intervention with the contemporary American family, including its structure, functions and the interaction and roles of family members both within the family and between family and society.

Prerequisite: CHGK-210

Credit: **4**

CHGK-302 Social Welfare History
Registration #0239-302
Designed to explore social welfare institutions and processes and their history, philosophy and relationship to other social institutions in the United States. Emphasis is on the role of social work in various interrelated social work institutions.

Focus is on the gradual modification of social policy in order to provide the student with a basic understanding of the evolution of programs and services to meet the changing needs of people. Traces the development of the social work profession and its response to the changing needs of society.
Prerequisite: CHGK-210
Credit: **4**

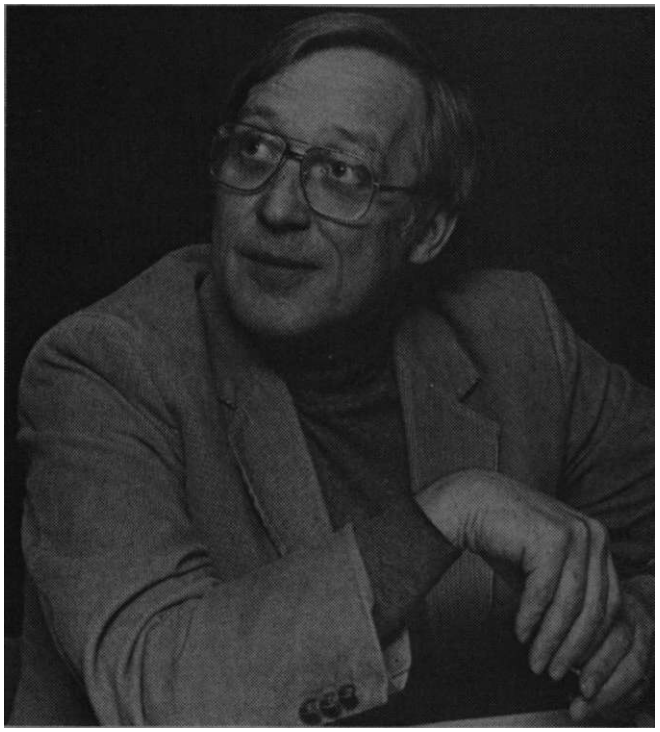
"This is a Science, Technology, and Humanity elective.

CHGK-356 **Group Theory in Social Work**
Registration #0239-356

This course covers the theoretical foundations of group dynamics and group behavior within the context of social work. Such concepts as types of groups (prevention, rehabilitation), group development, composition, group processes (problem solving, decision-making, affection), programming, leadership, communication, structure, and modes of intervention are covered. The course provides the knowledge base for the later development of practice skills in working with groups.

Prerequisite: CHGK-210

Credit: 4



CHGK-411 **Interviewing and the**
Registration #0239-411 **Helping Relationship**

Methods of Social Work is a three-course sequence offered concurrently with laboratory or field experience. Methods of Social Work stresses the basic principles and skills of a generic approach to social work practice, emphasizing the differential use of social work techniques (e.g., interviewing skills, assessment, problem-solving) and interventive skills in a variety of client systems.

Through lectures, discussions, readings, lab simulations and case analysis, it is the overall objective of the sequence to provide the student with the knowledge, skill and self-awareness for beginning professional social work practice. The development of this knowledge, skill and awareness is seen as a progressive process underlying and underpinning the three-course sequence.

Prerequisite: CHGK-210, 211, 302, 315, 356

Credit: 4

Technical Studies

This area offers a wide variety of technical programs at several distinct levels of achievement, as shown in the chart on page 16.

Each program is carefully designed to meet your needs as well as the particular needs of local industry for technical personnel trained to meet the requirements of Rochester's expanding industrial complex. Advisory committees from local industry contribute to a continuing program of course revision and updating to assure you a professional education of lasting value.

Master of Science Degree in Applied and Mathematical Statistics

John D. Hromi, Chairman
Department of Graduate Statistics: 475-2002

Objectives
Statistics today is defined as the science of making decisions in the face of uncertainty. To aid those needing the basic statistical tools to collect and analyze data and to make predictions, and to aid those needing to update their present statistical skills, the graduate program in statistics is offered by the College of Continuing Education at RIT.

Candidates
Specifically, the students are engineers, managers, scientists, auditors, production and inspection personnel and those interested in industrial research, quality control, reliability, metrology, and testing. Generally, the degree offers opportunity for immediate advancement in many early careers, and for career changes. The uniqueness of the program is its intent to help on the job today, or in the near future.

Part-time evening program
The program in applied and mathematical statistics is conducted on a PART-TIME EVENING BASIS and is intended primarily for full-time employees of business and industry. Classes meet once a week for three hours 6:30 - 9:30 p.m. unless otherwise arranged, with approximately six hours of homework. Normally, it takes two years to complete the program, attending two nights a week. Students from other programs at RIT may also participate, as may those without a degree objective who desire specialized training in particular statistical fields. Also, those in industry desiring to update their skills or extend their education in statistics further will find this program well-suited to their needs.

No Entrance Exam
Courses are offered on an open enrollment basis which is supportive of the RIT commitment to recurrent education. There are no entrance exams, and the program is self-contained at RIT.

A Practical Program
Both teachers and students work to put job experience and class studies together. For example, theses and papers often have job supervisor's approval and wind up being put into effect rather than into the library. Theory is used for understanding, but is not an end in itself. It is sometimes perceived as being only mathematical and proof-oriented. In this program, "theory" means gaining knowledge of the principles and learning how to solve problems intelligently rather than in "cookbook" style. The degree is considered as "terminal." Additional and higher level mathematics, not presently part of the program, are required of the Ph.D. degree.

Requirements (See Course Descriptions on page 75.)
For the master of science in applied and mathematical statistics degree, the satisfactory completion of the following quarter courses is required:
Two basic courses: (These may be waived by the department chairperson upon evidence of equivalent learning, experience, or competency.)

CTAM-711 and 712	Fundamentals of Statistics I & II

Eight core courses:

CTAM-801 and 802	Design of Experiments I & I
CTAM-821 and 822	Theory of Statistics I & II
CTAM-841 and 842	Regression Analysis I & II
CTAM-851	Nonparametric Statistics
CTAM-881	Bayesian Statistics

Seven electives: Taken from other courses listed under "course descriptions" in such areas as quality control, managerial decision making, multivariate analysis, sample surveys, reliability, and probability theory.

The total of 15 or 17 courses, each counting 3 quarter credits, comes to 45 or 51 credits depending on whether the basic courses (711 - 712) are waived. As indicated above, studies are normally completed in two to four years by attendance one or two nights a week.

Levels of Courses
There are 700 and 800 courses. The 700 level furnishes most of the standard methods currently used in industry; the 800 series covers theory and applications in special areas like the design of experiments. Generally, the 800 level is more advanced. From time to time, special courses are offered in topics of particular interest when requested by the students or as new fields of statistics open up.

Career Guidance
The minimum of 24 credits in the 800 series (core courses above) is required. All other courses are elective. In consultation with a departmental advisor, a total program structured to achieve individual professional objectives is worked out with each person interested in such guidance.

In sequentially numbered courses, the lower numbered course is prerequisite.

Admission
Admission to the degree program will be granted to qualified holders of a baccalaureate degree from an accredited college or university who have acceptable mathematics credits through integral calculus. Applicants who fail to meet the latter requirement may, at the discretion of the department chairperson, be accepted and required to complete two or three undergraduate mathematics courses before being able to matriculate in the regular graduate program.

Although students are encouraged to begin their graduate studies at any time, it is highly advisable to formally seek admission to the program no later than after completion of the core courses. This will assure proper selection of courses, adequate administrative time for transcripts, etc., and an early oral exam to indicate student capability to attain the MS degree.

Procedure
To be considered for admission it is necessary to file an application, submit transcripts of all previous undergraduate and graduate work, obtain two letters of recommendation, and pay $25 application fee. RIT graduates do not have to pay this fee. Forms and instructions, including quarterly offerings and registration forms, may be obtained by writing to:

Director of Admissions
Rochester Institute of Technology
One Lomb Memorial Drive
Rochester, NY 14623

Transfer and Interdisciplinary Credits
Credit for courses of graduate stature in statistics, mathematics, computer programming, operations research, and other quantitative fields related to statistics may be accepted toward fulfillment of degree requirements at the discretion of the department chairperson with due regard to the candidate's objectives. However, to insure credit toward the degree, candidates should write the chairperson indicating courses for which he or she would like transfer credit for work in the past and obtain prior approval of courses for which transfer credit is sought. While these matters would be discussed with either the candidate's advisor or the department at various times during the advisement process, it is essential that all agreements be documented *in writing*. A letter to the departmental chairperson will assure proper recognition of outside work accomplished toward the degree.

Non-matriculated Students
It is not necessary to be formally admitted or matriculated into the MS in Statistics Program in order to register for course offerings. Those who are eligible, however, should matriculate as early as possible, as recommended above. Those who do not have college degrees may be admitted to courses in fields of their special interest by consent of the department chairperson.

Grades, Exams and Theses
The candidate must attain an overall average grade of 3.0 (B) for graduation. An oral examination is required at the completion of the core courses to assure subject matter and verbal proficiency as well as ability to perform as a statistician in a working environment. Successful completion of each quarter course normally requires passing a final exam, submission of a written paper or thesis, or completion of a group project, as determined by the instructor. Students are encouraged to develop their writing and speaking skills as well as to use the computer as ways to improve their knowledge.

Location
Courses are offered at the Henrietta campus, at selected off-campus locations, and at in-plant training facilities.

Plans of Study
Students may, with the permission of the departmental chairperson, secure credits toward the master's degree in two ways:

First, a student may complete the required 45 or 51 quarter credits, depending on whether the basic "Fundamentals" courses are waived by formal *classroom* attendance and receipt of satisfactory grades.

Second, three, six or nine of these credits may be obtained by submission of a satisfactory research project and *thesis.* The project and credits must be approved by the department chairperson prior to registration. A letter outlining the project and requesting this approval must be addressed to the chairperson by the candidate prior to the regular registration periods. The depth of the project will determine the number of credits received. Generally this type of credit should be sought at the end of the program after sufficient knowledge of the subject is available for use. CTAM-896, 897, and 898 are the registration numbers used for thesis work.

Independent Study
The College of Continuing Education will no longer offer to new students an MS in Applied and Mathematical Statistics on an independent study basis. However, students currently doing independent study in Graduate Statistics will be permitted to continue the use of the independent study mode. While the independent study program is being completely phased out, such registrations must continue to have the approval of the chairperson.

Faculty
Two full-time and some fifteen adjunct faculty normally teach in the master's program in applied and mathematical statistics. All instructors have an industrial background. This is reflected in their realistic approach to the subject matter. Many of the faculty hold jobs which require them to apply daily what they teach at night; e.g. the quality control instructor installs quality control systems for his company. As with many others dedicated to continuing education, faculty members have a commitment to give evening students personal attention. This often involves career counseling.

The faculty select textbooks, determine subjects to be taught, and keep students up to date with new developments in their fields. Quarterly meetings of the faculty provide a continuous avenue of communication. An Industrial Advisory Committee periodically advises the Chairperson and collegiate administrators on academic and administrative matters. It assists in the determination of how RIT can best serve local and regional needs.

Bachelor of Science programs in Applied Science (BS)

The BS degree in Applied Science is awarded in four fields of interest: Chemistry, Electrical, Mechanical, and Mechanical-Industrial. These programs are designed for the individual with better than average preparation in high school mathematics and science. Students having the ability to pursue the BS program but having a deficient mathematics background, may complete CTAM-101,102,103 before entering this program.

An intensive core of courses in mathematics, physics, chemistry, and the basic engineering sciences is required in these programs while allowing the individual student to develop some depth in the interest area of choice.

After completing approximately half the courses in the BS program, you will receive an AAS degree. If you already hold an AAS degree you may be able to enter a BS program with minimal loss of credit. Consult an advisor for transcript evaluation.

Engineering Science

CCE now offers an AS in engineering science which will prepare you for further study in most bachelor degree programs in engineering accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

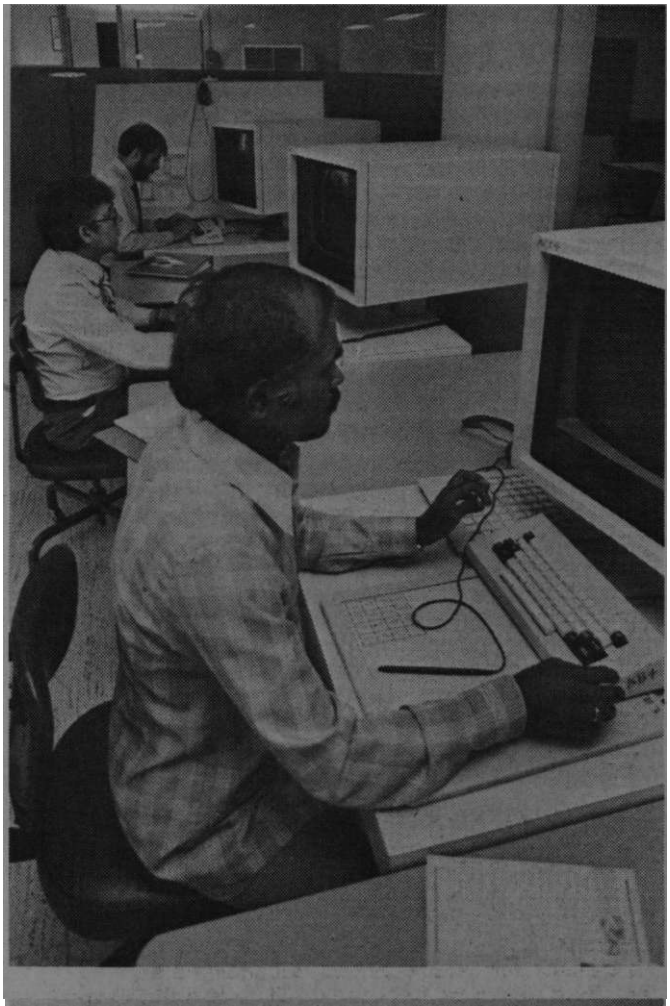
If you have a strong high school mathematics and science background you can earn the engineering bachelors degree in two stages at RIT.

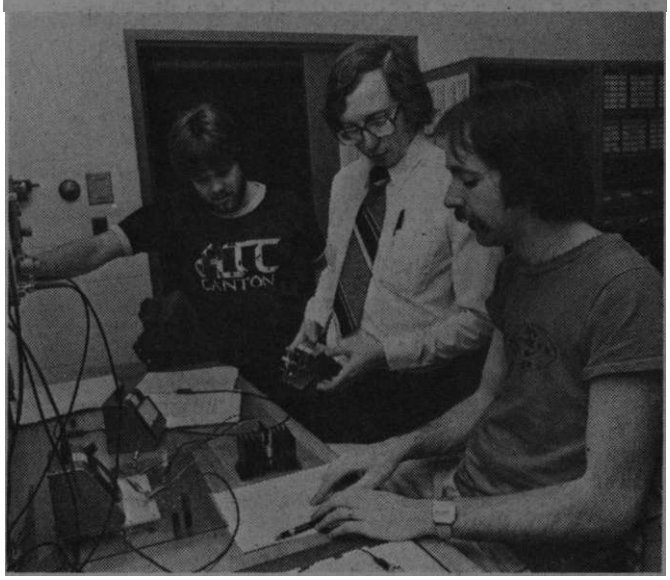
After earning the AS in engineering science, you can transfer to the College of Engineering as a third year student and complete through continued part time study all requirements for a bachelors degree in either electrical or mechanical engineering. These degree programs in the College of Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Associate in Applied Science programs (AAS)

Associate degree programs in technology are offered leading to the AAS degree in building technology, electrical technology, electro-mechanical technology, manufacturing technology and mechanical technology. Candidates for this program should have completed at least two years of high school mathematics including algebra and trigonometry. Students having a deficiency in this area may qualify by completing mathematics CTAM-101,102,103. Many of the courses required in these programs are available on a schedule to fit shift rotation.

These associate degree programs are designed to allow an employed individual to develop the technical skills needed to function at the technician level and to earn the AAS degree usually required for the job title - Technician. Course work is applied and practical, emphasizing laboratory experiences.





In sequentially numbered courses, the lower number course is prerequisite.

Bachelor of Technology in Computer Systems (B. Tech.)

This is a program for students primarily interested in a business applications computing career. Students desiring a somewhat different background may also take courses in electronics or mathematics or another professional area as part of the program.

After completing approximately one half of the program students are eligible for the AAS degree.

Transfer students with AAS degrees in data processing or similar programs can expect up to 100 quarter hours of transfer credit. They will enter as third year students.

Bachelor of Technology programs in Engineering Technology (B. Tech)

These electrical, mechanical and manufacturing engineering technology programs are upper division only (junior-senior level) and are designed for those who already hold an AAS degree in engineering technology. The primary objective of these programs is to strengthen your qualifications for employment in positions emphasizing design and production applications of engineering technology. The programs of study leading to a bachelor of technology degree in Electrical Engineering Technology and Mechanical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Courses for People on Rotating Work Schedule
If rotating work schedules make it impossible for you to attend regular evening classes, you can enroll in certain courses which are offered on both a day and evening schedule. They are taught by the same instructor so you can attend day sessions when you work evenings, or evening sessions when you work days.

Courses in this program include basic technical and general education courses which you can apply to a diploma or AAS degree program. For a listing of these courses, consult the schedule in the back of this book. They're indicated by a (+) next to the course time, it is necessary to begin these course sequences in September. There are no beginning entry points in December or March for rotating work schedules.

Mathematics Diagnostic Examination
If you want to take any of the beginning mathematics courses, you must take a diagnostic examination to determine the level at which you should start the mathematics courses, consult with an advisor to determine where you start the mathematics sequence. The test will be given on open registration days. There is no charge for this exam.**

Breakage Deposit Cards
For some courses, you will need to purchase a Breakage Deposit Card for $5 from the cashier. You can get a refund for unused amounts at the end of the school year.

For More Information

Technical Studies Program chairpeople are listed below. Contact them for additional information.

Director Technical Studies
Bernard A. Logan, 262-6281

Graphic Arts-Printing
Archibald Provan, Coordinator, 475-2725

Applied and Mathematical Statistics
John D. Hromi, 475-2002

Chemistry, Contemporary Science
262-6289

Photographic Science, Professional Photography, Graphic Arts-Photography
Andrew Davidhazy, 475-2592

Mathematics
Frederick P. Frey, Jr., 262-6273

Computer Systems, Physics
Alfred C. Haacke, 262-6275'

Engineering Technology—Electrical, Industrial Technology-Electrical
262-6289

Engineering Drawing
Mario DiQuillio, 262-6269

Building Technology
David A. Onesti, 262-6289

Machine Shop
Orville Adler, 262-2741

Engineering Technology—Manufacturing, Industrial Technology-Mechanical, Engineering Technology, Mechanical Technology
Charles DeRoller, 262-6268

Industrial Technology—Electromechanical
Robert Klafehn, 262-3091

In sequentially numbered courses, the lower numbered course is prerequisite.

***Test given during regular office hours (from 8:30 a.m. to 7:30 p.m. Monday through Thursday, and 8:30 a.m. to 3:00 p.m. Friday: and 9:00 a.m. to 10:00 a.m Saturday at the CCE Reception Desk. For further information phone 475-2234*

Degree Programs
BS in Applied Science

Applied Science-chemistry program (CTCC)
The chemistry curricula leading to the AAS and BS degrees are designed to provide you with a sound background in the fundamental principles in a broad spectrum of the various chemisty disciplines. Strong emphasis is on mathematical and physical aspects of the science of chemistry, and the more practical aspects of the science are presented in various laboratory courses. In the BS degree program professional elective courses provide you with the opportunity for specialization in the area of your choice.

You need not take courses within any phase in the sequence listed, so long as you complete all courses in one phase before proceeding to the next. The AAS degree is awarded upon your satisfactory completion of all courses in Phases I and II. If you're a transfer student, you must complete 45 credits of this program at RIT before receiving your degree.

Course requirements, CTCC—AAS and BS degrees

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
92 Quarter Credits	Phase I	College Algebra and Trigonometry ..... CTAM-210 Calculus ..... CTAM-251, 252 Computer Techniques CTDP-201	4 8 2	Dynamic Comm. ..... CHGL Dynamic Comm. II CHGL-205	4 4	General Chemistry ..... CTCC-211, 212, 213 Qualitative Inorganic Analysis ..... CTCC-216 Quantitative Analysis ... CTCC-217, 218 Organic Chemistry .. CTCC-231, 232, 233 (lec) 237, 238 (lab)	9 4 4 13
	Phase II	Calculus ..... CTAM-253 Physics..... CTCP-301, 302, 303 (lec) CTCP-306, 307, 308,(lab)	4 12	Psychology ..... CHGS-211 Economics ..... CHGS-221 **Electives	4 4 4	Analytical Chemistry—Instrumental Analysis..... CTCC-311 (lec) -316 (lab) Analytical Chemistry—Separations ..... CTCC-312 (lec) -317 (lab) Introduction to Physical Chemistry ..... CTCC-313 (lec)	5 5 3
96 Quarter Credits	Phase III	Calculus ..... CTAM-305 Engineering Statistics..... CTAM-341 Mathematics Elective.....	4 4 4	History or Political Science Elective..... Literature Elective.....	4 4	Chemical Literature and Technical Writing..... CTCC-417 Qualitative Organic Analysis..... CTCC-525 (lec) -537 (lab) Physical Chemistry .. CTCC-401, 402, 403 (lec) 405, 406, 407 (lab)	2 3 15
	Phase IV	Modern Physics..... CTCP-457, 458	8	**Electives.....	16	Instrumental Analysis... CTCC-511, 512 Inorganic Chemistry ..... CTCC-551 +Professional Electives	8 4 21

***These electives must be selected from the areas of humanities, communications or behavioral sciences offered in the Humanistic Studies area subject to the advisor's approval.*

+At least one of these professional elective courses must be taken in the area of organic chemistry. The selection of all professional elective courses is subject to advisor's approval.

In order to meet program objectives and prerequisites of later courses, transfer students who have an associate's degree may be required to take courses within Phases I and II. In many instances, such transfer students will be granted credit within Phases III and IV for appropriate work completed by the time of transfer.

In sequentially numbered courses, the lower numbered course is prerequisite.

Degree Programs - B.S. Applied Science

NOTE: The following three programs (CTBE, CTBI, CTBM) are under study for major revision. Current and prospective students must consult their advisors regarding latest curriculum changes.

Applied Science-electrical program (CTBE)
This intensive program in the electrical field includes a sound basis in mathematics, science and general engineering. This broad fundamental curriculum will provide you with a solid technical foundation for later specialization in the numerous branches of the electrical industry. The remainder of the curriculum is devoted primarily to developing methods of analysis and applying them to the solution of problems in the electrical field.

You need not take courses within any phase in the sequence listed, as long as you complete all courses in one phase before proceeding to the next. The AAS degree is awarded upon your satisfactory completion of all courses in Phases I and II. If you are a transfer student seeking a degree, you should plan to complete 45 credits of this program at RIT and meet with an advisor before registering, to obtain a preliminary evaluation of your previous course work.

Course requirements, CTBE—AAS and BS degrees

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
94 Quarter Credits	Phase I	College Algebra and Trigonometry CTAM-210 Calculus CTAM-251, 252 Computer Techniques CTDP-201 Engineering Chemistry CTCC-241, 242, 243 (lec) -246, 247, 248 (lab)	4 8 2 12	Dynamic Comm. CHGL-204 Dynamic Comm. II CHGL-205 Psychology CHGS-211	4 4 4	Engineering Graphics CTID-211, 212	4
	Phase II	Calculus CTAM-253 Calculus CTAM-305 Physics CTCP-301, 302, 303 (lec) -306, 307, 308 (lab) Engineering Math. CTAM-328	4 4 12 4	Economics CHGS-221	4	Engineering Mech. CTBM-341, 342 Circuit Analysis CTBE-401, 402, 403 CTBE-401, 402, 403 (lec) -406, 407, 408 (lab) Engineering Materials CTBM-347 (lec) -357 (lab)	8 12 4
98 Quarter Credits	Phase III	Differential Equations CTAM-306 Modern Physics CTCP-457, 458 Math Elective Nuclear Physics CTCP-459	4 8 4 4	History or Political Science Elective	4	Electric and Magnetic Fields CTBE-411, 412, 413 Electronics CTBE-421, 422, 423 Thermodynamics CTBM-401	12 12 4
	Phase IV	Complex Variables CTAM-420	4	**Electives Literature Elective	12 4	Electromechanical Energy Conversion CTBE-501 Control Systems CTBE-511, 512 Electives	4 8 14

In order to meet program objectives and prerequisites of later courses, transfer students who have an associate's degree may be required to take courses within Phases I and II. In many instances, such transfer **students** *will be granted credit within Phases III and IV tor appropriate work completed by the time of transfer*

All electives must be selected with advisor's approval.

***These electives must be selected from the areas of humanities, social sciences and language arts subject to advisor's approval.*

In sequentially numbered courses, the lower numbered course *is prerequisite*

Mechanical-industrial program (CTBI)
The mechnical-industrial curriculum integrates management couses with courses in engineering, science and general education in order to satisfy industry's need for qualified personnel in the manufacturing management field. As a graduate of this program you'll have a combined background in management and engineering. You need not take courses in the order listed, as long as you complete all courses in one phase before proceeding to the next. After successfully completing all courses in Phases I and II, you will receive the AAS degree. If you are transferring from another institution, you must complete 45 credits of this program at RIT.

Course requirements, CTBI—AAS and BS degree

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
95 Quarter Credits	Phase I	College Algebra and Trigonometry CTAM-210 Calculus CTAM-251, 252 Computer Techniques CTDP-201 Physics CTCP-301, 302, 303 (lec) -306, 307, 308 (lab)	4 8 2 12	Dynamic Comm. CHGL-204 Dynamic Comm. II CHGL-205 Psychology CHGS-211	4 4 4	Machine Shop CTIS-201, 202, 203 (lec) -206, 207, 208 (lab) Engineering Graphics CTID-211, 212, 213 Accounting for Engineers CBCA-207, 208	6 6 8
	Phase II	Calculus CTAM-253 Calculus CTAM-305	4 4	Economics CHGS-221	4	Organization and Management CBCE-203 Engineering Mechanics. CTBM-341, 342 Manufacturing Analysis CTEF-201, 202, 203 Strength of Materials CTBM-344 (lec) -354 (lab)	4 8 9 3 1
96 Quarter Credits	Phase III	Engineering Chemistry CTCC-241, 242, 243 (lec) -246, 247, 248 (lab) Engineering Statistics CTAM-341, 342	12 8	Psychology CHGS-315	4	Data Processing CBCC-321 Electrical Engineering Principles CTBE-461, 462, 463	4 12
	Phase IV	Mathematics Elective	4	Sociology CHGS-231 Effective Speaking CHGL-301 **Electives	4 4 12	Fundamentals of Industrial Engineering CBCJ-305 Industrial Engineering Economy CBCJ-306 Current Industrial Engineering Techniques CBCJ-408, 409 Electives	4 4 8 16

In order to meet program objectives and prerequisites of later courses, transfer students who have an associate's degree may be required to take courses within Phases I and II. In many instances, such transfer students will be granted credit within Phases III and IV tor appropriate work completed by the time of transfer.
All electives must be selected with an advisor's approval.
***These electives must be selected from the areas of humanities, social services and language arts subject to advisor's approval.*
In sequentially numbered courses, the lower numbered course is prerequisite.

Mechanical program (CTBM)

This curriculum is designed to provide you with a sound basis in mathematics, science and general engineering. You'll find courses in theory supplemented by laboratory work to increase your understanding of industrial methods and techniques. The knowledge and skills you acquire in this program apply to a wide variety of industrial assignments in mechanical design and manufacturing.

You need not take courses in the order listed, as long as you complete all courses in one phase before proceeding to the next. The AAS degree is awarded upon satisfactory completion of all courses in Phases I and II. In the case of transfer students seeking a degree, 45 credits of this program must be completed at RIT.

Course requirements, CTBM—AAS and BS degrees

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
99 Quarter Credits	Phase I	College Algebra and Trigonometry CTAM-210 Calculus CTAM-251, 252 Computer Techniques CTDP-201 Engineering Chemistry CTCC-241, 242, 243 (lec) 246, 247, 248 (lab)	4 8 2 12	Dynamic Comm. CHGL-204 Dynamic Comm. II CHGL-205 Psychology CHGS-211	4 4 4	Machine Shop CTIS-201, 202, 203 (lec) -206, 207, 208 (lab) Engineering Graphics CTID-211, 212, 213	6 6
	Phase II	Calculus CTAM-253 Calculus CTAM-305 Physics CTCP-301, 302, 303 (lec) -306, 307, 308 (lab) Math Elective	4 4 12 4	Economics CHGS-221	4	Engineering Mechanics CTBM-341, 342 Manufacturing Analysis CTEF-201, 202, 203 Strength of Materials CTBM-344 (lec) -354 (lab)	8 9 3 1
93 Quarter Credits	Phase III	Differential Equations CTAM-306 Boundary Value Problems CTAM-318 Modern Physics CTCP-457, 458 Nuclear Physics CTCP-459	4 4 8 4	History or Political Science Electives	4	Strength of Materials CTBM-345 Engineering Materials CTBM-347 (lec) CTBM-347 (lab) Thermodynamics CTBM-401, 402 Electrical Engineering Principles CTBE-461, 462, 463	4 3 1 8 12
	Phase IV			**Electives Literature Elective	12 4	Machine Design CTBM-551, 552, 553 Fluid Mechanics CTBM-411, 412 Electives	9 8 8

In order to meet program objectives and prerequisites of later courses, transfer students who have an associate's degree may be required to take courses with Phases. and II. In many instances, such transfer students will be granted credit within Phases III and IV for appropriate work completed by the time of transfer.

All electives must be selected with an advisor's approval.

***These electives must be selected from the areas of humanities, social science and language* arts *subject to advisor's approval.*

In sequentially numbered courses, the lower numbered course is prerequisite.

Engineering Science (CTSE)

This AS program in engineering science is designed to prepare you to pursue a BS degree in engineering. The program enables you to transfer into RIT's College of Engineering to continue pursuit of the baccalaureate degree in either electrical or mechanical engineering through completion of upper level courses made available during the evening hours by the College of Engineering. These degree programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Course requirements, (CTSE) Engineering Science AS degree

		Mathematics & Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
48 Quarter Credits	Phase I	Calculus ..... CTAM-251, 252, 253 Physics..... CTCP-301, 302, 303 (lec) 306, 307, 308 (lab)	12 12	Dynamic Communications ... CHGL-204 Psychology..... CHGS-211	4 4	Engineering Graphics.... CTID-211, 212 Engineering Mechanics..... CTBM-341, 342 Computer Programming for Engineers..... CTDP-320	4 8 4
48 Quarter Credits	Phase II	Calculus ..... CTAM-305 Differential Equations..... CTAM-306 *Math Elective ..... Engineering .. CTCC-241, 242, 243 (lec) Chemistry ..... -246, 247, 248 (lab) Modern Physics..... CTCP-457	4 4 4 12 4	Economics ..... CHGS-221 Sociology..... CHGS-231 *Literature Elective.....	4 4 4	Engineering Materials... CTBM-347 (lec) 357 (lab) *Strength of Materials... CTBM-344 (lec) or 354 (lab) *Circuit Analysis ..... CTBE-401 (lec) 406 (lab)	4 4

"These courses **to** *be selected with advisor's approval dependent upon future major in College of Engineering.*

For all upper division courses refer to RIT Day Catalog - College of Engineering. Graduates of this AS Engineering Science program must transfer to the College of Engineering and pursue the BSME or BSEE on the Extended Day schedule.

In sequentially numbered courses, the lower numbered **course** *is prerequisite.*

For further information regarding Mechanical Engineering extended day offerings, contact:

Dr. Robert Ellson
475-2148 or 475-2162

For further information regarding Electrical Engineering extended day offerings, contact:

Dr. Kenneth Hsu
475-2379 or 475-2164

Computer Programs-AAS and B. Tech. Degrees

Computer Systems (CTDC)
The goal of this program is to provide students with the skills and technology fundamental to a career in business applications computing. Graduates from this program must master the principles and skills which underlie the disciplines of business data processing and data management. These include hardware organization and assembly language, data structures, file management, business programming system specification and design, business applications programming, data communication, and database design and implementation.

Positions in business data processing and data management not only require a strong computing background, but also a sound foundation in analytical and business skills. For this reason, students are required to take a basic sequence of courses from business and other technical studies majors. The student may continue to pursue a professional electives concentration in business or may choose yet another relevant curriculum at RIT.

The computer systems curriculum is designed to facilitate transfer for graduates of two-year degree programs in data processing or business.

Computer Systems Bachelor of Technology Degree (CTDC)

	Mathematics & Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
Phase I	Business Statistics CBCH-351	4	Dynamic Communication CHGL-204	4	Introduction to Computer Science CTDS-202	4
	Calculus for Technologists I CTEM-420*	4	Dynamic Comm. II CHGL-205	4	Intro to Programming CTDP-208	4
	Calculus for Technologists II CTEM-421*	4	Social Science Electives	8	Program Design and Validation CTDP-210	4
					Assembly Language Programming CTDP-305	4
Phase II†			Literature Elective	4	Digital Computer Organization CTDS-315	4
			Science and Humanities Electives	8	Data Structure Analysis CTDS-320	4
			Elective (Lower Division)	4	Data Organization and Management CTDS-325	4
					Business Applications Programming CTDP-307	4
					Systems Specification, Design and Implementation CTDS-335	4
					Organization and Management CBCE-203	4
					Accounting Principles CBCA-201	4
					Computer Science Elective**	4
					Professional Elective	4
Phase III & IV			Electives (Upper Division)	15	Data Comm. Systems CTDS-420	4
					Data Base Concepts CTDS-485	4
					Computer Science Electives**	32
					Restricted Computer Science Electives***	8
					Programming Systems Workshop CTDP-488	4
					Operations Research CBCC-451	4
					Professional Electives	28

Or equivalent—see advisor before enrolling.

***Must be selected from Computer Science courses—notice exceptions listed under course descriptions.*

****Restricted Computer Science electives—students must take one course from group A and one course from group B*

Group A: Software Emphasis:
1) CTDS-440 Operating Systems
2) CTDS-530 Discrete Simulation
3) CTDP-350 Programming Language Concepts
4) CTDS-525 Assemblers. Interpreters and Compilers

Group B: Hardware Emphasis
1) CTDS-565 Computer Systems Selection
2) CTDS-575 Minicomputer Systems and Applications
3) CTDS-520 Computer Architecture

Upon successful completion of Phase I and Phase II, students are eligible for A.A.S. Degree.

In sequentially numbered courses, the lower numbered course is prerequisite.

Industrial Technology

Industrial Technology
Industrial Technology - Associate degree programs in building technology, electrical technology, electromechanical technology, and mechanical technology (AAS degree).

These associate degree programs are designed to allow an employed individual to develop the technical skills needed to function at the technician level and to earn the AAS degree usually required for the job title - Technician. Course work is applied and practical, emphasizing laboratory experiences.

Each program contains a core of technical mathematics and physics to prepare the student for the technical courses to follow. Several of these beginning courses are offered on a shift-schedule to accomodate those working a rotating shift. A core of general education courses is required and structured to develop the student's skills in communications and interpersonal relations essential to the technician.

You need not take courses within any phase in the order listed, so long as you complete all courses in one phase before proceeding to the next. After successfully completing all courses in Phases I and II, you will receive an AAS degree (about 5 years of two courses per term). If you are transferring from another institution, you must complete 45 credits of this program at RIT.

Many graduates of these programs continue on to the B. Tech. degree in Engineering Technology.

Electrical Technology—(CTEE)
This program is designed to prepare you for a career at the technician level in the field of electricity and electronics.

Phase I is devoted to providing you with the mathematics and science background necessary to master the technical courses which follow. These technical courses provide you with the broad practical background of electricity and electronics required of the technician in industry. You'll find instruction is supplemented by related work in the laboratories, where you will gain actual work experience in handling and operating electrical equipment.

Course requirements, CTEE—AAS degree

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
95 Quarter Credits	Phase I	Technical Mathematics . . . . . CTAM-201, 202 Technical Calculus . . . . . CTAM-203 College Physics . . . . CTCP-201, 202, 203 (lec) 206, 207, 208 (lab)	8 4 12	Dynamic Comm. . . . . CHGL-204 Dynamic Comm. II CHGL-205	4 4	Engineering Drawing . . . . . CTID-201, 202, 203 Elements of Electricity and Electronics . . CTIL-201, 202, 203 (lec) 206, 207, 208 (lab)	6 12
	Phase II			Psychology . . . . . CHGS-211 Economics CHGS-221	4 4	Applied Electronics . . . . . CTEE-361, 362, 363 Machines and Power Systems . . . . . CTIL-301, 302 Mechanical Components and Mechanisms . . . . . CTIL-221 Electives	12 8 4 12

All electives must be selected with advisor's approval.

In sequentially numbered courses, the lower numbered course is prerequisite.

Building Technology (CTIJ)
This program is structured to provide you with a broad understanding of the building industry, while you major in architectural technology or construction technology.

The architectural technology major provides you with in-depth training in all aspects of architectural drawing to qualify you, after graduation, for employment as an architectural technician. The professional courses in this major are designed to meet your individual requirements.

The construction technology major provides a more general background in building construction and qualifies you for career opportunities in the building industry.

In addition to purely technical courses relating to the building industry, the program includes courses in college mathematics and physics as well as a selection of courses in general education.

Course requirements, CTIJ—AAS degree
Students by choice of electives may develop a concentration in either Architecture or Construction.

95 Quarter Credits		Math and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
	Phase I	Technical Mathematics. CTAM-201, 202	8	Dynamic Comm. CHGL-204	4	Architectural Drawing CTIB-201, 202, 203, 204, 205, 206	12
		College Physics . . . . CTCP-201, 202, 203 (lec) -206, 207, 208 (lab)	12	Dynamic Comm. II. CHGL-205	4		
	Phase II			Economics CHGS-221	4	Architectural Drawing** CTIB-207, 208, 209	6
				Elective	4	Applied Mechanics & Strength of Materials CTEM-301, 303	8
						Building Materials CTIB-241	4
						Building Construction . . CTIB-242, 243	6
						Construction Contracting . . . CTIB-251	3
						Building Estimating (Residential)*** CTIB-252	3
						Building Estimating (Commercial)*** CTIB-253	3
						Structural Theory CTIB-301	4
						Structural Design CTIB-302	4
						Surveying CTIB-231	4
						Electives	8

All electives must be selected with advisor's approval.
***Required tor Architectural Technology.*
****Required tor Construction Technology.*
In sequentially numbered courses, the lower numbered course is prerequisite.

Electromechanical Technology (CTIL)
The manufacture of new and sophisticated equipment and complicated devices in which a number of electrical, electronic and mechanical principles are involved in one function or one piece of equipment, has led to the demand by industry for a new technology recognized by the composite word "electromechanical". As a graduate of this dual-discipline program you will be qualified to assist in design and development of new devices and to install, operate, service and maintain complex electromechanical assemblies. You could also qualify for employment in automation and numerical control systems. The curriculum has a mathematics and science base with applications in electricity, electronics and mechanics. The emphasis is on the interrelationship of electronic and mechanical principles in systems and devices in which these principles are interdependent.

Course requirements, CTIL—AAS degree

95 Quarter Credits		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
	Phase I	Technical Mathematics. CTAM-201, 202	8	Dynamic Comm. CHGL-204	4	Engineering Drawing CTID-201, 202, 203	6
		College Physics . . . . CTCP-201, 202, 203 (lec) -206, 207, 208 (lab)	12	Dynamic Comm. II. CHGL-205	4	Elements of Electricity and Electronics . . CTIL-201, 202, 203 (lec) -206, 207, 208 (lab)	12
						Mechanical Components and Mechanisms. CTIL-221, 222	8
	Phase II			Psychology CHGS-211	4	Machines and Power Systems . . . . . CTIL-301, 302 (lec) -306, 307 (lab)	8
				Elective	4	Pneumatic and Hydraulic Systems . . . . . CTIL-303 (lec) -308 (lab)	4
						Electromechanical Devices and Systems CTIL-351, 352, 353	12
						Digital Systems CTEE-321	3
						Computer Systems CTEE-323	3
						Elective	3

All electives are selected with advisor's approval.
In sequentially numbered courses, the lower numbered course is prerequisite.

Mechanical Technology-mechanical program (CTEM)
This program is designed to prepare you for a career at the technician level in the mechanical field. Phase I provides the mathematics and science background necessary to master the technical courses which follow. These technical courses in mechanics, materials, design, and manufacturing procedures cover the broad principles of mechanical engineering. The program is designed to meet the needs of industry for training in design, development, test engineering, manufacturing and other branches of this broad field.

Course requirements, CTEM—AAS degree

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
95 Quarter Credits	Phase I	Technical Mathematics. CTAM-201, 202	8	Dynamic Comm. CHGL-204	4	Engineering Drawing CTID-201, 202, 203	6
		Technical Calculus CTAM-203	4	Dynamic Comm. II. CHGL-205	4	Machine Shop. . . . CTIS-201, 202, 203	6
		College Physics. . . CTCP-201, 202, 203 -206, 207, 208 (lab)	12	Psychology CHGS-211	4	-206, 207, 208 (lab)	6
	Phase II			Economics CHGS-221	4	Manufacturing Analysis. CTEF-201, 202	6
				Elective	4	Applied Mechanics and Strength of Materials. CTEM-301, 302, 303	12
						Metallurgy. CTEF-211, 212	6
						Production Control CTEF-491	3
						Principals of Mechanical Design CTEM-315, 316, 317	6
						Elective	6

All electives must be selected with advisor's approval

In sequentially numbered courses, the lower numbered course is prerequisite

Manufacturing Technology (CTEF)
This program is designed to prepare you for a career at the technician level in the field of manufacturing. Emphasis is on the practical aspects of process and materials courses, work measurement and design, as well as the concepts of computer numerical control. Graduates of industrial training programs may find this program offers additional growth opportunity from the vocational to the professional levels.

Course requirements, CTEF—AAS degree

		Interdisciplinary	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
48 Quarter Credits	Phase I	Technical Mathematics. CTAM-201, 202	8	Dynamic Comm. CHGL-204	4	Machine Shop. . . . CTIS-201, 202, 203 -206, 207, 208 (lab)	6
		Technical Calculus CTAM-203	4	Dynamic Comm. II. CHGL-205	4	Engineering Drawing CTID-201, 202, 203	6
		Introduction to Computer and Programming CTDS-200	4	Psychology CHGS-211	4	Materials Technology I CTEF-414	3
						Materials Technology II CTEF-415	3
48 Quarter Credits	Phase II	College Physics. . . . CTCP-201, 202, 203 (lec) -206, 207, 208 (lab)	12	Economics CHGS-221	4	Manufacturing Analysis CTEF-201, 202	6
						Introduction to Numerical Control CTEF-470	4
						Applied Mechanics CTEM-301, 303	8
						Report Writing. CTEF-428	2
						Time Study CTEF-380	3
						Tool Design CTEF-370	4
						Technical Elective	4

In sequentially numbered courses, the lower numbered course is prerequisite.

Lower Division Technical Electives

Mechanical/Manufacturing Electives
CTEF-203 Manufacturing Analysis
CTEF-210 Industrial Plastics
CTEF-211 Metallurgy
CTEF-428 Report Writing
CTEF-470 Introduction to Numerical Control

Technology Programs- B. Tech. Degrees

Engineering Technology
Engineering Technology - Upper division baccalaureate program in Electrical, Mechanical, and Manufacturing Engineering Technology - B. Tech. degree.

The bachelor of technology degree in engineering technology is a relatively new professional program designed to meet the growing need for engineering technologists at the baccalaureate level in a technology oriented society.

The term "Technologist" is used to define the graduate of this program - "One whose professional training is in the application of existing technology and devices to the solution of routine engineering design problems." Technologists are finding increasing acceptance for positions formerly filled by engineers in such fields as sales engineering, manufacturing engineering, field service engineering, process control engineering, and product design engineering.

The bachelor of technology programs are upper division programs which provide the individual with a viable transfer option after earning the associates degree in the appropriate technology. Coursework is designed to provide a uniform mastery in applied calculus and to extend both the depth and breadth of understanding in the chosen technology building upon the technology base established in the associates degree programs.

Elective courses are available for the individual to pursue a chosen option and to provide course work that complements the student's professional objectives. The Institute provides a wide variety of course offerings and each student is urged to make full use of these offerings in developing a professional program.

Like all programs at Rochester Institute of Technology a thorough grounding in the humanities is required and students in the bachelor of technology program have an additional 23 quarter hours of courses in the areas of communications, humanities, literature, and social science. These electives should be chosen with the advisor's approval to develop the student's communications and interpersonal skills.

Electrical Engineering Technology (CTEE)
Students having an appropriate AAS degree in Electrical Technology are admitted to this program with full credit (90 quarter credits). All students enter at the third year or junior level as transfers from existing two-year associates degree electrical technology programs. Professional elective courses permit the student to develop elective options in the fields of electrical power, communications, or digital computer design.

Course requirements, CTEE—B. Tech. degree
Transfer credit for AAS technology degree 90 quarter credits

		Interdisciplinary	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
53 Quarter Credits	Phase III	Calculus for Technologists II. CTEM-421	4	Lower Division Electives	8	Circuit Theory I, II CTEE-401, 402	8
		Solutions of Engineering Problems CTEM-422	4			Control Systems CTEE-404	4
		Computer Techniques. CTDP-201	2			Logic & Digital Devices CTEE-424	4
		Introduction to Strength of Materials CTEM-408	4			Linear Amplifier Design. CTEE-423	4
		Engineering Materials CTEF-411	4			Power Concepts CTEE-425	3
47 Quarter Credits	Phase IV	Engineering Economics CTEF-436	4	Upper Division Electives	14	Power Amplifier Design. CTEE-532	4
						Microprocessors CTEE-542	4
						Electrostatic & Magnetic Fields CTEE-520	4
						Appl. of Disc. Int. Cir. Ele. . . . CTEE-530	4
						Upper Division Technical Electives	12
						Free Elective	3-5

All electives must be selected with an advisor's approval.

Entering students will take CTEM-420 or CTEM-421 depending on the evaluation of their mathematical background. Those students assigned to CTEM-420 will be taking a three **course** *sequence and will therefore delete a technical elective from their requirement.*

Mechanical Engineering Technology (CTEM)
Students having an appropriate AAS degree in Mechanical Technology are admitted to this program with full credit (90 quarter credits). All students enter at the third year or junior level as transfers from existing two-year associates degree mechanical technology programs. Professional elective courses permit the student to develop elective options in the fields of mechanical design or manufacturing.

Course requirements, CTEM-B. Tech. degree
Transfer credit for AAS technology degree 90 quarter credits

		Interdisciplinary	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
52 Quarter Credits	Phase III	Calculus for Technologists II. . . . . CTEM-421 Solutions of Engineering Problems . . . . . CTEM-422 Computer Techniques. . . . . CTDP-201 Electrical Principles for Design CTEE-411, 412	4 4 2 8	Lower Division Electives	8	Applied Mechanics of Materials. . . . . CTEM-404 Materials Technology I . . . . . CTEF-414 Mechanical Engineering Tech. Laboratory I . . . . . CTEM-407 Mechanical Engineering Tech. Laboratory II. . . . . CTEM-409 Applied Dynamics. . . . . CTEM-405 Materials Technology II . . . . . CTEF-415 Applied Thermodynamics . . CTEM-440	4 3 3 2 4 3 4
48 Quarter Credits	Phase IV			Upper Division Electives	14	Applied Fluid Mechanics . . CTEM-460 Thermofluid Laboratory . . CTEM-465 Machine Design . . . . . CTEM-506 Logic Control Systems . . . . CTEM-521 Upper Division Technical Elective. . . . . *Free Elective.	4 3 4 4 16 3-5

All electives must be selected with an advisor's approval.

Entering students will take CTEM-420 or CTEM-421 depending on the evaluation ot their mathematical background. Those students assigned to CTEM-420 will be taking **a** *three course sequence and will therefore delete a technical elective from their requirement.*

In sequentially numbered courses, the lower numbered course is prerequisite

Manufacturing Engineering Technology (CTEF)
Manufacturing Technology has become increasingly sophisticated and complex. This not only requires better academic preparation for persons entering the field, but continued education for those practitioners already in the field.

This program in Manufacturing Engineering Technology leads to the B. Tech. degree. It is designed to prepare students for entering into the field of Manufacturing Engineering Technology at the professional level: Technologist.

Transfer students holding an appropriate engineering technology Associates degree may enter the upper division program with full credit (90 quarter credits) for their A.A.S. degree.

This program emphasizes the learning of professional-technical skills as presented from a theoretical and practical approach.

Graduates of this program are versed in the new technologies of computer numerical control, machine tools, microprocessors, manufacturing systems and computer-aided manufacturing.

Course requirements, CTEF—6. Tech. degree

		Interdisciplinary	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
50 Quarter Credits	Phase III	Calculus for Technologists II. . . . . CTEM-421 Solutions of Engineering Problems . . . . . CTEM-422 Statistical Quality Control I . . CTEF-424 Computer Techniques. . . . . CTDP-201 Electrical Principles for Design I CTEE-411	4 4 4 2 4	Lower Division Electives	8	Engineering Economics . . . . CTEF-436 Tool Engineering . . . . . CTEF-472 Machine Elements. . . . . CTEF-403 Operations Management . . . CTEF-434 Computer Numerical Control CTEF-471	4 4 4 4 4
50 Quarter Credits	Phase IV	Electrical Principles for Design II CTEE-412	4	Upper Division Electives	14	Value Analysis. . . . . CTEM-437 Process Design I . . . . . CTEF-510 Advance Manufacturing . . . . CTEF-502 Computer Aided Manufacturing . . . . . CTEF-475 Technical Elective . . . . . Free Elective	3 4 4 4 16 3-5

All electives must be selected with an advisor's approval.
Entering students will take CTEM-420 or CTEM-421 depending on the evaluation of their mathematical background. Those students assigned to CTEM-420 will be taking a three course sequence and will therefore delete a technical elective from their requirement.
In sequentially numbered courses, the lower number course is prerequisite.

Upper Division Technical Electives
(Each carries 4 quarter credit hours)

Mechanical Electives
CTEM-496 Dynamics of Machinery
CTEM-451 Vibration and Noise
CTEF-460 Computer Aided Design
CTEM-507 Design Practice
CTEM-508 Special Topics in Machine Design
CTEM-535 Analog Control Systems
CTEM-540 Thermal Technology
CTEM-599 Independent Study

Manufacturing Electives
CTEF-424 Statistical Quality Control I
CTEF-425 Statistical Quality Control II
CTEF-470 Introduction to Numerical Control
CTEF-472 Tool Engineering
CTEF-473 COMPACT II
CTEF-475 Computer Aided Manufacturing
CTEF-480 Methods Analysis
CTEF-485 Robots in Manufacture
CTEF-491 Production Control
CTEF-511 Process Design II
CTEF-526 Quality Systems
CTEF-560 Legal and Ethical Responsibilities of the Field Engineer

Electrical Electives
CTEE-524 Microwave Systems
CTEE-534 Communications System I
CTEE-535 Communications Systems I
CTEE-536 Control Systems II
CTEE-538 Digital Computer Design I
CTEE-539 Digital Computer Design II
CTEE-546 Industrial Electronics
CTEE-550 Power Systems I
CTEE-551 Protective Relaying
CTEE-552 Power System Stability
CTEE-554 Electronic Optic Devices

Graphic Arts Programs-AAS and BS Degrees

Degree Program in professional photography (CTGI)
Andrew Davidhazy, chairperson, 475-2592

The role of photography has become increasingly influential in the development of modern technology. In its multitude of applications it plays a vital role in communications, business, medicine and education, as well as being the primary means of recording moments of the present for future enjoyment.

Although at this time competition in the fields of commercial, advertising and free lance photography is very great, there is a need for qualified technicians and specialists particularly in the fields of marketing, training, medicine, graphic arts, photofinishing, law enforcement, and others.

The degree program in professional photography provides you with a balanced education comprised of courses in science, general education and applied photography. Your specific goals can be met through careful selection from a comprehensive list of professional electives.

Course requirements (CTGI)—AAS degree

The AAS degree is awarded after you satisfactorily complete all courses in Phases I and II. Transfer students seeking a degree must complete 45 credits at RIT.

The primary aim of the program is to prepare you with a broad background in photography so that you may modify general knowledge to fit your particular job specialty.

Although courses are designed to serve the needs of students with a well-defined career objective, most are also suitable for you if you want to improve your photographic background or if you feel photographic training would help you develop on your job. After receiving the AAS degree you may pursue a further degree in the BS program in graphic arts with a major in photography with complete transfer of credit. Consult with chairperson for details.

Course requirements, CTGI—AAS degree

		Mathematics and Science	Qtr Cr.	General Education	Qtr Cr.	Professional	Qtr Cr.
95 Quarter Credits	Phase I	Technical Mathematics . . . . . CTAM-201, 202 or Mathematical Thought and Processes . . . . . CTAM-205 And Modern Mathematical Methods CTAM-206	8	Dynamic Comm . . . . . CHGL-204 Dynamic Comm. II . . . . . CHGL-205 Psychology . . . . . CHGS-211 Communications Elective	4 4 4 4	Basic Professional Photography . . . . CTGI-201, 202, 203 Professional Electives	12 12
	Phase II	Electives	12	Economics . . . . . CHGS-221 Electives	4 4	Color Photography . . CTGI-211, 212, 213 Professional Electives	12 15

Suggested photographic electives are listed below. All electives tor degree seeking students are to be selected with advisor's approval. At least 15 quarter credits must be from the photography area. *

Professional electives for professional photography (CTGI) degree		Qtr. Cr.
Architectural Photography	CTGI-404,405, 406	3
Commercial Photography	CTGI-241, 242, 243	3
Fashion Photography	CTGI-401, 402, 403	3
Illustrative Photography	CTGI-221, 222, 223	3
Industrial Photography—Instrumentation ...	CTGI-351	3
Industrial Photography-A.V. Techniques ...	CTGI-352	3
Industrial Photography-Special Topics —	CTGI-353	3
Motion Picture Photography	CTGI-301,302	3
Photographic Communication ...	CTGI-431,432, 433	2
Photography of the Natural World	CTGI-411	4
Portrait Photography	CTGI-231, 232, 233	3
Retouching, Commercial	CTGI-321, 322, 323	1
Retouching, Portrait	CTGI-331, 332, 333	1
Dye Transfer Printing	CTGI-366	3

Other courses not listed above are also acceptable. This includes topics in printing design and audio visual areas. Up to six quarter credits may be scheduled in management, quality control, electronics or other technical areas. At least 15 quarter credits must be scheduled from the professional photography area All electives should be scheduled with the Chairperson's approval.

Degree program in photographic science (CTGP)
Andrew Davidhazy, chairperson, 475-2592

Today, the complexity of the photographic process and its manufacturing technology is easily matched by its multitude of uses. From its very beginnings, photography attracted the interest of many famous scientists. Photographic materials, for example, triggered the discovery of x-rays and enabled the discovery of distant galaxies in space and elementary particles on earth.

As a result, photography's impact on society has been tremendous and continues to increase. The graphic arts industry is now almost completely dependent on photographic processes. New light-sensitive processes have found numerous applications, particularly in the duplicating field, and hold much promise for other future non-silver imaging processes. Photosensitive resins are essential to the manufacture of microcircuits in the electronics industry.

It is evident that a field of such variety and growth potential should provide interest, challenge and reward to a substantial number of technicians, scientists and engineers for years to come.

The degree program in photographic science provides students with a thorough understanding of the photographic process, from fundamental laws and principles in sensitometry, photographic chemistry and radiometry, to state of the art research and practice in emulsion chemistry, color theory, non-silver processes, image evaluation and photographic optics.

These topics combined with a solid background in mathematics, chemistry, physics and statistics prepare you for a promising career as an engineering technician at the completion of the associate's degree or as a photographic engineer at the bachelor's degree level.

Beyond the requirements in the photographic science area you are encouraged to examine other fields of interest through elective courses in chemistry, electronics, physics, or other appropriate subjects.

The program relates closely to your needs if you plan to be involved in an interdisciplinary relationship with chemists, physicists, electrical and mechanical engineers developing new photosensitive systems, improving existing products, or finding new applications for photography in science, medicine or industry.

Most courses are designed to also meet the needs of local engineers and scientists who wish to refresh their background in the photographic process, who might find a particular topic of interest, or who want to explore a new or specialized subject.

Course requirements, CTGP—AAS and BS degrees

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
102 Quarter Credits	Phase I	Algebra and Trigonometry . CTAM-210 Engineering Chemistry. CTCC-241, 242, 243 (lec) -246, 247, 248 (lab)	4 12	Dynamic Comm. . . . . CHGL-204 Dynamic Comm. II. . . . . CHGL-205 Communications Elective	4 4 4	Fundamentals of Photographic Science . . . . . CTGP-207, 208, 209 Black and White Sensitometry . . . CTGP-227, 228, 229	12 12
	Phase II	Calculus . . . . . CTAM-251, 252, 253 College Physics. . . . CTCP-201, 202, 203 (lec) -206, 207, 208 (lab)	12 12	Psychology . . . . . CHGS-211 Economics CHGS-221	4 4	Radiometry . . . . . CTGP-237, 238 Photographic Chemistry. . CTGP-217, 218, 219 (lec) -224, 225, 226 (lab)	6 12
92 Quarter Credits	Phase III	Calculus . . . . . CTAM-305 Differential Equations CTAM-306	4 4	Electives	8	Optics . . . . . CTGP-407, 408, 409 Image Evaluation . CTGP-417, 418, 419 or Quality Control of Photo Solutions . . . . . CTGP-307, 308, 309 Color Sensitometry . . . CTGP-414, 415, 416	9 9 9 10
	Phase IV	Electives (Statistics) . . . . . . Electives (Computer Programming) . . .	8 4	Electives	8	Theory of Photo Process. . . . CTGP-527 Theory of Color Process . . . . CTGP-528 Non-silver Imaging Systems . CTGP-529 Technical Electives	4 4 4 16

In order to meet program objectives and prerequisites of **later** *courses, transfer students who have an associate's degree may be required to take courses within Phase I and II. In many instances, such transfer students will be granted credit within Phases III and IV for appropriate work completed by the time of transfer.*

*The AAS degree is awarded upon the student's satisfactor***y** *completion of all courses in Phases I and II. In the case of transfer students seeking a degree, 45* **credits must be** *completed at RIT.*

Technical electives for photographic science (CTGP)

The following is a partial list of courses you may elect to fulfill the technical elective requirements for the photographic science program:

CTGP-421	Mathematical Methods in Photographic Science
CTGP-520	Electrostatic Imaging Methods
CHBI-351	Industrial Photography-Instrumentation
CTAM-711,712	Fundamentals of Statistics
CTAM-721	Control Charts
CTDS-202	Introduction to Computer Science
CTDP-304,305,306	Assembly Language Programming COBOL
CTIL-201, 202, 203	Elements of Electricity and Electronics
CTEM-301	Applied Mechanics and Strength of Materials

Other courses not listed above are acceptable. This includes advanced topics in chemistry, physics, statistics, electronics, and mechanics. Up to six quarter credits may be scheduled in management. You should schedule all electives with your advisor's approval.

In sequentially numbered courses, the lower numbered course is prerequisite.

The degree program in graphic arts (CTGR)
This program is structured to provide you with an opportunity to receive a broad understanding in the graphic arts field, and, at the same time, to select a major in design, photography or printing.

The professional courses in this program are presented in a manner which provides you with a broad practical background in printing, photography, design, and related fields as well as a concentration of study in your major area. Classroom instruction is supplemented by related work in studios and laboratories where you'll gain actual experience.

You need not take courses in the order listed, as long as you complete all courses in one phase before proceeding to the next. After successfully completing all courses in Phases I and II, you will receive an AAS degree. If you are transferring from another institution, you must complete 45 credits at RIT.

Course requirements, CTGR—AAS and BS degrees with options in design, printing or photography

		Mathematics and Science	Qtr. Cr.	General Education	Qtr. Cr.	Professional	Qtr. Cr.
94 Quarter Credits	Phase I	Technical Mathematics. . . . . CTAM-201, 202 or Mathematical Thought and Processes . . . . . CTAM-205 and Modern Mathematical Methods CTAM-206	8	Dynamic Comm. . . . . CHGL-204 Dynamic Comm. II. . . . . CHGL-205 Psychology . . . . . CHGS-211 Communications Elective	4 4 4 4	Intro to Printing . . CTGR-201, 202, 203 Basic Professional Photography. . . . CTGI-201, 202, 203 Basic Design CHAD-201, 202, 203	6 12 6
	Phase II	Contemporary Science . . . . . CTCS-221, 222, 223 or Engineering Chemistry. CTCC-241, 242, 243 (lec) -246, 247, 248 (lab) or Physics . . . . . CTCP-201, 202, 203 (lec) -206, 207, 208 (lab)	12	Economics . . . . . CHGS-221 Electives (Humanities)	4 6	Paper and Printing . . . CTGR-251, 252 Copy Preparation . . . . . CTGR-227 Technology of Typesetting . CTGR-237 Graphic Design . . CHAD-311, 312, 313 Professional Electives	4 3 2 6 9
94 Quarter Credits	Phase III	Science, Technology and Society Electives	8	Electives	20	Reproduction Camerawork. . . CTGR-301, 302, 303 Printing Plates. . . . . CTGR-231, 232 Printing Process . . . . . CTGR-341 Advertising CHAD-301, 302	6 4 2 8
	Phase IV			Electives	16	Estimating . . . . . CTGR-219 Imposition and Finishing . . . CTGR-421 Professional Electives	4 2 24

In order to meet program objectives and prerequisites of later courses, *transfer students who have an associate's degree may be required to take courses within Phase I and II. In many* instances, such *transfer students will be granted credit within Phases III and IV tor appropriate work completed by the time of transfer.*
All electives are to be selected with advisor's approval.

Diploma Programs

You can earn a diploma of the Institute by completing one of fourteen technical diploma programs. These programs are carefully planned to include the basic courses in their respective specialized fields, so that you will get maximum benefit for a minimum expenditure of time. Enrollment in or completion of a diploma program does not preclude the possibility of your later pursuing a degree program; in fact courses are applicable to degree programs if you should decide to pursue a degree at a later time.

Students not interested in pursuing a diploma program may register for individual courses of their choice as long as they meet any prerequisites.

Diplomas of the Institute are granted in the following programs in the Technical Studies division: architectural drawing; automatic screw machine operation and set-up; building technology; electronics; industrial technology (electrical); instrument making and experimental work; machine design; machine shop; photography; printing; tool design; tool and die making; tool engraving; turret lathe and chucker operation and set-up.

Architectural Drawing (CTID)

Architectural Drawing	CTIB-201, 202, 203
Architectural Drawing	CTIB-204, 205, 206
Architectural Drawing	CTIB-207, 208, 209
Human Relations	CBCE-101,102,103
Elective (any one of the following):	
Construction Contracting	CTIB-251
Building Estimating	CTIB-252, 253
Surveying I	CTIB-231
Architectural Projects	CTIB-311, 312, 313
Building Construction (Materials)	CTIB-241

Building Technology (CTID)

Architectural Drawing	CTIB-201, 202, 203
or	
Architectural and Structural Blueprint Reading	CTIB-101
and	
Building Estimating	CTIB-252, 253
Building Construction (Materials)	CTIB-241
Building Construction (Methods and Procedures)	CTIB-242, 243
Construction Contracting	CTIB-251
Human Relations	CBCE-101,102,103
Elective: (any one of the following):	
Architectural Drawing	CTIB-201, 202, 203
Architectural Drawing	CTIB-204, 205, 206
Surveying I	CTIB-231
Building Estimating	CTIB-252, 253

Electronics (CTIA)

Basic Mathematics for Electronics	CTEE-101, 102,103
Electrical Schematics	CTEE-105,106,107
Elements of Electricity and Electronics	CTIL-201, 202, 203
Human Relations	CBCE-101,102,103
Digital and Analog Systems	CTEE-321,322

Machine Design (CTIH)

Machine Shop	CTIS-201, 202, 203 (lec.)
	CTIS-206, 207, 208 (lab.)
Engineering Drawing	CTID-201, 202, 203
Mathematics	CTAM 101, 102, 103
Engineering Graphics	CTID-212, 213
Machine Design	CTID-151,152,153
Human Relations	CBCE-101,102,103
Elective (any one of the following):	
Industrial Plastics	CTEF-210
Numerical Control	CTIS-281, 282

Tool Design (CTIS)

Machine Shop	CTIS-201, 202, 203 (lec.)
	CTIS-206, 207, 208 (lab.)
Engineering Drawing	CTID-201, 202, 203
Mathematics	CTAM-101,102,103
Tool Design	CTID-141,142,143
Engineering Graphics	CTID-212, 213
Human Relations	CBCE-101,102,103
Elective (any one of the following):	
Industrial Plastics	CTEF-210
Numerical Control	CTIS-281, 282

Tool Engineering (CTIT)

Engineering Drawing	CTID-201, 202, 203
Machine Shop	CTIS-201, 202, 203 (lec.)
	CTIS-206, 207, 208 (lab)
Mathematics	CTAM-101,102, 103
Tool Design	CTID-141,142
Metallurgy	CTEF-211,212
Industrial Plastics	CTEF-210
Human Relations	CBCE-101,102,103

Printing (CTGT)

This program utilizes the laboratories of the School of Printing which are completely equipped with the most modern printing machinery for all processes of producing the printed word, including letterpress, lithography, and gravure. The printing (CTGT) program leads to a diploma, indicating competency in specialized areas of printing as well as a practical understanding of the entire printing operation. All printing courses shown are also open to students not enrolled as diploma candidates.

Printing (CTGT)

Introduction to Printing	CTGR-201, 202, 203
Copy Preparation	CTGR-227
Process Camerawork	CTGR-101,102,103
Color Separation Camerawork	CTGR-111,112,113
Offset Layout and Stripping	CTGR-121,122,123
Offset Platemaking	CTGR-131,132
Offset Presswork	CTGR-141,142,143
Human Relations	CBCE-101,102,103

Diploma program in Photography (CTGD)

This sequence of photographic courses is designed to prepare you for the highly competitive field of professional photography. The requirements combine a thorough technical education in photography with an introduction to management and human relations. Because of the specific nature of the diploma, all six required courses must be completed before you earn the diploma. You may apply photography courses you complete for the diploma towards the associate in applied science degree in professional photography. Under certain conditions, Psychology CHGS-211 may be substituted for Human Relations CBCE-101,102,103.

Requirements for photography diploma program

Basic Professional Photography	CTGI-201, 202, 203
Color Photography	CTGI-211, 212, 213
Commercial Photography	CTGI-241, 242, 243
Portrait Photography	CTGI-231, 232, 233
Portrait Retouching or	CTGI-331, 332, 333
Commercial Retouching	CTGI-321, 322, 323
Human Relations	CBCE-101,102,103
	Total: 51 qtr. cr.

Apprenticeship Programs
In cooperation with local industry, CCE offers a wide selection of courses applicable to apprenticeship programs. Applicants seeking to complete courses required in apprenticeship programs should consult with their company training director to determine courses required.

Machine Shop
Two machine shops, one on the Rochester campus and one at the City Center, are completely equipped for thorough instruction in all phases of the machine industry.

For tool room work there are several Toolmaster vertical mills, a Contourmaster, Pratt and Whitney jig-borer, surface grinders, cylindrical grinders, a pantograph machine and a punch press. The heat treating laboratory is also an active facility.

Specialized Industrial Training
Specialized intensive training programs may be developed on a one-time basis or as on-going programs to meet the specific needs of a given company or organization.

If you are seeking advanced standing in subjects in the Machine Shop area, you must submit transcripts of courses taken at other schools and/or take an examination in those courses for which you want credit. The examination fee is $50 per course, and you must receive an admission card before being admitted to the test. The test may be scheduled at the City Center. For further information call Orville Adler, 262-2741.

Course Requirements

	Tool and Die Making (CTML)
Phase 1	Mechanical Blue Print Reading....CTID-101 Machine Shop Lecture....CTIS-201, 202, 203 Machine Shop Lab....CTIS-206, 207, 208 Shop Mathematics....CTIS-151. 152, 153
2	Advanced Machine Shop I....CTIS-104, 105, 106 Shop Trigonometry....CTIS-154, 155, 156
3	Tool & Die Making I....CTIS-121, 122, 123 Heat Treatment....CTIS-161, 162
4	Tool & Die Making II....CTIS-124, 125, 126 Human Relations....CBCE-101, 102, 103
5	Tool & Die Making III....CTIS-127, 128,129 Electives: (any 3 quarters)

	Machine Shop (CTMS)
Phase 1	Mechanical Blue Print Reading....CTID-101 Machine Shop Lecture....CTIS-201, 202, 203 Machine Shop Lab....CTIS-206, 207, 208 Shop Mathematics....CTIS-151, 152, 153
2	Advanced Machine Shop I....CTIS-104, 105, 106 Heat Treatment....CTIS-161 162
3	Advanced Machine Shop II....CTIS-107, 108, 109 Human Relations....CBCE-101, 102, 103
	Electives: (any 3 quarters)
	Electives: (any 3 quarters of the following) Precision Measurement....CTIS-101, 102, 103 Engineering Drawing....CTID-201, 202, 203
	Numerical Control....CTIS-281, 282 Computer Programming for N/C....CTIS-283

	Instrument Making and Exp. Work (CTMI)
Phase 1	Mechanical Blue Print Reading....CTID-101 Machine Shop Lecture....CTIS-201, 202, 203 Machine Shop Lab....CTIS-206, 207, 208 Shop Mathematics....CTIS-151,152,153
2	Instrument Making I....CTIS-111, 112, 113 Shop Trigonometry....CTIS-154, 155, 156
3	Instrument Making II....CTIS-114, 115, 116 Heat Treatment....CTIS-161, 162
4	Instrument Making....CTIS-117, 118, 119 Human Relations....CBCE-101, 102,103
	Electives: (any 3 quarters)

	Turret Lathe Set-Up and Operate (CTUM)
Phase 1	Mechanical Blue Print Reading....CTID-101 Turret Lathe I....CTIS-141, 142, 143 Shop Mathematics....CTIS-151, 152,153
2	Turret Lathe II....CTIS-144, 145, 146 Human Relations....CBCE-101, 102, 103 Electives: (any 3 quarters)

	Automatic Screwmach. Set-Up and Operate (CTMR)
Phase 1	Hand Screw Machine....CTIS-131,132,133 Mechanical Blue Print Reading....CTID-101 Shop Mathematics....CTIS-151,152
2	Automatic Screw Machine I....CTIS-134, 135, 136 Human Relations....CBCE-101, 102, 103
3	Automatic Screw Machine II....CTIS-137, 138, 139 Electives: (any 3 quarters)

Starting Classes for B Shift or Tricker

Fall	Winter	Spring
Mach. Lec. CTIS-201 Mach. Lab CTIS-206 (May come either AM or PM)	MathCTIS-157	B/PCTID-101

Starting Classes for Mid Year

Spring	Summer
Mach. Lec. CTIS-201 Mach. Lab CTIS-206 Math CTIS-157 B/PCTID-101	B/P CTID-101 ,	Mach. Lec. CTIS-204 Mach. Lab. CTIS-20E B/PCTID-101

Technical Studies Course Descriptions

(See Pg. 25 for course number information).
Entering students who apply for any of the beginning mathematics courses, CTAM-201, 202, 210 or 251, are required to take a diagnostic examination to determine the level at which they may start the mathematics sequence. (See page for further information.) Students who have had previous college level mathematics courses should consult with an advisor.

Mathematics

CTAM-101,102,103 Mathematics
Registration #0240-101,102,103
A three-quarter sequence for students whose high school mathematics background is insufficient to allow them to enroll in degree-level mathematics course. This is an accelerated intermediate high school algebra course with an introduction to trigonometry.

Credit: 3/Qtr.

CTAM-201,202 Technical Mathematics
Registration #0240-201,202
A two-quarter sequence to meet the needs of students enrolled in AAS degree programs. This is an introduction to college algebra and trigonometry covering basic algebraic concepts and operations, algebraic and transcendental (trigonometric, logarithmic, and exponential) functions.

Prerequisite: CTAM-103 or equivalent

Credit: 4

CTAM-203 Technical Calculus
Registration #0240-203
An elementary applied calculus course for students in the AAS program. This course covers the basic Differential and Integral calculus of algebraic and transcendental function with applications.

Prerequisite: CTAM-202 or equivalent

Credit: 4

CTAM-205 Mathematical Thought & Processes
Registration #0240-205
An examination of mathematical thought and processes through a study of elementary mathematical concepts. This course is designed to acquaint the student with the "mathematical way of thinking," the development of mathematical formulas, the applications of mathematics in today's society on an elementary level.

Credit: 4

CTAM-206 Modern Mathematical Methods
Registration #0240-206
An examination of selected modern mathematical methods used in today's society. This examination includes a study of the nature of these methods, a study of how these methods are used, and a study of the usefulness of these methods in today's society.

Credit: 4

CTAM-210 College Algebra and Trigonometry
Registration #0240-210
A study of algebraic and transcendental (trigonometric, logarithmic, and exponential) functions including graphs and equations.

Prerequisite: Three years of high school mathematics or equivalent, including intermediate algebra.

Credit: 4

CTAM-251, 252, 253 Calculus
Registration #0240-251, 252, 253
A three quarter course sequence covering the differential and integral calculus of single variables; analytical geometry; series; and vector algebra with emphasis on applications.

Prerequisite: CTAM-210 or equivalent

Credit: 4

CTAM-305 Calculus
Registration #0240-305
Partial differentiation; multiple integrals; solid analytic geometry; vector calculus with emphasis on applications to science and engineering.

Prerequisite: CTAM-253 or equivalent

Credit: 4

CTAM-306 Differential Equations
Registration #0240-306
Ordinary differential equations through nth order with emphasis on first and second order linear. Applications, numerical methods, series solutions.

Prerequisite: CTAM-305 or equivalent

Credit: 4

CTAM-318 Boundary Value Problems
Registration #0240-318
A continuation of CTAM-306, Differential Equations. Topics covered are Fourier Series, LaPlace Transforms, an introduction to partial differential equations; series solutions of differential equations; applications of the material covered.

Prerequisite: CTAM-306 or equivalent

Credit: 4

CTAM-328 Engineering Mathematics
Registration #0240-328
An introduction to matrix algebra and vector analysis. Topics covered are matrix operations with application; vector algebra, vector calculus, gradient, divergence and curl; linear and surface integrals; independence of path and the divergence theorem; applications.

Prerequisite: CTAM-305 or equivalent

Credit: 4

CTAM-341,342 Engineering Statistics
Registration #0240-341, 342
Designed to provide the student with a working understanding of the basic statistical strategies useful in the analysis and interpretation of data generated by problems of variation in the physical and applied sciences, and as such is a study of the concepts and techniques of mathematical probability and statistics and its role as the central core of all statistical strategies.

Prerequisite: CTAM-305 or equivalent

Credit: 4

CTAM-407 Linear Algebra
Registration #0240-407
Topics covered in this course are: vector spaces; systems of linear equations; linear transformations and matrices; determinants; characteristic roots and vectors; similarity of matrices and quadratic forms; applications of the above.

Prerequisite: CTAM-252 or equivalent

Credit: 4

CTAM-417 Numerical Analysis
Registration #0240-417
This course covers linear difference equations; numerical methods for solving equations; interpolation, iteration, and approximating procedures; error analysis or related methods; empirical formulas; and problems involving computer applications. Where applicable, the computer will be used in solving problems.

Prerequisites: FORTRAN or BASIC Programming and CTAM-306 or equivalents

Credit: 4

CTAM-420 Complex Variables
Registration #0240-420
A study of the calculus of complex functions. Cauchy Theory leading to residue theory and conformal mapping.

Prerequisite: CTAM-305 or equivalent

Credit: 4

Statistics
(Graduate Level)

CTAM-711 Fundamental of Statistics I
Registration #0240-711
For those taking statistics for the first time. Covers the statistical methods used most in industry, business and research. Essential for all scientists, engineers, and administrators.

Topics: organizing observed data for anlysis and insight; learning to understand probability as the science of the uncertain; concepts of random variables and their associated probability models; meaning and practical use of the Central Limit Theorem.

Prerequisite: Consent of the department

Credit: 3

CTAM-712 Fundamentals of Statistics II
Registration #0240-712
Continuation of CTAM-711.

Topics: concepts and strategies of statistical inference for making decisions about a population on the basis of sample evidence; tests for independence and for adequacy of a proposed probability model; learning how to separate total variability of a system into identifiable components through analysis of variance; regression and correlation models for studying the relationship variable to one or more predictor variables.

Prerequisite: CTAM-711 or equivalent

Credit: 3

CTAM-721 Quality Control: Control Charts
Registration #0240-721
A practical course designed to give depth to practicing quality control personnel.

Topics: statistical measures; theory, construction, and application of control charts for variables and for attributes; computerization procedures for control charts; tolerances, specifications, and process capability studies; basic concepts of total quality control, and management of the quality control function.

Prerequisite: Consent of the department

Credit: 3

CTAM-731 Quality Control: Acceptance Sampling
Registration #0240-731
Investigation of modern acceptance sampling techniques with emphasis on industrial application.

Topics: single, double, multiple, and sequential techniques for attributes sampling; variables sampling; techniques for sampling continuous production. The course highlights Dodge-Romig plans, Military Standard plans, and recent contributions from the literature.

Prerequisite: Consent of the department

Credit: 3

CTAM-751 Introduction to Decision Processes
Registration #0240-751
A first course in statistical decision theory featuring concrete situations and realistic problems.

Topics: basic statistical ideas; how to make the best decision prior to sampling, after sampling, sequentially; optimum managerial strategies, practical applications.

Prerequisite: Consent of the department

Credit: 3

CTAM-761 Reliability
Registration #0240-761
A methods course in reliability practices: What a reliability engineer must know about reliability prediction, estimation, analysis, demonstration, and other reliability activities. Covers most methods presently being used in industry.

Topics: applications of normal, binomial, exponential, and Weibull graphs to reliability problems; hazard plotting; reliability confidence limits and risks; strength and stress models; reliability safety margins; truncated and censored life tests; sequential test plans; Bayesian test programs.

Prerequisite: CTAM-712 or equivalent

Credit: 3

CTAM-801 Design of Experiments I
Registration #0240-801
How you design and analyze experiments in any subject matter area; what you do and why.

Topics: basic statistical concepts, scientific experimentation, completely randomized design, randomized complete block design, nested and split plot designs. Practical applications to civil engineering, pharmacy, aircraft, agronomy, photoscience, genetics, psychology, and advertising.

Prerequisite: CTAM-712

Credit: 3

CTAM-802 Design of Experiments II
Registration #0240-802
Continuation of CTAM-801.

Topics: Factorial experiments: fractional, three level, mixed: response surface exploration. Practical applications to: medical areas, alloys, highway engineering, plastics, metallurgy, animal nutrition, sociology, industrial and electrical engineering.

Prerequisite: CTAM-801

Credit: 3

CTAM-821 Theory of Statistics I
Registration #0240-821
Provides a sound theoretical basis for continuing study and reading in statistics.

Topics: constructs and applications of mathematical probability; discrete and continuous distribution functions for a single variable and for the multivariate case; expected value and moment generating functions; special continuous distributions.

Prerequisite: Consent of the department.

Credit: 3

CTAM-822 Theory of Statistics II
Registration #0240-822
Continuation of CTAM-821

Topics: supporting theory for, and derivation of, sampling distribution models; applications and related material. Point estimation theory and applications, the multivariate normal probability model, its properties and applications; interval estimation theory and applications.

Prerequisite: CTAM-821 or equivalent.

Credit: 3

CTAM-830 Multivariate Analysis I
Registration #0240-830
Deals with the summarization, representation, and interpretation of data sampled from populations where more than one characteristic is measured on each sample element. Usually the several measurements made on each individual experimental item are correlated and certainly one should not apply univariate analysis to each measurement separately. This course covers the use of the basic multivariate techniques. Computer problem solving will be emphasized. Topics will include multivariate, t-test, ANOVA, regression analysis, repeated measures, quality control and profile analysis.

Prerequisite: CTAM-801, 802.

Credit: 3

CTAM-831 Multivariate Analysis II
Registration #0240-831
A continuation of CTAM-830, this course covers the use of advanced multivariate techniques. Topics include principal component analysis, cluster analysis, multi-dimensional contingency tables, discrete discriminant analysis, multi-dimensional scaling, and regression with errors in the independent variables. Practical applications will be emphasized.

Prerequisite: CTAM-830

Credit: 3

CTAM-841 Regression Analysis I
Registration #0240-841
A methods course dealing with the general relationship problem.

Topics: the matrix approach to simple and multiple linear regression; analysis of residuals; dummy variables; orthogonal models; computational techniques.

Prerequisite: CTAM-802 or equivalent.

Credit: 3

CTAM-842 Regression Analysis II
Registration #0240-842
A continuation of CTAM-841.
Topics: selection of best linear models; regression applied to analysis of variance problems; nonlinear estimation and model building.

Prerequisite: CTAM-841 or equivalent.

Credit: 3

CTAM-851 Nonparametric Statistics
Registration #0240-851
Distribution-free testing and estimation techniques with emphasis on applications.
Topics: sign tests; Kolmogorov-Smirnov statistics; run tests; Wilcoxon-Mann-Whitney test; chi-square tests; rank correlation; rank order tests; quick tests.

Prerequisite: CTAM-712 or equivalent.

Credit: 3

CTAM-853 Managerial Decision Making
Registration #0240-853
Continuation of CTAM-751, statistical decision analysis for management.
Topics: utilities; how to make the best decision (but not necessarily the right one); normal and beta Bayesian theory; many action problems; optimal sample size; decision diagrams. Applications to marketing; oil drilling; portfolio selection, quality control; production; and research programs.
Prerequisite: CTAM-751 or equivalent.
Credit: 3

CTAM-871 Sampling Theory and Application
Registration #0240-871
An introduction to sample surveys in many fields of applications with emphasis on practical aspects.
Topics: review of basic concepts, sampling problem elements; sampling; random, stratified, ratio, cluster, systematic, two-stage cluster; wild life populations, questionnaires, sample sizes.

Prerequisite: CTAM-712 or equivalent.

Credit: 3

CTAM-881 Bayesian Statistics
Registration #0240-881
Probability as a degree of belief; how we learn; the applications of Bayesian principles to: estimation of failure rates, revising odds, testing precise hypotheses, finding credible regions, tests of significance and goodness of fit from the Bayesian point of view; handling several variables: straightline analysis. A potpourri of applications.

Prerequisite: CTAM-712 or equivalent

Credit: 3

CTAM-886 Sample Size Determination
Registration #0240-886
The question most often asked of an industrial statistician is "What size sample should I take?" This course answers that question for a wide variety of practical investigational projects. Techniques for the full use of the optimal sample evidence are also offered.

Prerequisite: CTAM-712 or equivalent.

Credit: 3

CTAM-891,892,893 Special Topics in Applied Statistics
Registration #0240-891,892, 893
These courses provide for the presentation of subject matter of important specialized value in the field of applied and mathematical statistics not offered as a regular part of the statistics program.

Prerequisite: Consent of the department.

Credit: 3

CTAM-895 Statistics Seminar
Registration #0240-895
This course or sequence of courses provides for one or more quarters of independent study and research activity.
This course may be used by other departments or other colleges at RIT to provide special training in statistics for students who desire an independent study program in partial fulfillment of graduate degree requirements.

Prerequisite: Consent of all departments involved.

Credit: 3

CTAM-896, 897, 898 Thesis
Registration #0240-896,897, 898
For students working for the MS degree in applied and mathematical statistics who use a research project and thesis for three, six or nine credits.

Prerequisite: Consent of the department.

Credit: 3

Electrical (Applied Science)

CTBE-401,402, 403 (lec,): 406,407, 408 (lab.) Circuit Analysis
Registration #0241-401,402, 403, 406,407, 408
Circuit parameters, Ohm's Law, Kirchhoff s Laws, combination of elements, voltage and current division, mesh and nodal analysis, linearity and superposition, Thevenin's and Norton's theorems, dependent sources, transient analysis, sinusoidal steady-state analysis, polyphase circuits, complex frequency, pole-zero diagrams, resonance, magnetically coupled circuits, two-port theory, Fourier series analysis of circuits, Laplace transform techniques of circuit solution.

Prerequisite: CTCP-303 and CTAM-305 and concurrent with CTAM-306.

Credit: 4 (Lec. 3, Lab. 1)

CTBE-411,412,413 Electric and Magnetic Fields
Registration #0241-411,412, 413
Electric and magnetic field application in dielectrics and magnetic core component. Wave propagation and the formulation of dynamic field equations and their specific application to radiation problems, waveguides, antennas, shielding, and transmission lines.

Prerequisite: CTAM-308 and CTBM-342 or equivalent.

Credit: 4

CTBE-421,422, 423 Electronics
Registration #0241-421,422,423
An integrated treatment of basic electron devices and their circuits with emphasis on active circuits and their analysis: biasing, stability, and frequency response consideration, feedback amplifiers and non-linear circuits.

Prerequisite: CTBE-403 and 408 or equivalent

Credit: 4

CTBE-431,432 Electronics (Advanced)
Registration #0241-431, 432
An in depth study of stability, feedback, temperature and noise effects as applied to operational amplifiers. Application of integrated circuit operational amplifiers as RC filters and in linear and nonlinear modes.

Prerequisite: CTBE-423 or equivalent

Credit: 4

CTBE-433 Electronics (Communications)
Registration #0241-433
Introduction to systems for transmitting information at high frequencies-AM, FM, PM. Digital and sampled-data systems including basic information theory and noise. Emphasis is on basic understanding utilizing analysis as a tool to demonstrate application and to further understanding. Topics to include propagation, RF amplification, modulation and detection, basic antenna and transmission line principles, D-A and A-D conversion, signal-to-noise ratio, bandwidth, sampling theory, and noise sources with their effects on information transmission.

Prerequisite: CTBE-412 and CTBE-423 or equivalent.

Credit: 4

CTBE-434 Digital Logic Design
Registration #0241-434
Concepts of Boolean algebra and related switching circuit theory, analysis and synthesis of AND/OR, NAND/NOR logic. Use of Darnaugh map techniques for combinational logic. Simplification, analysis, and synthesis of sequential circuits using transition and state tables, number systems and codes. TTL, ECL, HTL, digital MOS device characteristics.

Prerequisite: CTBE-423 or equivalent.

Credit: 4

CTBE-461,462, 463 Electrical Engineering Principles
Registration #0241-461,462, 463
A course for non-electrical majors. Electric and magnetic circuits, electrical measurements, electronic devices, transformers, power systems, machines, and control circuits.

Prerequisite: CTAM-305 and CTCP-303 or equivalent.

Credit: 4

CTBE-501 Electromagnetic Energy Conversion
Registration #0241-501
Theoretical development of magnetic circuit principles as applied to electromechanical energy conversion with emphasis on electromagnetic field and mechanical energies. Electromagnetic devices are discussed with emphasis on the magnetic circuit point of view under steady-state operation conditions.

Prerequisite: CTAM-306 and CTBE-412 or equivalent.

Credit: **4**

CTBE-511,512 Control Systems
Registration #0241 -511,512
Control systems are analyzed with emphasis on open and closed loop operation. System parameters are discussed including block diagrams, transfer functions, and stability. Nyquist criteria and Bode plots are presented to predict and analyze the operation and design of control systems.

Prerequisite: CTBE-501 and CTBE-403 and 408 or equivalent.

Credit: 4

Mechanical (Applied Science)

CTBM-341,342 Engineering Mechanics
Registration #0242-341, 342
Vector methods in statics and dynamics, force systems, friction, moments, centers of mass and centroids, moments and products of inertia, work, velocity, acceleration, kinetic energy, momentum, rigid body motion, rotation, work, potential energy, conservative forces and impulse.

Prerequisite: CTCP-302 and CTAM-305

Credit: 4

CTBM-344 (lec); 354 (lab) Strength of Materials I
Registration #0242-344, 354
Stress, strain. Hooke's Law, shear, torsion, shear and bending in beams, moment diagrams and deflection of statically determinate beams.

Prerequisite: CTBM-341 or equivalent.

Credit: 4 (Lec. 3, Lab. 1)

CTBM-345 Strength of Materials II
Registration #0242-345
A continuation of the study of the way engineering materials behave. Slope and deflection of statically indeterminate beams, analysis of special beams, reinforced concrete beams, shear center, bending or torsion stresses combined with direct stresses, combined stresses for general types of loading. Mohr's circle, column analysis, energy of strain and impact, Castigliano's theorem.

Prerequisite: CTBM-344 and 354.

Credit: 4

CTBM-347 (lec), 357 (lab) Engineering Materials
Registration #0242-347, 357
Properties of engineering materials from the standpoint of atomic and crystalline structure, imperfections, and phase changes.

Prerequisite: CTBM-341

Credit: 4 (Lec. 3, Lab. 1)

CTBM-401 Thermodynamics I
Registration #0242-401
Fundamental properties of thermodynamic systems: perfect gases, state and energy equations, laws of thermodynamics, and properties of pure substances.

Prerequisite: CTCP-302 and CTAM-306 or equivalents.

Credit: 4

CTBM-402 Thermodynamics II
Registration #0242-402
Thermodynamic properties of steam and refrigerants: fluids, heat transfer, mixtures of gases and vapors, internal combustion cycles and vapor power cycles.

Prerequisite: CTBM-401 or equivalent.

Credit: 4

CTBM-403 Thermodynamics III
Registration #0242-403
Additional material on vapor power cycles and internal combustion engines, reactive systems, and fundamentals of heat transfer.

Prerequisite: CTBM-402 or equivalent.

Credit: 4

CTBM-411 Fluid Mechanics I
Registration #0242-411
The basic properties of fluids are described. The principles of fluid behavior are investigated and applied to practical problems. Forces developed by fluids in motion are also examined. Major topics include incompressible viscous flow and boundary-layer theory. Films showing flow phenomena are used to supplement the lecture material.

Prerequisite: CTAM-306 and CTBM-401 or equivalents.

Credit: 4

CTBM-412 Fluid Mechanics II
Registration #0242-412
Introduction to special flow systems. Major topics include potential flow, compressible flow, and the behavior of fluids in open channels, dimensional analysis and its relation to model flow-testing. Lectures are supplemented with films.

Prerequisite: CTBM-411

Credit: 4

CTBM-551 Machine Design I
Registration #0242-551
Statics of linkage mechanisms, Rinematics and dynamics of linkages, analytical methods of solution based on vector analysis, graphical methods, additional vector methods of solution, plus graphical methods.

Prerequisite: CTBM-345 or equivalent.

Credit: 3

CTBM-552 Machine Design II
Registration #0242-552
Kinematics of cam mechanisms, dynamic analysis of cams and some vibrations analysis, cam synthesis, stress analysis of machine design, including the selection of materials.

Prerequisite: CTBM-551

Credit: 3

'I sequentially numbered courses, the lower *numbered course is prerequisite.*

CTBM-553 Machine Design III
Registration #0242-553
Design of machine elements (shafts, springs, gears, bearings, clutches and brakes), vibration analysis, material selection, additional analytical and graphical solutions.

Prerequisite: CTBM-552.

Credit: 3

CTBM-554 Linkage Mechanism Synthesis
Registration #0242-554
The combining of linkage mechanisms to perform machine functions. Coordinating of output motion with input motion for four and six-link mechanisms. Combinations and inversions of four-bar and slider-crank linkages. Analyzing coupler-curves. Coupler-cognate mechanism synthesis. Solving problems by graphical and analytic methods with typical applications to machine design.

Prerequisite: CTBM-551 or permission of advisor.

Credit: 3

Chemistry

CTCC-211,212,213 General Chemistry
Registration #0244-211, 212, 213
For chemistry majors and others who desire an in-depth study of general chemistry: atomic structure, chemical bond, properties of elements and compounds, states of matter, solutions, acids and bases, oxidation-reduction reactions, chemicals calculations, qualitative and quantitative analysis.

Prerequisite: 3 years of high school math or equivalent, including intermediate algebra

Credit: 3/Qtr.

CTCC-216 Qualitative Inorganic Analysis
Registration #0244-216
A lecture-laboratory course designed to present and illustrate the principles of the methodology of qualitative inorganic cation and anion analyses.

Prerequisite: Concurrent with CTCC-213 or equivalent.

Credit: 2

CTCC-217,218 Quantitative Analysis
Registration #0244-217, 218
A lecture-laboratory course designed to illustrate the techniques and skills required for volumetric and gravimetric quantitative analysis.

Prerequisite: Concurrent with CTCC-211, 212 or equivalent.

Credit: 2/Qtr.

CTCC-231 Organic Chemistry
Registration #0244-231
A lecture course serving as an introduction to the science of organic chemistry. A survey of the nomenclature of organic molecules and a discussion of the structure and properties of the various classes of organic compounds is presented.

Prerequisite: CTCC-213 or equivalent.

Credit: 3

CTCC-232,233 (lec); 237,238 (lab) Organic Chemistry
Registration #0244-232, 233, 237, 238
Fundamental principles of organic reactions are examined for the various types of organic chemicals. Nomenclature, stereochemistry, physical characterization techniques, and reaction types are stressed. Laboratory: preparation of various types of organic chemicals. Emphasis is on the techniques of separation and identification.

Prerequisite: CTCC-231 or equivalent.

Credit: 5 (Lec. 3, Lab. 2)

CTCC-241, 242, 243 (lec); 246, 247, 248 (lab) Engineering Chemistry
Registration #0244-241, 242, 243, 246,247, 248
A general chemistry course for engineering science and applied science students. The fundamental concepts relating to the physical states of matter, the atomic theory, chemical reactions, thermodynamics, kinetics, electrochemistry, solutions, acid-base theory, oxidation-reduction reactions, nuclear chemistry and a brief introduction to organic chemistry, biochemistry and polymer chemistry as these topics relate to technological problems are presented. The emphasis is placed on the techniques available for the solution of real problems. The laboratory includes applications of the principles discussed in lecture to the solution of specific or project oriented laboratory problems.

Prerequisite: CTAM-202 or equivalent.

Credit: 4 (Lec. 3, Lab. 1)

CTCC-311 (lec); 316 (lab) Analytical Chemistry
Registration #0244-311,316 Instrumental Analysis
Elementary treatment of instrumental theory and techniques; properties of light; refractive index, ultraviolet, visible and infrared spectrophotometry; emission spectroscopy; flame photometry; electro-chemistry; Nernst Law; pH meters and electrodes. A knowledge of organic chemistry is desirable.

Prerequisite: CTCC-213, CTCC-218 or equivalents; CTAM-210 required or to be taken concurrently.

Credit: 5 (Lec. 3, Lec./Lab. 2)

CTCC-312 (lec); 317 (lab) Analytical Chemistry-Separations
Registration #0244-312, 317
Inorganic and organic separations; Raoult and Henry Laws; phase rules; distillation; extraction; absorption and surface effects; electrophoresis; chromatography including gas, liquid, column, paper, thin layer, and ion exchange.

Prerequisites: CTCC-213, CTCC-218 or equivalents; CTAM-210 or take concurrently.

Credit: 5 (Lec. 3, Lec./Lab. 2)

CTCC-313 (lec) Introduction to Physical Chemistry
Registration #0244-313
Properties of gases, kinetic-molecular theory; Boltzman Distribution functions; non-ideal behavior; first law of thermodynamics; heat capacities; Euler's theorem and homogeneous functions; thermo-chemistry; and introduction to the second law.

Prerequisites: CTCC-213, CTCC-218 or equivalents; CTAM-252 or take concurrently.

Credit: 3

CTCC-401,402 (lec); 405,406 (lab) Physical Chemistry
Registration #0244-401,402, 405,406
Kinetic-molecular theory of gases, states of matter, atomic and molecular structure, thermodynamics, quantum theory, chemical kinetics, photochemistry, spectroscopy (x-ray, optical, magnetic), chemical kinetics, electrochemistry, adsorption and heterogeneous catalysis, and macromolecular structure analysis.

Prerequisites: CTCC-233 and 238, CTCC-313, CTAM-253 or equivalents

Credit: 5 (Lec. 3, Lec./Lab. 2)

CTCC-403 (lec); 407 (lab) Physical Chemistry
Registration #0244-403, 407
A lecture course presenting some of the more mathematical aspects of physical chemistry. Selected topics from the areas of chemical statistics, quantum theory, chemical bonding molecular states and spectra, and the gas, liquid and solid states are discussed.

Prerequisite: CTCC-402 and 406 or equivalent.

Credit: 5 (Lec. 3, Lec./Lab. 2)

CTCC-417 Chemical Literature and
Registration #0244-417 Technical Writing
Organization of technical libraries, classification of scientific literature into original and secondary sources and techniques for making literature searches; use of card catalog, index, abstracts, monographs, handbooks, critical tables, journals, bibliographies, technical catalogs, and patents; preparation of literature research reports.

prerequisites: CTCC-233 and 238, CTCC-313 or equivalent.

Credit: 2

CTCC-511,512 Instrumental Analysis
Registration #0244-511,512
Instrumental techniques of analysis including spectrophotometry, conductance, potentiometry, and refractive index measurement, gas chromatography, mass spectroscopy, NMR, and electron spin resonance. Emphasis is placed on the uses of instrumental methods for structure determination, measurement of reaction, kinetics, and mechanisms.

Prerequisites: CTCC-313, CTAM-253 or equivalents.

Credit: 4

CTCC-521 Synthetic Organic Chemistry
Registration #0244-521
An extensive discussion of the methodology and strategy of the synthesis of complex organic molecules including a discussion of the stereochemistry and mechanism of the synthetic processes.

Prerequisites: CTCC-233 and 238 or equivalent.

Credit: 3

CTCC-522 Physical Organic Chemistry
Registration #0244-522
Topics include activation parameters, kinetic and non-kinetic treatment of mechanism elucidation, linear-free energy concepts, quantitative analysis of conformational and electronic effects, simple Huckel Molecular Orbital Theory, electrocyclic reactions, acidity functions and primary and secondary isotope effects.

Prerequisite: CTCC-233 and 238, CTAM-210 or equivalent.

Credit: 3

CTCC-523 Advanced Topics in Organic Chemistry
Registration #0244-523
Several of the following advanced topics in organic chemistry are covered: polyfunctional compounds, modern synthetic methods, stereochemistry, conformational analysis, free radical reactions, natural and synthetic polymers.

Prerequisites: CTCC-233 and 238 or equivalent.

Credit: 3

CTCC-525 (lec), 535 (lab) Qualitative Organic Analysis
Registration #0244-525, 535
A combination of chemistry and spectroscopic techniques is used to identify the structure of "unknown" organic compounds.

Prerequisites: : CTCC-233 and 238

Credit: 3 (Lec. 1, Lec./Lab. 2)

CTCC-528 Organic Chemistry of Polymers
Registration #0244-528
Introduction to the chemistry of synthetic, high molecular weight polymers and a survey of their diverse structures and properties. Mechanisms of condensation, free radical and ionic polymerization

Prerequisites: CTCC-233 and 238 or equivalent.

Credit: 3

CTCC-551 Inorganic Chemistry
Registration #0244-551
The properties and structures of the elements and their compounds in relation to electronic and stereochemical principles. Some emphasis on the reactions and spectroscopic indentification of inorganic compounds.

Prerequisites: CTCC-233 and 238, CTCC-401 and 405 or equivalents.

Credit: 4

CTCC-555 Biochemistry
Registration #0244-555
Introduction to modern biological chemistry, physiological and physical-chemical aspects of energy metabolism, intermediary metabolism, biosynthesis of biopolymers, and metabolic regulations; structure and function of proteins and nucleic acids as an introduction to enzymology, molecular biology biology, and molecular genetics.

Prerequisites: CTCC-233 and 238 or equivalent.

Credit: 3

CTCC-561 Surface and Colloid Chemistry
Registration #0244-561
Surface energy of liquids and solids, adsorption, catalysis, preparation and properties of classical colloids, electrical and optical properties of colloids, formation and properties of macromolecules.

Prerequisite: CTCC-403 or equivalent.

Credit: 3

CTCC-562 Photochemistry
Registration #0244-562
Properties of visible and ultraviolet radiation, adsorption of radiation, spectra, mechanisms in gases, liquids, and solids; experimental techniques.

Prerequisite: CTCC-403 or equivalent.

Credit: 3

CTCC-563 Chemical Thermodynamics
Registration #0244-563
A study of the basic fundamentals of thermodynamics and their use in deriving the interrelationships of thermodynamic functions. Thermodynamic properties of gases will be calculated based on spectroscopic data.

Prerequisite: CTCC-403 or equivalent.

Credit: 3

CTCC-564 Quantum Chemistry
Registration #0244-564
The application of quantum mechanics to the covalent bond, diatomic molecules, resonance and complex molecules: molecular spectroscopy; elements of quantum statistical mechanics.

Prerequisite: CTCC-403 or equivalent.

Credit: 3

CTCC-565 Chemical Kinetics
Registration #0244-565
Methods of investigating the kinetics of chemical reactions and the theories used to interpret their results. Focus on homogeneous reactions in gas and liquid phases; discussions of references from recent chemical literature.

Prerequisite: CTCC-403 or equivalent.

Credit: 3

CTCC-598 Topics in Chemistry Spectrometry Identification
Registration #0244-598 of Organic Compounds
A practical approach to the elucidation of the structure of organic compounds through detailed analysis of their infrared, ultraviolet-visible, nuclear magnetic resonance and mass spectrometric properties. The emphasis is on the solution of real problems.

Prerequisite: CTAM-233-01 or equivalent.

Credit: 3

CTCC-599 Independent Study-Chemistry
Registration #0244-599

Faculty-directed study of chemical topics on a tutorial basis.

Prerequisite: Consent of instructor.

Credit: 1 - 3

Physics

CTCP-201,202,203 (lec); 206,207,208 (lab) College
Registration #0245-201, 202, 203, 206, 207, 208 Physics
A basic course in college physics using algebra and trigonometry: statics, dynamics, harmonic motion, sound, heat, fluid-flow, wave motion and optics, electricity and magnetism. Emphasis on understanding of basic principles and applications to problem solving.

Prerequisite: CTAM-202. Students who have not taken CTAM-202 must take mathematics qualifying exam.

Credit: 4 (Lec., 3; Lab., 1)

CTCP-301,302,303 (lec); 306,307,308 (lab) Physics
Registration #0245-301,302, 303, 306, 307, 308
General physics for engineering and science students; statics, dynamics, harmonic motion, wave motion, sound, heat, fluid-flow, optics, electricity and magnetism. Application of calculus to solving problems.

Prerequisite: CTAM-253 or equivalent.

Credit: 4 (Lec., 3; Lab., 1)

CTCP-457 Modern Physics
Registration #0245-457
An introductory course of 20th century physics. Review of classical physics, special relativity, quantum effects, duality of waves and particles, the hydrogen atom, many-electron atoms.

Prerequisite: CTCP-303 and 308, CTAM-305

Credit: 4

CTCP-458 Modern Physics
Registration #0245-458
A continuation of CTCP-457. Molecular physics, statistical mechanics, solid state physics and devices, lasers.

Prerequisite: CTCP-457 or equivalent.

Credit: 4

CTCP-459 Nuclear Physics
Registration #0245-459
Elementary particles, nuclear structure, nuclear reactions-fission and fusion. Nuclear power, accelerating machines.

Prerequisite: CTCP-458 or equivalent.

Credit: 4

Contemporary Science

CTCS-221 Contemporary Science-Biology
Registration #0246-221
An introduction to the fundamental principles of biology for nonscience majors, and the application of these concepts to areas of interest in our contemporary technological society. Topics to be discussed include the cell as a biological unit. The biogenesis-abiogenesis controversy, genetic coding and introduction to plant and animal biology. The course is presented in a lecture-demonstration format.

Prerequisite: CTAM-201 or CTAM-205 or CBCH-201 or equivalent.

Credit: 4

CTCS-222 Contemporary Science-Chemistry
Registration #0246-222
An introduction to the fundamental principles of chemistry for nonscience majors and the application of those concepts to areas of interest and concern in our contemporary technological society. Topics to be discussed include the atomic theory, chemical periodicity, nuclear reactions and energy, physical states of matter, chemical compounds, chemical reactions, organic chemistry, biological chemistry and macromolecular chemistry. The course is presented in a lecture-demonstration format.

Prerequisite: CTAM-201 or CTAM-205 or CBCH-201 or equivalent.

Credit: **4**

CTCS-223 Contemporary Science-Physics
Registration #0246-223
An introduction to the fundamental principles of physics for nonscience majors, and the application of these concepts to areas of interest and concern in our contemporary technological society. The conceptual basis for the phenomena of heat, light, sound, mechanics, electricity and magnetism are discussed and are related to such topics as astronomy, space exploration, lasers and environmental concerns. The course is presented in a lecture-demonstration format.

Prerequisite: CTAM-201 or CTAM-205 or CBCH-201 or equivalent.

Credit: **4**

CTCS-224 Contemporary Science-Oceanus
Registration #0246-224
An introduction to the fundamental principles of oceanography for nonscience majors, and the application of those concepts to areas of interest and concern in our contemporary technological society. The marine environment will be investigated in terms, of basic scientific concepts, and topics to be discussed will include plate tectonics and earthquake predictions, the impact of ocean pollutants, climate fluctuations, cetacean intelligence and resources from the sea.

Credit: **4**

Computer Systems

CTDP-200 Introduction to Micro-computers
Registration #0249-200
Expanding use of the computer from large data processing centers to the small business office to the home has created the need for a new level of understanding-computer knowledge. This technical course will help you become familiar with small computers, more comfortable with terminology and technology involved in computing and more aware of computers' significance and potential. You will also learn beginning BASIC. **Not for computer systems majors.**

Credit: 4

CTDP-201 Computer Techniques
Registration #0249-201
Programming in BASIC using time-sharing terminals. After an introduction to log-on and log-off procedures the course deals with the computer as a tool for solving applied problems in engineering technology and mathematics. Other topics can be considered as desired by student. **(Not for computer systems majors)**

Prerequisite: CTAM-202 or equivalent.

Credit: 2

CTDP-208 Introduction to Programming
Registration #0249-208
Fundamentals of programming using the structured programming language PASCAL. Topics include basic problem-solving methods, algorithm development, elementary data types, expression evaluation, use of basic control structures and subprograms. Programming projects will be required.

Prerequisite: CTDS-202, or approval of computer systems advisor.

Credit: 4

CTDP-210 Program Design and Validation
Registration #0249-210
Program design, including specification, structured development, advanced data types, procedures and functions, program validation and verification; programming paradigms, including basic internal sorting and searching algorithms. Programming projects will be required.

Prerequisite: CTDP-208

Credit: 4

CTDP-215 FORTRAN Programming
Registration #0249-215
A study of FORTRAN programming techniques and applications. Topics include FORTRAN constants, variables, expressions, function, logical operations, storage allocations, statements, I/O manipulation, program structures, subprograms, plotting, debugging, diagnostic methods and applied problem solving methods.

Prerequisite: CTDS-202

Credit: 4

CTDP-301 COBOL Programming
Registration #0249-301
COBOL programming techniques and applications. Topics include COBOL coding methods, data processing and sequential file manipulation, table look-up SORT and SEARCH verbs, introduction to the concept of modular and structured programming. COBOL debugging and editing facilities, establishment of documentation standards, case studies. **Not for computer systems majors.**

Prerequisite: CTDS-202 or CBCC-322

Credit: 4

CTDP-304 Advanced COBOL Programming
Registration #0249-304
Advanced COBOL programming techniques and applications with topics including magnetic tape and disc file processing techniques using COBOL, subroutines, over-lay and segmentation, report writer, core dump analysis, modular and structured programming techniques, coding optimization techniques, and case studies. **Not for computer systems majors.**

Prerequisite: CTDP-301

Credit: 4

CTDP-305 Assembly Language Programming
Registration #0249-305
A study of assembly language programming methods with topics including computer organization, assembly process, assembly coding, addressing, binary arithmetic, relocatability, storage allocation, subroutine linkage, looping and address modification, character manipulation, bit manipulation, floating-point arithmetic, decimal instruction set, some system I/O, macros and debugging techniques.

Prerequisite: A high level language

Credit: 4

CTDP-306 Advanced Assembly Techniques
Registration #0249-306
A study of advanced techniques in assembly language programming. Topics include macro definition and invocation, conditional assembly, system macros and supervisor calls, program linkage, reentrant and recursive programs and I/O programming at the interrupt level. Programming projects will be required.

Prerequisite: CTDS-315, CTDS-325

Credit: 4

CTDP-307 Business Applications Programming
Registration #0249-307
The mastery of the techniques and concepts of programming within a business programming environment. Emphasis on algorithmic solutions to business application problems, including report generation, sorting and table processing and generation and complex I/O processing. Project management, programming teams and tooling and stubbing are used in the course. Structured COBOL is used. Students will also program against a data base in a host-embedded programming language. Laboratory emphasis.

Prerequisite: CTDS-325

Credit: 4

CTDP-318 APL Programming Techniques
Registration #0249-318 and Applications
Topics include APL programming and style, function definition and recursive programming, APL report formatting features, file I/O subsystem, graphic I/O and scientific and business systems applications. Programming projects will be required.

Prerequisite: A high level language

Credit: 4

CTDP-320 Computer Programming for Engineers
Registration #0249-320
Computer programming in FORTRAN using time-sharing terminals. Emphasis is on problem solving and using the computer as an engineering and research tool. Subject matter is drawn from following areas: mathematics, plotting and graphic displays, language, dynamics, random processes, wave motion, electronics and communications. **Not for computer systems majors.**

Prerequisite: CTAM-305 and CTCP-303

Credit: 4

CTDP-330 PL/I Programming
Registration #0249-330
Topics include elementary data types and control structures, data structuring capabilities (arrays and records), run-time error handling standard built-in functions, text processing and user-written functions and subroutines. Emphasis is on developing well-structured and modular programs. Programming projects will be required.

Prerequisite: A high level language

Credit: 4

CTDP-488 Programming Systems Workshop
Registration #0249-488
A workshop for the mastery of the techniques and concepts of programming systems specification, design and implementation. Students will work with data modeling, both with and without a data-base management system product. Students will gain experience with system specification and design charting techniques, project scheduling and management, and programming team experience. Programming projects will be required.

Prerequisite: CTDP-307, CTDS-335, CTDS-485

Credit: 4

CTDS-200 Introduction to Computers
Registration #0250-200 & Programming
Basic concepts and overview of computer science. The topics include historical development algorithms, flowcharting, programming in a problem-oriented language like BASIC, exposure to assembly language, hardware concepts, including a functional description of CPU operations, data representations and manipulation, software concepts, including compilers, assemblers, and operating systems, and the application of the computer to various disciplines. **Not for computer systems majors.**

Prerequisite: High School Intermediate Algebra.

Credit: 4

CTDS-202 Introduction to Computer Science
Registration #0250-202
An introduction to the computer: information representation, instruction execution, and the software interface to the user. Topics include integer (binary and decimal) and floating point arithmetic, logical operations; introduction to machine language and assembly language, input/output operations and operating systems and editors.

Prerequisite: Permission of advisor.

Credit: 4

CTDS-230 Discrete Structure
Registration #0250-230
A study of discrete mathematical foundations with topics that include propositional logic, set algebra, functions and relations, Boolean algebra and Boolean functions, permutations and combinations, vectors and matrices, graphs, digraphs, trees and strings. Applications of these structures are related to the various areas of computer science.

Prerequisite: CBCH-201 or equivalent.

Credit: 4

In sequentially numbered courses, the lower number course is prerequisite.

CTDS-315 Digital Computer Organization
Registration #0250-315
An introduction to the logical design of a computer. Topics include a review of arithmetic and Boolean algebra, combinational and sequential circuit design, flip-flops and adders, storage mechanisms and their organization, instruction fetch decode and execution in a simple CPU, input/output subsystems, interrupts and variations in memory addressing.

Prerequisite: CTDP-305

Credit: 4

CTDS-320 Data Structure Analysis
Registration #0250-320
Information structures: sequential lists, stacks, queues, sequential allocation; linked lists, circular lists, doubly linked lists, linked allocation; trees, tree traversal; lists, orthogonal lists, multilinked structures; dynamic storage allocation and garbage collection. Programming projects will be required.

Prerequisites: CTDP-210 and CTDP-305

Credit: 4

CTDS-325 Data Organization and Management
Registration #0250-325
This course combines the content associated with file organization (sequential, indexed and direct access physical organization); space optimization and directory organization; an introduction to external sorting and searching, and the basics of data modeling, data base organization and management. Programming projects will be required.

Prerequisite: CTDS-320

Credit: 4

CTDS-335 Systems Specification, Design
Registration #0250-335 and Implementation
Students are introduced to basic concepts of system specification, design, system implementation and project management. Tools used include PERT/CPM (scheduling tools), structured English, structured flowcharts, and decision trees (description tools), dataflow diagramming (description and design tool), and hierarchical design of programming systems (design tool). Students are also introduced to other tools (e.g., HIPO charts, N-S charts, etc.) An introduction to the structured design methods of Yourdon is included.

Prerequisite: CTDS-325

Credit: 4

CTDS-340 Finite State Machines and Automata
Registration #0250-340
Topics include finite state models, machine capabilities, descriptive methods, decomposition methods, regular expressions, bilateral analysis and synthesis, sequential iterative systems and space-time transformations.

Prerequisite: CTDS-315

Credit: 4

CTDS-400 Logical Design
Registration #0250-400
Topics include an introduction to switching theory, sequential circuit analysis and synthesis, error detection, error correction networks, speed-up techniques, serial and parallel approaches, interface techniques and comparative studies of digital computer architecture.

Prerequisite: CTDP-315

Credit: 4

CTDS-420 Data Communication Systems
Registration #0250-420
Data communication and telecommunication systems, including communication techniques, communication interfaces; common carrier implications and tariffs, exchanges; concentrators, multiplexors, front-end computers; buffering response time and human factors; network cost and design analysis, software considerations.

Prerequisite: CBCH-351

Credit: 4

CTDS-430 Numerical Methods
Registration #0250-430
Topics include introductory error analysis, roots of an equation, solution of systems of linear and non-linear equations, interpolation, power series calculation of functions, numerical integration and first-order ordinary differential equations. The computational aspects rather than mathematical development will be emphasized. Programming projects will be required.

Prerequisite: CTEM-421 or equivalent and FORTRAN or BASIC.

Credit: 4

CTDS-440 Operating Systems
Registration #0250-440
A general survey of operating system concepts. Topics include process synchronization, interprocess communication, deadlocks, multiprogramming and multiprocessing, processor scheduling and resource management, memory management, overlays, static and dynamic relocation, virtual memory, file systems, logical and physical I/O, device allocation, I/O processor scheduling, process and resource protection.

Prerequisite: CTDS-315 and CTDS-320

Credit: 4

CTDS-480 Formal Languages
Registration #0250-480
Formal language theory and principles. Topics include context free, context sensitive grammars, regular expressions; Turning machines; introduction to unsolability and computability.

Prerequisite: CTDS-340

Credit: 4

CTDS-485 Data Base Concepts
Registration #0250-485
Topics include data organization and structure; relational, hierarchical, and network approach; data security and recovery. Comparison of the data-base approach with traditional file organization and access methods, performance and management issues. Existing data-base systems will be studied.

Prerequisite: CTDS-325

Credit: 4

CTDS-520 Computer Architecture
Registration #0250-520
A study of computer architectural analysis and design. Topics include review of basic theories, hardware technology, parallel and distributive logic, asynchronous and synchronous machines and case study.

Prerequisite: CTDS-315

Credit: 4

CTDS-525 Assemblers, Interpreters, and Compilers
Registration #0250-525
A survey of three basic programming language processors;assemblers, interpreters, and compilers. The topics include design and construction of language processors, formal syntactic definition methods, parsing techniques, and code generation techniques. Laboratory work includes actual construction of language processors.

Prerequisite: CTDS-320

Credit: 4

CTDS-530 Discrete Simulation
Registration #0250-530
Computer simulation techniques are examined. Topics include abstract properties of simulations modeling, analysis of a simulation run, and statistics. One or more general-purpose simulation languages will be taught. Programming projects will be required.

Prerequisite: CBCH-351

Credit: 4

CTDS-545 Processor Design Concepts
Registration #0250-545
A survey of processor design and implementation techniques. Topics include microprogramming and emulation, comparisons of microcode and hardwired logic, I/O processors and subsystems, high-level language and operating system support, and processor speedup techniques. Lectures will be supplemented with outside reading and/or programming assignments.

Prerequisite: CTDS-315

Credit: 4

CTDS-550 Review of Computer Science
Registration #0250-550
Review of significant advances in computer science which have occurred in the last few years-designed to give graduating or upperclass students an overview of recent technological and theoretical advances. (Normally taken during the last quarter of school.)

Prerequisite: Must have fifth year standing.

Credit: 4

CTDS-565 Computer Systems Selection
Registration #0250-565
A study of computer systems design, evaluation, and selection methodology. The design aspect deals with the problem of specifying physical systems on the basis of logical design specifications and performance analysis of existing and proposed computer systems. The selection aspect covers vendor proposal requests, evaluation and validation of proposals and procurement methods.

Prerequisite: CTDS-315 and CTDS-320

Credit: 4

CTDS-575 Minicomputer Systems and Applications
Registration #0250-575
A study of minicomputer hardware architectures; software organization, operating systems; input/output programming, interrupt handling; debugging techniques, device interfacing and custom applications. Hands-on experimentation with a minicomputer is emphasized. (Proficiency in assembly language programming is required.)

Prerequisite: CTDS-315

Credit: 4

Lower Division Electrical Technology

CTEE-101,102,103 Basic Mathematics for Electronics
Registration #0253-101,102,103
Course will begin with a brief review of fundamental arithmetic and algebraic concepts for those whose skills have lessened due to time lapse. The slide rule, powers of ten and units and dimensions applicable to the field of electronics will be emphasized. Ratios, simultaneous equations, exponents, radicals, quadratic equations, and logarithms with specific applications; solution of Ohm's and Kirchoffs Laws, trigonometric functions, right triangles and vector algebra.

Prerequisite: One year of high school mathematics or equivalent.

Credit: 3

CTEE-105,106,107 Electrical Schematics
Registration #0253-105,106,107
Electrical symbols, schematics, color codes, specifications and ratings, logic diagrams, block diagrams, wiring and control diagrams.

Prerequisite: Concurrent enrollment in CTEE-101.

Credit: 1

CTEE-321 Digital Systems
Registration #0253-321
Introduction to binary and octal number systems, logic components and their functions; truth tables; gates, switches, counters, flip-flops, integrators, differentiators and adders; application to mechanical, relay, fluidic, pneumatic and electronic digital logic systems.

Prerequisite: CTIL-203 or equivalent.

Credit: 3

CTEE-322 Analog Systems
Registration #0253-322
Introduction to all types of transducers; study of operational amplifiers and their uses with transducers in analog control of electromechanical systems; study of all types of differential transducers and their role in analog control systems.

Prerequisite: CTIL-203 or equivalent.

Credit: 3

CTEE-323 Computer Systems
Registration #0253-323
Flow diagrams of a computing system; computer input-output systems, card, tape, photoelectric, voice; computing portion of the computer, storage, memory, comparing systems, information flow; similarities and differences between analog and digital computers; advantages, disadvantages and limitations of the analog and digital computers; auxiliary computer systems, sorters, plotters, keypunch, printers, related computer systems, numerical control; interfacing systems between computer and computer controlled systems; processing typical problems on the computer including flow diagrams; discussion of types of problems which lend themselves to computer systems.

Prerequisite: CTIL-203

Credit: 3

CTEE-361,362,363 Applied Electronics
Registration #0253-361,362,363
Applications of electronic components and circuits which have become electronic building blocks; applications of oscillators, tuned circuits, amplifiers, power amplifiers, multi-vibrators, switching, waveshaping and other circuits; applications of integrated circuits including special purpose amplifier, operational amplifier, timers, regulators, zero voltage switches and other integrated circuits both linear and digital. The laboratory includes testing, troubleshooting and analysis of electronic circuits.

Prerequisite: CTIL-203.

Credit: 4

Upper-Division Electrical Engineering Technology

All courses in this listing have the prerequisite of an AAS degree in the appropriate technology.

CTEE-401 Circuit Theory I
Registration #0253-401
An introductory course in the use of Laplace transform to determine the complete response of circuits containing independent and dependent sources, resistance, inductance, and capacitance. Application of basic circuit theorems to the solution of transformed networks.

Prerequisite: CTEM-420/21 or concurrently.

Credit: 4 (Lec. 3, Rec. 2)

CTEE-402 Circuit Theory II
Registration #0253-402
Frequency response of network functions by use of pole-zero diagrams; Bode diagrams of network functions; Fourier series solution of circuits with non-sinusoidal inputs; two port network theory and application.

Prerequisite: CTEE-401

Credit: 4 (Lec. 3, Rec. 2)

CTEE-404 Control Systems I
Registration #0253-404
Analysis of closed loop control system using Routh's and Nyquist's stability criteria; determination of steady-state error, phase and gain margin and static error coefficients; lead and lag compensating networks and their applications.

Prerequisite: CTEM-422 and CTEE-402 or equivalent.

Credit: 4 (Lec. 3, Lab. 2)

CTEE-411 Electrical Principles for Design I
Registration #0253-411
Basic Course in electrical circuits for mechanical technology students: solution of D.C. and A.C. circuits including basic network theorems: concepts of electro-mechanical energy conversion including D.C. machines, polyphase circuit and power transmission.

Credit: 4 (Lec. 3, Lab. 2)

CTEE-412 Electrical Principles for Design II
Registration #0253-412
A continuation of CTEE-411. Topics include A.C. machines, transformers, power rectifiers, basic principles of electronic amplifiers and electronic control systems.

Prerequisite: CTEE-411

Credit: 4 (Lec. 3, Lab. 2)

CTEE-424 Logic and Digital Devices
Registration #0253-424
Analysis and simplification of logic equations using Boolean algebra to semiconductor, fluidic, pneumatic and relay logic devices; Karnough and Quine McClusky reduction technique and truth tables; transformation from logic equations to standard logic units, the operation and hazards of sequential circuits.

Credit: 4 (Lec. 3, Lab. 2)

CTEE-425 Power Concepts
Registration #0253-425
Steady-state AC circuits both single and three phase. DC and Stepper motors, solid-state power electronic devices and application to control of motors.

Credit: 3 (Lec. 2, Rec. 2)

CTEE-428 Linear Amplifier Design
Registration #0253-428
Design of transistor amplifiers for specific low frequency, high frequency, and transient response; single and cascaded bandpass amplifiers including compensated video amplifiers, staggered turned amplifiers, and feedback systems; design of transistor bias networks to meet specific circuit requirements.

Prerequisite: CTEM-421, CTEE-402

Credit: 4 (Lec. 3, Lab. 2)

CTEE-520 Electrostatic and Magnetic Fields
Registration #0253-520
Basic principles of electrostatic fields including vector analysis, Coulomb's law, field intensity and energy. Steady state magnetic field fundamentals including Ampere's law, magnetic flux and flux intensity. Basic magnetic circuit design.

Prerequisite: CTEM-422

Credit: 4 (Lec. 4)

CTEE-524 Microwave Systems
Registration #0253-524
Microwave power sources and waveguide transmission systems; measurement of standing waves, impedance, and power flow in waveguides; solid state microwave devices; microwave communication system design.

Prerequisite: CTEE-520

Credit: 4 (Lec. 3, Lab. 2)

CTEE-530 Application of Discrete and Integrated Circuit Elements
Registration #0253-530
Selected topics in the application of discrete circuit components to linear and non-linear circuit design. Theory and application of integrated circuit op-amps in the design of active filters, analog computers, feedback control systems and function generators.

Credit: 4 (Lec. 3, Lab. 2)

CTEE-532 Power Amplifier Design
Registration #0253-532
Design of class A and B low frequency power amplifiers including distortion analysis and feedback. Class C, R.F. power amplifier design using transistors. Thermal considerations for power transistors and heat sink design.

Prerequisite: CTEE-428

Credit: 4 (Lec. 3, Lab. 2)

CTEE-534 Communication Systems I
Registration #0253-534
An introduction to AM, DSB, SSB and FM modulation systems and their spectrums. Circuitry for their generation and demodulation; frequency division multiplex and the analysis of mixing circuits; the Sampling Theorem and its application to time division multiplex.

Prerequisite: CTEE-428

Credit: 4 (Lec. 3, Lab. 2)

CTEE-535 Communication Systems II
Registration #0253-535
Pulse modification systems, including pulse amplitude modulation, pulse width modulation and pulse position modulation; pulse code modulation as applied to voice and to digital data transmission; introduction to noise and its effect on communication system, performance; introductory information theory; analysis and design of communication systems.

Prerequisite: CTEE-534

Credit: 4 (Lec. 4)

CTEE-536 Control Systems II
Registration #0253-536
Design of control systems for specific application and performance criteria; a study of control motors and components for D.C./A.C. control systems; application of control theory to the solution of practical system problems.

Prerequisite: CTEE-404

Credit: 4 (Lec. 3, Lab. 2)

CTEE-538 Digital Computer Design I
Registration #0253-538
Design of logic circuits using 7400 series TTL gates; a study of TTL flip-flops, one shots and oscillator circuits; design of arithmetic circuits, shift registers and counters.

Prerequisite: CTEE-424

Credit: 4 (Lec. 3, Lab. 2)

CTEE-539 Digital Computer Design II
Registration #0253-539
A continuation of CTEE-538 with application of logic circuits to computer design. Multiplexers, semiconductor memories, ALUs and their applications to computers and microprocessors are considered. The basic operation of computers, microprocessors, and computer systems are examined. Machine language programming indexing and indirect addressing and interrupt programming are introduced. Peripheral devices and interfaces are discussed if time permits.

Prerequisite: CTEE-538

Credit: 4 (Lec. 3, Lab. 2)

CTEE-542 Microprocessors
Registration #0253-542
An introductory course in Microprocessors emphasizing the Motorola 6800 and Intel 8085. The topics covered include the CPU, ROMS, RAMS, programming and interface ICs. Practical applications of microprocessors are also considered.

Prerequisite: CTEE-424

Credit: 4 (Lec. 2, Lab. 2)

CTEE-546 **Industrial Electronics**
Registration #0253-546
Design of SCR/Triac control circuits for D.C. and A.C. motors; control of lights and heating elements; D.C. power supplies and polyphase rectifier circuits; speed control of D.C. and A.C. motors; process control systems utilizing solid state electronic circuits.

Prerequisite: CTEE-532

Credit: 4 (Rec. 3, Lab. 2)

CTEE-547 **Digital Processing of Signals**
Registration #0253-547
Analog signal processing including the use of microprocessors. Topics include transducers, AD/DA converters, microprocessor programming and I/O devices. Applications include bio-medical, automotive controls and communication signals.

Credit: 4

CTEE-550 **Power Systems I**
Registration #0253-550
Basic elements of a power system, energy sources, substation configuration, load cycles, single phase circuits, balanced and unbalanced three phase circuits, power factor correction, and transmission line configurations and impedances are covered.
Prerequisite: CTEE-402
Credit: 4 (Lec. 3, Rec. 2)

CTEE-551 **Protective Relaying**
Registration #0253-551
The physical construction and characteristics of electromechanical relays, short circuit calculation and line, bus, transformer and motor-generator protection are studied. Solid state relays, instrument transformers, and telecommunications and supervisory control are included.

Prerequisite: Matriculation in program.

Credit: 4 (Lec. 3, Lab. 2)

CTEE-552 **Power Systems II**
Registration #0253-552
Voltage regulation and efficiency of transformers, per unit systems, symmetrical components, lightning protection, energy conservation, switching surges, and system voltage regulation are included. Equal area criterion of transient stability is covered.

Prerequisite: CTEE-550

Credit: 4 (Lec. 4)

CTEE-554 **Electronic Optic Devices**
Registration #0253-554
Basic units for measuring radiated energy; laser and light emitting diode operating theory; characteristics of solid state light sensors; optical systems in industry; basic principles of laser theory and fiber-optics.

Prerequisite: None

Credit: 4 (Lec. 3, Lab. 2)

Lower-Division Mechanical Technology

CTEM-301 **Applied Mechanics and Strength of Materials**
Registration #0254-301
Basic principles of statics, systems of forces, free-body diagrams, equilibrium conditions, friction, centroids, moments of inertia.

Prerequisite: CTCP-201 or equivalent.

Credit: 4

CTEM-302 **Applied Mechanics and Strength of Materials**
Registration #0254-302
Principles of dynamics; kinematics and kinetics of rectilinear, rotational and plane motion; velocity, acceleration; inertia; work, energy, power, impact.

Prerequisite: CTEM-301 or equivalent.

Credit: 4

CTEM-303 **Applied Mechanics and Strength**
Registration #0254-303 **of Materials**
Strength of materials, principles of stress and strain, properties of materials, shear and thermal stresses, stress and deflection of beams, column analysis, connections, combined stresses.

Prerequisite: CTEM-301 or equivalent.

Credit: 4

CTEM-315 **Principles of Mechanical Design I**
Registration #0254-315
Additional material, with emphasis on applications, on area moments, centers of gravity, beam deflection, end loading, columns, stress and strain, plastic deformation, stress concentrations, torsion.

Prerequisite: CTEM-303

Credit: 2

CTEM-316 **Principles of Mechanical Design**
Registration #0254-316
Thin-walled tubes, non-circular shafts, springs, screw threads, belts, stress in cylindrical shells.

Prerequisite: CTEM-315

Credit: 2

CTEM-317 **Principles of Mechanical Design**
Registration #0254-317
Ball and roller bearings, gears, stresses in thick-walled cylinders, shrink and press fits, flywheel design, elastic impact, curved beams, cams, loading of flat plates.

Prerequisite: CTEM-316 and CTID-203

Credit: 2

Upper-Division Mechanical Engineering Technology

All courses in this listing have the prerequisite of an AAS degree in the appropriate technology.

CTEM-404 **Applied Mechanics of Materials**
Registration #0254-404
The basic concepts of strength of materials as applied to mechanical design are reviewed in depth. The course includes the study of the concepts of stress and strain, the stress-strain relationship and combined stress. Applications of these concepts to beams, shafts, columns, shrink fits, and curved beams are covered.

Credit: 4 (Lec. 4)

CTEM-405 **Applied Dynamics**
Registration #0254-405
Examines the principles of kinematics and the basic laws of motion as applied to the design and analysis of mechanical components and systems.

Prerequisite: CTEM-404, CTEM-421

Credit: 4 (Lec. 4, Rec. 2)

CTEM-406 **Dynamics of Machinery**
Registration #0254-406
A study of the kinematics and kinetics of machine elements such as gears, cams, linkages, and the dynamic balancing of machinery.

Prerequisite: CTEM-405

Credit: 4 (Lec. 3, Rec. 2)

CTEM-407 **Mechanical Engineering Technology**
Registration #0254-407 **Laboratory I**
A course in mechanical laboratory techniques and the preparation of laboratory reports; experimental work in materials testing, strength of materials, experimental stress analysis, metallurgy, and metalography; individual instruction in the preparation of laboratory reports.

Prerequisite: CTEM-404, CTEM-414

Credit: 3 (Lec. 2, Lab. 3)

Prerequisites: CTAM-202 or equivalent

CTEM-408 Introduction to Strength of Materials
Registration #0254-408
Elements of statics and strength of materials. Topics include plane equilibrium, friction, stress, strain, torsion, and the bending of beams. Principles of statics and deflection will be demonstrated.

Credit: 4 (Lec. 3, Rec. 2)

CTEM-409 Mechanical Engineering Technology Laboratory II
Registration #0254-409
A continuation of Mechanical Engineering Technology Laboratory I.

Prerequisite: CTEM-407

Credit: 2 (Lec. 1, Lab. 3)

CTEM-420 Calculus for Technologists I
Registration #0254-420
An elementary applied calculus course covering the differential and integral calculus of algebraic functions with emphasis on applications.

Prerequisite: CTAm-202 or equivalent.

Credit: 4

CTEM-421 Calculus for Technologists II
Registration #0254-421
A continuation of CTEM-420. Topics covered in this course are: application of the integral calculus; differential, and integral calculus; calculus of the transcendental function; and basic techniques of integration with emphasis on applications to engineering technology problems.

Prerequisites: CTEM-420 or equivalent

Credit: 4

CTEM-422 Solutions of Engineering Problems
Registration #0254-422
A continuation of CTEM-421, this course covers selected applied mathematics topics including: differential equations through 2nd order linear, LaPlace Transforms, Taylor's series, and other appropriate topics. Emphasis is on the application of these topics to engineering technology problems.

Prerequisites: CTEM-421 or equivalent

Credit: 4

CTEM-440 Applied Thermodynamics
Registration #0254-440
The first and second laws of thermodynamics and their applications; Thermodynamic properties of working fluids including pure substances and ideal gases; the concepts of work and heat, thermodynamic processes, systems, and cycles. An introduction to the basic concepts of heat transfer is also included.

Prerequisite: CTEM-421

Credit: 4 (Lec. 4)

CTEM-451 Vibration and Noise
Registration #0254-451
A study of the basic concepts of vibration and noise. Designing equipment for survival in vibration and shock environments; methods of reducing noise in machinery and structures; environmental tests for vibration and shock; methods of noise testing and analysis. Techniques of vibration and noise analysis will be demonstrated.

Prerequisite: CTEM-422, CTEM-405.

Credit: 4 (Lec. 4)

CTEM-460 Applied Fluid Mechanics
Registration #0254-460
A study of the fundamentals of fluid statics and dynamics and applications of these principles to pumps, turbines, flow measurement, pipe flow, and fluid power.

Prerequisite: CTEM-440

Credit: 4 (lec. 4)

CTEM-465 Thermofluid Laboratory
Registration #0254-465
Laboratory experiments in thermodynamics, fluid mechanics, and heat transfer.

Prerequisite: CTEM-440, CTEM-460

Credit: 3 (Lec. 1, Lab. 3)

CTEM-506 Machine Design
Registration #0254-506
The study of the static and dynamic failure of machine elements and the design and analysis of fasteners, springs, shafts and bearings.

Prerequisite: CTEM-405

Credit: 4 (Lec. 3, Lab. 2)

CTEM-508 Special Topics in Machine Design
Registration #0254-508
The study of topics such as clutches, brakes, couplings, belts, chains and/or vibrations in machinery.

Prerequisite: CTEM-506

Credit: 4 (Lec. 3, Lab. 2)

CTEM-521 Logic Control Systems
Registration #0254-521
The analysis and design of logic control systems using Boolean algebra. Emphasis is placed on the control of machines with fluid and relay logic; introduction to electronic programmable controls; the concepts of ordinary and times sequence control and machine protection are covered. Logic control systems will be demonstrated.

Credit: 4 (Lec. 4)

CTEM-530 Instrumentation
Registration #0254-530
A basic approach to calibration and use of pressure, temperature, flow, humidity, and liquid level measurement instruments. Techniques of test, calibration, and proper use of instruments will be demonstrated.

Credit: 4 (Lec. 4)

CTEM-535 Analog Control Systems
Registration #0254-535
An introduction to the basic concepts of analog process control; the feedback control concept, system components, transfer functions of system components, frequency response technique of system design, and optimizing system performance.

Prerequisite: CTEM-422

Credit: 4 (Lec. 4)

Lower-Division Manufacturing Technology

CTEF-201,202, 203 Manufacturing Analysis
Registration #0255-201, 202, 203
Introduction to current manufacturing processes, casting, forming, stamping, welding and chipless machining, to produce parts on a production basis. Selected pieces will be analyzed with respect to production sequencing and cost, including costs of material handling, manufacture, inspection, and assembly. Projects involving solution to production problems will be assigned.

Prerequisite: CTIS-203 or equivalent

Credit: 3

CTEF-210 Industrial Plastics
Registration #0255-210
An introductory course in industrial plastics with emphasis on the practical aspects such as properties, identification, processing methods, design and suitability for given applications. Classwork will be supplemented with demonstrations, discussions of samples, and several field trips.

Credit: 4

CTEF-211, 212 Metallurgy
Registration #0255-211, 212
Review of chemical and metallurgical terms; manufacturing process; theory of constitutional diagrams; space-lattices, theory of hardening, heat treatment and general properties of ferrous and non-ferrous metals and alloys; effects of composition and mechanical working upon such properties as grain size, hardenability, machinability and weldability of metals. Some knowledge of chemistry and physics is desirable.

Credit: 3

CTEF-370 Tool Design
Registration #0255-370
The design of special tooling, jigs, and fixtures for economic production. The principles of positioning, locating and clamping are studied along with the analysis of cutting forces. Also covered are tools for inspection and gaging.

Prerequisite: CTEF-202

Credit: 4 (Lec. 3, Rec. 2)

CTEF-380 Time Study
Registration #0255-380
The principles and applications of the basic techniques for improvement of the man-job-time relationship, job standards and recording, and work-space design for the efficient use of manpower.

Prerequisite: CTEF-202

Credit: 3 (Lec. 3)

Upper-Division Manufacturing Engineering Technology

All courses in this listing have the prerequisite of an AAS degree in the appropriate technology.

CTEF-411 Engineering Materials
Registration #0255-411
A study of the physical properties of metallic and non-metallic materials; a survey of manufacturing processes including casting, molding, metal removal, metal forming, and welding; field trips are made to local manufacturing installations. For non-mechanical majors.

Credit: 4 (Lec. 3, Lab. 2)

CTEF-414,415 Materials Technology I, II
Registration #0255-414,415
A two quarter course involving a study of materials, their structure and characteristics. Topics covered include atomic and crystal structure, phases and phase diagrams, physical properties, corrosion and oxidation, diffusion in metals, recovery, recrystallization and grain growth, age hardening and heat treatment of metals. The effect of processes such as welding on the metallurgy of the part will be examined. Organic and ceramic materials will also be studied. (Prerequisite for CTEF-415 is CTEF-414).

Credit: I. 3 (Lec. 3)
II: 3 (Lec. 3)

CTEF-424 Statistical Quality Control I
Registration #0255-424
The basic concepts of statistics and probability are studied as they apply to quality control including the study of control charts, sampling procedures, and the planning, organizing and installation of quality controls in the industrial setting.

Credit: 4 (Lec. 4)

CTEF-425 Statistical Quality Control II
Registration #0255-425
The application of statistical theory to forecasting, process control, sampling reliability, quality control and quality assurance. The planning, organizing and implementation of quality controls in the industrial setting. Inspection techniques and computer aided measurement will be introduced.

Prerequisite: CTEF-424

Credit: 4 (Lec. 3, Rec. 2)

CTEF-428 Report Writing
Registration #0255-428
Principles of organizing data and information into clear and concise engineering reports; technique of library research; oral reports; minutes of meetings; business letters; short and formal reports.

Credit: 2

CTEF-434 Operations Management
Registration #0255-434
The course will cover modern manufacturing systems design, analysis, and control Techniques of decision making process, design of manufacturing process, materials handling, design of physical facilities and control of manufacturing operations will be discussed.

Credit: 4 (Lec. 4)

CTEF-436 Engineering Economics
Registration #0255-436
This course covers some of the factors involved in engineering economic factors with design and production criteria; use of tion, risk and uncertainty, break-even studies, replacement costs and selections between alternatives are typical of the topics covered.

Credit: 4 (Lec. 4)

CTEF-437 Value Analysis
Registration #0255-437
Use of decision theory and the nature of man-machine systems in analyzing manufacturing and design projects; integration of economic factors with design and production criteria; use of linear programming and computers in performing value engineering analysis. Techniques of estimating costs will be studied and used.

Prerequisite: CTDP-201

Credit: 3 (Lec. 3)

CTEF-460 Computer Aided Design
Registration #0255-460
This course will present CAD concepts, 2D and 3D interactive graphics, hardware and software, programming and CAD applications. CAD interface to group technology, process planning and numerical control will be discussed.

Prerequisite: GTIM-202 and CTID-203

Credit: 4 (Lec. 3, Lab. 2)

CTEF-470 Intro to Numerical Control
Registration #0255-470
The philosophy of the use of numerical control in manufacturing. The course will review manual programming, examine different applications of numerical control, and introduce computer-assisted programming techniques. N/C machine tools will be demonstrated.

Credit: 4 (Lec. 4)

CTEF-471 Computer Numerical Control
Registration #0255-471
An advanced course in applications of numerical control. Emphasis will be placed on computer-assisted part programming for contouring in two and three dimensions. Application of advanced technologies such as CNC and DNC.

Prerequisite: CTEF-470

Credit: 4 (Lec. 3, Lab. 2)

CTEF-472 Tool Engineering
Registration #0255-472
Selection ***of*** tools for production, specification of tools, jigs, fixtures, dies, production type gauges; selection of tooling for automatic machines; determining assembly tooling.

Credit: 4 (Lec. 3, Rec. 2)

CTEF-473 COMPACT II
Registration #0255-473
This is an advanced course in Computer-Assisted Numerical Control. COMPACT II is one of the most commonly used NC part programming languages in industry. Hands on computer program generation will be emphasized.

Prerequisite: CTEF-470

Credit: 4 (Lec. 3; Lab. 2)

CTEF-475 Computer Aided Manufacturing
Registration #0255-475
An introduction to the basic elements, principles, and terminology for computer-aided manufacturing systems. Group Technology, Classification and Coding, Cellular production and generative process planning will be discussed.

Prerequisite: CTEF-202

Credit: 4 (Lec. 3, Lab. 2)

CTEF-480 Methods Analysis
Registration #0255-480
Principles and applications of basic methods and techniques for improvement of the worker-job time relationship: job standards and recording; work-space design for efficient use of labor.

Credit: 4 (Lec. 3, Lab. 2)

CTEF-485 Robots in Manufacturing
Registration #0255-485
This course will present the technology and applications of industrial robots. Hardware aspects as configurations, degrees of freedom precision, speed and load capabilities will be discussed. Software aspects will include manual and computer assist programming of robots.

Credit: 4 (Lec. 3, Lab. 2)

CTEF-491 Production Control
Registration #0255-491
This course prepares the student to deal with production planning algorithms and inventory control models. Subjects as forecasting, inventory control techniques, production planning and scheduling and material requirements planning will be presented.

Prerequisite: CTEF-202

Credit: 4 (Lec. 3, Lab. 2)

CTEF-502 Advanced Manufacturing Processes
Registration #0255-502
This course presents an advanced coverage of manufacturing processes which will emphasize the use of analytical techniques. An examination of working loads, tool stresses and metal flow in forging, extrusion deep drawing and forming will be covered. Metal cutting processes, abrasive machining and electrical and laser machining will be studied.
Prerequisite: CTEF-202
Credit: 4 (Lec. 3, Lab. 2)

CTEF-510,511 Process Design 1,11
Registration #0255-510,511
The student is placed in a realistic manufacturing situation in which he selects, creates, or is assigned a product to manufacture. Use of his total program in the solution of the problem and its presentation. Oral and written report presentations.

Credit: 4 (Lec. 3, Lab. 2)

CTEF-526 Quality Systems
Registration #0255-526
A study of those factors involved in quality planning, the practicality of tolerances and specifications; planning, organizing and installing quality controls; training and supervision of quality control personnel; effective administration of the quality assurance function.

Credit: 4 (Lec. 4)

Photography*

Students enrolled in photographic courses have the studios and laboratories available to them only for the scheduled class times. On a space available basis additional time may be secured but not to exceed the equivalent of one regularly scheduled lab or studio period per week. Work done in the studios or laboratories must be for the specific purpose of meeting course objectives.

CTGI-021 Introduction to Photography
Registration #0256-021
For the novice photographer who would like to learn how to produce aesthetically and technically acceptable photographs. Topics include cameras, lenses, films, developing, printing and enlarging, filters, flash photography and print finishing. The emphasis is on the successful solution of practical photographic problems.

Credit: none

CTGI-101 Photography Workshop
Registration #0256-101
A flexible course in the application of photography to creative expression. Emphasis is on self-criticism and the development of the individual's ability to create meaningful and purposeful photographs. Class time devoted primarily to developing and enlarging as well as group and individual critique sessions. All shooting assignments are completed outside of class.

Credit: 2

CTGI -102 Photography Workshop
Registration #0256-102
Continuation of CTGI-101. Students are encouraged to develop in areas of specific interest to them. Excellence in the creative as well as the technical aspects of photography, printing and presentation is stressed. Students should bring examples of past work to first class. This course may be elected more than once for credit.

Credit: 2

CTGI -104 Color Photography Workshop
Registration #0256-104
The course will acquaint students with skills in color materials handling, from exposure to color printing. Aesthetic and communicative aspects of color photography will be stressed. Small format equipment with color negative and reversal materials will be used. Students should bring examples of past work to first class. May be elected more than once for credit.

Prerequisite: CTGI-102 or equivalent.

Credit: 2

CTGI-201,202,203 Basic Professional Photography
Registration #0256-201, 202, 203
An introductory course to photographic principles and practice designed primarily for the inexperienced who aspire to enter photography as a profession, who would find such knowledge useful in a related field or who wish to improve personal knowledge. Both theory and practice are provided in a wide range of picture taking and darkroom techniques. Some background in photography is desirable but not absolutely necessary. This course is a prerequisite to all other courses in the professional photography program.

Credit: 4

CTGI-211,212,213 Color Photography
Registration #0256-211, 212, 213
Color theory and applied problems in color photography, processing and printing. Negative and reversal processing, color balance and correction, internegatives, duplication techniques, elements of masking and optimum reproduction methods.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 2

CTGI-221, 222, 223 Illustrative Photography
Registration #0256-221, 222, 223
The application of various specialized photographic techniques to creative image making. Special emphasis on single source studio lighting techniques to achieve desired visual effects. Novel **and** innovative camera methods and photographic design concepts are stressed. Particular emphasis on advertising photography applications and on the essence of the subject. Topics will include still lifes, food and consumable products, fashion assignments and some location photography. The principal camera format used will be 4 x 5. Equipment is available at the studios for use during class hours. Some small format photography will also be required.

prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-231, 232, 233 Portrait Photography
Registration #0256-231, 232, 233
A foundation course in portraiture, including concepts and psychology of portraiture and the use of professional cameras and studio equipment through lectures, demonstrations, and assigned projects. Stress is placed on understanding facial types and on the appropriate use of light. It is recommended that students who enroll in this course also schedule Portrait Retouching CTGI-331, 332, 333.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-241, 242, 243 Commercial Photography
Registration #0256-241, 242, 243
Materials, equipment and techniques with emphasis on the solution of problems in commercial photography. It is recommended that students who enroll in this course also schedule Commercial Retouching, CTGI-321, 323.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-301, 302 Motion Picture Photography
Registration #0256-301,302
Designed for the amateur, the school teacher, and those interested in basic film production. Super 8mm will be the principal size camera and film used, however, 16mm will be used toward the conclusion of the course. Included will be scripts and story boards, composition, continuity, cutting, editing, sound and presentation. The participants should have a personal Super 8mm camera available for use during the program.

Credit: 3

CTGI-321,322, 323 Commercial Retouching
Registration #0256-321, 322, 323
Methods used in retouching commercial negatives and prints: bleaching, lettering, use of etching knife and abrasives. Last quarter includes color retouching and use of airbrush.

Credit: 1

CTGI-331, 332, 333 Portrait Retouching
Registration #0256-331, 332, 333
Retouching portrait negatives using pencil, knife, abrasives and dyes. Last quarter includes Ektacolor negatives and major correction of anatomical features.

Credit: 1

CTGI-341 Coloring
Registration **#0256-341, 342, 343**
Coloring of photographs with transparent oil colors; how to apply color to commercial, portrait, and pictorial subject matter.
Credit: 1

CTGI-351 Industrial Photography: Instrumentation
Registration #0256-351
Fundamental applications of a variety of photographic techniques will be presented. Weekly projects will give students hands-on experience with methods such as high-speed flash, sequence, motion picture and streak photography; panoramic and peripheral photography; schlieren, shadowgraph and thermal photography; infrared, ultraviolet and polarization photography; etc.

Although mathematical concepts are utilized, emphasis is placed on understanding underlying photographic measurement principles rather than on absolute mathematical rigor. May be elected three times for credit.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-352 Industrial Photography:
Registration #0256-352 Audiovisual Techniques
You will have an opportunity to prepare audiovisual programs using current techniques and equipment. You will learn special photographic methods used for the production of programs that exhibit both technical excellence and visual impact. Also included are presentations on the use of the medium as a training, promotional and educational tool. May be elected three times for credit.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-353 Industrial Photography: Special Topics
Registration #0256-353
Through guided individual study students have the opportunity for more comprehensive work in either the instrumentation or audiovisual areas. Also, specialized topics not covered in standard courses may be scheduled with the consent of individual faculty members. For listing of special topics available any particular quarter consult department chairman. May be elected more than once for credit.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-361,362 Law Enforcement Photography
Registration #0256-361, 362
Advanced photographic applications in various aspects of law enforcement photography. Fingerprints, infrared and ultraviolet photography. Forgery, surveillance and accident photography.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-366 Dye Transfer Printing
Registration #0256-366
The dye transfer color printing process is covered in its theory and through practical laboratory assignments. Mordants, dye acidity and contrast, color balance controls, dyeing, image transfer and registration.

Prerequisite: CTGI-211, 212, 213 or equivalent.

Credit: 3

CTGI-401,402,403 Fashion Photography
Registration #0256-401,402, 403
A course designed to expand the photographer's vision and awareness to the problems of fashion photography. Emphasis is on sensitivity to light, the beauty of the model, and most important, on the development of the student's personal taste in expressing the inherent qualities of the garment. Students should bring to first class examples of past work, whether it be fashion photography or not.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 3

CTGI-404, 405, 406 Architectural Photography
Registration #0256-404,405, 406
Photographic interpretation and effective visual presentation of buildings, both as structures for habitation as well as art forms in themselves. Use and application of view camera included. Effective use of small format equipment. Assignments to be completed outside of class time include exteriors, interiors, landscapes, details and individual as well as grouped buildings. Students must make arrangements for printing outside of class.

Credit: 3

CTGI-411 Photography of the Natural World
Registration #0256-411
Through lectures, field trips, class discussion, and critiques, the student is offered an opportunity to develop an awareness and sensitivity to the beauty of the natural world. There are a number of field trips scheduled to areas such as Letchworth Park, Bergen Swamp, Sapsucker Woods and other appropriate locations. Transparency materials are exclusively in the 35mm format. The student is expected to have his or her own camera, light meter, and some type of close-up accessory. May be elected twice for credit.

Prerequisite: CTGI-201, 202, 203 or equivalent.

Credit: 4

CTGI-431,432, 433 Photographic Communication
Registration #0256-431,432, 433
Photography for people in action and situations. The decisive moment and "candid" pictures. Picture stories and sequences. Effective use of available light. Historical perspectives. Use of writing and captions in conjunction with photographic images. Shooting assignments to be completed outside of class time. Print lab scheduled as integral part of course.

Credit: 2

Photographic Science

CTGP-207,208,209 Fundamentals of Photographic
Registration #0257-207, 208, 209 Science
Principles of sensitometry, photographic chemistry and applied photography. Subject areas include densitometers, sensitometers, logarithms, characteristic curves and photographic response relationships. General emulsion and photographic processing chemistry formulations, time-temperature relationship, chemical balance and process control. The view camera and its use, perspective, depth of field, lighting and proper metering techniques, filters, flash and photography as a pictorial and a scientific instrument.

Prerequisite: A background in algebra and trigonometry is suggested.

Credit: 4

CTGP-217, 218, 219 (lec); 224,225, 226 (lab) Photographic
Registration #0257-217, 218, 219, 224, 225, 226 Chemistry
This course will provide the student with an understanding of the chemical basis of photography necessary to the continued study of photographic science, and to provide a systematic study of the manufacture and properties of silver halide photographic emulsions and processing solutions.

Specific topics will be: formation and growth of silver halide crystals; chemical and spectral sensitization; addenda and coating; latent image theory; theory and application of conventional and diffusion transfer processing; comparisons of silver halide and non-silver photographic systems.

The course will assume only an introductory knowledge of chemistry. Yet science or engineering graduates entering photographic research or involved in other areas of photographic technology will find in the course a basis for their work and for further study.

Prerequisite: CTCC-201, 202, 203 and CTGP-207, 208 or equivalent.

Credit: 4

CTGP-227, 228, 229 Black and White Sensitometry
Registration #0257-227, 228, 229
The relation of photographic density to exposure in a light-sensitive silver halide emulsion, including radiation sources, exposure measuring devices, sensitometers, chemical development and processing, D-Log curves, densitometers, tone reproduction, and the necessary latent image theory.

Prerequisite: CTGP-207, 208, 209 and CTAM-210 or equivalents.

Credit: 4

CTGP-237,238 Radiometry
Registration #0257-237, 238
You will become acquainted with the human visual process, light sources, attenuators, receivers and the physical parameters involved in the generation, propagation, composition and measurement of radiant energy particularly as it related to photographic materials and fundamental optical systems.

A background in algebra and trigonometry is recommended.

Prerequisite: CTGP-207 and CTAM-210 or equivalent.

Credit: 3

CTGP-307, 308, 309 Quality Control of Photographic
Registration #0257-307, 308, 309 Solutions
Principles of photographic processing solutions, their chemical and sensitometric analysis, the application of statistics and the design of photographic processing machines for precision photographic processing. Identification of processing errors, processing for permanence, modification and restoration of photographic images.

Content purpose and criticality of control of the chemical components in Black and White and Color processing solutions. Current procedures and instrumentation for the analysis and control of processing solutions. Testing for the identification of processing errors. Design of replenishment formulas. Principles of machine design construction materials and processing solution compatability. Specific examples of use in present day machines.

Types and illustration, producing layouts from thumbnail sketches to a completed comprehensive design. Emphasis on technical arid printing problems.

Prerequisite: CTGI-217, 218, 219 or equivalent.

Credit: 3

CTGP-407, 408, 409 Optics
Registration #0257-407, 408, 409
Introduction to geometrical and physical optics applied to photographic systems and optical instruments.

Prerequisite: CTAM-251, 252 or equivalents.

Credit: 3

CTGP-414,415,416 Color Sensitometry
Registration #0257-414,415,416
Photometric measurements, color specification, spectrophotometry, visual and printing densities, integral and analytical color densitometry, color reproduction, dye deficiencies and masking.

Prerequisite: CTGP-227, 228, 229 and CTAM-251, 252, 253 or equivalents. Computer programming background also required.

Credit: CTGP-414, 415-3; CTGP-416-4

CTGP-417,418,419 Image Evaluation
Registration #0257-417,418, 419
The course objective is to develop a fundamental and rigorous understanding of the problems of evaluating photo-optical systems. Both the subjective and the objective methods of analysis are discussed in considerable detail.

The main topics are: point-and-line-spread function of photo-optical systems; derivation of the line-spread function of photographic emulsions; one-dimensional and two-dimensional image formation and convolution integrals; Fourier analysis and Fourier transforms; autocorrelation and its applications; modulation transfer function of photo-optical systems (OTF).

Prerequisite: CTGP-407,408,409 and CTAM-305,308 or equivalent. Computer programming background also required.

Credit: 4

CTGP-421 Mathematical Methods in Photographic Science
Registration #0257-421
A survey of various mathematical techniques useful in devising or modeling photographic systems. Each method is applied to numerous problems and examples from photographic science after development of the pertinent mathematics. Topics selected from: linear spaces, transformations, dimensional analysis, information theory, system analysis, distributory theory, stochastic processes.

Prerequisite: CTAM-251, 252, 253 or equivalents.

Credit: 4

CTGP-520 Xerography and Electrographics
Registration #0257-520
The objectives of this course, which is directed toward working engineers, scientists and experienced technicians, are to provide a comprehensive program devoted to the scientific background and practical applications of electro-photographic, to emphasize the relationship of silver photography to electrostatic imaging, and to provide practical experience in xerographic image formation and reproduction.

Topics which will be covered in lectures, demonstrations, and laboratories include: electrical imaging and electrostatic principles; photoconductivity; the electrical latent image; dry and wet development; image transfer and fusing; and novel technical approaches.

The prerequisites assume a background in general physics (especially electricity) and college mathematics or equivalent experience.

Fundamental principles of selected subjects will be reviewed.

Credit: 3

CTGP-527 Theory of the Photographic Process
Registration #0257-527
An advanced course in photographic theory covering the underlying principles and mechanisms of the photographic process. Latent image formation, photographic sensitivity, emulsions, and development processes will be discussed in terms of the basic principles of solid state physics. The concepts of band structure, trapping levels, lattice defects, surface space charge layers, and interface electro-chemistry will be described and employed.

Prerequisite: CTGP-216, 218, 219 and 224, 225, 226 or equivalents.

Credit: 4

CTGP-528 Theory of the Color Process
Registration #0257-528
The measurements of color photography, colorimetry, tone and color reproduction, spectrophotometry, and masking theory are treated in a common mathematical notation.

Prerequisite: CTGP-217, 218, 219 and 224, 225, 226 and CTGP-414, 415, 416 or equivalents.

Credit: 4

CTGP-529 Non-Silver Imaging Systems
Registration #0257-529
The purpose of the course is to examine the more promising non-silver and unconventional silver halide systems in view of the future requirements in cost, sensitivity, image quality, color rendition, ecology (to compare them to present silver imaging systems), and to consider the reasons for the commercial failure and future prospects of other systems.

The course will emphasize the principles and methods of physics and chemistry which have been developed into non-silver photographic systems, rather than the extensive empiricism which has been characteristic of this field. The student will gain an understanding of the principal non-silver systems and today's research and product trends. Topics include: latent-image theory; exposure effects: mechanism of development and spectral sensitization; sensitometry and image evaluation.

Prerequisite: CTGP-527 or equivalent.

Credit: 4

CTGP-557,558, 559 Independent Research
Registration #0257-557,558,559
Individual project involving research in an applied professional or scientific photographic subject carried out under the guidance of a professor.

Prerequisite: Permission of Chairperson, Photography.

Credit: 3

Printing

CTGR-101,102,103 Process Camerawork
Registration #0258-101,102,103
Fundamentals of photography and photomechanical principles and techniques for black and white reproduction. Emphasis on line and halftone photography. Designed for the individual who wants to do process camerawork or who wants to become more proficient in this area.

Credit: 2

CTGR-105 Printing as a Fine Craft
Registration #0258-105
To review the fundamentals of printing, from type on simple presses to the development of that process to a fine craft. Guidance in the selection of type designs and papers, actual practice in printing as a creative art, in typesetting and in presswork.

Credit: 2

CTGR-111,112,113 Color Separation Camerawork
Registration #0258-111,112,113
Fundamentals of light and color as applied to masking and color separation in offset lithography. Densitometric control of the photographic operations is emphasized; various masking methods are surveyed. Laboratory projects supplement lecture material.

Prerequisite: CTGR-101, 102, 103 or equivalent.

Credit: 2

CTGR-121,122,123 Offset Layout and Stripping
Registration #0258-121,122,123
Examination and treatment of negative and positive films to remove defects; study and application of various methods of assembling film negatives or positives into flats in preparation for platemaking; study of proofing systems and types of impositions.

Credit: 2

CTGR-131,132 Offset Platemaking
Registration #0258-131,132
A comprehensive course covering all aspects of offset platemaking. Includes all imaging methods for lithographic plates, such as the various forms of presensitized-, wipe-on, photopolymer-, deep-tech-, bi- and tri-metal plates as well as transfer and direct camera plate systems; basic step and repeat layout and procedures on two machines are also studied.

Credit: 2

CTGR-141,142,143 Offset Presswork
Registration #0258-141,142,143
A study of the fundamentals of lithographic presswork. Emphasis is placed on principles, procedures, equipment and the interrelationship of materials.

Credit: 2

CTGR-151,152,153 Color Stripping
Registration #0258-151,152,153
An advanced study of image assembly to include 4 color process stripping; spot color stripping; pin register systems; proofing systems; contacting procedures. Student should have taken prerequisite course of offset layout & stripping.

Prerequisite: CTGR-121, 122, 123 or equivalent experience.

Credit: 2

CTGR-201, 202, 203 Introduction to Printing
Registration #0258-201,202, 203
Survey of the various phases of production employed in major printing processes, encompassing the major steps from design to the finished printed product.

Credit: 2

CTGR-207 Printing Design and Layout
Registration #0258-207
Fundamentals of layout and design as applied to commercial printing and advertising, including how to design with type, specify type and illustrations, and produce layouts from thumbnail sketches to a completed comprehensive design. Emphasis on technical and printing problems.

Credit: 3

CTGR-211 Phototypesetting Procedures
Registration #0258-211
Study and analysis of phototypesetting procedures, emphasizing techniques of phototypography through the medium of contemporary laboratory facilities. One field trip.

Credit: 2

CTGR-215 Bookbinding
Registration #0258-215
This course is intended to give the student an introduction to the skills of hand bookbinding. The purpose is to experience bookbinding as an art form. Content will cover history, materials, methods of binding and restoration. Students should bring two books of their own for rebinding.

Credit: 2

CTGR-219 Estimating
Registration #0258-219
A basic course in planning production, cost of materials, hour costs, hour rates, estimating time and time standards.

Credit: 4

CTGR-221 Production Management
Registration #0258-221
Examines the non-technological functions of production as components of a system, emphasizing organizational alternatives relating to human factors. Includes such topics as organization, systems approach, decision making, production planning and control, purchasing, inventory control, quality control, methods analysis, work measurement. Some simple analytical models based on graphs or elementary algebra are introduced.

Credit: 3

CTGR-227 Copy Preparation
Registration #0258-227
Copy preparation for reproduction: working from layouts; arrangement and handling for paste-up, separation mechanicals, and photographic copy; requirements of reproduction proofs; writing complete specifications for stripping and camera.

Credit: 3

CTGR-231,232 Printing Plates
Registration #0258-231, 232
Theory and practice of platemaking for lithographic, letterpress and flexographic printing plus theory of gravure cylinder making.

Credit: 2

CTGR-237 Technology of Typesetting
Registration #0258-237
An introduction to machine typesetting including hot metal, tape and phototypesetting.

Credit: 2

CTGR-241 Typography
Registration #0258-241
The typographical factors important to all phases of printing design from simple commercial work to books. Special attention is given to the logical selection of types, and their fitness for a variety of jobs.

Credit: 2

CTGR-247 Development of Printing Types
Registration #0258-247
Type recognition studied through historic pattens and a systematic classification method. Emphasis is placed on current printing types and their availability on modern composition equipment.

Credit: 2

CTGR-251,252 Paper and Printing
Registration #0258-251,252
A survey of kinds of paper and papermaking emphasizing the graphic arts processes and their relation to varieties of paper; instruction in utilizing papercharacteristic for printing advantage. Attention given to the economics of paper buying, the paper problems of the pressroom, and the paper revolution.

Credit: 2

CTGR-301,302,303 Reproduction Camerawork
Registration #0258-301,302,303
The photographic process as it relates to the printing of black and white color reproductions. Emphasis on basic photography; line and half-tone photography; tone reproduction; and color separation photography.The theoretical approach is stressed; however, students will be involved in various photographic activities.

Credit: 2

CTGR-307 Financial Control
Registration #0258-307
Among other things, the accounting system is a main scorekeeping device for the business "game." This course considers the accounting system with minimum emphasis on bookkeeping detail in order to help managers or future managers understand the scorekeeping rules better.

Credit: 2

CTGR-314 Flexograpy
Registration #0258-314-01
A study of the theory and practice of flexographic printing, uses and development of flexography, plate and ink requirements, press principles and operation, experiments in printing on a wide variety of surfaces.

Credit: **4**

CTGR-317,318 Computer Applications in Printing
Registration #0258-317,318
A basic course covering computers and how they are used in graphic arts applications. Characteristics and types of computers used are discussed as well as an introduction to programming concepts.

Credit: 2

CTGR-321,322 Magazine Production
Registration #0258-321,322
A discerning look at what goes on in the competitive and dynamic field of magazine publishing.

Credit: 2

CTGR-331 Production Control for Printing
Registration #0258-331
Theory and practice of production control as applied to commercial printing plants. Includes order processing, planning, scheduling and routing, inventory and materials control, information processing, plant layout and location, work simplification and measurement. Course will emphasize procedures directly applicable to production conditions in job printing plants.

Credit: 3

CTGR-341 Printing Processes
Registration #0258-341 Intro, to Offset Press
A basic introduction to offset presses. Covering: lithographic theory, the applications of lithography, capabilities and limitations of the process and basic press design and function. The material will be presented in the form of lectures and demonstrations.

Prerequisite: CTGR-203

Credit: 2

CTGR-343,344 Screen Printing
Registration #0258-343,344
Introductory course designed to survey screen printing. To study the theory and practice of areas such as stencil making; frame construction; decal printing; printing on paper, fabrics; irregular shaped objects; printing of electronic circuits, use of photographic screen printing and equipment for screen printing; the economics of screen printing and its relation to the graphic arts industry.

Credit: 2

CTGR-401 Graphic Arts Quality Control Procedures
Registration #0258-401
A study of the methods of evaluating and measuring printed tone and color. Analysis techniques and instrumentation necessary to compare the original copy to the printed reproduction will be learned. Study will be made of the parameters that can be measured on the reproduction, the intermediate images, and the control procedures that produce those images. This course is for the printing manager or buyer who already understands the basic printing procedures.

Credit: 2

CTGR-403 Basic Electricity & Electronics for Graphic Arts
Registration #0258-403
A basic course in the fundamentals of electricity and electronics with emphasis of its use and applications in the graphic arts field. The course is designed to assume that the student had no previous knowledge on the subject.

Credit: 3

CTGR-404 Advanced Color Reproduction
Registration #0258-404
Advanced study of color measurement and color reproduction, with emphasis on the analysis of a color reproduction system using such tools as color measurement instrumentation, visual color evaluation, color tone reproduction, and process control.

Prerequisite: CTGR-303 or 113 or equivalents.

Credit: 2

CTGR-407 Ink and Color
Registration #0258-407
This course is designed to meet the needs of both management and production printing students. A two-hour lecture course on all facets of ink manufacturing and color matching; lab project participation by the student is strictly voluntary. Emphasis on technical and printing problems with offset (wet/dry) and letterpress inks.

Credit: 2

CTGR-411 Labor Relations in the Printing Industry
Registration #0258-411
Study of factors important to labor relations in the printing and publishing industry with special regard for behavioral consequences; makeup of labor force; union history and philosophy; government and organization; issues of wages, hours, and working conditions; labor law; principles of collective bargaining. Particular attention will be given to integrating these factors with the problems created by the changing structure and technology of the industry.

Credit: 3

CTGR-421 Imposition and Finishing
Registration #0258-421
Course is designed to understand imposition planning as related to and governed by folding and other finishing operations. Content deals with the concepts of pre-press planning, binding and finishing. Included are topics on preparing layouts, forms and folded paper material for binding. Laboratory experiments include operation of modern bindery equipment and the binding of a hardcover bound book.

Credit: 2

Building Technology (Industrial Technology)

CTIB-101,102 Architectural & Structural Blueprint Reading
Registration #0261-101,102 (Residential, Commercial)
Reading and interpretation of architectural and structural drawings; use of scales, symbols for materials, drafting conventions, schedules and specification; freehand sketching, elementary mathematics, and some quantity take-off.

Credit: 3

CTIB-201 Architectural Drawing
Registration #0261-201
Introduction to architecture, the role of architectural drawings in the construction process, and basic drafting techniques used in architectural drawing including pencil techniques, freehand sketching and lettering. Introduction to drawings required in the traditional construction drawing set.

Credit: 2

CTIB-202 Architectural Drawing
Registration #0261-202
Introduction to the techniques of the architectural design process including preliminary presentation drawings and isometrics. Preparation of drawings required in the design and construction process of different building types.

Prerequisite: CTIB-201

Credit: 2

CUB-203 Architectural Drawing
Registration #0261-203
Advanced study in the complete architectural process required in developing more complex building types. Preparation of design and schematic drawings of different building types.

Prerequisite: CTIB-202

Credit: 2

CTIB-204,205,206 Architectural Drawing
Registration #0261-204, 205, 206
Design development, presentation and working drawing preparation including: plans, elevation, sections, and details of different building types. Site planning, cost analysis, perspective presentation and related design skills.

Prerequisite: CTIB-203

Credit: 2

CTIB-207,208,209 Architectural Drawing
Registration #0261-207,208,209
Advanced design development, presentation and working drawing preparation including: plans, elevation, sections, and details of different building types. Site planning, cost analysis, perspective presentation and related design skills.

Prerequisite: CTIB-206

Credit: 2

CTIB-231 Surveying
Registration #0261-231
Introduction to surveying including measurement of horizontal distances, leveling, theory of error, bearings and azimuths, measurement of angles, tachymetry, traverse surveys and computations. Several field trips provide familiarization with instrument use.

Prerequisite: High school algebra and trigonometry or equivalent.

Credit: 4

CTIB-241 Building Construction (Materials)
Registration #0261-241
Study of basic construction materials including concrete, masonry, metal, wood, bitumens, plastics, coatings, glass and glazing. Basic physical properties of materials are defined and emphasis is placed on practical applications. Design of concrete mixtures and basic stress-strain relationships are covered.

Credit: 3

CTIB-242,243 Building Construction
Registration #0261 -242,243 (Methods and Procedures)
Elements and details of building construction. Study of fundamental design concepts, building codes, foundations, wood, steel and concrete construction specification and management.

Prerequisite: CTIB-241 or equivalent.

Credit: 3

CTIB-251 Construction Contracting
Registration #0261-251
Construction activities from the contractors' viewpoint. Bidding procedures from bid advertisement to bid opening; bonds, insurance, contracts,subcontracts and bidding documents: construction safety, project planning, scheduling and control. Governmental controls including zoning and building codes.

Credit: 3

CTIB-252, 253 Building Estimating
Registration #0261 -252,253 (Residential, Commercial)
Basic cost estimating of residential and commercial construction projects including types of estimates, quantity taken off, unit price, material and labor costs, overhead, profit and contingencies. Job cost data sources and cost indices are reviewed.

Prerequisites: CTIB-101 or CTIB-203 or equivalent

Credit: 3

CTIB-301 Structural Theory
Registration #0261-301
Analysis of loads, determination of reactions, horizontal and vertical shear, shear diagrams, bending moments, axial and combined stress, truss analysis, deflections and continuous frame study.

Prerequisites: CTEM-301 and CTEM-303 or equivalents

Credit: 4

CTIB-302 Structural Design
Registration #0261-302
Fundamentals of structural design including the basic design concepts of structural steel, reinforced concrete, and timber: design of beams, columns, and trusses including connections.

Prerequisite: CTIB-301 or equivalent.

Credit: 4

CTIB-311,312,313 Architectural Projects
Registration #0261-311,312, 313
Advanced work in architectural drafting to develop specialized skills in design development, contract documents, frame construction, shop drawings, site planning or other related areas. Program to be planned individually to match the individual requirements of each student.

Prerequisite: CTIB-206 or equivalent.

Credit: 2

Engineering Drawing

CTID-101 Mechanical Blueprint Reading I
Registration #0262-101
The major thrust of this course is to enable the student to visualize machine parts represented on the blueprint as actually needed in practice. This is accomplished by covering such topics as lines, freehand sketching, orthographic projection, auxiliary and sectional views as well as callouts for machine processes. A brief introduction to Geometric Dimensioning and Tolerancing is also included.

Credit: 1

CTID-102 Mechanical Blueprint Reading II
Registration #0262-102
This course is a continuation of CTID-101 dealing with further study of machine parts and assembly drawings. Also covered will be prints of precision sheet metal and welded construction. The remainder of the course will cover geometric dimensioning and tolerancing which is becoming universally used by industry.

Credit: 1

CTID-141,142,142 Tool Design
Registration #0262-141,142,143
Drafting and design of shop tools, Student makes design drawings under instructor's supervision. Design of various machine cutting tools, gauge design, design of drilling jigs and milling fixtures. Principles and practice of punch and die design. Fundamentals of plastic molding and extruding with emphasis on production of practical designs. Consideration given to importance of tooling costs, redesign for economical production and production processes as they affect the designer. Course designed for tool and die makers, manufacturing managers, quality control managers and engineers. Drafting board and instruments required.

Prerequisites: CTID-203 and CTIS-203, CTAM-103 or equivalents.

Credit: 2

CTID-151,152,153 Machine Design
Registration #0262-151,152,153
Properties and behavior of materials; basic principles of statics and dynamics; design of basic machine elements; spring and linkage design; methods of fastening; gear and bearing selection.

Prerequisite: CTAM-103, CTID-203, CTIS-203 or equivalent.

Credit: 3

CTID-201 Engineering Drawing
Registration #0262-201
This an introductory course in mechanical drawing. Spatial objects are first drawn by free hand sketching before drawing instruments are used. Topics covered include lettering, orthographic and isometric drawings, auxiliary and section views, and principles of dimensioning and tolerances.

Credit: 2

CTID-202 Engineering Drawing
Registration #0262-202
This course is a continuation of CTID-201 which covers in more detail the topics included in CTID-201. In addition, drawings involving flat pattern developments and intersections, threads, fasteners and springs are also taught.

Prerequisite: CTID-201 or equivalent

Credit: 2

CTID-203 Engineering Drawing
Registration #0262-203
This course continues the teaching of the fundamentals of drafting as done in CTID-201-2 with topics on geometric tolerancing and dimensioning and welding, electrical, and piping drawings. The last half of the course requires the student to prepare a complete set of drawings including detail, assembly, parts and materials list, as needed to manufacture a mechanical component.

Prerequisite: CTID-202 or equivalent

Credit: 2

CTID-211 Engineering Graphics
Registration #0262-211
This is an introductory course in drafting addressed to prospective engineering students. Its content is essentially the same as CTID-201 and 202 with emphasis on graphic communication rather than skills development.

Credit: 2

CTID-212 Engineering Graphics
Registration #0262-212
This course covers the fundamental principles of descriptive geometry as used to find graphical solutions of spatial engineering problems. Students are taught methods of drawing an object in any view desired and also problems of ordinary point-line-plane are solvable by the same methods.

Prerequisite: CTID-211 or CTID-202 or equivalent.

Credit: 2

CTID-213 Engineering Graphics
Registration #0262-213
The subject of graphical kinematics is introduced by first covering the principles of basic motion; namely velocity and acceleration. These concepts are then applied to the design and analysis of mechanisms such as linkages, cams, gears, pulleys, belts, etc. The graphical approach is emphasized throughout the course.

Prerequisite: CTID-212 or equivalent.

Credit: 2

Electromechanical (Industrial Technology)

CTIL-201, 202, 203 (lec) Elements of Electricity
CTIL-206,207,208 (lab) and Electronics
Registration #0264-201, 202, 203, 206,207, 208
Basic laws of electricity: introduction to electric components, resistance, inductance, capacitance and their application to D.C. and A.C. circuits; analysis of electric systems including resonant circuits, single phase, balanced polyphase circuits, operation and application of meters; semi-conductor concepts (PNP, NPN, SCR, UJT, TRAIC, DIAC, photo-sensitive) and operating characteristics and integration and application to electric and electronic devices and systems. Lab sessions introduce instrumentation, troubleshooting and problem solving.

Prerequisite: CTAM-103 or equivalent. If you're in doubt about whether you're prepared for this course, you should take the math diagnostic test. See page for further information.

Credit: 4 (Lec. 3; Lab. 1)

CTIL-221,222 Mechanical Components and
Registration #0264-221. 222 Mechanisms
Introduction to mechanical elements of electromechanical systems: Study of individual components and mechanisms in terms of functions and operating characteristics. Topics covered are: Torque, inertia, work, power, efficiency, gears, (spur, bevel, helical, worm), gear trains, differentials and integrators, beltdrives, chain drives, pins, couplings, cams, linkages, switches. Independent approach to practical problem solving is stressed.

Prerequisites: CTCP-201,202 and CTID-201,202,203 or equivalents.

Credit: 4

CTIL-301, 302 (lec); 306, 307 (lab) Machines and Power
Registration #0264-301,302, 306, 307 Systems
Basic concepts and characteristics of D.C., synchronous and introduction machines including transformer action, turns ratio, losses, power factor, waveforms and impedance matching-single phase and three phase operation; study of the machine in an electromechanical system including types of control (torque, speed, voltage, current) and associated devices (clutches, brakes, coupling, bearings, mounting); electrical and mechanical power transmission; specialized machines such as metadynes, amplidynes, selsyns, synchro control transformers and their systems applications. Lab sessions develop a qualitative feel for characteristics and applications of power systems, machines and their control.

Prerequisites: CTIL-201, 202, 203 and CTAM-201,202 or equivalents.

Credit: 4 (Lec. 3; Lab. 1)

CTIL-303 (lec), 308 (lab) Pneumatic and
Registration #0264-303,308 Hydraulic Systems
Introduction to pneumatic and hydraulic components; pneumatic and hydraulic power systems (compressors, pumps, efficiency and applications); integrated electromechanical power systems; Lab sessions develop a qualitative feel for characteristics and applications of power systems, machines and their control.

Prerequisites: CTCP-201, 202

Credit: 4 (Lec. 3; Lab. 1)

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CTIL-351,352,353 Electromechanical Devices
Registration #0264-351,352,353 and Systems
Concepts and principles of electromechanical system components and systems; temperature, displacement, force, electropneumatic, electrohydraulic transducers, encoders, amplifiers and control elements and their applications to systems. Thermistor, thermocouple, pneumatic temperature transducers, LVDT, proximity sensors, strain gauges, pressure, flow, level transducers, control valves, motors, mechanisms and control devices; open loop, closed loop, digital analog, sequential systems. Analysis of systems representative of the types found in industrial use today. The laboratory includes analysis and troubleshooting of operational electromechanical systems.

Prerequisite: Successful completion of all other technical courses in CTIL curriculum.

Credit: 4

Machine Shop

CTIS-101,102,103 Precision Measurement
Registration #0266-101,102,103
The care and use of all common inspection and gauging equipment. Techniques of inspecting various types of parts, quality control procedures and discussion and application on the use of tolerancing; blueprints and true positioning. Sine bar, contour projector, casting layout, surface finishes, thread gauging, common types of production gauging and the use of optical flats are used in the second and third quarters.

Credit: 1

CTIS-104 to CTIS-109 Advanced Machine Shop I, II
Registration #0266-104,105,106
#0266-107,108,109
Advanced work on lathes, milling machines and grinders; explanations and demonstrations on more difficult problems; assemblies and temporary tooling. Some work done entirely in metrics. Must accurately handle tool room layout, machining, and measuring equipment. Special emphasis on skill, neatness and accuracy.

Prerequisite: CTIS-203.

Credit: 1

CTIS-111 to CTIS-119 Instrument Making & Experimental
Registration #0266-111,112,113 Work I, II, III
#0266-114,115,116
#0266-117,118,119
Students must operate all tool room equipment. Skillful manipulation of hand tools; make small temporary tooling required to form or bend the finished parts; blank development and precision layout; make small punches, dies, cutters and assemblies to simulate actual industrial model work.

Prerequisite: CTIS-203.

Credit: 1

CTIS-121 to CTIS-129 Tool & Die Making I, II, III
Registration #0266-121,122,123
#0266-124,125,126
#0266-127,128,129
Planning and making accurate, complete tool and die assemblies. Emphasis is on accuracy of the individual parts and in the fitting of the assembled tool or die. Samples from the forming and blanking dies are inspected for quality.

Prerequisite: CTIS-106

Credit: 1

CTIS-131 to CTIS-139
Registration #0266-131,132,133 Hand Screw Machine Op
#0266-134,135,136 Automatic Screw Mach Op
#0266-137,138,139 Automatic Screw Mach Op
Operation and set-up of both hand and automatic single and multiple spindle automatic screw machines to produce parts using standard and special tools. Constructional details and general maintenance of equipment; advanced set-up, developing ingenuity in setting up and tooling for more economical production.

Prerequisite: Mechanical Blueprint Reading CTID-101, should be taken concurrently.

Credit: 1

CTIS-141 to CTIS-146 Turret Lathe Operation I, II
Registration #0266-141,142,143
#0266-144,145,146
Introduction to basic machine shop techniques and fundamentals of metal removal for bar and chucking machines. Explanations, demonstrations and working out practical operations and problems on various makes of turret lathes. Construction details and general maintenance of equipment; advanced turret lathe operation; work out a series of set-ups for a variety of specialized tooling applications.

Prerequisite: Mechanical Blueprint Reading CTID-101, should be taken concurrently.

Credit: 1

CTIS-151,152,153 Shop Mathematics
Registration #0266-151,152,153
Precision measuring instruments, calculation of feeds and speeds, tapers, screw threads and gear ratios; indexing calculations, gearing percentages, figuring stresses, graphs and elementary algebra designed to increase analytical ability to solve complicated shop problems.

Credit: 2

CTIS-154,155,156 Shop Trigonometry
Registration #0266-154,155,156
Elements of geometry designed to increase analytical ability in solving complicated shop problems; solving trigonometric equations and their unknown dimensions or angles from data on practical working drawings.

Prerequisite: CTIS-153 or equivalent.

Credit: 2

CTIS-157,158 Shop Mathematics
Registration #0266-157,158
Identical to Shop Mathematics CTIS-151,152,153 except for differences in scheduling and credits per quarter.

Credit: 3

CTIS-161,162 Heat Treatment
Registration #0266-161,162
Practical heat treatment of metals: Carburizing, cyaniding, mitriding, annealing, normalizing and hardening of steels, Relation of tool steels to particular applications and their resulting properties, including hardness, toughness, wear resistance, machinability and movement in hardening; treatment of nonferrous alloys including aluminum, brass, bronze, zinc beryllium, copper, silver, monel, stainless and magnetic steel. Several types of heat treating furnaces and atmospheres are available for laboratory exercises and demonstrations of these metals and alloys to prove out the theories of class lectures and discussions.

Credit: 2

CTIS-171 Jig Boring
Registration #0266-171
Explanations and demonstrations on working out practical, basic jig boring techniques and processes required in jig and fixture work. Practical problems in developing coordinates, clamping, locating, machining, fits and inspection of tooling, working with both new and modified jigs and fixtures.

Prerequisites: CTIS-119 and CTIS-129 or permission of Chairman, Machine Shop.

Credit: 1

CTIS-201,202, 203 (lec); 206, 207, 208 (lab) Machine Shop
Registration #0266-201, 202, 203, 206, 207, 208
Machine shop theory and techniques involving basic machine tools, machining theories and practices. Explanations, demonstrations and working out of basic problems in measuring, layout and cutting tools, with lathe, milling, drilling and grinding work.

Credit: 2

CTIS-204 (lec); 209 (lab) Machine Shop
Registration #0266-204, 209

A combination of CTIS-201, 202, 203 and 206, 207, 208.

Credit: 6

CTIS-281 Numerical Control (Mill)
Registration #0266-281
This course is designed to offer the student the fundamentals and techniques in Numerical Control Part Programming Explanations and demonstration of EIA and ASCII Punched tape coding, Point to Point and Contour Programming, linear and circular interpolation, looping and macros. Special canned cycles are introduced and used along with the hands on experience.

Prerequisite: Phase I Machine Shop diploma or equivalent.

Credit: 3

CTIS-282 Numerical Control (Lathe)
Registration #0266-282
Code system and format as used by industry for writing programs in contour, linear and circular interpolation along with safe and efficient tooling techniques. Canned turning, facing, drilling and threading cycles will be covered with compensation for tooling radius. Bar feed programming along with straight and taper threading. Will include hands on.

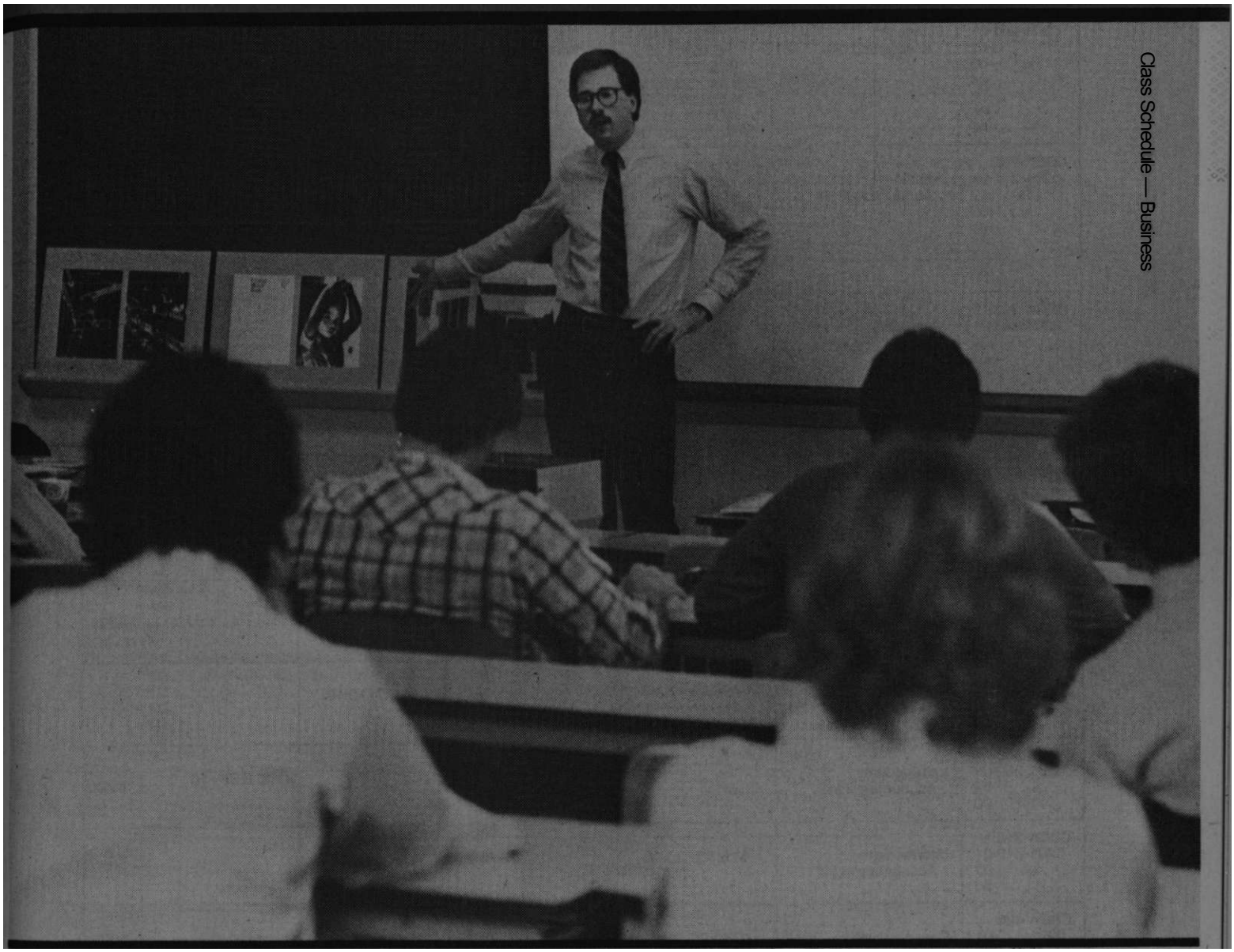
Prerequisite: Phase I Machine Shop diploma programs or approval of machine shop counselor.

Credit: 3

CTIS-283 , Computer Programming for
Registration #0266-283 Numerical Control
Course emphasizing programming for numerically controlled machine tools with point-to-point and straight-line milling capabilities. Pattern manipulations utilizing programs developed for a computer system will be stressed. Part programming output consisting of original input information, necessary information for post-processors for various machine tools with graphical output of optimum cutter path on a plotter interfaced to the computer; time sharing on a remote computer.

Prerequisite: CTIS-282 or program experience.

Credit: 3



Schedule of Classes

This section indicates meeting hours and locations for each of the courses listed in the course description section.

RIT uses an alpha-numeric course numbering system as well as a totally numeric system. Therefore both numbering systems are used in this catalog. When registering, you must use the **registration number,** which is the number under the regular course number in the following chart. For example, the registration number for the first course, CBCA-201, is 0201 -201.

Numbers listed in parenthesis after course titles indicate credit hours.

In sequentially numbered courses, the lower numbered course is prerequisite.

Abbreviations used in the charts indicate meeting places: CC-City Center; RLTH-R.L. Thomas High School; WR—West Ridge Community Center; PAL—Palmyra; GENEVA-Geneva Middle School; G.I.S.-Guided Individual Study; M-Mon., T-Tues., W-Wed., R-Thurs., F-Fri., S-Sat., U-Sunday. Unless otherwise noted, all classes meet at the Henrietta campus.

In summer *only* - courses not with asterisk are offered in 11 week quarter.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
Accounting — CBCA (Daniel Smialek, chairperson, 262-6285)						
CBCA-201 0201-201-01 -02 -03 -04 -05 -06 -90	Financial Accounting I (4)	M 6:00-9:45 T 6:00 - 9:45 W 6:00-9:45 S 9 am - 12:30 pm M 5:30-9 (CC) TR 6:35-8:15 M 5 - 8:30 (RLTH)	T 6:00-9:45 W 6:00-9:45 MW 6:35-8:15	M 6:00-9:45 S 9am-12:30 pm MW 6:35-8:15 TR 6:35-8:15	T 6:00 - 9:45 W 6:00-9:45 MW 6:35-8:15	392
CBCA-202 0201-202-01 -02 -03 -04 -05 -06 -90	Financial Accounting II (4)	T 6:00-9:45 W 6:00-9:45 MW 6:35-8:15	M 6:00-9:45 T 6:00 - 9:45 W 6:00-9:45 S 9 am -12:30 pm M 5:30 - 9 (CC) TR 6:35-8:15 M 5-8:30 (RLTH)	T 6:00-9:45 W 6:00-9:45 MW 6:35-8:15	M 6:00 - 9:45 S 9 am -12:30 pm TR 6:35-8:15	392
CBCA-203 0201-203-01 -02 -03 -04 -05 -06 -90	Managerial Accounting (4)	M 6:00-9:45 W 6:00-9:45 TR 8:30-10:10	T 6:00 - 9:45 W 6:00 - 9:45 MW 6:35-8:15	M 6:00-9:45 T 6:00-9:45 W 6:00-9:45 S 9 am -12:30 pm M 5:30 - 9 (CC) TR 6:35-8:15 M 5-8:30 (RLTH)	T 6:00-9:45 W 6:00-9:45 MW 6:35-8:15	392
CBCA-207 0201-207-01	Accounting for Engineers I (4)	MW 6:35-8:15				392
CBCA-208 0201-208-01	Accounting Engineers II (4)		MW 6:35-8:15			392
CBCA-271 0201-271-01 -95	Accounting for Not-For-Profit Organizations (4)	W 6:35-10:10 T 6:00-9:30 (GENEVA)	M 6:35-10:10	T 6:35-10:10		392
CBCA-308 0201-308-01 -02 -90	Intermediate Accounting I (4)	W 6:00-9:45 TR 6:35-8:15 W 5-8:30 (RLTH)		M 6:35-10:10		392
CBCA-309 0201-309-01 -02 -90	Intermediate Accounting II (4)		W 6:00 - 9:45 TR 6:35-8:15 W 5-8:30 (RLTH)		M 6:35-10:10	392
CBCA-310 0201-310-01 -02 -90	Intermediate Accounting III (4)	M 6:35-10:10		W 6:00-9:45 TR 6:35-8:15 W 5 - 8:30 (RLTH)		392
CBCA-420 0201-420-01 -90	Cost Accounting (4)	TR 6:35-8:15	T 6:35-10:10 R 5 - 8:30 (RLTH)	TR 6:35-8:15	T 6:35-10:10	392
CBCA-422 0201-422-01 -90	Tax Accounting (4)	MW 8:30-10:10 T5-8:30(RLTH)	TR 6:35-8:15	R 6:35-10:10		392
CBCA-424 0201-424-01 -90	Tax Accounting (4)		MW 8:30-10:10 T 5-8:30 (RLTH)	TR 6:35-8:15	R 6:35-10:10	392
CBCA-504 0201-504-01 -90	Auditing (4)	W 6:35-10:10 M 5 - 8:30 (RLTH)	W 6:35-10:10	W 6:35-10:10		392
CBCA-505 0201-505-01 -90	Advanced Accounting I (4)	M 6:35 -10:10	T.6:35-10:10 M 5 - 8:30 (RLTH)			392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CBCA-506 0201-506-01 -90	Advanced Accounting II (4)		M 6:35-10:10	T 6:35-10:10 M 5 -8:30 (RLTH)		392
CBCA-508 0201-508-01	CPA Problems (4)	R 6:35-10:10		M 6:35 -10:10		392
Business Law — CBCB (Rolf Zerges, chairperson, 262-6293)						
CBCB-301 0202-301-01 -02 -03 -04 -05 -90	Business Law I (4)	T 6:00 -9:45 W 6:00 -9:45 R 6:00-9:45 MW 6:35-8:15 T 5:30 - 9 (CC) W 5-8:30 (RLTH)	W 6:00-9:45 MW8:30-10:10 TR 6:35-8:15	R 6:00-9:45 MW 6:35-8:15	T 6:00-9:45 MW 6:35-10:10 (1st session)	392
CBCB-302 0202-302-01 -02 -03 -04 -05 -90	Business Law II (4)	T 6:00-9:45 MW 8:30-10:10	T 6:00 -9:45 W 6:00 - 9:45 R 6:00-9:45 MW 6:35-8:15 T 5:30 - 9 (CC) W 5 - 8:30 (RLTH)	W 6:00-9:45 MW 8:30-10:10 TR 6:35 -8:15	R 6:00-9:45 MW 6:35-10:10 (2nd session)	392
CBCA-303 0202-303-01	Business Law CPA (4)	T 6:35 -10:10		R 6:35-10:10		392
Data Processing Systems — CBCC (Daniel Smialek, chairperson, 262-6285)						
CBCC-321 0203-321-01 -02 -03 -04 -05 -06 -90	Data Processing Principles (4)	T 6:00-9:45 W 6:00-9:45 R 6:00 -9:45 S 9 am - 12:30 pm MW 6:35-8:15 M 6:35-10:10	M 6:00-9:45 TR 8:30-10:10 W 5:30 - 9 (CC) T 5-8:30 (RLTH)	R 6:00-9:45 S 9 am -12:30 pm MW 6:35-8:15	T 6:00 - 9:45 MW 6:35-10:10 (1st session)	392
CBCC-322 0203-322-01 -02 -03 -04 •05 -06 -90	Data Processing Systems (4)	M 6:00 - 9:45 TR 8:30-10:10	T 6:00-9:45 W 6:00-9:45 R 6:00 - 9:45 S 9 am - 12:30 pm MW 6:35-8:15 M 6:35-10:10	M 6:00-9:45 TR 8:30-10:10 W 5:30 - 9 (CC) T 5-8:30 (RLTH)	R 6:00 - 9:45 S 9 am-12:30 pm MW 6:35-10:10 (2nd session)	392
CBCC-451 0203-451-01	Operations Research I (4)	T 6:35-10:10				392
CBCC-452 0203-452-01	Operations Research II (4)		T 6:35-10:10			392
CBCC-599 0203-599-01	BASIC Programming for Business (2)	W6:35 -8:15	W 6:35-8:15	W 6:35 -8:15		196
Finance - CBCD (Rolf Zerges, chairperson, 262-6293)						
CBCD-204 0204-204-01 -02	Personal Financial Management (4)	T 6:00-9:45 Cable TV (TBA)	W 6:35-10:10	W 6:00 - 9:45 Cable TV (TBA)	T 6:00 - 9:45 Cable TV (TBA)	392
CBCD-281 0204-281-01 -02 -90	Money and Banking (4)	R 6:35-10:10	M 6:00 - 9:45 R 6:30-10:10	R 6:35-10:10 M 5 - 8:30 (RLTH)	S 9 am-12:30 pm	392
CBCD-404 0204-404-01	Personal Financial Decision Making	T 6:00-9:45		W 6:00-9:45		392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CBCD-441 0204-441-01 -02 -90 -95	Corporation Finance (4)	T 6:00 - 9:45 MW 8:30-10:10	R 6:00-9:45 T 5 - 8:30 (RLTH)	TR 6:35-8:15 M 6:00-9:30 (GENEVA)	R 6:35-10:10	392
CBCD-451 0204-451-01	Corporation and Business Taxes (4)		MW 6:35-8:15			392
CBCD-481 0204-481-01	International Banking & Finance (4)			W6:35-10:10		392
CBCD-503 0204-503-01 -90	Financial Problems (4)	MW 6:35-8:15	R 6:35-10:10	T 5-8:30 (RLTH)	T 6:35-10:10	392
CBCD-507 0204-507-01	Security Analysis (4)	T 6:35-10:10				392
CBCD-508 0204-508-01	Financial Management (4)			T 6:35-10:10		392
CBCD-509 0204-509-01	Investment Management (4)		T 6:35-10:10			392
General Business Administration — CBCE (Rolf Zerges, chairperson, 262-6293)						
CBCE-101 0205-101-01	Human Relations I (2)	M 12:00-1:45 (CC) M 6:35 -8:15 (CC)				196
CBCE-102 0205-102-01	Human Relations II (2)		M 12:00 -1:45 (CC) M 6:35 -8:15 (CC)			196
CBCE-103 0205-103-01	Human Relations III (2)			M 12:00-1:45 (CC) M 6:35 -8:15 (CC)		196
CBCE-203 0205-203-01 -02 -03 -04 -05 -90	Organization and Management (4)	M 6:00-9:45 T 6:00-9:45 R 6:00-9:45 MW 6:35-8:15 TR 8:30-10:10 M 5-8:30(RLTH)	T 6:00-9:45 R 6:00 - 9:45 TR 6:35-8:15	M 6:00 - 9:45 R 6:00-9:45 T 5:30 - 9 (CC) W 5-8:30 (RLTH)	W 6:00 - 9:45 TR 6:35-8:15	392
Management Certificate Program — CBCE (Lynda Rummel, chairperson, 262-6264)						
CBCE-200 0205-200-01 -02 -03 -04 -05 -90 -91	Management Process I (4)	M 6:35-10:10 T 6:00-9:45 W 6:00 - 9:45 R 6:35-10:10 S 9 am -12:30 pm W 6:00 - 9:30 (PAL) T 6:30 -10:10 (WR)	T 6:35-10:10			392
CBCE-201 0205-201-01 -02 -03 -04 -05 -90 -91	Management Process II (5)		M 6:35-10:10 T 6:00-9:45 W 6:00-9:45 R 6:35-10:10 S 9 am -12:30 pm W 6:00-9:30 (PAL) T 6:30-10:10 (WR)	T 6:35-10:10		490
CBCE-202 0205-202-01 -02 -03 -04 -05 -90 -91	Management Process III (5)	T 6:35-10:10		M 6:35-10:10 T 6:00-9:45 W 6:00 - 9:45 R 6:35-10:10 S 9 am -12:30 pm W 6:00 - 9:30 (PAL) T 6:30-10:10 (WR)		490

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
Small Business Management - CBCE (Daniel Smialek, chairperson, 262-6285)						
CBCE-221 0205-221-01	New Ventures Development (4)	M 6:00-9:45				392
CBCE-222 0205-222-01	Small Business Management Finance (4)			M 6:00-9:45		392
CBCE-223 0205-223-01	Small Business Marketing and Planning (4)		M 6:00 - 9:45			392
Business Strategy and Planning — CBCE (Daniel Smialek, chairperson, 262-6285)						
CBCE-401 0205-401-01 -02 -90	Strategic Process I (4)	R 6:35-10:10 S 9 am-12:30 pm T 5-8:30 (RLTH)	W6:35-10:10	MW 6:35-8:15	W 6:00-9:45 TR 8:30-10:10	392
CBCE-402 0205-402-01 -02 •90	Strategic Process II (4)	W 6:00-9:45 TR 8:30-10:10	R 6:35-10:10 S 9 am -12:30 pm T 5-8:30 (RLTH)	W6:35-10:10	MW 6:35-8:15	392
CBCE-456 0205-456-01	Management Systems Concepts (4)	W 5 -8:30 (RLTH)		T6:35-10:10		392
CBCE-461 0205-461-01	Government and Business Relations (4)		W6:35-10:10	W 5-8:30 (RLTH)		392
CBCE-554 0205-554-01	Management Seminar: Ethical Issues in Business (4)			T 6:35-10:10		392
Health Services Management — CBCF (Lynda Rummel, chairperson, 262-6284)						
CBCF-241 0206-241-01	Health Institutions Management I (4)	T 6:35-10:10				392
CBCF-242 0206-242-01	Health Institutions Management II (4)		T 6:35-10:10			392
CBCF-340 0206-340-01	Legal Aspects of Health Care Administration (4)			T 6:35-10:10		392
CBCF-341 0206-341-01 -95	Health Administration Functions I (4)	M 6:00-9:30 (GENEVA)	R 6:35-10:10			392
CBCF-342 0206-342-01 -95	Health Administration Functions II (4)		M 6:00-9:30 (GENEVA)	R 6:35-10:10		392
Marketing - CBCG (Rolf Zerges, chairperson, 262-6293)						
CBCG-210 0207-210-01 -90	Effective Selling (4)	M 6:35-10:10 R 6:30 -10:00 (WR)	T 6:35-10:10	M 6:35-10:10	TR 6:35-10:10 (1st session)	392
CBCG-213 0207-213-01 -90	Advertising Principles (4)	M 6:35-10:10	W 6:35-10:10 R 6:30-10:00 (WR)	T6:35-10:10	MW 6:35-10:10 (1st session)	392
CBCG-214 0207-214-01 -90	Advertising Evaluation and Techniques (4)	W6:35-10:10	M 6:35 -10:10	M 6:35-10:10 R 6:30-10:00 (WR)		392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CBCG-216 0207-216-01	Sales Management (4)	W 6:35-10:10		W6:35-10:10	TR 6:35-10:10 (2nd session)	392
CBCG-217 0207-217-01	Marketing Research (4)	T 6:35-10:10		M 6:35-10:10		392
CBCG-218 0207-218-01	Principles of Retailing (4)	W 6:00-9:45		W 6:00-9:45		392
CBCG-361 0207-361-01 -02 -03 -90	Marketing (4)	M 6:00-9:45 T 6:00-9:45 R 6:35-10:10 R 5-8:30(RLTH)	R 6:35-10:10 TR 6:35-8:15	T 6:35-10:10 MW8:30-10:10	MW 6:35-8:15	392
CBCG-413 0207-413-01	Promotional Principles and Strategies (4)		M 6:35-10:10			392
CBCG-414 0207-414-01	Contemporary Issues in Marketing (Adv.) (IND) (4)	R 6:35-10:10		R 6:35-10:10		392
CBCG-423 0207-423-01	Publicity and Public Relations (4)			M 6:35-10:10		392
CBCG-461 0207-461-01	Packaging (Principles & Practices) (4)			TR 6:35-8:15		392
CBCG-501 0207-501-01	International Marketing (4)		M 6:35-10:10			392
CBCG-502 0207-502-01	Marketing II (4)		T 6:35-10:10			392
CBCG-503 0207-503-01	Consumer Behavior (4)			M 6:35-10:10		392
CBCG-504 0207-504-01	Marketing Case Studies (4)			R 6:35-10:10		392
Mathematics & Statistics for Business - CBCH (Daniel Smialek, chairperson, 262-6285)						
CBCH-201 0208-201-01 -02 -03	College Math for Business & Management I (4)	MW 6:35-8:15 TR 6:35-8:15 MW 6:35-8:15	TR 8:30-10:10	MW 8:30-.10:10	MW 6:35-8:15	392
CBCH-202 0208-201-01 -02 -03	College Math for Business & Management II (4)	MW 8:30-10:10	MW 6:35-8:15 TR 6:35-8:15 MW 6:35-8:15	TR 8:30-10:1^	MW8:30-10:10	392
CBCH-351 0208-351-01 -02 -03 -90 -91 -95	Statistics I (4)	MW 8:30-10:10 TR 4:45 - 6:25 TR 8:30-10:10 M 6:30-10:00 (WR) W 6:00-9:30 (GENEVA)	TR 8:30-10:10 T 5-8:30 (RLTH)	MW8:30-10:10 S 9 am-12:30 pm	M 6:00-9:45	392
CBCH-352 0208-352-01 -02 -03 -90 -91 -95	Statistics II (4)	TR 8:30-10:10	MW 8:30-10:10 TR 4:45-6:25 TR 8:30-10:10 M 6:30 -10:00 (WR) W 6:00-9:30 (GENEVA)	TR 8:30-10:10 T 5-8:30 (RLTH)	MW8:30-10:10 S 9 am-12:30 pm	392
Personnel Management - CBCI (Rolf Zerges, chairperson, 262-6293)						
CBCI-224 0209-224-01 -02 -90	Interviewing Techniques (4)	M 6:00-9:40 T 5 - 8:30 (RLTH)	T 6:00-9:40	T 6:00 -9:40	M 6:00-9:40 TR 6:35-10:10 (1st session)	392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CBCI-229 0209-229-01 -02 -90 -91	Personnel Administration (4)	T 6:00-9:40 W 6:35-10:10 M 5-8:30 (RLTH) M 6:00 - 9:30 (PAL)	T 6:35-10:10	T 6:35-10:10 S 9 am-12:30 pm	W6:35-10:10	392
CBCI-323 0209-323-01 -90 -91	Compensation Administration (4)	T 6:35-10:10	R 6:35-10:10 M 6:00-9:30 (PAL)	W 6:35-10:10 M 5 -8:30 (RLTH)		392
CBCI-324 0209-324-01 -90 -91 -95	Resolving Conflict Within Organizations (4)	R 6:35-10:10	M 5-8:30 (RLTH)	R 6:35-10:10 M 6:00 - 9:30 (PAL) W 6:00 -9:30 (GENEVA)		392
CBCI-423 0209-423-01	Benefits Administration (4)			R 6:35-10:10		392
CBCI-434 0209-434-01	Personnel Administration (Advanced) (4)	T 6:35-10:10		W 6:35-10:10		392
CBCI-437 0209-437-01	Labor Law I (4)	M 6:35-10:10				392
CBCI-438 0209-438-01	Labor Law II (4)		M 6:35-10:10			392
CBCI-439 0209-439-01	Labor Law (Collective Bargaining) (4)			M 6:35-10:10		392
Production Management & industrial Engineering — CBCJ (Rolf Zerges, chairperson, 262-6293)						
CBCJ-209 0210-209-01 -90 -91	Production Management (4)	T 6:30-10:10 W 6:30-10:00 (WR) T 6:00-9:30 (PAL)	T 6:35-10:10	T 6:35-10:10 W 5 - 8:30 (RLTH)	T6:35-10:10	392
CBCJ-305 0210-305-01 -90 -91	Fundamentals of Industrial Engineering (4)	W 6:35-10:10	T6:30-10:10 W 6:30-10:00 (WR) T 6:00 - 9:30 (PAL)		MW 6:35-10:10 (1st session)	392
CBCJ-306 0210-306-01 -90 -91	Industrial Engineering Economy (4)		W 6:35 -10:10	T 6:30-10:10 W 6:30-10:00 (WR) T 6:00 - 9:30 (PAL)	MW 6:35-10:10 (2nd session)	392
CBCJ-408 0210-408-01	Current Industrial Engineering Techniques I (4)	T 6:35-10:10		W 6:35-10:10	TR 6:35-10:10 (1st session	392
CBCJ-409 I 0210-409-01	Current Industrial Engineering Techniques II (4)		T 6:35-10:10		TR 6:35-10:10 (2nd session)	392
Traffic, Transportation & Distribution Management — CBCL (Rolf Zerges, chairperson, 262-6293)						
CBCL-234 0212-234-01	Traffic & Transportation Management Principles & Practices (4)	W 6:35-10:10				392
CBCL-239 0212-239-01	Traffic & Transportation Management I (Rates and Classifications)		W 6:35-10:10			392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
C8CL-240 0212-240-01	Traffic & Transportation Management II (Rates and Classifications			W 6:35-10:10		392
C8CL-314 0212-314-01 -90	Materials Management I (4)	R 6:35-10:10	M 5-8:30(RLTH)			392
CBCL-315 0212-315-01 -90	Materials Management II (4)		R 6:35-10:10	M 5 -8:30 (RLTH)		392
C8CL-316 0212-316-01	Distribution Management (4)			R 6:35-10:10		392
CBCL-334 0212-334-01	Transportation Law (4)	M 6:35-10:10				392
CBCL-369 0212-369-01	Purchasing (4)		M 6:35-10:10	T 6:35-10:10		392
CBCL-420 0212-420-01	Traffic & Transportation Management (Domestic Transportation)	T 6:35-10:10		M 6:35-10:10		392
C6CL-432 0212-432-01	Traffic & Transportation Case Problems (4)			T 6:35-10:10 (IND)		392
CBCL-435 0212-435-01	International Transportation (4)	W 6:35-10:10				392
Real Estate - CBCM (Rolf Zerges, chairperson, 262-6293)						
C8CM-201 0213-201-01	Basic Real Estate Principles (4)	M 6:00-10:10	S 9 am - 1 pm			392
CBCM-202 0213-202-01	Advanced Real Estate Principles (4)		M 6:00-10:10	S 9 am - 1 pm		392
CBCM-203 0213-203-01	Real Estate Investment and Finance (4)	S 9 am-12:30 pm				392
C8CM-204 0213-204-01	Real Estate Evaluation, Operation, and Placement (4)		S 9 am -12:30 pm			392
Insurance — C8CN (Rolf Zergea, chairperson, 262-6293)						
CBCN-271 0214-271-01	Principles of Insurance (4)	T6:35-10:10				392
CBCN-272 0214-272-01	Principles of Insurance II (4)		T 6:35-10:10			392
Ceramics - CHAC (Frances Welles, chairperson, 262-3053)						
CHAC-201 0222-201-80 -81	Introduction to Ceramics (2) Introduction to Ceramics (2)	W 6:30-10:30 (CC) S10 am-2 pm	Same as Fall Quarter Same as Fall Quarter	Same as Fall Quarter Same as Fall Quarter		211*
CHAC-211 0222-211-80 -81	Intermediate Ceramics (2) Ceramics (2)	S10 am-2 pm R 6:30 -10:30 (CC)	Same as Fall Quarter Same as Fall Quarter	Same as Fall Quarter Same as Fall Quarter		211*

* *includes studio tee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHAC-301 022-301-80	Advanced Ceramics (2)	R 6:30-10:30 (CC)	Same as Fall Quarter	Same as Fall Quarter		**211***
CHAC-295 0222-295-80	Independent Study: Ceramics (variable)	By Appointment				**98/cr.**
CHAC-298 0222-298	Special Topics: Ceramics (2)	See Quarterly Schedule of Courses				**211***
Design - CHAD (Susan Rogers, chairperson, 262-6283)						
CHAD-201 0223-201-80 -81	Basic Design (2)	T 6:30-10:30 W 6:30-10:30	M 6:30-10:30		**MW 6:30-10:30 (1st 5 weeks)**	**211***
CHAD-202 0223-202-80 -81	Basic Design (2)		Same as CHAD-201 Fall Quarter	M 6:30-10:30	**MW 6:30-10:30 (2nd 5 weeks)**	**211***
CHAD-203 0223-203-80 -81	Basic Design (2)	M 6:30-10:30		Same as CHAD-201 Fall Quarter	**MW 6:30-10:30 (1st 5 weeks)**	**211***
CHAD-211 0223-211-80	Display Design (2)	Not offered 1983 - 84				
CHAD-212 0223-212-80	Display Design (2)	Not offered 1983-84				
CHAD-213 0223-213-60	Display Design (2)	Not offered 1983-84				
CHAD-215 0223-215-80	Rendering Techniques (2)	T 6:30-10:30				**211***
CHAD-216 0223-216-80	Rendering Techniques (2)		Same as CHAD-216			**211***
CHAD-217 0223-217-80	Rendering Techniques (2)			Same as CHAD-217		**211***
CHAD-220 0223-220-80	Art for Reproduction (3)	W 6:30-10:30			**TR 6:30-10:30 (1st 5 weeks)**	**309***
CHAD-222 0224-222-01	History of Interior Design (2)			M 7:00-10:00		**196**
CHAD-224 0223-224-80	Interior Design (2)	W 6:30-10:30				**211***
CHAD-225 0223-225-80	Interior Design (2)		W 6:30-10:30			**211***
CHAD-231 0223-231-80	Color Theory in Art (2)	W 6:30-10:30		W 6:30 -10:30		**211***
CHAD-235 0223-235-80	Commercial Interior Design (2)	M 6:30-10:30				**211***
CHAD-241 0223-241-80	Model Design (2)	Not offered 1983-84				
CHAD-242 0223-242-80	Model Design (2)	Not offered 1983-84				
CHAD-243 0223-243-80	Model Design (2)	Not offered 1983-84				

** includes studio lee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHAD-251 0223-251-80	Environmental Design (2)					211*
CHAD-252 0223-252-80	Environmental Design (2)		Same as CHAD-251 Fall Quarter			211*
CHAD-253 0223-253-80	Environmental Design (2)			Same as CHAD-251 Fall Quarter		211*
CHAD-261 0223-261-80	Lettering and Layout (2)	M 6:30-10:30				211*
CHAD-262 0223-262-80	Lettering and Layout (2)		Same as CHAD-261 Fall Quarter			211*
CHAD-263 0223-263-80	Lettering and Layout(2)			Same as CHAD-261 Fall Quarter		211*
CHAD-301 0223-301-80	Advertising (4)	M 6:30 -10:30				392
CHAD-302 0223-302-80	Advertising (4)		Same as CHAD-301 Fall Quarter			392
CHAD-311 0223-311-80	Graphic Design (2)	T 6:30 -10:30				211*
CHAD-312 0223-312-80	Graphic Design (2)		Same as CHAD-311 Fall Quarter			211*
CHAD-313 0223-313^80	Graphic Design (2)			Same as CHAD-311 Fall Quarter		211*
CHAD-315 0223-315-80	Advertising Design (2)	Not offered 1983-84				
CHAD-316 0223-316-80	Advertising Design (2)	Not offered 1983-84				
CHAD-317 0223-317-80	Advertising Design (2)	Not offered 1983-84				
CHAD-321 0223-321-80	Design Applications (2)	W 6:30-10:30				211*
CHAD-322 0223-322-80	Design Applications (2)		Same as Fall Quarter			211*
CHAD-323 0223-323-80	Design Applications (2)			Same as Fall Quarter		211*
CHAD-331 0223-331-80	Fashion Graphics (2)	T 6:30-10:30			TR 6:30-10:30 (1st 5 weeks)	211*
CHAD-332 0223-332-80	Fashion Graphics (2)		Same as CHAD-331 Fall Quarter		TR 6:30-10:30 (2nd 5 weeks)	211*
CHAD-333 0223-333-80	Fashion Graphics (2)			Same as CHAD-331 Fall Quarter		211*
CHAD-360 0223-360-80	Portfolio Workshop (2)			W 6:30-10:30		211*
CHAD-411 0223-411-80	Art and Technology (2)	Not offered 1983-84				
CHAD-412 0223-412-80	Art and Technology (2)	Not offered 1983-84				

** includes studio tee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHAD-413 0223-413-80	Art and Technology (2)	Not offered 1983-84				
CHAD-295 0223-295-80	Independent Study (variable)	By Appointment				98/cr.
CHAD-298 0223-298-80	Special Topics: Design (2)	See Quarterly Schedule of Courses				211*
Fine Arts - CHAF (Susan Rogers, chairperson, 262-6283)						
CHAF-201 0224-201-80 -81	Basic Drawing & Media (2)	W 6:30 - 10:30 R 6:30 - 10:30	T 6:30 - 10:30		TR 6:30 - 10:30 (1st session)	211*
CHAF-202 0224-202-80 -81	Basic Drawing & Media (2)		Same as CHAF-101 Fall Quarter	T 6:30 -10:30	TR 6:30 - 10:30 (2nd session)	211*
CHAF-203 0224-203-80 -81	Basic Drawing & Media (2)	T 6:30 - 10:30		Same as CHAF-101 Fall Quarter	TR 6:30 - 10:30 (1st session)	211*
CHAF-306 0224-306-80 -81	Drawing (2)	W 6:30-10:30 R 6:30-10:30 (CC)	W 6:30-10:30	W6:30-10:30 R 6:30-10:30 (CC)	MW 6:30-10:30 (Both sessions)	211*
CHAF-207 0224-207-80	Basic Figure Drawing (2)	R 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter	TR 6:30-10:30 (Both sessions)	211*
CHAF-211 0224-211-80	Introduction to Painting (2)	T 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter		211*
CHAF-307 0224-307-80	Figure Drawing (2)	R 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter	TR 6:30-10:30 (Both sessions)	211*
CHAF-301 0224-301-80	Painting (2)	T 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter		211*
CHAF-227 0224-227-80	Figure Painting (2)	R 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter		211*
CHAF-337 0224-337-80	Portrait Painting (2)	Not offered 1983-84				
CHAF-341 0224-341-80	Watercolor Painting (2)			R 6:30-10:30	MW 6:30-10:30 (1st 5 weeks)	211*
CHAF-247 0224-247-80	Sculpture (2)	Not offered 1983-84				
CHAF-361 0224-361-80	Illustration (2)	W 6:30-10:30	Same as Fall Quarter	Same as Fall Quarter	MW 6:30-10:30 (2nd session)	211*
CHAF-263 0224-263-80	Calligraphy (2)	T 6:30-10:30		TR 6:30-10:30		211*
CHAF-363 0224-363-80	Calligraphy Workshop (2)	T 6:30-10:30		T 6:30-10:30		211*
CHAF-291 0224-291-80	Serigraphy	Not offered 1983 - 84				
CHAF-296 0224-296-80	Introduction to Printmaking (2)	T 6:30-10:30		T 6:30-10:30		211*
CHAF-297 0224-297-80	Printmaking Workshop (2)	T 6:30-10:30		T 6:30-10:30		211*

** includes studio tee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHAF-293 0224-293-80	Creative Papermaking (2)		T 6:30-10:30			211*
CHAF-210 0224-210-80	Interpretive Landscape Drawing (2)	S 9 am -1 pm				211*
CHAF-295 0224-295-80	Independent Study (variable)	By Appointment				98/cr.
CHAF-298 0224-298-80	Special Topics: Fine Arts (2)	See Quarterly Schedule of Courses				211*
Metalcrafts and Jewelry - CHAM (Francas Welles, chairperson, 262-3053)						
CHAM-201 0225-201-80	Introduction to Metalcrafts and Jewelry (2)	M 6:30 -10:30	M 6:30-10:30	M 6:30-10:30		211*
CHAM-211 0225-211-80	Intermediate Metalcrafts (2)	W 6:30-10:30	W 6:30-10:30	W6:30-10:30		211*
CHAM-301 0225-301-80	Advanced Metalcrafts & Jewelryt (2)	W 6:30-10:30	W6:30-10:30	W 6:30-10:30		211*
CHAM-295 0225-295-80	Independent Study: Metalcrafts (variable)	By Appointment				98/cr.
CHAM-298 0225-298-80	Special Topics Metalcrafts & Jewelry (2)	See Quarterly Schedule of Courses i				211*
Textiles - CHAT (Frances Welles, chairperson, 262-3053)						
CHAT-201 0226-201-80	Introduction to Weaving (2)	W 6:30-10:30 (CC)	W 6:30-10:30 (CC)	W 6:30-10:30 (CC)		211*
CHAT-211 0226-211-80	Intermediate Weaving (2)	R 6:30-10:30 (CC)	R 6:30-10:30 (CC)	R 6:30-10:30 (CC)		211*
CHAT-215 0226-215-80	Textile Design (2)	T 6:30-10:30 (CC)	T 6:30-10:30 (CC)	T 6:30-10:30 (CC)		211*
CHAT-301 0226-301-80	Advanced Weaving (2)	R 6:30 -10:30 (CC)	R 6:30-10:30 (CC)	R 6:30-10:30 (CC)		211*
CHAT-295 0226-295-80	Independent Study Weaving (variable)	By Appointment				98/cr.
CHAT-298 0226-298-80	Special Topics: Weaving (2)	See Quarterly Schedule of Courses				211*
Woodworking - CHAW (Frances Welles, chairperson, 262-3053)						
CHAW-201 0227-201-80 -81	Introduction to Woodworking (2)	M 6:30-10:30 W 6:30-10:30	M 6:30-10:30 W 6:30-10:30	M 6:30 - 10:30 W 6:30 - 10:30	TR 6:30-10:30 Both Sessions	211*
CHAW-211 0227-211-80	Intermediate Woodworking (2)	R 6:30-10:30	R 6:30-10:30	R 6:30-10:30	TR 6:30-10:30 Both Sessions	211*
CHAW-301 0227-301-80	Advanced Woodworking (2)‡	W 6:30 -10:30	W 6:30-10:30	W 6:30-10:30	TR 6:30-10:30	211*

** includes studio tee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHAW-295 0227-295-60	Independent Study: Woodworking (variable)	By Appointment				98/cr.
CHAW-298 0227-298-60	Special Topics: Woodworking (2)	See Quarterly Schedule of Courses				211*
Senior Studies - CHGA (Contact: Andrea Walter, 262-6288)						
CHGA-501 0230-501-01	Senior Seminar (2)	MW 5:30-6:25 pm	TR 5:30-6:25 pm	W 6:35-8:25 pm		196
International Studies - CHGI (Alan Fischler, chairperson, 262-2747)						
CHGI-211 0233-211-01	Chinese Language and Culture: China and the Chinese People (4)	T 6:30-10:10				392
CHGI-212 0233-212-01	Chinese Language and Culture: Chinese Communism Ideology and Practices (4)		T 6:30-10:10			392
CHGI-213 0233-213-01	Chinese Language and Culture: Contemporary Issues (4)			T 6:30-10:10		392
CHGI-221 0233-221-01	Japan: The Changing Tradition (4)	Cable TV	Cable TV			392
Deaf Studies - CHCD (Karen Finch, chairperson, 262-6270)						
CHCD-211 0234-211-01 -02	Sign Language & Communication System I (2)	MW 5:30-7:00 R 5:30 - 8:30 (CC)	M 6:30 - 9:30	W 6:30-9:30	W 6:30-9:30	196
CHCD-212 0234-212-01 -02	Sign Language & Communication System II (2)	W 6:30 - 9:30	MW 5:30 - 7:00 R 5:30 - 8:30 (CC)	M 6:30-9:30	M,R 6:00-9:00 (1st 5 weeks)	196
CHCH-213 0234-213-01 -02	Sign Language & Communication System III (2)		W 6:30-9:30	MW 5:30 - 7:00 R 5:30-8:30 (CC)	M, R 6:00 - 9:00 (2nd 5 weeks)	196
CHCD-311 0234-311-01	American Sign Language I (2)	T 6:00-9:00	T 6:00 - 9:00			196
CHCD-312 0234-312-01	American Sign Language II (2)			T 6:00 - 9:00		196
CHCD-241 0234-241-01	Aspects & Issues of Deafness I (3)	W 6:00 - 9:00	M 6:00 - 9:00			294
CHCD-242 0234-242-01	Aspects & Issues of Deafness II (3)		W 6:00 - 9:00	M 6:00 - 9:00		294
CHCD-595 0234-595	Independent Study Deaf Studies (variable)	By Appointment				98/cr.
CHCD-598 0234-598	Special Topics: Deaf Studies (variable)	See Quarterly Schedule of Courses				98/cr.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
Humanities - CHGH (Alan Fischler, chairperson, 262-2747)						
CHGH-201 0235-201-01	Humanities (4)	M 6:35-10:10				392
CHGH-202 0235-202-01	Humanities (4)		M 6:35-10:10			392
CHGH-203 0235-203-01	Humanities (4)			M 6:35 -10:10		392
CHGH-210 0235-210-01	Introduction to Art Appreciation (4)	T 6:35-10:10		T 5:30-9:00 (CC)		392
CHGH-220 0235-220-01 -90	Introduction to History (4)	MW 6:35-8:15 W 6:30 -10:00 (WR)		MW 8:30 -10:10		392
CHGH-230 0235-230-01	Introduction to Music Appreciation (4)		R 6:35-10:10		TR 6:35-10:10 (2nd 5 weeks)	392
CHGH-260 0235-260-01	Introduction to Literature (4)		W 6:35-10:10	TR 8:30-10:10	M 6:35-10:10	392
CHGH-270 0235-270-01 -90	Introduction to Philosophy (4)		T 5:00-8:30 (RLT)	TR 6:35-8:15		392
CHGH-298 0235-298	Special Topics: Humanities (variable)	See Quarterly Schedule of Courses				98/cr.
CHGH-440 0235-440	Science as a Humanity (4) (STH)*	Cable TV	Cable TV			392
CHGH-441 0235-441-01 -90	Technology in American History (4) (STH)*	R 5:00-8:30 (RLT)		MW 6:35-8:15	T 6:35-10:10	392
CHGH-444 0235-444-01 -90	Ascent of Man (4) (STH)*		R 6:30 -10:00 (WR)	TR 6:35-8:15		392
CHGH-446 0235-446-01 -90	America and the Future of man (4) (STH)*		S 9:00 am -12:20 pm	T 6:30 - 10:00 (W/R	MW 6:35-10:10 (2nd 5 weeks)	392
CHGH-447 0235-447-01	History of Science (4) (STH)*	MW 8:30-10:10	M 5:30-9:00 (CC)		MW 6:35-10:10 (1st 5 weeks)	392
CHGH-448 0235-448-01 -90	Oceans: Our Continuing Frontier (4) (STH)*	TR 8:30-10:10	W 5:00-8:30 (RLT)			392
CHGH-449 0235-449-01 -90	Cosmos (4) (STH)*	T 5:00-8:30 (RLT)	TR 6:35-8:15			392
CHGH-451 0235-451-01	Moral Choices (4) (STH)*	W 5:30-9:00 (CC)	MW 8:30 -10:10	TR 4:45-6:15		392
CHGH-452 0235-452 01	Science and the Sense of Beauty (4) (STH)*	TR 6:35-8:15		W 5:30 - 9:00 (CC)		392
CHGH-456 0235-456-01 -90	Science and Speculative Fiction (4) (STH)*	M 6:35-10:10		R 5:00 - 8:30 (RLT)	W 6:35-10:10	392
CHGH-457 0235-457-01	The Arts in Mass Media (4) (STH)*		R 5:30-9:00 (CC)	W 6:35-10:10		392

**This course is a Science, Technology and Humanity elective.*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHGH-595 0235-595	Independent Study Humanities (variable)	By Appointment				98/cr.
CHGH-598 0235-598	Special Topics Humanities (variable)	See Quarter Schedule of Courses				98/cr.
Communications—CHGL (Elizabeth Conley, chairperson, 262-6270)						
CHGL-204 0236-204-01 -02 -03 -04 -05 -90 -91 -92	Dynamic Communications I (4)	MW 4:45-6:15 MW 6:35-8:15 TR 8:30-10:10 S 9:00 am-12:20 pm M 9:00 am-12:30 pm (CC+) W 5:30-9:00 (CC-) R 5:00-8:30 (RLT) W 6:30-10:00 (WR) T 6:00-9:30 (PAL)	MW 6:35-8:15 TR 8:30-10:10 W 6:00-9:30 W 5:00 -8:30 (RLT)	R 5:30-9:00	TR 6:35-8:15 M 6:00-9:00	392
CHGL-205 0236-205-01 -02 -03 -04 -05 -90 -91 -92	Dynamic Communications II (4)	MW 4:45-6:15 MW 6:30-8:15	MW 4:45-6:15 MW 6:35-8:15 TR 8:30-10:10 S 9:00 am-12:20 pm M 9:00 am-12:30 pm (CC+) W 5:30 - 9:00 (CC+) R 5:00-8:30 (RLT) W 6:30-10:00 (WR) T 6:00-9:30 (PAL)	MW 6:35-8:15 TR 8:30-10:10 W 6:00-9:30 W 5:00 - 8:30 (RLT)	R 5:30-9:00	392
CHGL-206 0236-206-01	Vocabulary (1)	T 5:00 - 6:25				98
CHGL-207 0236-207-01	Analytical Reading (1)		W 5:00-6:25		W 5:00 - 6:25	98
CHGL-208 0236-208-01	Listening (1)			R 5:00-6:25		98
CHGL-298 0236-298	Special Topics: Communications (variable)	See Quarterly Schedule of Courses				98/cr.
CHGL-301 0236-301-01 02	Effective Speaking (4)	MW 6:35-8:15	W 6:35-10:10 W 6:00-9:30 (PAL)	M 9:00 am -.12:30 pm (CC+) W 5:30 - 9:00 (CC+)	TR 6:35-10:10 (1st 5 weeks)	392
CHGL-302 0236-302-01 -02 •03 -90 -91	Discussion Skills & Leadership (4)	M 6:30-10:10 TR 6:30-8:15 T 6:30-10:00 (WR)	MW 6:35 - 8:15 T 6:35-10:10 S 9:00 am -12:20 pm	MW8:30-10:10 TR 6:35-8:15 T 6:35-10:10 (CC) W 5:00-8:30 (RLT) M 6:00 - 9:30 (PAL)	TR 6:35-10:10 (2nd 5 weeks)	392
CHGL-307 0236-307-01 -02 -90 -91	Business Communications (4)	MW 6:35-8:15 TR 8:30 -10:10 W 5:00 - 8:30 (RLT) W 6:00 - 9:30 (PAL)	TR 8:30-10:10 T 5:30-9:00 (CC)	TR 6:35-8:15 W 6:00-9:30 M 6:30-10:00 (WR)	W 5:30 -9:00	392
CHGL-308 0236-308-01	Technical Report Writing (4)	MW 6:35-8:15	R 5:00-8:30 (RLT)	TR 8:30-10:10	MW 6:35-8:15	392
CHGL-401 0236-401-01	Creative Writing (4)		TR 6:35-8:15			392
CHGL-402 0236-402-01	Man and Mass Media (4) (STH)*	TR 6:35-8:15			M 6:35-10:10	392
CHGL-403 0236-403-01 -90	Man & His Languages (4) (STH)*		M 5:00-8:30 (RLT)	M 5:30-9:00 (CC)		392

**This course is a Science, Technology and Humanity elective.*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CHGL-404 0236-404-01	Effective Persuasion (4)			T6:35-10:10	TR 5:00-9:30	392
CHGL-595 0236-595	Independent Study: Communications (variable)	By Appointment				98/cr.
CHGL-598 0236-598	Special Topics: Communications (variable)	See Quarterly Schedule of Courses				98/cr.
Behavioral Sciences-CHGS (Andrea Walter, chairperson, 262-6288)						
CHGS-201 0237-201-01	Anthropology (4)	TR 6:35-8:15		W 5:00-8:30 (RLT)	MW 6:35-10:10 (1st 5 weeks)	392
CHGS-211 0237-211-01 -02 -03 -04 -90 -91	Psychology Introduction (4)	TR 4:45-6:25 MW 6:35-8:15 W 9:00-12:30 (CC+) M 5:30 - 9:00 (CC)	MW 4:45-6:25 TR 6:35-8:15 S 9 am -12:30 pm W 6:30-10:00 (WR) Cable TV	TR 4:45-6:25 MW 6:35-8:15 MW8:30-10:10 R 5:00-8:30 R 5:00 - 8:30 (RLT) Cable TV	TR 6:35-8:15 W 6:30-10:10	392
CHGS-221 0237-221-01 -02 -03 -90	Principles of Economics I (4)	TR 4:45 - 6:25 TR 6:35-8:15 MW 8:30-10:10 T 5:00-8:30 (RLT)	MW8:30-10:10 S 9 am-12:30 pm R 6:35-10:10 (CC)	MW 6:35-8:30 TR 8:30-10:10	TR 6:35-10:10 (1st 5 weeks)	392
CHGS-222 0237-222-01 -02 -03 -90	Principles of Economics II (4)	TR 8:30-10:10	TR 4:45 - 6:25 TR 6:35-8:15 MW 8:30-10:10 T 5:00-8:30 (RLT)	MW8:30-10:10 S 9 am -12:30 pm R 6:35-10:10 (CC)	TR 6:35-10:10 (2nd 5 weeks)	392
CHGS-231 0237-231-01 -02 -03	Sociology Introduction (4)	TR 6:35-8:15 MW 8:30-10:10	TR 8:30-10:10 MW 4:45-6:25	MW 6:35-8:15 T 6:35-10:10 (CC)	R 6:35-10:10	392
CHGS-261 0237-261-01	Political Science Introduction (4)	MW 6:35-8:15		R 6:35-10:10		392
CHGS-298 0237-298	Special Topics: Behavioral Science (variable)	See Quarter Schedule of Courses				98/cr.
CHGS-312 0237-312-01	Psychology: Issues & Applications (4)	M 6:35-8:15 (GIS)*		R 6:00 - 7:30 *(GIS) (WR)		392
CHGS-316 0237-316-01 -02 -03 -90	Psychology: Behavior in Industry (4)	TR 8:30-10:10 W 6:35-10:10	T 6:35-10:10 MW 6:35-8:15 R 5:00-8:30 (WR)	M 6:35-10:10 R 5:30 - 9:00 (CC)	M 6:35-10:10 TR 6:35-8:15	392
CHGS-317 0237-317-01	Understanding Stress (4)	S 9:00-12:30			W 6:35-10:10	392
CHGS-411 0237-411-01	Adult Development & Aging (4)			MW 6:35-8:15		392
CHGS-413 0237-413-01	Patterns of Development (4)		TR 6:35-10:10			392
CHGS-421 0237-421-01	Macroeconomics (4)	M 6:35-10:10				392
CHGS-422 0237-422-01	Microeconomics (4)		M 6:30-10:10			392

**Guided individual study*

Course and Registration Numbers	Subject and Credit	FaH	Winter	Spring	Summer	Tuition
CHGH-441 0237-441-01	The Changing Family (STH) (4)			MW 6:35-8:15	TR 6:35-8:15	392
CHGH-443 0237-443-01	Death and Dying (STH) (4)		T 6:35-10:10		W 6:35-10:10	392
CHGH-444 0237-444-01	Contemporary Social Problems (STH)* (4)	W 6:35 -10:10			T 6:35-10:10	392
CHGS-445 0237-445-01	Politics and Environmental Decision Making (STH)* (4)	MW 8:30 -10:00		T 6:00-9:30 (CC)		392
CHGS-446 0237-446-01	The American Presidency (STH)* (4)	S 9:00-12:20 (CC)		W6:30-10:10		392
CHGS-447 0237-447-01	International Relations (STH)* (4)			MW 8:30-10:10	T 6:30-10:10	392
CHGS-448 0237-448-01	Science & Scientists in Society (STH)* (4)			S 9:00 am-12:30		392
CHGS-595 0237-595	Independent Study: Behavioral Science (variable)	By Appointment				98/cr.
CHGS-598 0237-598	Special Topics: Behavioral Science (variable)	See Quarterly Schedule of Courses				98/cr.
Social Work—CHQK (Art Barman, chairperson, 475-201•)						
CHGK-210 0239-210-01	Professional Social Work Rule (4)	T 6:30-10:10 pm				392
CHGK-211 0239-211-01	Social Welfare Structure & Function (4)		R 6:30-10:10 pm			392
CHGK-215 0239-215-01	Family from a Social Work Perspective (4)		T 6:30-10:10 pm			392
CHGK-302 0239-302-01	Social Welfare History (4)	R 6:30 -10:10 pm				392
CHGK-356 0239-356-01	Group Theory in Social Work (4)			R 6:30-10:10 pm		392
CHGK-411 0239-411-01	Interviewing & the Helping Relationship (4)			T 6:30-10:10 pm		392
Mathematics-CTAM (Frederick Fray, chairperson 282-6273)						
CTAM-101 0240-101-01 -02 -03 -04	Mathematics (3)	MW 8:30-9:45 MW7:00 -8:15 TR 8:30-9:45 TR 10:00-11:15am (CC)+ or TR 7 - 8:15 (CC)+	TR 8:30-9:45	TR 7:00-8:15	MTR 6:30-8:15 (1st session)	294
CTAM-102 0240-102-01 -02 -03 -04	Mathematics (3)	MW7:00-8:15	Same as CTAM-101 Fall Quarter	TR 8:30 -9:45	MTR 6:30-8:15 (1st session) MTR 6:30-8:15 (2nd session)	294
CTAM-103 0240-103-01 -02 -03 -04	Mathematics (3)	MW7:00-8:15	MW 7:00-8:15	Same as CTAM-101 Fall Quarter	MTR 6:30-8:15 (2nd session)	294

*STH — *Society. Technology and Humanity elective.*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTAM-201 0240-201-01 -02 -03 -04 -05	Technical Mathematics (4)	MW 6:35-8:15 MW 8:30-10:10 TR 6:35-8:15 TR 10:00-11:40 am (CC)+ or TR 6:35-8:15 (CCH- MW 6:35-8:15	MW 6:35-8:15	TR 6:35-8:15	MTR 6:30-9:00* (1st session)	392
CTAM-202 0240-202-01 -02 -03 -04 -05	Technical Mathematics (4)	TR 6:35-8:15	Same as CTAM-201 Fall Quarter	MW6:35~-8:15	MTR 6:30-9:00* (2nd session)	392
CTAM-203 0240-203-01 -02 -03 -04 -05	Technical Mathematics (4)	TR 6:35-8:15	TR 6:35-8:15	Same as CTAM-201 Fall Quarter		392
CTAM-205 0240-205-01	Mathematical Thought & Processes (4)	MW 6:35-8:15				392
CTAM-206 0240-206-01	Modern Mathematical Methods (4)		MW 6:35-8:15			392
CTAM-210 0240-210-01 -02	College Algebra & Trigonometry (4)	MW 8:30-10:10 TR 6:35-8:15	MW 8:30-10:10	TR 6:35-8:15	TR 6:35-8:15	392
CTAM-251 0240-251-01 -02 -03 -04 -05	Calculus (4)	MW 8:30-10:10 MW 6:35-8:15 TR 8:30-10:10 MW 6:35-8:15 MW 9:00-10:40 (CC) or 6:35-8:15 +	MW8:30-10:10 TR 6:35-8:15	MW8:30-10:10	MTR 6:30 - 9:00* (1st session)	392
CTAM-252 0240-252-01 -02 -03 -04 -05	Calculus (4)	MW 8:30 -10:10 MW 8:30-10:10	Same as CTAM-251 Fall Quarter	MW8:30-10:10 TR 6:35-8:15	MTR 6:30 - 9:00* (2nd session)	392
CTAM-253 0240-253-01 -02 -03 -04 -05	Calculus (4)	MW 8:30-10:10 MW 8:30-10:10	MW 8:30-10:10 MW 8:30-10:10	Same as CTAM-251 F ill Quarter	TR 8:30-10:10	392
CTAM-305 0240-305-01 -02 -03	Calculus (4)	. MW 8:30-10:10 i	MW 8:30-10:10 MW8:30-10:10	MW8:30-10:10 MW8:30-10:10	TR 8:30-10:10	392
CTAM-306 0240-306-01 -02	Differential Equations (4)	MW 8:30-10:10	MW 8:30-10:10	MW 8:30-10:10 MW8:30-10:10	TR 8:30-10:10	392
CTAM-318 0240-318-01	Boundary Value Problems (4)	MW8:30-10:10	MW8:30-10:10	MW8:30-10:10	TR 8:30-10:10	392
CTAM-328 0240-328-01	Engineering Mathematics (4)	TR 6:35-8:15	MW 8:30-10:10	MW8:30-10:10		392
CTAM-341 0240-341-01	Engineering Statistics (4)		TR 6:35-8:15 *ip*	MW 8:30-10:10		392
CTAM-342 0240-342-01	Engineering Statistics (4)		1	TR 6:35-8:15	TR 8:30-10:10	392

+Courses to *accommodate shiftwork schedules. May attend either AM or PM class each week*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTAM-407 0240-407-01	Linear Algebra (4)	MW 6:35-8:15				392
CTAM-417 0240-417-01	Numerical Analysis (4)		MW 6:35-8:15			392
CTAM-420 0240-420-01	Complex Variables (4)		MW 8:30-10:10	MW 8:30-10:10	TR 8:30-10:10	392
Applied and Mathematical Statistics - CTAM (John O. Hromi, 475-2002)						
CTAM-711 0240-711-01 -02 -90	Fundamentals of Statistics I (3 or 4)	T 6:30 - 9:30 T 6:30 - 9:30 T 5:00 -8:00 (RLTH)	M 6:30-9:30 M 6:30 - 9:30 M 5:00-8:00 (RLTH)	T 6:30-9:30 T 6:30-9:30 T 5:00 - 8:00 (RLTH)	M 6:30-9:30	131/cr.
CTAM-712 0240-712-01 -02 -90	Fundamentals of Statistics II (3 or 4)	M 6:30 - 9:30 M 6:30 - 9:30 M 5:00-8:00 (RLTH)	T 6:30-9:30 T 6:30-9:30 T 5:00-8:00 (RLTH)	M 6:30-9:30 M 6:30 -9:30 M 5:00 - 8:00 (RLTH)	T 6:30 -9:30	131/cr.
CTAM-721 0240-721-01 -90	Quality Control: Control Charts (3)	R 6:30 - 9:30 R 5:00-8:00 (RLTH)		R 6:30-9:30 R 5:00 - 8:00 (RLTH)		393
CTAM-731 0240-731-01 -90	Quality Control: Acceptance Sampling (3)		R 6:30-9:30 R 5:00 - 8:00 (RLTH)		R 6:30-9:30	393
CTAM-751 0240-751-01 -90	Introduction to Decision Processes (3)	R 6:30-9:30 R 5:00-8:00 (RLTH)				393
CTAM-761 0240-761-01 -90	Reliability (3)			M 6:30-9:30 M 5:00-8:00 (RLTH)		393
CTAM-801 0240-801-01 -90	Design of Experiments I (3)		T 6:30-9:30 T 5:00 - 8:00 (RLTH)	R 6:30 -9:30 R 5:00 - 8:00 (RLTH)	M 6:30 -9:30	393
CTAM-802 0240-802-01	Design of Experiments II (3)	T 6:30-9:30		T 6:30-9:30	T 6:30-9:30	393
CTAM-821 0240-821-01	Theory of Statistics I (3)	W 6:30-9:30				393
CTAM-822 0240-822-01	Theory of Statistics II (3)		W 6:30-9:30			393
CTAM-830 0240-830-01	Multivariate Analysis I (3)			R 6:30 -9:30		393
CTAM-831 0240-831-01	Multivariate Analysis II (3)				R 6:30-9:30	393
CTAM-841 0240-841-01	Regression Analysis I (3)		T 6:30-9:30			393
CTAM-842 0240-842-01	Regression Analysis II (3)			T 6:30-9:30		393
CTAM-851 0240-851-01	Nonparametric Statistics (3)	T 6:30-9:30		W 6:30-9:30	M 6:30 -9:30	393
CTAM-853 0240-853-01 -90	Managerial Decision Making (3)		R 6:30-9:30 R 5:00-8:00 (RLTH)			393

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTAM-871 0240-871-01	Sampling Theory & Applications (3)		M 6:30-9:30		T 6:30-9:30	393
CTAM-881 0240-881-01	Intro, to Bayesian Statistics (3)	M 6:30-9:30				393
CTAM-886 0240-886-01	Sample Size Determination (3)				W 6:30-9:30	393
CTAM-891 0240-891-01	Special Topics (3)	Hours to be arranged				393
CTAM-895 0240-895-01	Statistics Seminar (3)	Hours to be arranged				393
CTAM-896 0240-896-01 897-01 898-01	Thesis (3)	Hours to be arranged				393
Electrical—CTBE (Contact Dept., 262-6289)						
CTBE-401-406 0241-401-01 0241-406-40 -41	Circuit Analysis (3)** Lab (1)	MW 7:00 -8:15 R 6:00 - 9:00 R 6:00 - 9:00		MW 7:00 -8:15 R 6:00 - 9:00 R 6:00-9:00		294 113*
CTBE-402, 407 0241-402-01 0241-407-40	Circuit Analysis (3)** Lab(1)	Not offered 1983/84, Contact Dept.				294 113*
CTBE-403, 408 0241-403-01 0241-408-41	Circuit Analysis (3)** Lab (1)	Not offered 1983/84, Contact Dept.				294 113*
CTBE-411 0241-411-01	Electric & Magnetic Fields (4)	MW 8:30-10:10				392
CTBE-412 0241-412-01	Electric & Magnetic Fields (4)		MW 8:30-10:10			392
CTBE-413 0241-413-01	Electric & Magnetic Fields (4)			MW8:30-10:10		392
CTBE-421 0241-421-01	Electronics (4)	Not offered 1983/84, contact Dept.				392
CTBE-422 0241-422-01	Electronics (4)	Not offered 1983/84, contact Dept.				392
CTBE-423 0241-423-01	Electronics (4)	Not offered 1983/84, contact Dept.				392
CTBE-431 0241-431-01	Electronics (4)	Not offered, 1983/84, contact Dept.				392
CTBE-432 0241-432-01	Electronics (4)	Not offered, 1983/84, contact Dept.				392
CTBE-433 0241-433-01	Electronics (Comm) (4)			MW8:30-10:10		392
CTBE-434 0241-434-01	Digital Logic Design (4)	MW 8:30-10:10		MW8:30-10:10		392
CTBE-461 0241-461-01	Electrical Engineering Principles (4)	MW 6:15-8:15				392
CTBE-462 0241-462-01	Electrical Engineering Principles (4)		MW 6:15-8:15			392

*includes lab fee
**Student must register tor both lecture and lab.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTBE-463 0241-463-01	Electrical Engineering Principles (4)			MW 6:15-8:15		392
CTBE-501 0241-501-01	Electromagnetic Energy Conversion (4)	MW 6:35-8:15				392
CTBE-511 0241-511-01	Control Systems (4)		MW 6:35-8:15			392
CTBE-512 0241-512-01	Control Systems (4)			MW 6:35-8:15		392
Mechanical—CTBM (Charles DeRoller, chairperson, 262-6268)						
CTBM-341 0242-341-01	Engineering Mechanics (Statics) (4)	MW 6:35-8:15	TR 6:35-8:15			392
CTBM-342 0242-342-01	Engineering Mechanics (Dynamics) (4)		MW 6:35-8:15	TR 6:35-8:15		392
CTBM-344, 354 0242-344-01 0242-354-40	Strength of Materials (3)** Lab (1)		MW 8:30-9:45 R 6:20-8:20			294 113*
CTBM-345 0242-345-01	Strength of Materials (4)			MW8:30-10:10		392
CTBM-347, 357 0242-347-01 0242-357-40	Engineering Materials (3)** Lab (1)			MW 7:00-8:15 R 6:20-8:20		294 113*
CTBM-401 0242-401-01	Thermodynamics (4)	Not offered 1983/84, contact Dept.				392
CTBM-402 0242-402-01	Thermodynamics (4)	Not offered 1983/84, contact Dept.				392
CTBM-403 0242-403-01	Thermodynamics (4)	Not offered 1983/84, contact Dept.				392
CTBM-411 0242-411-01	Fluid Mechanics (4)		MW 6:35-8:15			392
CTBM-412 0242-412-01	Fluid Mechanics (4)			MW 6:35-8:15		392
CTBM-551 0242-551-01	Machine Design (3)	MW 8:30-9:45				294
CTBM-552 0242-552-01	Machine Design (3)		MW 8:30-9:45			294
CTBM-553 0242-553-01	Machine Design (3)			MW 8:30-9:45		294
Chemistry-CTCC 262-6289						
CTCC-211 0244-211-01	General Chemistry (3)	MW 7:00 -8:15				294
CTCC-212 0244-212-01	General Chemistry (3)		MW 7:00-8:15			294
CTCC-213 0244-213-01	General Chemistry (3)			MW 7:00-8:15		294
CTCC-216 0244-216-01	Qualitative Inorganic Analysis (2)			R 6:00 -10:00 Lec/Lab		211*

*includes lab tee
**Student must register tor both lecture and tab.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTCC-217 0244-217-01	Qualitative Analysis	R 6:00-10:00 Lec/Lab				211*
CTCC-218 0244-218-01	Quantitative Analysis (2)		R 6:00-10:00 Lec/Lab			211*
CTCC-231 0244-231-01	Organic Chemistry (3)	MW 7:00-8:15				294
CTCC-232, 237 0244-232-01 0244-237-40	Organic Chemistry Lecture (3) Lab (2)		MW 7:00-8:15 Lec. R 6:00-10:00 Lec/Lab			294 211*
CTCC-233, 238 0244-233-01 0244-238-40	Organic Chemistry** Lecture (3) Lab (2)			MW 7:00-8:15 Lec R 6:00-10:00 Lec/Lab		294 211*
CTCC-241, 246 0244-241-01 -02 0244-246-40 -41 -42 -43	Engineering Chemistry** Lecture (3) Lab(1)	MW 7:00-8:15 TR 7:00-8:15 M 8:30 -10:30 R 8:30-10:30 M 8:30-10:30 R 8:30-10:30				294 113*
CTCC-242, 247 0244-242-01 -02 0244-247-40 -41 -42 -43	Engineering Chemistry** Lecture (3) Lab(1)		Same as CTCC-241 Fall Quarter			294 113*
CTCC-243, 248 0244-243-01 -02 0244-248-40 -41 -42 -43	Engineering Chemistry** Lecture (3) Lab (1)			Same as CTCC-241 Fall Quarter		294 113*
CTCC-311,316 0244-311-01 0244-316-40	Analytical Chemistry Instrumental Analysis** Lecture (3) Lab (2)	MW 7:00-8:15 Lec R 6:00-10:00 Lec/Lab				294 211*
CTCC-312, 317 0244-312-01 0244-317-40	Analytical Chemistry** Separations Lec. (3) Lab (2)		MW 7:00-8:15 Lec R 6:00-10:00 Lec/Lab			294 211*
CTCC-313 0244-313-01	Introduction to Physical Chemistry** Lecture (3)			MW 7:00-8:15		294
CTCC-401, 405 0244-401-01 0244-405-40	Physical Chemistry" Lecture (3) Lab (2)	MW 7:00-8:15 Lab MW 6:30 - 7:00				294 211*
CTCC-402,406 0244-402-01 0244-406-40	Physical Chemistry** Lecture (3) Lab (2)		MW 7:00 - 8:15 Lab. MW 6:30 - 7:00			294 211*
CTCC-403,407 0244-403-01 0244-407-40	Physical Chemistry (3) Lab (2)			MW 7:00 -8:15 Lab MW 6:30 - 7:00		294 211*

**includes lab lee*
***Student must register tor both lecture and lab.*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTCC-417 0244-417-01	Chemical Literature & Technical Writing (2)	M 8:30 -10:30				196
CTCC-511 0244-511-01	Instrumental Analysis (4)	TR 6:35-8:15				392
CTCC-512 0244-512-01	Instrumental Analysis (4)		TR 6:35-8:15			392
CTCC-525, 535 0244-525-01 0244-535-40	Qualitative Organic** Analysis Lecture (1) Lab (2)			M 8:30-9:20 R 6:00-10:00 Lec/Lab		98 211*
CTCC-551 0244-551-01	Inorganic Chemistry** Lecture (4)			TR 6:30-8:15		392
CTCC-521 0244-521-01	Synthetic Organic Chemistry (3)	Not Offered 1983/84				294
CTCC-522 0244-522-01	Physical Organic Chemistry (3)	Not Offered 1983/84				294
CTCC-523 0244-523-01	Advanced Topics in Organic Chemistry (3)	Not Offered 1983/84				294
CTCC-528 0244-528-01	Organic Chemistry of Polymers (3)				MW 8:30-9:45	294
CTCC-555 0244-555-01	Biochemistry (3)			MW 8:30-9:45		294
CTCC-561 0244-561-01	Surface and Celloid Chemistry (3)		MW 8:30-9:45			294
CTCC-562 0244-562-01	Photochemistry (3)	MW 8:30-9:45				294
CTCC-598 0244-598-01	Topics in Chemistry: Spectometric Identification of Organic Compounds (3)	Not Offered 1983/84				294
CTCC-599 0244-599-01	Independent Study Chemistry-See Advisor (credit variable) (1-3)	Hours to be arranged				98/ cr. hr.
Physics-CTCP (Alfred Haacke, chairperson, 262-6275)						
CTCP-201, 206 0245-201-01 -02 0245-206-40 -41 *-42* *-43*	College Physics** Lecture (3) Lab (1)	MW 8:30-9:45 TR 7:00-8:15 M 6:20-8:20 M 8:30-10:30 R 6:20-8:20 R 8:30-10:30				294 113*
CTCP-201 0245-201-03	College Physics (4) Lec/Lab	***TR 6:20-8:20 (CC)+ Lec/Lab				407*
CTCP-202, 207 0245-202-01 -02 0245-207-40 -41 -42 -43	College Physics** Lecture (3) Lab (1)		Same as CTCP-201 & 206 Fall Quarter			294 113*

**includes lab fee*
***Student must register for both lecture and lab*
****9-11 am shift work schedule available, check with chairperson*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTCP-202 0245-202-03	College Physics (4)		Same as CTCP-201 -03 Fall Qtr			407*
CTCP-203, 208 0245-203-01 -02 0245-208-40 -41 -42 •43	College Physics** Lecture (3) Lab(1)			Same as CTCP-201 & 206 Fall Quarter		294 113*
CTCP-203 0245-203-03	College Physics (4)			Same as CTCP-201-03 Fall Qtr		407*
CTCP-301,306 0245-301-01 -02 0245-306-40 -41 -42	Physics** Lecture (3) Lab(1)	MW 7:00-8:15 Lec TR 8:30 - 9:45 Lec W 6:20-8:20 Lab T 6:20 - 8:20 Lab W 8:30-10:30 Lab				294 113*
CTCP-302,307 0245-302-01 0245-307-40 -41	Physics** Lecture (3) Lab(1)		Same as CTCP 301 & 306, Fall Quarter			294 113*
CTCP-303, 308 0245-303-01 0245-308-40 -41	Physics** Lecture (3) Lab (1)			Same as CTCP-301 + 306 Fall qtr.		294 113*
CTCP-457 0245-457-01 -02	Modern Physics (4)	MW 8:30-10:10 TR 8:30-10:10	MW 6:35-8:15			392
CTCP-458 0245-458-01 -02	Modern Physics (4)		Same as CTCP-457 Fall Quarter	MW6:35 -8:15		392
CTCP-459 0245-459-01 -02	Nuclear Physics (4)			MW8:30-10:10 TR 8:30-10:10		392
Contemporary Science-CTCS 262-6289						
CTCS-221 0246-221-01 .-02 -90	Contemporary Science - Biology Lec.-Demonstration (4)	MW 8:30-10:30 TR 6:15-8:15 MW 5:00 - 7:00 (RLTH)		MW 6:15-8:15		392
CTCS-222 0246-222-01 -02 -90	Contemporary Science - Chemistry Lec.-Demonstration (4)	MW 6:15-8:15	Same as CTCS-221 Fall Quarter			392
CTCS-223 0246-223-01 -02 -90	Contemporary Science - Physics Lec.-Demonstration (4)		MW 6:15-8:15	Same as CTCS-221 Fall Quarter		392
CTCS-224 0246-224-01	Contemporary Science-Oceanus (4)		Cable TV	Cable TV		392
Computer Systems—CTDP (Alfred Haacke, chairperson, 262-6275)						
CTDP-200 0249-200-01	Introduction to Microcomputers (4)	Cable TV	Cable TV	Cable TV		392
CTDP-201 0249-201-01 -02	Computer Techniques (2)	M 8:30-10:30 W 8:30-10:30	M 6:20-8:20 W 6:20-8:20	T8:30-10:30 R 8:30-10:30	T 6:20-8:20	196

*includes lab lee
**Student must register tor both lecture and lab.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTDP-208 0249-208-01 -02 -03	Introduction to Programming (4)	TR 8:30-10:10 MW 8:30-10:10 MW 6:35-8:15	TR 6:35-8:15 MW 8:30-10:10 MW 8:30-10:10	TR 6:35-8:15 MW8:30-10:10 TR 8:30-10:10	MW 6:35-8:15	392
CTDP-210 0249-210-01 -02	Program Design and Validation (4)	TR 6:35-8:15 MW 8:30-10:10	TR 8:30-10:10 MW 8:30-10:10	TR 6:35-8:15 MW8:30-10:10		392
CTDP-215 0249-215-01	Fortran Programming (4)	TR 6:35-8:15	MW 6:35-8:15	TR 6:35-8:15	MW 6:35-8:15	392
CTDP-301 0249-301-01	Cobol Programming (4)	MW 6:35-8:15		TR 8:30-10:10		392
CTDP-304 0249-304-01	Advanced Cobol Programming (4)		MW 6:35-8:15		MW 6:35-8:15	392
CTDP-305 0249-305-01 -02	Assembly Language Programming (4)	TR 6:35-8:15 TR 8:30-10:10	MW 6:35-8:15	MW8:30-10:10 MW 6:35-8:15		392
CTDP-306 0249-306-01	Advanced Assembly Techniques (4)		TR 6:35-8:15			392
CTDP-307 0249-307-01	Business Applications Programming (4)		MW 6:35-8:15			392
CTDP-318 0249-318-01	APL Programming Techniques and Applications (4)	TR 6:35-8:15		MW 6:35-8:15		392
CTDP-320 0249-320-01	Computer Programming For Engineers (4)			MW 6:35-8:15	TR 6:35-8:15	392
CTDP-330 0249-330-01	PL/1 Programming (4)		TR 6:35-8:15	MW 6:35-8:15		392
CTDP-488 0249-488-01	Programming Systems Workshop (4)			MW8:30-10:10		392
CTDS-200 0250-200-01 -02	Introduction to Computers and Programming (4)	MW 6:35-8:15 TR 6:35-8:15	TR 6:35-8:15 MW 6:35-8:15	TR 8:30-10:10 MW8:30-10:10		392
CTDS-202 0250-202-01 -02	Introduction to Computer Science (4)	MW 6:35-8:15 TR 6:35-8:15	TR 8:30-10:10 TR 6:35-8:15	TR 8:30-10:10 MW 6:35-8:15		392
CTDS-230 0250-230-01 -02	Discrete Structure (4)	TR 8:30-10:10 TR 6:35-8:15	TR 6:35-8:15	MW 6:35-8:15 MW8:30-10:10		392
CTDS-315 0250-315-01	Digital Computer Organization (4)	MW 8:30-10:10		MW8:30-10:10		392
CTDS-320 0250-320-01	Data Structure Analysis (4)		TR 8:30-10:10	MW 8:30-10:10		392
CTDS-325 0250-325-01	Data Organization and Management (4)	·		TR 8:30-10:10	MW 6:35-8:15	392
CTDS-335 0250-335-01	Systems Specification Design and Implementation (4)	TR 8:30-10:10				392

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTDS-340 0250-340-01	Finite State Machines and Automata (4)		MW 6:35-8:15			392
CTDS-400 0250-400-01	Logical Design (4)		MW 8:30-10:10	Offered alternate years only.		392
CTDS-420 0250-420-01	Data Communication Systems (4)		TR 6:35-8:15			392
CTDS-430 0250-430-01	Numerical Methods (4)	Not offered 1983/84 - Offered alternate years only.				392
CTDS-440 0250-440-01	Operating Systems (4)	MW 8:30-10:10				392
CTDS-480 0250-480-01	Formal Languages (4)			MW 6:35-8:15		392
CTDS-485 0250-485-01	Data Base Concepts (4)			TR 6:35-8:15		392
CTDS-520 0250-520-01	Computer Architecture (4)		MW 8:30-10:10			392
CTDS-525 0250-525-01	Assemblers, Interpreters and Compilers (4)	Not offered 1983/84				392
CTDS-530 0250-530-01	Discrete Simulation (4)	MW 6:35-8:15				392
CTDS-545 0250-545-01	Processor Design Concepts (4)	MW 6:35-8:15				392
CTDS-550 0250-550-01	Review of Computer Science (4)			TR 8:30,-10:10		392
CTDS-565 0250-565-01	Computer Systems Selection (4)			TR 6:35-8:15		392
CTDS-575 0250-575-01	Minicomputer Systems and Applications (4)				TR 6:35-8:15	392
Engineering Technology-Electrical-CTEE (Contact Dept., 262-6281)						
CTEE-101 0253-101-01	Basic Mathematics for Electronics (3)	MW 7:00 - 8:15 (CC)				294
CTEE-102 0253-102-01	Basic Mathematics for Electronics (3)		MW 7:00 - 8:15 (CC)			294
CTEE-103 0253-103-01	Basic Mathematics for Electronics (3)			MW 7:00 - 8:15 (CC)		294
CTEE-105 0253-105-01	Electrical Schematics (1)	MW 8:30-10:30 (CC)				98
CTEE-106 0253-106-01	Electrical Schematics (1)		M 8:30-10:30 (CC)			98
CTEE-107 0253-107-01	Electrical Schematics (1)			M 8:30-10:30 (CC)		98
CTEE-321 0253-321-01	Digital Systems (3)	TR 8:30-9:45 (CC)				294

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTEE-322 0253-322-01	Analog Systems (3)		TR 8:30-9:45 (CC)			294
CTEE-323 0253-323-01	Computer Systems (3)			TR 8:30-9:45		294
CTEE-361 0253-361-01	Applied Electronics (4)	TR 8:30-10:30 (CC)				407*
CTEE-362 0253-362-01	Applied Electronics (4)		TR 8:30 -10:30 (CC)			407*
CTEE-363 0253-363-01	Applied Electronics (4)			TR 8:30-10:30 (CC)		407*
CTEE-401 0253-401-01 -50	Circuit Theory I (4)	LecTR 7:00-8:15 Rec M 6:15 -8:15				392
CTEE-402 0253-402-01 -50	Circuit Theory II (4)		LecTR 7:00-8:15 Rec M 6:15-8:15			392
CTEE-404 0253-404-01 -40	Control Systems I (4)			LecTR 7:00-8:15 Lab M 6:15 -8:15		407*
CTEE-411 0253-411-01 -40	Electrical Principles tor Design I (4)	Lec MW 7:00-8:15 Lab R 6:15-8:15				407*
CTEE-412 0253-412-01 -40	Electrical Principles for Design II (4)		Lec MW 7:00-8:15 Lab R 6:15-8:15			407*
CTEE-424 0253-424-01 -40	Logic and Digital Devices (4)		LecTR 8:30-9:45 Lab M 8:30-10:30			407*
CTEE-425 0253-425-01	Power Concepts (3) Lec/Lab	T 8:30-10:30 R 8:30-10:30				309*
CTEE-428 0253-428-01 -40	Linear Amplifier Design (4)		LecTR 8:30-9:45 Lab M 8:30 -10:30			407*
CTEE-520 0253-520-01	Electrostatic and Magnetic Fields (4)	TR 6:35-8:15				392
CTEE-530 0253-530-01 -40	Application of Discrete & Integrated Circuit Elements (4)	LecTR 7:00-8:15 Lab M 6:15-8:15			LecTR 7:00-8:15 LabM 6:15-8:15	407*
CTEE-532 0253-532-01 -40	Power Amplifier Design (4)			LecTR 8:30-9:45 Lab M 8:30-10:30		407*
CTEE-536 0253-536-01 -40	Control Systems II (4)		LecTR 7:00-8:15 Lab M 6:15-8:15			407*
CTEE-538 0253-538-01 -40	Digital Computer Design I (4)	LecTR 8:30-9:45 Lab M 8:30-10:30				407*
CTEE-539 0253-539-01 -40	Digital Computer Design II (4)		LecTR 8:30-9:45 Lab M 8:30 -10:30			407*
CTEE-542 0253-542-01 •40	Microprocessors (4)			Lec R 8:30-9:45 Lab M 6:15 -10:15	Lec R 8:30-9:45 Lab M 6:15 -10:15	407*
CTEE-546 0253-546-01 -40	Industrial Electronics (4)			LecTR 7:00-8:15 Lab M 6:15 - 8:15		407*

*includes lab tee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTEE-547 0253-547-01	Digital Processing of Signals (4)	Not offered 1983/84				392
CTEE-550 0253-550-01 -50	Power Systems I (4)	LecTR 7:00-8:15 Rec M 6:15 -8:15				392
CTEE-551 0253-551-01 -40	Protective Relaying (4)			LecTR 7:00-8:15 Lab M 6:15 -8:15		407*
CTEE-552 0253-552-01	Power Systems II (4)		TR 6:15-8:15			392
CTEE-554 0253-554-01	Electronic Optic Devices (4)			TR 8:30-10:30		392
Engineering Technology-Mechanical—CTEM (Charles DeRollar, chairperson 282-4288)						
CTEM-301 0254-301-01	Applied Mechanics & Strength of Materials (4)	TR 6:35-8:15				392
CTEM-302 0254-302-01	Applied Mechanics & Strength of Materials (4)		TR 6:35-8:15			392
CTEM-303 0254-303-01	Applied Mechanics & Strength of Materials (4)			TR 6:35-8:15		392
CTEM-315 0254-315-01	Principles of Mechanical Design (2)	MW 8:30 -10:30				196
CTEM-316 0254-316-01	Principles of Mechanical Design II (2)		MW 8:30 -10:30			196
CTEM-317 0254-317-01	Principles of Mechanical Design III (2)			MW8:30-10:30		196
CTEM-404 0254-404-01	Applied Mechanics of Materials (4)	TR 8:30-10:30				392
CTEM-405 0254-405-01	Applied Dynamics (4)		LecTR 8:30-10:30			392
CTEM-406 0254-406-01	Dynamics of Machinery (4)			LecTR 8:30-9:45 RecM 6:15-8:15		392
CTEM-407 0254-407-01 •40 -41	Mechanical Engineering Technology Lab (3)			Lec R 8:30 -10:30 Lab M 6:15-10:15 W 6:15 -10:15		309*
CTEM-408 0254-408-01 -50	Introduction to Strength of Materials (4)	LecTR 8:30-9:45 Rec M 8:30 • 10:30				392
CTEM-409 0254-409-01 -40 -41	Mechanical Engineering Technology Lab II (2)	Lec R 8:30 -9:45 Lab W6:15 -9:15 M 6:15-9:15				211*
CTEM-420 0254-420-01 -02	Calculus for Technologists I (4)	MW8:30-10:10 TR 6:35-8:15	TR 6:35-8:15			392

*Includes lab lee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTEM421 0254-421-01 •02	Calculus for Technologists II (4)	MW 8:30-10:10 TR 6:35-8:15	MW8:30-10:10 TR 6:35-8:15	TR 6:35-8:15		392
CTEM-422 0254-422-01 -02	Solutions of Engineering Problems (4)		MW 8:30-10:10 TR 6:35-8:15	MW8:30-10:10 TR 6:35-8:15	TR8:30-10:10	392
CTEM-440 0254-440-01	Applied Thermodynamics (4)	TR 6:35-8:15				392
CTEM-451 0254-451-01	Vibrations and Noise (4)			TR 8:30-10:10		392
CTEM-460 0254-460-01	Applied Fluid Mechanics (3)		TR 7:00-8:15			294
CTEM-465 0254-465-01 -02 0254-465-40 41	Thermofluid Laboratory (2)			LecM 6:15-7:15 Lec R 6:15 - 7:15 Lab M 7:30-9:30 Lab R 7:30-9:30		211*
CTEM-506 0254-506-01	Machine Design (4)	MW8:30-10:10				392
CTEM-508 0254-508-01	Special Topics in Machine Design (4)	Not offered 1983/84				392
CTEM-521 0254-521-01	Logic Control Systems (4)			MW 6:35-8:15		392
CTEM-530 0254-530-01	Instrumentation (4)		MW 8:30-10:10			392
CTEM-535 0254-535-01	Analog Control Systems (4)			MW8:30-10:10		392
Engineering Technology-Manufacturing—CTEF (Charles OeRoller, chairperson, 262-6268)						
CTEF-201 0255-201-01 -02	Manufacturing Analysis (3)	MW 8:30-9:45 TR 8:30 - 9:45				294
CTEF-202 0255-202-01 -02	Manufacturing Analysis (3)		MW 8:30-9:45 TR 8:30-9:45			294
CTEF-203 0255-203-01 -02	Manufacturing Analysis (3)			MW 8:30-9:45 TR 8:30-9:45		294
CTEF-210 0255-210-01	Industrial Plastics (4)		MW 6:35-8:15 (CC)	MW8:30-10:10		392
CTEF-211 0255-211-01	Metallurgy (3)	MW 7:00-8:15				294
CTEF-212 0255-212-01	Metallurgy (3)		MW 7:00 -8:15			294
CTEF-370 0255-370-01	Tool Design (4)			TR 8:30-10:10		392
CTEF-380 0255-380-01	Time Study (3)	TR 7:00-8:15				294
CTEF-411 0255411-01 40	Engineering Materials (4)		LecTR 8:30 -9:45 Lab M 8:30-10:30			407*

*includes lab tee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTEF-414 0255-414-01	Materials Technology I (3)			TR 8:30-9:45		294
CTEF-415 0255-415-01	Materials Technology II (3)	LecTR 7:00 -8:15				**294**
CTEF-424 0255-424-01	Statistical Quality Control I (4)		TR 6:35-8:15		TR 6:35-8:15	392
CTEF-425 0255-425-01	Statistical Quality Control II (4)	Not offered 1983/84				392
CTEF-428 0255-428-01	Report Writing (2)			M 6:35-8:15		196
CTEF-434 0255-434-01	Operations Management (4)		MW 6:35-8:15			392
CTEF-436 0255-436-01	Engineering Economics (4)			TR 8:30-10:10	TR 8:30-10:10	392
CTEF-437 0255-437-01	Value Analysis (3)		MW 8:30-9:45			294
CTEF-460 0255-460-01	Computer Aided Design (4)	Not offered 1983/84				392
CTEF-470 0255-470-01	Numerical Control Applications (4)			TR 6:35-8:15		392
CTEF-471 0255-471-01	Computer Numerical Control (4)	TR 6:35-8:15				392
CTEF-472 0255-472-01	Tool Engineering (4)		TR 8:30-10:10			392
CTEF-473 0255-473-01	Compact II (4)	Not offered 1983/84				407*
CTEF-475 0255-475-01	Computer Aided Manufacturing (4)			TR 6:35-8:15		392
CTEF-480 0255-480-01 -50	Methods Analysis (4)		LecTR 7:00-8:15 Rec M 6:15 -8:15			392
CTEF-485 0255-485-01	Robots in Manufacturing (4)	TR 6:35-8:15				392
CTEF-491 0255-491-01	Production Control (4)	Not offered 1983/84				392
CTEF-502 0255-502-01	Advanced Manufacturing Processes (4)	Not offered 1983/84				392
CTEF-510,511 0255-510,511	Process Design I, II (4)	Not offered 1983/84				392
CTEF-526 0255-526-01	Quality Systems (4)			TR 6:35-8:15		392
Photography-CTGI (Andrew Davidhazy, chairperson, 475-2592) Photographic Studio and Laboratory Usage - see note on page 88						
CTGI-021 0256-021-40	Introduction to Photography (0)	W 6:30-10:30 (CC)	T 6:30-10:30	W 6:30-10:30 (CC)	MW 6:30-10:30 (CC) 1st Session	216*
CTGI-101 0256-101-40	Photography Workshop (2)	M 6:15-10:20	M 6:15-10:30	M 6:15-10:20	TR 6:15-10:20	216*

*includes lab fee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTGI-102 0256-102-40	Photography Workshop (2)	M 6:15 -10:20	M 6:15-10:20	M 6:15-10:20	TR 6:15 -10:20	216*
CTGI-104 0256-10440 41	Color Photography Workshop (2)	T 6:15-10:20 R 6:15-10:20	T 6:15-10:20 R 6:15-10:20	T 6:15-10:20 R 6:15-10:20	TR 6:15 -10:20	216*
CTGI-201 0256-201-01 -02	Basic Professional Photography (4)	MLec 6:35-8:25 W 6:15-10:20 Lab/Studio TLec 6:35-8:25 R 6:15-10:20 Lab/Studio				412*
CTGI-202 0256-202-01 -02	Basic Professional Photography (4)		Same as CTGI-201 Fall Quarter			412*
CTGI-203 0256-203-01 -02	Basic Professional Photography (4)			Same as CTGI-201 Fall Quarter		412*
CTGI-211 0256-211-01	Color Photography (4)	MLec 6:35-8:15 WLab 6:15-10:20				412*
CTGI-212 0256-212-01	Color Photography (4)		Same as CTGI-211 Fall Quarter			412*
CTGI-213 0256-213-01	Color Photography (4)			Same as CTGI-211 Fall Quarter		412*
CTGI-221 0256-221-01	Illustrative Photography (3)	Not offered 1983/84				314*
CTGI-222 0256-222-01	Illustrative Photography (3)	Not offered 1983/84				314*
CTGI-223 0256-223-01	Illustrative Photography (3)	Not offered 1983/84				314*
CTGI-231 0256-23140	Portrait Photography (3)	Lec/Studio W 6:15-10:20				314*
CTGI-232 0256-23240	Portrait Photography (3)		Lec/Studio W 6:15-10:20			314*
CTGI-233 0256-23340	Portrait Photography (3)			Lec/Studio W 6:15 -10:20		314*
CTGI-241 0256-24140	Commercial Photography (3)	Lec/Studio R 6:15-10:20				314*
CTGI-242 0256-24240	Commercial Photography (3)		Lec/Studio R 6:15-10:20			314*
CTGI-243 0256-24340	Commercial Photography (3)			Lec/Studio R 6:15-10:20		314*
CTGI-301 0256-301-01	Motion Picture (3)	Not offered 1983/84				314*
CTGI-302 0256-302-01	Motion Picture (3)	Not offered 1983/84				314*

**includes lab fee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTGI-321 0256-321-40	Retouching Commercial (1)	T 6:15 - 8:15 Lab				118*
CTGI-322 0256-322-40	Retouching Commercial (1)		T 6:15 -8:15 Lab			118*
CTGI-323 0256-323-40	Retouching Commercial (1)			T 6:15 - 8:15 Lab		118*
CTGI-331 0256-331-40	Retouching, Portrait (1)	T 6:15 - 8:15 Lab				118*
CTGi-332 0256-332-40	Retouching Portrait (1)		T 6:15 - 8:15 Lab			118*
CTGI-333 0256-333-40	Retouching, Portrait (1)			T 6:15 - 8:15 Lab		118*
CTGI-351 0256-351-01	Industrial Photography, Instrumentation (3)	Lec/Lab R 6:15 -10:20	Lec/Lab R 6:15-10:20	Lec/Lab R 6:15-10:20		314*
CTGI-353 0256-353-40	Industrial Photography, Special Topics (3)	Guided Independent Study	Guided Independent Study	Guided Independent Study	TR 6:15-10:20*	314*
CTGI-361 0256-361-40	Law Enforcement Photography (3)	Not offered 1983/84				314*
CTGI-362 0256-362-40	Law Enforcement Photography (3)	Not offered 1983/84				314*
CTGI-366 0256-366-40	Dye Transfer Printing (3)	Lec/Lab M 6:15-10:20		Lec/Lab M 6:15-10:20		314*
CTGI-401 0256-401-40	Fashion Photography (3)	Lec/Studio W6:15-10:20				314*
CTGI-402 0256-402-40	Fashion Photography (3)		Lec/Studio W 6:15-10:20			314*
CTGI-403 0256-403-40	Fashion Photography (3)			Lec/Studio W6:15-10:20		314*
CTGI-404 0256-404-40	Architectural Photography (3)	Lec/Critique T 6:00 - 8:30		Lec/Critique T 6:00-8:30		314*
CTGI-411 0256-411-40	Photography of the Natural World (4)	R 6:00-8:00 Lec S 8:00-12:00 Field Trip		R 6:00-8:00 Lec S 8:00-12:00 Field Trip	R 6:00 - 8:00 Lec S 8:00-12:00 Field Trip	392
CTGI-431 0256-431-40	Photographic Communication (2)	Not offered 1983/84				196
CTGI-432 0256-432-40	Photographic Communication (2)	Not offered 1983/84				196
CTGI-433 0256-433-40	Photographic Communication (2)	Not offered 1983/84				196
Photographic Science-CTGP (Andrew Davidhazy, chairperson, 475-2592)						
CTGP-207 0257-207-01	Fundamentals of Photo Science (4)	M 6:35-8:15 Lec W 6:15-10:20 Lab				412*
CTGP-208 0257-208-01	Fundamentals of Photo Science (4)		M 6:35-8:15 Lec W 6:15 -10:20			412*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTGP-209 0257-209-01	Fundamentals of Photo Science (4)			M 6:35-8:15 Lec W 6:15-10:20 Lab		412*
CTGP-217,224 0257-217-01 0257-224-40	Photographic Chemistry (3) Lab(1)	T 6:35-8:15 Lec R 6:35 - 7:30 Lec R 7:30-10:30 Lab				294 118*
CTGP-218, 225 0257-218-01 0257-22540	Photographic Chemistry (3) Lab (1)		Same as CTGP-217 Fall Quarter			294 118*
CTGP-219,226 0257-219-01 0257-22640	Photographic Chemistry (3) Lab(1)			Same as CTGP-217 Fall Quarter		294 118*
CTGP-227 0257-227-01	Black and White Sensitometry (4)	Not offered 1983/84				392
CTGP-228 0257-228-01	Black and White Sensitometry (4)	Not offered 1983/84				392
CTGP-229 0257-229-01	Black and White Sensitometry (4)	Not offered 1983/84				392
CTGP-237 0257-237-01	Radiometry (3)	TR 5:30 - 7:00				294
CTGP-238 0257-238-01	Radiometry (3)		TR 5:30 - 7:00			294
CTGP-307 0257-307-01	Quality Control of Photographic Solutions (3)	Not offered 1983/84				294
CTGP407 0257407-01	Optics (3)	Not offered 1983/84				294
CTGP408 0257408-01	Optics (3)	Not offered 1983/84				294
CTGP409 0257409-01	Optics (3)	Not offered 1983/84				294
CTGP417 0257417-01	Image Evaluation (3)	W 5:30-8:00				294
CTGP418 0257418-01	Image Evaluation (3)		W 5:30 -8:30			294
CTGP419 0257419-01	Image Evaluation (3)			W5:30-8:00		294
CTGP421 0257421-01	Math Methods in in Photo Science (4)	Not offered 1983/84				392
CTGP-520 0257-520-01	Xerography and Electrography (3)	W 5:30 -8:00				294
CTGP-527 0257-527-01	Theory of Photo Process (4)	Not offered 1983/84				392
CTGP-528 0257-528-01	Theory of Photo Process (4)	Not offered 1983/84				392
CTGP-529 0257-529-01	Non-Silver Imaging Systems (4)			MW 5:45-7:30		392

*Includes lab tee.

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTGP-557 0257-557-40	Independent Reseach (3)	TBA	TBA	TBA		294
CTGP-558 0257-558-40	Independent Research (3)	TBA	TBA	TBA		294
CTGP-559 0257-559-40	Independent Research (3)	TBA	TBA	TBA		294
Printing - CTGR (Archibald Provan, coordinator, 475-2712)						
CTGR-101 0258-10140	Process Camerawork (2)	R 6:30 -9:30				211*
CTGR-102 0258-10240	Process Camerawork (2)		R 6:30-9:30			211*
CTGR-103 0258-10340	Process Camerawork (2)			R 6:30-9:30		211*
CTGR-111 0258-11140	Color Separation Camerawork (2)	M 6:30-9:30				211*
CTGR-112 0258-11240	Color Separation Camerawork (2)		M 6:30-9:30			211*
CTGR-113 0258-11340	Color Separation Camerawork (2)		.	M 6:30-9:30		211*
CTGR-121 0258-12140	Offset Layout & Stripping (2)	W 7:00-10:00				211*
CTGR-122 0258-12240	Offset Layout & Stripping (2)		W 7:00 -10:00			211*
CTGR-123 0258-12340	Offset Layout & Stripping (2)			W 7:00-10:00		211*
CTGR-131 0258-13140	Offset Platemaking (2)	R 7:00-10:00				211*
CTGR-132 0258-13240	Offset Platemaking (2)	V	R 7:00-10:00			211*
CTGR-141 0258-14140	Offset Presswork (2)	R 7:00 -10:00				211*
CTGR-142 0258-14240	Offset Presswork (2)		R 7:00-10:00			211*
CTGR-143 0258-14340	Offset Presswork (2)			R 7:00-10:00		211*
CTGR-151 0258-15140	Color Stripping (2)	M 7:00 -10:00				211*
CTGR-152 0258-15240	Color Stripping (2)		M 7:00-10:00			211*
CTGR-153 0258-15340	Color Stripping (2)			M 7:00-10:00		211*
CTGR-201 0258-201-01	Introduction to Printing (2)	M 6:35-8:15				196

*includes lab tee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTGR-202 0258-202-01	Introduction to Printing (2)		M 6:35-8:15			196
CTGR-203 0258-203-01	Introduction to Printing (2)			M 6:35-8:15		196
CTGR-207 0258-207-01	Printing Design & Layout (3)	T 6:20-9.00				294
CTGR-211 0258-211-40	Phototypesetting (2)		W 7:00-10:00			211*
CTGR-215 0258-215-40	Bookbinding (2)			T 6:30-9:30		211*
CTGR-219 0258-219-01	Estimating (4)		TR 6:35-8:15			392
CTGR-227 0258-227-01	Copy Preparation (3)	R 6:20-9:00		R 6:20-9:00		294
CTGR-231 0258-231-40	Printing Plates (2)		T 7:00-10:00			211*
CTGR-232 0258-232-40	Printing Plates (2)			R 7:00-10:00		211*
CTGR-237 0258-237-01	Technology of Typesetting (2)	W 6:35 - 8:15				196
CTGR-241 0258-241-01	Typography (2)			T 6:35-8:15		196
CTGR-251 0258-251-01	Paper & Printing (2)		T 6:35-8:15			196
CTGR-252 0258-252-01	Paper & Printing (2)			T6:35 -8:15		196
CTGR-301 0258-301-40	Reproduction Camerawork (2)	W 6:30 - 9:30				211*
CTGR-302 0258-302-40	Reproduction Camerawork (2)		W 6:30-9:30			211*
CTGR-303 0258-303-40	Reproduction Camerawork (2)			W 6:30-9:30		211*
CTGR-314 0258-314-40	Flexography (2)	W 6:30-9:30		W 6:30-9:30		211*
CTGR-317 0258-317-01	Computer Applications in Printing (2)	W 6:30-9:30				196
CTGR-318 0258-318-01	Computer Applications in Printing		W 6:30-9:30			196
CTGR-341 0258-341-01	Printing Processes (2)		W 6:35-8:15			196
CTGR-403 0258-403-01	Basic Electricity and Electronics for Graphic Arts (3)	M 6:30-9:30		M 6:30-9:30		309*
CTGR-407 0258-407-40	Ink & Color (2)	W 7:00-9:00		W 7:00-9:00		211*
CTGR-421 0258-421-40	Imposition & Finishing (2)	T 6:35-8:15				211*

*includes lab lee

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
Building Technology - CUB (David Onesti, chairperson)						
CT1B-101 0261-101-01	Architectural & Structural Blueprint Reading (Residential) (3)	MW 7:00-8:15				294
CT1B-102 0261-102-01	Architectural & Structural Blueprint Reading (Commercial) (3)			MW 7:00-8:15		294
CTIB-201 0261-201-01	Architectural Drawing (2)	TR 8:30 -10:30		\ i ^ - ' n i		196
CTIB-202 0261-202-01	Architectural Drawing (2)		TR 8:30-10:30			196
CT1B-203 0261-203-01	Architectural Drawing (2)			TR 8:30-10:30		196
CTIB-204 0261-204-01	Architectural Drawing (2)	TR 6:20-8:20				196
CT1B-205 0261-205-01	Architectural Drawing (2)		TR 8:20-8:20			196
CT1B-206 0261-206-01	Architectural Drawing (2)			TR 6:20-8:20		196
CTIB-207 0261-207-01	Architectural Drawing (2)	TR 6:20-8:20				196
CTIB-208 0261-208-01	Architectural Drawing (2)		TR 6:20-8:20			196
CTIB-209 0261-209-01	Architectural Drawing (2)			TR 6:20-8:20		196
CT1B-231 0261-231-01	Surveying (4)			MW 6:35-8:15		392
CTiB-241 0261-241-01	Building Materials (4)	TR 8:30-10:10				392
CT1B-242 0261-242-01	Building Construction (3)		TR 8:30-10:10			294
CTIB-243 0261-243-01	Building Construction (3)			TR 8:30-10:10		294
CTIB-251 0261-251-01 .	Construction Contracting (3)	MW 8:30-9:45				294
CTIB-252 0261-252-01	Building Estimating (Residential) (3)	Not offered 1983/84				294
CTIB-253 0261-253-01	Building Estimating (Commercial) (3)	Not offered 1983/84				294

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CT1B-301 0261-301-01	Structural Theory (4)	MW 6:35-8:15				**392**
CTIB-302 0261-302-01	Structural Design (4)		MW 6:35-8:15			**392**
CT1B-311 0261-311-01	Architectural Projects (2)	TR 6:20-8:20				**196**
CT1B-312 0261-312-01	Architectural Projects (2)		TR 6:20-8:20			**196**
CT1B-313 0261-313-01	Architectural Projects (2)			TR 6:20-8:20		**196**
Engineering Drawing - CTID (Mario DiQgillio, chairperson, 262-6269)						
CTID-101 0262-101-01 -02 -06	Mechanical Blueprint Reading I (1)	T 6:20-8:20 (CC) R 6:20-8:20 (CC)	M 6:20 - 8:20 (CC)	R 6:20-8:20 (CC) R 9 am -11 am (CC)+	W 6:20-8:20 (CC)	**98**
CTID-102 0262-102-01	Mechanical Blueprint Reading II (1)	W 6:20-8:20 (CC)	W 6:20-8:20 (CC)	W 6:20-8:20 (CC)		**98**
CTID-141 0262-141-01	Tool Design (2)	TR 6:20-8:20 (CC)				**196**
CT1D-142 0262-142-01	Tool Design (2)		TR 6:20-8:20 (CC)			**196**
CT1D-143 0262-143-01	Tool Design (2)			TR 6:20-8:20 (CC)		**196**
CTID-151 0262-151-01	Machine Design (3)	MW 8:30-10:30				**294**
CTID-152 0262-152-01	Machine Design (3)		MW 8:30-10:30			**294**
CTID-153 0262-153-01	Machine Design (3)			MW 8:30-10:30		**294**
CTID-201 0262-201-01 -02 -03 -04 -05	Engineering Drawing (2)	MW 6:20-8:20 MW 8:30-10:30 TR 6:20-8:20 TR 8:30-10:30 (CC) orTR 12-2 pm (CC) TR8:30-10:30 (CC)				**196**
CTID-202 0262-202-01 -02 -03 -04 -05	Engineering Drawing (2)		Same as CTID-201 Fall Quarter			**196**
CTID-203 0262-203-01 -02 -03 -04 -05	Engineering Drawing (2)			Same as CTID-201 Fall Quarter		**196**
CTID-211 0262-211-01 -02	Engineering Graphics (2)	MW 6:20-8:20 TR 8:30-10:30				**196**
CTID-212 0262-212-01 -02	Engineering Graphics (Descriptive Geo.) (2)		MW 6:20-8:20 TR 8:30-10:30			**196**
CTID-213 0262-213-01 -02	Engineering Graphics (Intro. Kinematics) (2)			MW 6:20-8:20 TR 8:30 - 10:30		**196**

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
Industrial Technology - Electromechanical — CTIL (Contact Dept., 262-6289)						
CTIL-201,206 0264-201-01 -02 0264-206-40 -41 -42 -43 -44	Elements of Electricity & Electronics** Lecture (3) Lab (1)	MW 7:00-8:15 (CC) TR 8:30-9:45 (CC)+oi TR8:30-9:45am(CC)-l M 6:20-8:20 (CC) M 8:30-10:30 (CC) W8:30-10:30 (CC) R 6:20-8:20 (CC) T 6:20-8:20 (CCH-or M 8:30-10:30am (CC)				294 113*
CTIL-202, 207 0264-202-01 -02 0264-207-40 -41 -42 -43 -44	Elements of Electricity & Electronics** Lecture (3) Lab(1)		Same as CTIL-201 Fall Qtr. Lecture Same as CTIL-206 Fall Qtr. Lab			294 113*
CTIL-203, 208 0264-203-01 -02 0264-208-40 -41 -42 -43 -44	Elements of Electricity & Electronics** Lecture (3) Lab(1)			Same as CTIL-201 Fall Qtr. Lecture Same as CTIL-206 Fall Qtr. Lecture		294 113**
CTIL-221 0264-221-01	Mechanical Components & Mechanisms (4)	TR 6:20-8:20 (CC)				392
CTIL-222 0264-222-01	Mechanical Components & Mechanisms (4)		TR 6:20-8:20 (CC)			392
CTIL-301,306 0264-301-01 0264-306-40 -41	Machines & Power Systems** Lecture (3) Lab(1)	TR 7:00-8:15 Lec (CC) M 6:20-8:20 Lab (CC) R 8:30 -10:30 (CC)				294 113*
CTIL-302,307 0264-302-01 0264-307-40 -41	Machine & Power Systems** Lecture (3) Lab(1)		Same as CTIL-301 Fall Quarter			294 113*
CTIL-303,308 0264-303-01 0264-308-40 -41	Pneumatic & Hydraulic Systems** Lecture (3) Lab(1)			Same as CTIL-301 Fall Quarter		294 113*
CTIL-351 0264-351-01	Electromechanical Devices & Systems (4)	MW 6:20-8:20 (CC)				407*
CTIL-352 0264-352-01	Electromechanical Devices & Systems (4)		MW 6:20 - 8:20 (CC)			407*
CTIL-353 0264-353-01	Electromechanical Devices & Systems (4)			MW 6:20 - 8:20 (CC)		407*
Machine Shop - CTIS (Orville Adler, chairperson, 262-2741)						
cns-101 0266-101-41	Precision Measurements (1)	W 7:15-10:00 (CC)				138*
CTIS-102 0266-102-41	Precision Measurements (1)		7:15-10:00 (CC)			138*

+Courses to accommodate shiftwork schedules. May attend either AM or PM class each week,

**includes lab lee*

***Student must register tor both lecture and lab.*

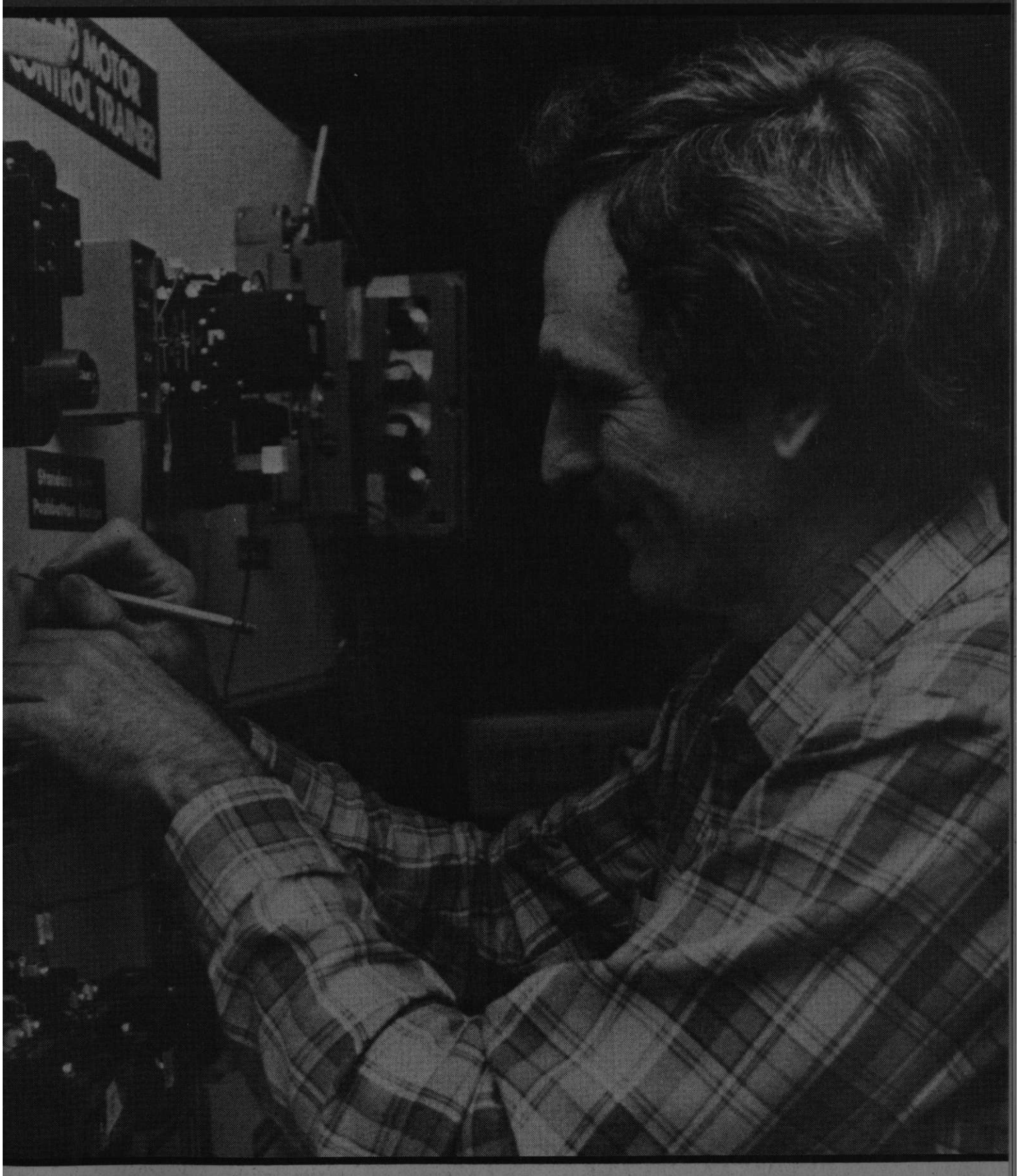
Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTIS-103 0266-103-01	Precision Measurements (1)			7:15-10:00 (CC)		138*
CTIS-104-109 0266-104-41 -42 -43 -44	Advanced Machine Shop (1)	M 6:30-9:30pm (CC)+ T 6:30-9:30pm (CC)+ W 6:30-9:30pm (CC)+ R 6:30-9:30pm (CC>+ T 9:00am-12:00 noon (CC)+	Same as Fall Quarter	Same as Fall Quarter		138*
CTIS-111-119 0266-111-41 -42 -43 -44 -46	Instrument Making and Experimental Work (1)	M 6:30-9:30pm (CC) T 6:30-9:30pm (CC) W 6:30-9:30pm (CC) R 6:30-9:30 pm (CC) T 9:00am-12 noon (CC)+	Same as Fall Quarter	Same as Fall Quarter		138*
CTIS-121-129 0266-121-41 -42 -43 -44 -46	Tool and Die Making (1)	M 6:30-9:30pm (CC) T 6:30-9:30pm (CC) W 6:30-9:30pm (CC) R 6:30-9:30pm (CC) T 9:00am-12 noon (CC)+	Same as Fall Quarter	Same as Fall Quarter		138*
CTIS-131,133 0266-131-41 133-41	Hand Screw Machine Operation (1)	M 6:30-9:30 (CC)	Same as Fall Quarter	Same as Fall Quarter		138*
CTIS-134, 139 0266-134-41 139-41	Automatic Screw Machine (1)	M 6:30 - 9:30 (CC)	Same as Fall Quarter	Same as Fall Quarter		138*
CT1S-141, 146 0266-141-41 146-41	Turret Lathe Setup and Operation I & 11(1)	M 6:30 - 9:30 (CC)	Same as Fall Quarter	Same as Fail Quarter		138*
CTIS-151 0266-151-01 -02 -03	Shop Math (2)	M 6:20-8:20 (CC) W 6:20-8:20 (CC) R 6:20-8:20 (CC)				196
CTIS-152 0266-152-01 -02 -03	Shop Math (2)		Same as CTIS-151 Fall Quarter			196
CTIS-153 0266-153-01 -02 -03	Shop Math (2)			Same asCTIS-151 Fall Quarter		196
CTIS-154 0266-154-01 -02 -03 -06	Shop Trigonometry (2)	M 6:20-8:20pm (CC) T 6:20-8:20pm (CC) R 6:20-8:20pm (CC) R 9:00am-11:00am (CC)+				196
CTIS-155 0266-155-01 -02 -03 -06	Shop Trigonometry (2)		Same as CTIS-154 Fall Quarter			196
CTIS-156 0266-156-01 -02 -03 -06	Shop Trigonometry (2)			Same as CTIS-154 Fall Quarter		196
CTIS-157 0266-157-01 -06	Shop Mathematics (3)		W 6:20-9:20 (CC) W 9:00 am -12 noon (CC)+			294

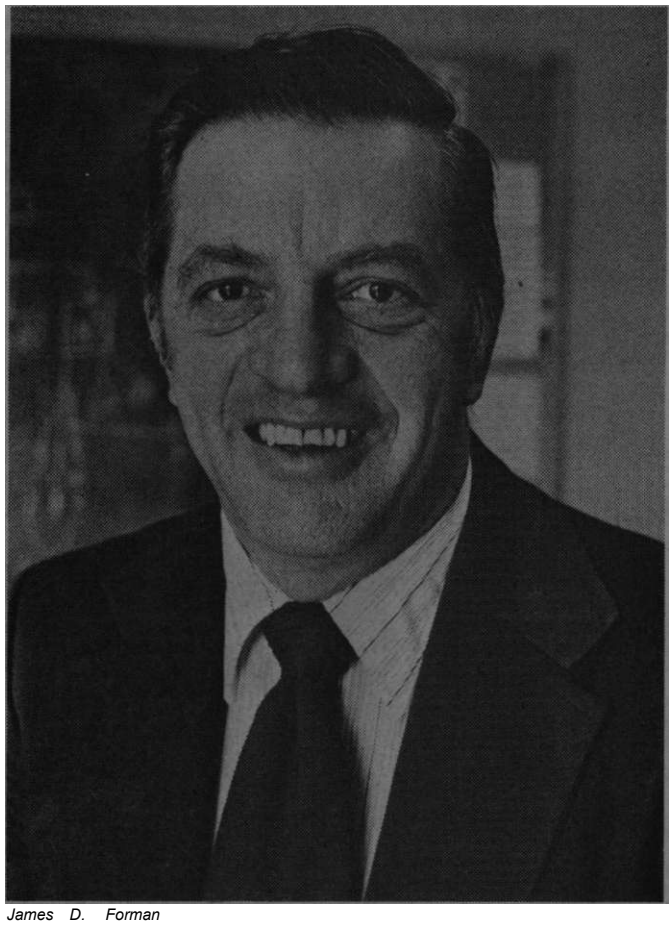
+Courses to accommodate shiftwork schedules. *May attend either AM or PM class each week,*
**includes lab tee*

Course and Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer	Tuition
CTIS-158 0266-158-01 -06	Shop Mathematics (3)			W 6:20 - 9:20 (CC) W 9:00 am-12 noon (CC)+		294
CTIS-161 0266-161-41 -42	Heat Treatment (2)	M 6:30-9:30 (CC) R 6:30-9:30 (CC)	T 6:30- 9:30 (CC)			236
CTIS-162 0266-162-41 -42	Heat Treatment (2)		M 6:30-9:30 (CC) R 6:30-9:30 (CC)	T 6:30-9:30 (CC)		236
CTIS-201, 206 0266-201-01 0266-206-41 201-02 206-42 201-03 206-43 201-04 206-44 201-06 206-46	Machine Shop** Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1)	M 6:00 - 7:00 (CC) M 7:00-10:00 (CC) T 6:00 - 7:00 (CC) T 7:00 -10:00 (CC) W 6:00-7:00 (CC) W 7:00-10:00 (CC) R 6:00 - 7:00 (CC) R 7:00-10:00 (CC) T 8:00-9:00am (CC)+ T 9:00 am -12 noon (CC)+	F 6:00 - 7:00 (CC) F 7:00-10:00 (CC)			98 138* 98 138* 98 138*
CTIS-202, 207 0266-202-01 0266-207-41 202-02 207-42 202-03 207-43 202-04 207-44 202-06 207-46	Machine Shop** Lecture (1) Lab (1) Lecture (1) Lab(1) Lecture(1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1)		Same as CTIS-201 Fall Quarter (CC)	F 6:00-7:00 (CC) F 7:00-10:00 (CC)		98 138* 98 138* 98 138*
CTIS-203, 208 0266-203-01 0266-208-41 203-02 208-42 203-03 208-43 203-04 208-44 203-06 208-46	Machine Shop** Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab (1) Lecture (1) Lab(1)			Same as CTIS-201 Fall Quarter (CC)	F 6:00 - 7:00 (CC) F 7:00-10:00 (CC)	98 138* 98 138* 98 138*
CTIS-204, 209 0266-204-01 0266-209-41	Machine Shop** Lecture (3) Lab (3)	MTR 6:00-7:00 (CC) MTR 7:00 -10:00 (CC)	MTR 6:00-7:00 (CC) MTR 7:00 -10:00 (CC)	MTR 6:00-7:00 (CC) MTR 7:00 -10:00 (CC)	MTR 6:00-7:00 (CC) MTR 7:00-10:00 (CC)	294 414
CTIS-281 0266-281-41	Numerical Control Systems (3) (Mill)	M 7:15-9:45	W 7:15 -9:45	M 7:15-9:45		334*
CTIS-282 0266-282-41	Numerical Control Systems (3) (Lathe)	W 7:15-9:45	M 7:15-9:45	W 7:15-9:45		334*
CTIS-283 0266-283-41	Computer Programming for Numerical Control (3)	R 7:15-9:45	R 7:15-9:45	R 7:15-9:45		334*

+Courses to *accommodate shiftwork schedules. May attend either AM or PM class each week*
**includes lab tee*
***Student must register tor both lecture and lab.*

School of Applied Industrial Studies





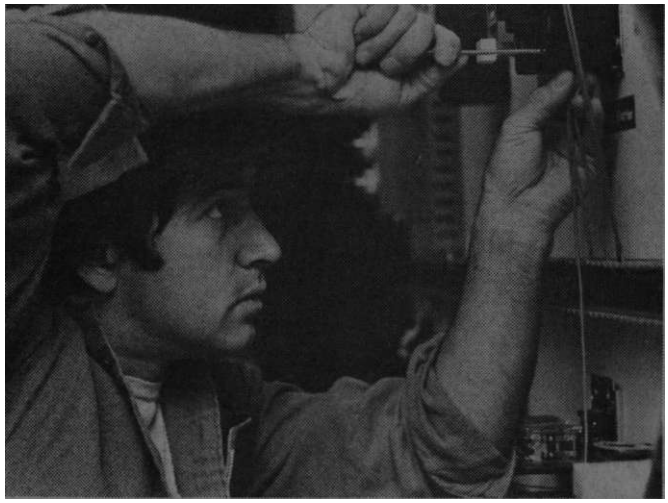
James D. Forman

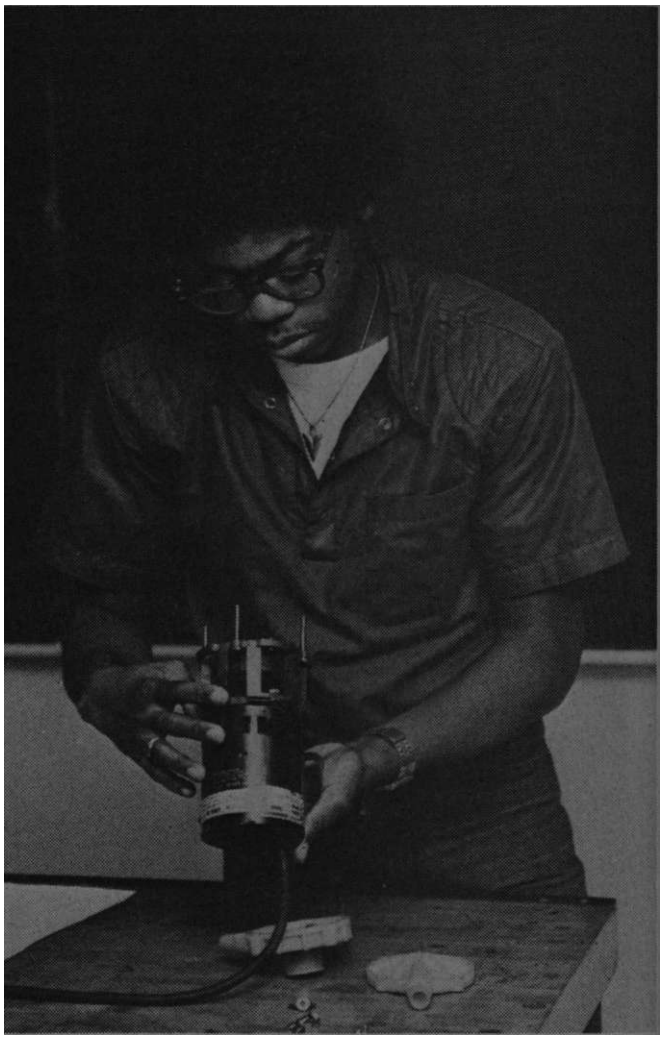
James D. Forman, Director

The School of Applied Industrial Studies (SAIS) was initiated in the late 1970's to help meet the need for skilled workers for Rochester industry. The School of Applied Industrial Studies is a reaffirmation of some of the original concepts of RIT.

RITs roots go back to the Rochester Anthenaeum which was established in 1829 "for the purpose of cultivating and promoting literature, science, and the arts." In 1885, the growing industries of Rochester declared their future independence of European trained machine designers, toolmakers, and draftsmen, by setting up a Mechanics Institute to provide technical training for men and women. In 1891 the Anthenaeum and Mechanics Institute of Technology merged with the stated goal of preparing students for "the making of a living and the living of a life."

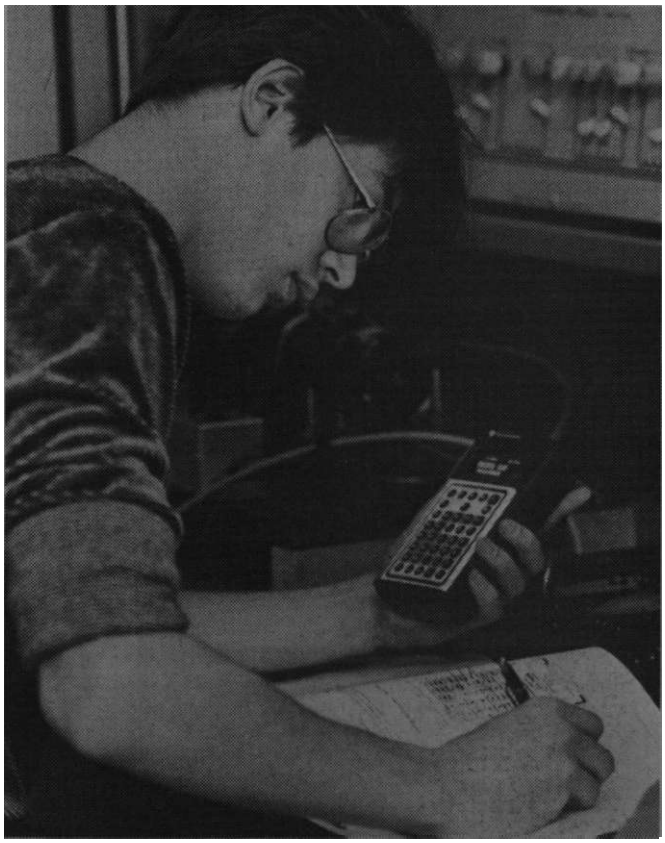
The School has been established at RITs City Center Campus in newly renovated classroom, laboratory and office facilities. Extensive modern equipment and facilities are available to carry out this historic mission of RIT.





Programs
The School of Applied Industrial Studies offers one-year (12 month) programs leading to a diploma of the Institute in the following fields:
1. Drafting Technology
2. Electromechanical Technology
3. Machine Tool Technology
4. Packaging Machinery Mechanics

The SAIS programs are designed especially to prepare persons for entry level positions in a wide range of industrial organizations.



Admission Requirements
The School of Applied Industrial Studies offers admission to high school graduates (or equivalent) who have an interest and an aptitude for the specific technical field. Applicants are accepted on a continuous basis through the year for admission to any one of the three entry dates. Fall (September), Winter (December), Spring (March).

Persons wishing to enroll in specific courses or who wish to pursue the program on a part-time basis must meet the general program requirements and (if appropriate) any course prerequisites.

Admission information and applications should be obtained directly from the

School of Applied Industrial Studies
33 North Fitzhugh Street
Rochester, NY 14614

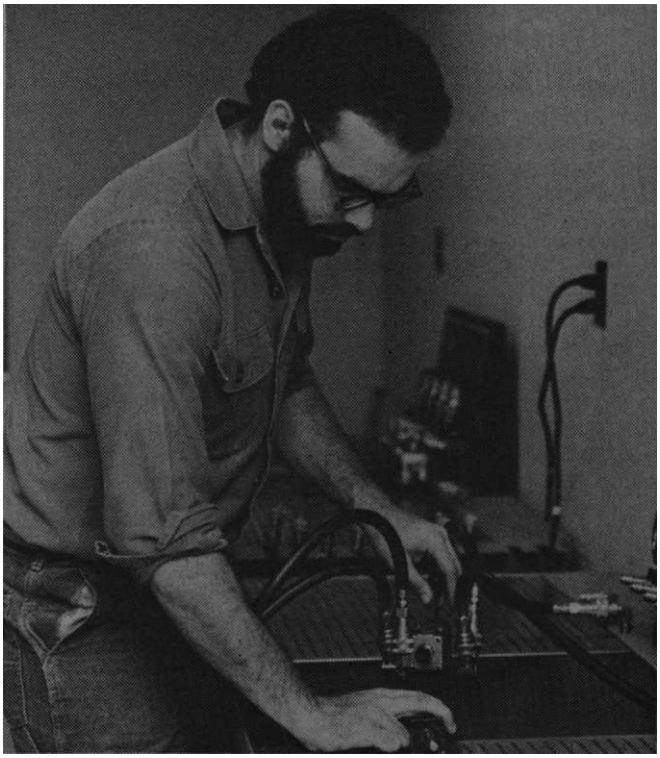
716/262-2736

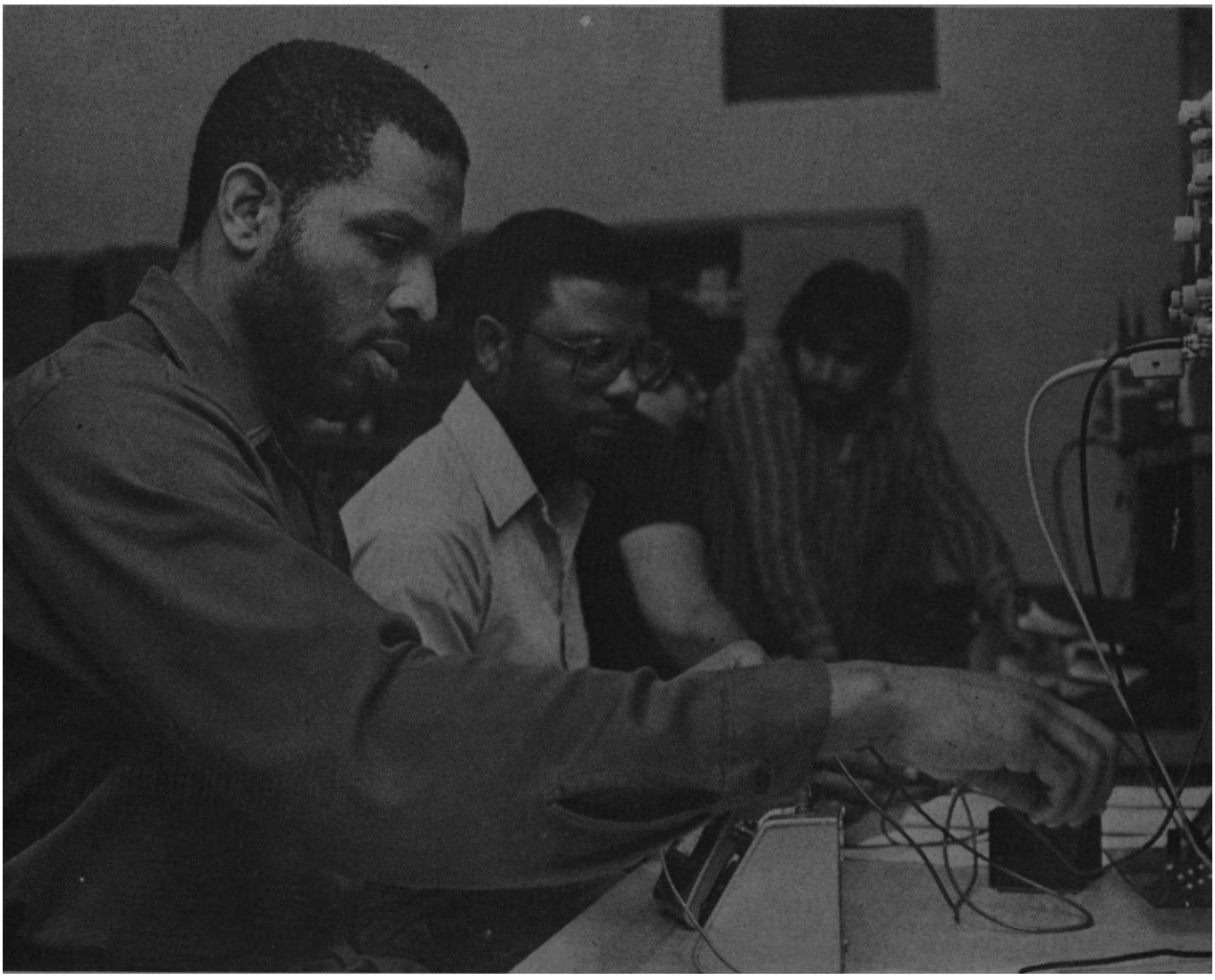
Transfer Credit
SAIS accepts credits from any accredited college or university for those courses which the transfer credit directly applies. To obtain credit formal application should be made at time of admission. A grade of C or better is required in the original course to be considered for transfer.

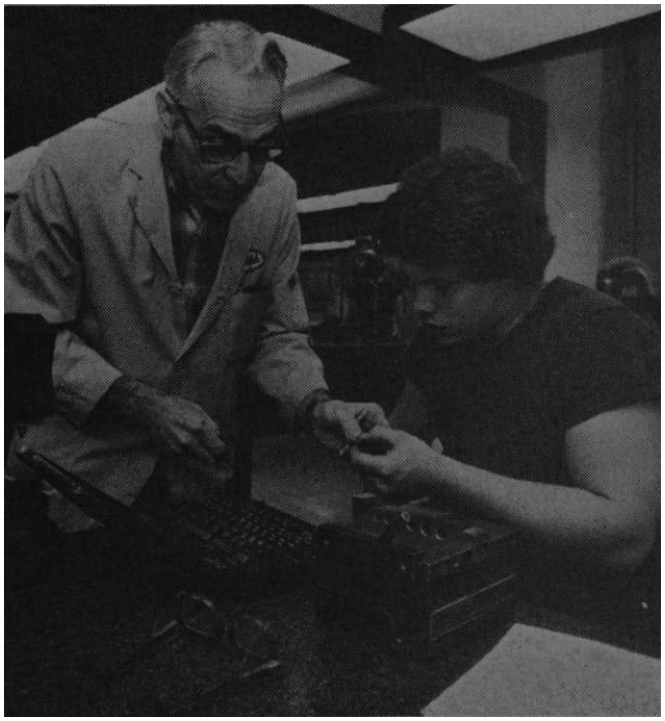
Financial Aid
Students applying to the School of Applied Industrial Studies should contact the RIT Office of Financial Aid as well as the SAIS Admissions Office regarding assistance. Beyond the financial aids generally available to all college students, SAIS offers scholarships both at admission and during the program for qualifying applicants or students.

Graduation Requirements
The minimum requirements for the Diploma of the Institute from the School of Applied Industrial Studies are
1. successful completion of the prescribed program including the mathematics and communications sequences required for the specific curriculum,
2. the minimum credit hours specified for each curriculum,
3. minimum cumulative quality point average of 2.0.

SAIS holds three graduations each year - at the conclusion of the Fall (November), Winter (February), and Summer (August) quarters.



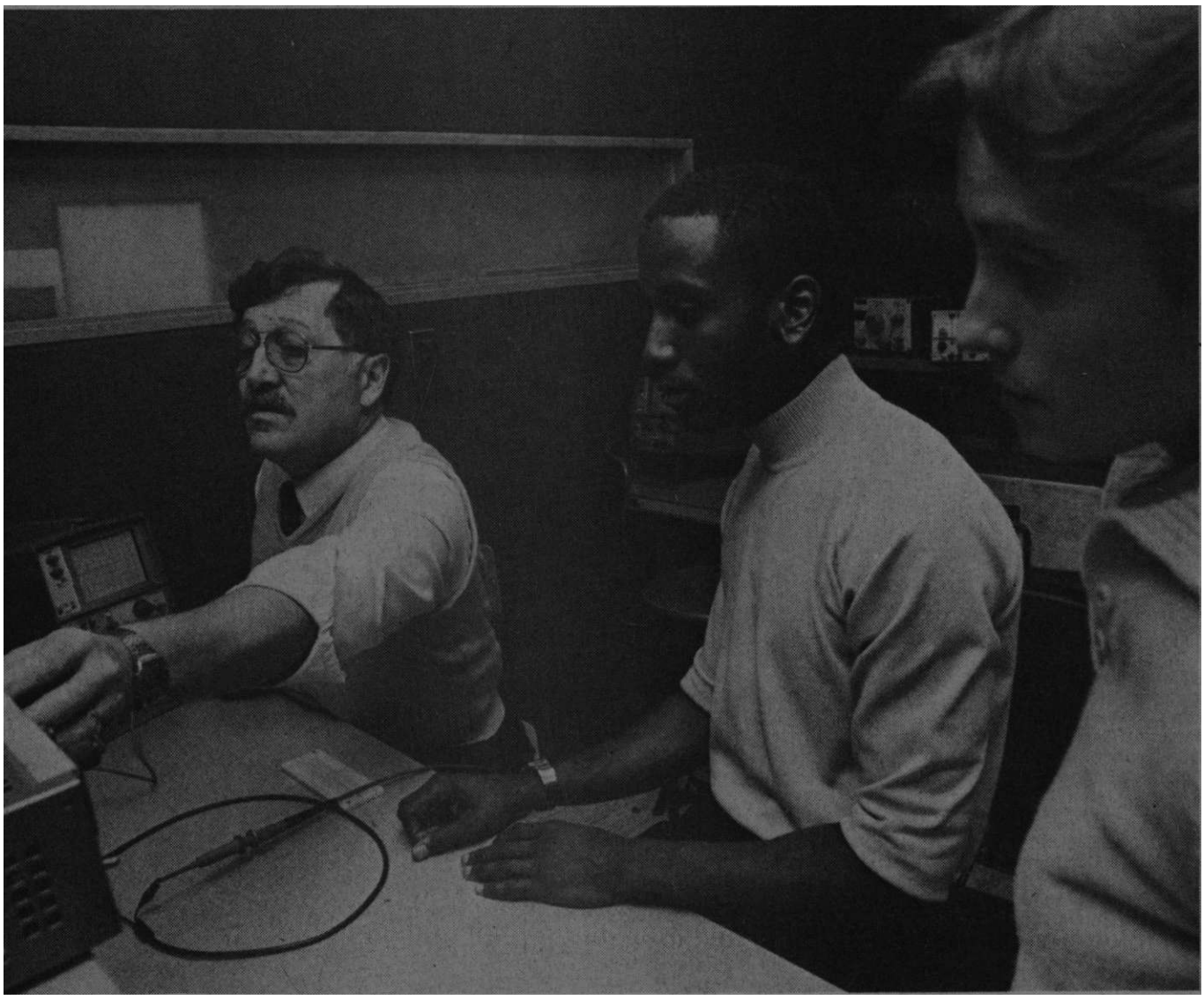




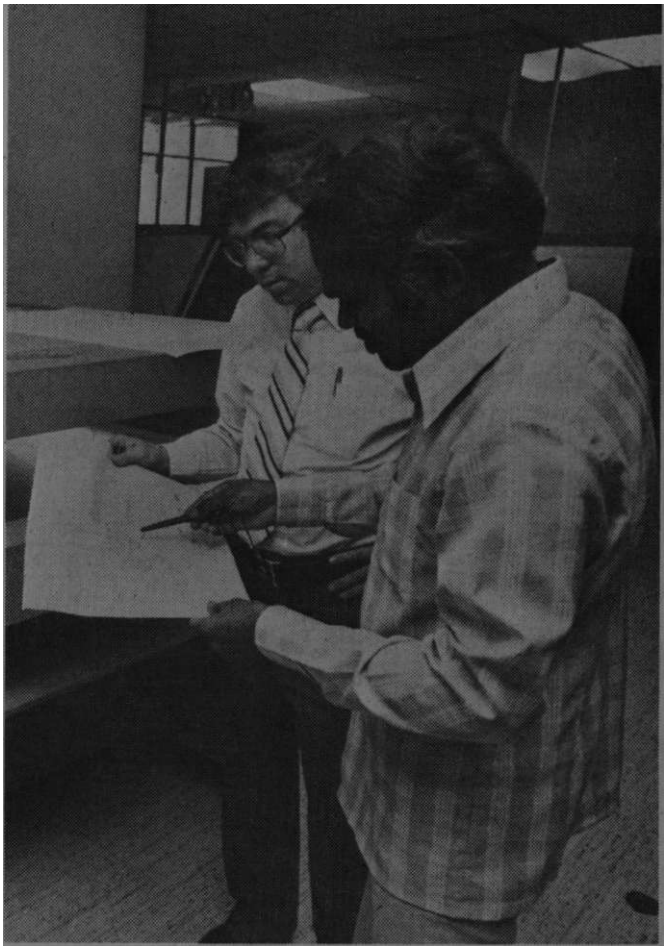
Job Placement

The School of Applied Industrial Studies retains a full-time staff to assist with the total activity of job placement. The School has contacts with hundreds of industries who commonly hire the graduates and every effort is made to provide the graduating SAIS student with as many opportunities as may be available.

A continuous effort is made to develop new and wide ranging job opportunities for SAIS graduates in all of the program fields.



Drafting Technology



Diploma Program
Elizabeth Paciorek, Program Chairperson.

The drafting field has undergone many significant changes in recent years. Today not only does the drafter require a sound knowledge of drafting fundamentals but as well must be able to quickly specialize in a particular area of drafting. The advent of computer assisted drafting has added another exciting dimension to this important technical field.

Students in the SAIS drafting program receive a strong foundation of basic drafting skills (pencil and paper) plus exposure and experience on the latest drafting tools and techniques including computer assisted drafting. Formal course work in computing and extensive activity utilizing the School's CAD/CAM (Computer Assisted Design/ Computer Assisted Manufacturing) facilities is required of all students enrolled in this program.

Graduates enter such positions as drafter, drafting apprentice; CAD/CAM operator, with a wide range of companies, both large and small. Opportunities are excellent for future education and growth for those who enter these job fields.

Program Graduation Requirements
Successful completion of:

a. a minimum mathematics sequence of
   Industrial Math CAIG 106
   Algebra & Trigonometry II CAIG 207
   Algebra & Trigonometry III CAIG 208
b. 11 quarter credit in a Communications sequence through
   Technical Communications CAIG 206
c. a minimum of 69 quarter credit hours earned
d. other general requirements of the School (see page 3)

Drafting Technology

Course Requirements		Qtr. Cr.
Unit I (1st quarter)		
Basic Machine Shop I	CAIM-121	2
Manufacturing Processes	CAID-210	5
Technical Drawing I	CAID-238	5
Communication Skills	CAIG-104	2
Industrial Mathematics	CAIG-106	3
		17
Unit II (2nd quarter)		
Basic Machine Shop II	CAIM-122	2
Drafting Mechanics I	CAID-215	4
Drafting Mechanics Lab	CAID-225	1
Technical Drawing II	CAID-239	5
Communicating on the Job	CAIG-105	3
Algebra & Trigonometry I	CAIG-107	3
		18
Unit III (3rd quarter)		
Materials Selection	CAID-211	2
Drafting Mechanics II	CAID-217	3
Technical Drawing III	CAID-240	5
Composition-Written & Oral	CAIG-204	4
Algebra & Trigonometry II	CAIG-207	4
		18
Unit IV (4th quarter)		
Introduction to Computers	CAID-208	3
Drafting Mechanics III	CAID-219	2
Technical Drawing IV	CAID-241	5
Technical Communications	CAIG-206	4
Algebra & Trigonometry III	CAIG-208	4

Drafting Technology Course Descriptions

CAID-110 **Principles of Blueprint Reading**
Registration #0271-110
To aid the student in reading, visualizing and interpreting basic blueprints in the industrial environment.

Class: 3
Credit: 3

CAID-238 **Technical Drawing I**
Registration #0271-238
Technical Drawing I will provide students with an understanding Of the use(s) of Technical Drawings and Common Drafting Practices. The course will include lettering, instrument use, geometric construction, definition of lines, multi-view projection theory, dimensioning practices, and related information. It will provide drafting methodologies for students, which will assist them in attaining proficiency skill levels in each area listed above.

Class: 2, Lab: 8
Credit: 5

CAID-239 **Technical Drawing II**
Registration #0271-239
To provide the necessary technical knowledge and informed judgement to analyze and prepare accurate mechanical drawings from verbal instructions and engineers' sketches. Accuracy and neatness are stressed. Proficiency is developed in both coordinate and geometric dimensioning and tolerancing. Four significant drawing projects are accomplished, as well as one or more minor projects. (CAID-238.)

Class: 2, Lab: 8
Credit: 5

CAID-147 **Blueprint Reading (EMT/PKG)**
Registration #0271-147
To develop an understanding of how and why engineering drawings exist. Drawings are sketched and interpreted. Mechanical, electrical and hydraulics are studied and includes working with tolerances and geometric tolerancing.

Class: 1, Lab: 2
Credit: 2

CAID-208 **Introduction to Computers**
Registration #0271-208
To teach each student to be proficient with computers, to understand terminology, functions and commands. To be able to program low and high resolution graphics, and produce eight programs.

Class/Lab: 5
Credit: 3

CAID-210 **Manufacturing Processes**
Registration #0271-210
Manufacturing Processes will acquaint students with methods of fabrication which are used to convert ideas into useable products and/or machines.

Class: 5
Credit: 5

CAID-211 **Materials Selection**
Registration #0271-211
To make the student aware of different materials and conditions of materials. To study the atomic, chemical and mechanical composition of materials, including the testing of materials.

Class: 3
Credit: 2

CAID-215 **Drafting Mechanics I**
Registration #0271-215
To give the student some tools to measure and qualify the physical world about them. To provide the student an awareness of what is happening around him, as it relates to the physical laws learned in class. (CAIG-106)
Class: 4
Credit: 4

CAID-216 **Engineering Drawing for Machinists**
Registration #0271-216
This course is intended to aid the student in understanding machine shop drawings. After completing this course, the student will have proper knowledge of Geometric Construction, Sketching, Multiview Projection, Sectional Views, Auxiliary Views, and the use of Drafting Instruments and Equipment. (CAID-110)

Class: 3
Credit: 3

CAID-217 **Drafting Mechanics II**
Registration #0271-217
To provide a basic understanding of the operation of the different components in a mechanical system. Also the rational understanding to choose specific components for specific application. (CAID-215, CAIG-107.)

Class: 5
Credit: 3

CAID-219 **Drafting Mechanics III**
Registration #0271-219
To provide a basic working understanding of electricity, current flow and power. (CAID-217, CAIG-207.)

Class: 3
Credit: 2

CAID-225 **Drafting Mechanics Lab**
Registration #0271-225
To provide the student with hands-on experience with demonstrations of the laws of physics and in the collection of data as a result of these experiments.

Lab. 3
Credit: 1

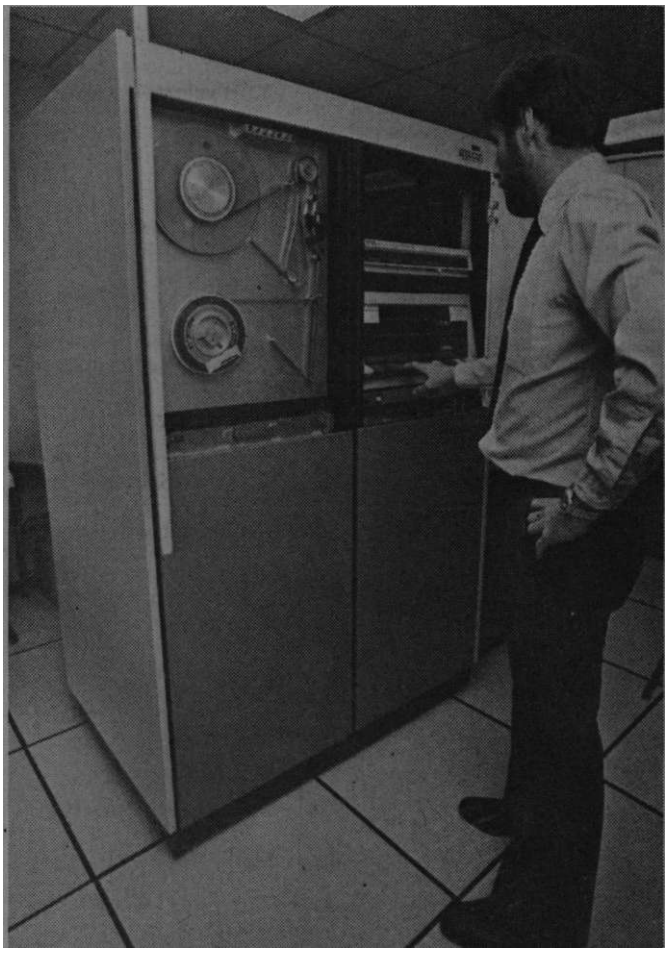
CAID-240 **Technical Drawing III**
Registration #0271-240
To enable the student to learn an engineer's design layout. The student individually and in a team setting will drawa complete set of working detail drawings, including a listing of manufacturing methods, materials, specifications, heat treatment and parts lists. (CAID-239.)

Class: 2, Lab: 8
Credit: 5

CAID-241 **Technical Drawing IV**
Registration #0271-241
To give each student a greater understanding of mechanical drawing working from layouts and direct measurement of parts. Also to teach the basic skills and knowledge of symbols used in hydraulic and electronic schematics. The student will also make a portfolio. The student will understand the "thinking" in a CAD System and know how to operate the CAD System. (CAID-240, CAIG-207.)

Class: 2, Lab: 8
Credit: 5

Electromechanical Technology



Diploma Program
Robert Klafehn, Program Chairman

The Electromechanical Technology program is designed to prepare persons to enter the field of automated equipment maintenance. It is anticipated that this field will be one of the fastest growing areas of need for qualified personnel in the coming years.

Students enrolled in the Electromechanical program study electricity and electronics, hydraulics, pneumatics, and mechanisms. These courses are needed for people in the automated equipment maintenance field to enable them to apply this knowledge and background in such things as the maintenance of computers, assembly equipment, copying machines, robots, and a host of other automated or computerized devices.

SAIS facilities provide extensive experience in ail of the areas mentioned for students enrolled in this program. Due to the nature of this technology, a good proficiency in mathematics is required.

Program Graduation Requirements
Beyond those listed as the general graduation requirements, the following also apply:

a. a minimum mathematics sequence to include at least
Algebra & Trigonometry II CAIG 207
Algebra & Trigonometry ill CAIG 208
b. 11 quarter credits in a communications sequence through
Technical Communications CAIG 206
c. a minimum of 67 quarter credit hours earned

Electromechanical Technology

Course Requirements		Qtr. Cr.
Unit I (1st quarter)		
Machine Shop	CAIM-123	2
Blueprint Reading	CAID-147	2
Physical Principles I	CAIE-101	2
Basic Circuits	CAIE-121	3
Electromechanical Concepts I	CAIE-201	3
Communication Skills	CAIG-104	2
Algebra & Trigonometry I	CAIG-107	3
		17
Unit II (2nd quarter)		
Physical Principles II	CAIE-102	2
Electromechanical Concepts II	CAIE-202	4
Electricity/Electronics I	CAIE-205	3
Fabrication	CAIE-233	1
Communicating on the Job	CAIG-105	3
Algebra & Trigonometry II *	CAIG-207	4
		17
Unit III (3rd quarter)		
Electromechanical Concepts III	CAIE-211	4
Electricity/Electronics II	CAIE-221	4
Welding Fabrication	CAIE-236	1
Composition-Written & Oral	CAIG-204	4
Algebra & Trigonometry III	CAIG-208	4
		17
Unit IV (4th quarter)		
Electromechanical Concepts IV	CAIE-212	4
Systems Troubleshooting	CAIE-231	3
Special Studies	CAIE-298	1-6
Technical Communications	CAIG-206	4
		12-17

Electromechanical Technology Course Descriptions

CAIE-101 **Physical Principles I**
Registration #0272-101
Investigates the basic structure of matter; especially the electrical aspects of sub-atomic particles, and the forces which relate them. Electrostatics and the dynamics of current flow will be examined. The second part of the course will deal with an examination of mechanical forces, their laws and mechanisms. (High School Trig.)

Class: 1.5
Lab: 2.5
Credit: 2

CAIE-102 **Physical Principles II**
Registration #0272-102
Investigates properties of gasses and noncompressible fluids. Solid forms of matter will be studied. Elasticity, stress and strain, shear, and determination will be considered. Harmonic motion and waves of all types will be studied and analyzed. Several forms of electromagnetic radiation will be studied. (CAIE-101)

Class: 1.5
Lab: 2.5
Credit: 2

CAIE-201 **Electromechanical Concepts I**
Registration #0272-201
The student will learn, through hands on experience and study, the following areas: gears, chain drives, belt drives, pulleys, linkages, universals, differentials, bearings, cams, lubrication and friction, speed changes and braking. (High School Trig.)

Class: 3
Lab: 3.5
Credit: 3

CAIE-202 **Electromechanical Concepts II**
Registration #0272-202
Basics of fluid mechanics. Areas of study are pressure, viscosity, turbulance, flow, thermal properties, and displacement. Hydraulic components such as pumps, actuators, valves, accumulators, lines, directional controls, sealing devices, servomechanisms, hydraulic fluids and fluid containers will be studied. (CAIE-201)

Class: 3.5
Lab: 4
Credit: 4

CAIE-121 **Basic Circuits**
Registration #0272-121
To introduce the electrical circuit, basic principles of circuit action, and experience with circuit components and devices. Proper use of instruments needed to power and measure electrical circuit values will be taught. Analysis of series, parallel, and complex D.C. circuits will be conducted. Comparisons and contrast between electrical circuits and other types of circuits encountered by the electromechanical technician, e.g. magnetic, hydraulic, mechanical will be pointed out. (High School Trig.)

Class: 3
Lab: 2.5
Credit: 3

CAIE-205 **Electricity/Electronics I**
Registration #0272-205
Introduce the concept of alternating current, study the generation of A.C., analyze the action of A.C. resistive and reactive circuits, to properly use equipment and instruments appropriate to the analysis and diagnosis of A.C. circuits, values peculiar to A.C. circuits will be studied, (i.e.: reactance, impedance, phase angle, etc.) Both lab and mathematical techniques requisite to the analysis of A.C. will be taught. (CAIE-121)

Class: 3
Lab: 2.5
Credit: 3

CAIE-236 **Welding Fabrication**
Registration #0272-236
Topics covered include: PCB fabrication and repair, soldering, welding, mechanical component repair, industrial pipe fitting, conduit layout, cutting and bending. Through use of lab sessions and on-site observations the student develops a working knowledge of these electromechanical areas.

Lecture/Lab. 2.5
Credit: 1

CAIE-211 **Electromechanical Concepts III**
Registration #0272-211
Characteristics of single and polyphase transformers, D.C. and H.C. generators, D.C. and A.C. motors. Practice will be given in the construction, analysis and diagnosis of a variety of electrical control methods. Experience in programming and field wiring static control system and programmable controllers will be given. (CAIE-202).

Class: 4.5
Lec./Dem.: 2
Lab: 3.6
Credit: 4

CAIE-212 **Electromechanical Concepts IV**
Registration #0272-212
Operation of input and output transducers (mechanical, fluid-mechanical, acoustic, thermal, optical, magnetic, chemical) and the interface and feedback systems they function within. She/he will be able to identify normal and abnormal operation of open and closed loop systems utilizing these transducers. (CAIE-211).

Class/Dem: 3
Lab: 4
Credit: 4

CAIE-221 **Electricity/Electronics II**
Registration #0272-221
Operation of basic electronic circuits (rectifiers, amplifiers, oscillators, switching, wave shaping, timing) utilizing semi-conductors. She/he will add, subtract, divide and multiply binary numbers and be able to construct logic circuits to perform and operations. (CAIE-205).

Class/Dem.: 4.5
Lab: 4
Credit: 4

CAIE-231 **Systems Troubleshooting**
Registration #0272-231
Experiences in diagnosing and correcting faults introduced into electromechanical systems. Emphasis will be placed upon the development of a systematic approach to troubleshooting. Students will be exposed to such items as logs, machine history, flow charts, and other reports generated by maintenance systems. (Units I, II, III).

Class: 1.5
Lab: 4
Credit: 3

CAIE-233 **Fabrication**
Registration #0272-233
To familiarize the student with layout and processing equipment in the fabrication of sheet metal.

Lecture/Lab. 2.5
Credit: 1

CAIE-298 **Special Studies**
Registration #0272-298
To exercise the students knowledge of electromechanical technology. Time and opportunity are given the student to design, fabricate and test an electromechanical device. The promotion of initiative, creativity and independent study will be fostered. The student will be expected to conceive and execute the project with minimal staff supervision. (Units I, II, III).

Lab: 17.5
Credit: 1 - 6

Machine Tool Technology

Diploma Program
Orville Adler, Program Chairman

Machine Tool Technology is the "flagship" program of the School of Applied Industrial Studies. Historic records indicate a perennial need for skilled personnel in the "machine trades" in both the Rochester area and across the nation. The need for persons with machining skills will no doubt remain paramount in the traditional industrial organizations. Beyond the need for the generalist who has the background and education to function in a variety of roles in this field, the need for persons with special attributes to enter apprenticeships in tool and die making, mold making, and instrument making will continue unabated.

As the technology advances in the mass production field, graduates are called upon in areas requiring computer assisted manufacturing and other state-of-the-art manufacturing techniques including electric discharge machining (EDM), numerical control (N/C) and laser machining. Students enrolled in the Machine Tool Technology program will be exposed to all of these facits of modern manufacturing with opportunities for specialization in any one of the aforementioned techniques.

SAIS boasts one of the most modern and extensive facilties for preparation in the Machine Tool field. An intensive program of instruction provides graduates with a variety of opportunities for employment and growth in one of the most traditional and stable areas of employment in U.S. industry.

Graduation Requirements
Beyond those listed as general graduation requirements, the following also apply:

a. a minimum mathematics sequence to include at least
   Industrial Math CAIG 106
   Algebra & Trigonometry II CAIG 207
   Algebra & Trigonometry III CAIG 208
b. 11 quarter credits in a Communications sequence through
   Technical Communications CAIG 206
c. a minimum of 65 quarter credits earned.

Machine Tool Technology

Course Requirements		Qtr. Cr.
Unit I (1st quarter)		
Industrial Machine Shop I	CAIM-120	4
Materials & Methods	CAIM-210	3
Principles of Blueprint Reading	CAID-110	3
Communication Skills	CAIG-104	2
Industrial Mathematics	CAIG-106	3
		15
Unit II (2nd quarter)		
Production Automated Machining	CAIM-212	3
Industrial Machine Shop II	CAIM-231	4
Engineering Drawing for Machinists	CAID-216	3
Communicating on the Job	CAIG-105	3
Algebra & Trigonometry I	CAIG-107	3
		16
Unit III (3rd quarter)		
Numerical Control Programming & Machining	CAIM-214	3
Tool & Gage Making	CAIM-218	3
Intermediate Machine Tool Technology	CAIM-232	4
Composition-Written & Oral	CAIG-204	4
Algebra & Trigonometry II	CAIG-207	4
		18
Unit IV (4th quarter)		
Die Making	CAIM-220	3
Metallurgy & Heat Treatment	CAIM-222	3
Advanced Machine Tool Technology	CAIM-233	4
Technical Communications	CAIG-206	4
Algebra & Trigonometry III	CAIG-208	4
		18

Machine Tool Course Descriptions

CAIM-120 **Industrial Machine Shop I**
Registration #0270-120
A beginning industrial machine shop course introducing students to the basic machines in industry today, and the techniques used in operating them. The care and skillful use of precision measuring and gauging equipment. Introduction to metal cutting machines such as lathes, horizontal and vertical mills, bandsaws, and drill presses. Also covered are the basic skills in layout and bench work.

Lab 15, Credit 4

CAIM-210 **Materials and Methods**
Registration #0270-210
Machine shop theory and techniques involving the basic machine tools, the practical application of cutting material, tool geometry, measuring and inspection, turning and milling, threads and threading, drilling and grinding work. Introduction of plastic and powder metal, its properties and processing method.

Class 3, Credit 3

CAIM-212 **Production Automated Machining**
Registration #0270-212
Emphasis on production machines, such as, turret lathes, screw machines, centerless grinders, multiple drills, numerical control machines and punch presses. Explanation and demonstration for the most economical method for machining, such as, flowsheets, time study and tooling for production.

Class 3, Credit 3

CAIM-121 **Basic Machine Shop I (DT)**
Registration #0270-121
This course is intended to introduce the student with hands on experience performing such tasks as: tool grinding, thread cutting, drilling layout and bench work. The techniques of precision measurement is covered to a great extent. Safety and neatness of projects is covered throughout the quarter.

Lab: 5 hours per week
Credits: 2

CAIM-122 **Basic Machine Shop II (DT)**
Registration #0270-122
In this course the student will be introduced to more advanced type of machining, such as, horizontal mills, precision grinding, layout, drilling and tapping, and additional bench work projects. Safety and neatness of work are stressed throughout the quarter (0270-121 or equivalent)

Lab: 5 hours per week
Credits: 2

CAIM-123 **Machine Shop (EMT)**
Registration #0270-123
This course is designed to introduce the student to hands on experience. Explanation and techniques are demonstrated to the student in precision measurement, tool grinding, engine lathe, drill press, layout and sawing. Safety and neatness of work is stressed throughout the quarter.

Lab: 5 hours per week
Credits: 2

CAIM-214 **Numerical Control Programming**
Registration #0270-214 **and Machining**
The study of basic concepts for manual programming for numerical control equipment. Techniques of point to point and continuous path programming, linear and circular interpolation, looping and macros, and special "canned Cycles" are introduced and used.

Peripheral equipment such as CRTs, plotters, printers, tape punch and floppy disc are used as input/output devices, and will be demonstrated and used throughout the course. (CAIM-120 or equivalent, CAIG-107 or equivalent.)

Class 3, Credit 3

CAIM-218 **Tool and Gage Making**
Registration #0270-218
This course offers the student a basic knowledge of jigs and fixtures. Studies of the basic principles and construction of work holding devices: clamps, locators, supports and tool assemblies. Design consideration: economics, comparative cost analysis and practical application of jigs and fixtures. The actual development of a workable jig and fixture design. (0271-110, 0271-120.)

Class 3, Credit 3

CAIM-220 **Diemaking**
Registration #0270-220
Introduction to the manufacturing process of diemaking and related to the production process of stamping sheet and plate materials primarily but not necessarily metals.

Empirical (experience) and technical data is used to develop the details, techniques, and theories of cutting and forming processes of pressworking (stamping) dies.

Guidelines for the manufacture of die components, selection of proper die sets, and economical materials use, is maximized. (0271-110, 0270-231.)

Class 3, Credit 3

CAIM-222 **Metallurgy and Heat**
Registration #0270-222 **Treating**
An introductory course in physical and mechanical characteristics of metals and alloys, crystal structure. Heat treating of steels and the use of the iron-carbide equilibrium diagram, transpiration diagram, hardenability of tool steels and alloy steels.

Class 3, Lab 3, Credit 3

CAIM-231 **Industrial Machine Shop II**
Registration #0270-231
Extensive use and refinement of machine tools, such as, engine lathes, turret lathes, vertical mills, and surface grinders. Explanation and demonstrations on more difficult problems, assemblies and temporary tooling. Emphasis on neatness, time, quality and accuracy are stressed. (0270-120, 0274-106 or equivalent.)

Lab 15, Credit 4

CAIM-232 **Intermediate Machine Tool**
Registration #0270-232 **Technology**
Advanced work on lathes, milling machines, surface and cylinderical grinders. Principles of cutting theory and basic cutter grinding are discussed and demonstrated. Introduction to theory and practices of electrical discharge machining (EDM) and numerical control (N/C) is given. EDM and N/C machines are demonstrated and used in the course. (0270-231.)

Lab 15, Credit 4

CAIM-233 **Advanced Machine Tool**
Registration #0270-233 **Technology**
Option to plan and manufacture precision assemblies of any of five (5) different dies; Compound, Progressive, Blank, Form, or Perforating.

Utilizing standard machining techniques, and/or digital readout, numerical control, or electrical discharge machining, machined components are heat treated, by students, using furnace, induction, and/or torch methods.

Surface, internal, or external grinding is then performed to achieve gage block tolerances of tenths (.0001) of a thousandth of an inch. All components are inspected for conformance by standard measuring devices, coordinate measuring machine and/or electronic or optical comparators. This data is documented on inspection format for quality. The precision die assemblies are modular, interchangeable and produced by different manufacturing processes. These produce a pressworked component to a part drawing. (0270-232 or equivalent, 0270-220 lecture to be taken at the same time.)

Lab: 15
Credits: 4

CAIM-235 **Practical Fabrication**
Registration #0270-235
Teaches proper use of tools, equipment and the fabrication of materials used for assembly. Discussions and demonstrations are given in layout thread cutting, boring, cutting of key ways and machining of sheet metal. (CAIM-0270-123 or equivalent)

Lab: 5 hours per week
Credits: 2

Packaging Machinery Mechanics

Diploma Program
Marc O'Connell, Program Chairman

The packaging industry involves a wide ranging field including foods, pharmaceuticals, general consumer goods, and a vast array of products which many people take for granted.

Packaging is not only important for the health and safety of consumers but as well provides for maximum convenience and/or availability to the general public.

Modern packaging techniques and processes account heavily toward our standard of living and in the case of the manufacturer may mean the difference between success and failure.

The key individual in the packaging process has been shown, over and over again, to be the person or persons who maintain and insure the proper packaging of a manufacturer's product.

The high speeds, computerized packaging line found today in successful industries rely heavily upon specially trained and skilled personnel to maintain production schedules and insurance of product quality.

The SAIS program provides instruction in electrical and electronic circuitry, hydraulics, pneumatics, computers and specialized packaging machinery, equipment and techniques which are in high demand.

Graduates of this program will find job opportunities across the nation in a wide variety of industries. Positions in packaging machinery mechanics demand excellent salaries commensurate with the serious obligations and responsibilities of the job.

Graduation Requirements
Beyond those listed as the general graduation requirements, the following also apply

a. a minimum mathematics sequence to include at least
   Algebra & Trigonometry II CAIG 207
   Algebra & Trigonometry III CAIG 208
b. 11 quarter credits in a communications sequence through
   Technical Communications CAIG 206
c. a minimum of 66 quarter credit hours earned.

Packaging Machinery Mechanics

Course Requirements		Qtr. Cr.
Unit I (1st quarter)		
Machine Shop	CAIM-123	2
Basic Circuits	CAIE-121	3
Electromechanical Concepts I	CAIE-201	3
Introduction to Packaging	CAIP-201	3
Communication Skills	CAIG-104	2
Algebra & Trigonometry I	CAIG-107	3
		16
Unit II (2nd quarter)		
Practical Fabrication	CAIM-235	2
Electromechanical Concepts	CAIE-202	4
Electricity/Electronics I	CAIE-205	3
Packaging Machinery Systems I	CAIP-206	2
Communicating on the Job	CAIG-105	3
Algebra & Trigonometry II	CAIG-207	4
		18
Unit III (3rd quarter)		
Electricity/Electronics II	CAIE-221	4
Welding Fabrication	CAIE-236	1
Packaging Machinery Systems II	CAIP-207	4
Composition-Written & Oral	CAIG-204	4
Algebra & Trigonometry III	CAIG-208	4
		17
Unit IV (4th quarter)		
Electromechanical Concepts III	CAIE-211	4
Packaging Machines & Related Equipment	CAIP-210	4
Packaging Machinery Troubleshooting & Repair	CAIP-215	4
Packaging Machinery Set-up & Operation	CAIP-230	2
Technical Communications	CAIG-206	4
		18

Packaging Mechanics Course Descriptions

CAIP-201 Introduction to Packaging
Registration #0273-201
Role of the packaging person, conduct responsibilities, safety, packaging materials.

Class: 4
Credit: 3

CAIP-206 Packaging Machinery Systems I
Registration #0273-206
Product Filling: Types and methods of container filling. Bottle closing; capping, sealing. Can closing; double seaming. (CAIP 0273-201 and 202.)

Class: 3
Lab.: 2
Credit: 2

CAIP-207 Packaging Machinery Systems - II
Registration #0273-207
Package labeling, coding, marking, imprinting, case packing, cartoning, wrapping, bundling, form fill sealing.

Class: 5
Lab.: 2
Credit: 4

CAIP-210 Packaging Machines and
Registration #0273-210 Related Equipment
Packaging line operations, handling of perishable products, refrigeration, pasteurization, support equipment.

Class: 5
Lab.: 2
Credit: 4

CAIP-215 Package Machinery Troubleshooting
Registration #0273-21S and Repair
Problems associated with packaging machinery, cause and correction. (0273-206 and 207.)

Class: 4
Lab.: 2
Credit: 4

CAIP-230 Packaging Machinery Set-up
Registration #0273-230 and Operation
Changeover procedures, adjustment, start-up, fine tuning.

Lab.: 6
Credit: 2

Mathematics Course Descriptions

CAIG-106 Industrial Mathematics
Registration #0274-106
Topics include fractions and decimals; measurement; introduction to algebra; ratio and proportion; speeds and feeds, tapers, pulleys and gears; introduction to geometry and trigonometry with applications to machine tool and drafting.

Required of all first quarter students in Machine Tool Technology and Drafting Technology programs.

Class: 3, Recitation 4.5
Credit: 3

CAIG-107 Algebra and Trigonometry I
Registration #0274-107
A concentrated review of elementary algebra and trigonometry. Topics include properties of real numbers; order of operations; operations with real numbers and polynomials; factoring and algebraic fractions; linear equations; graphing; exponents and radicals; quadratic equations; solution of right and oblique triangles with applications to numerical control and vectors.

Class: 3, Recitation 4.5
Credit: 3

CAIG-207, 208 Algebra and Trigonometry II, III
Registration #0274-207,208
A standard pre-calculus sequence

207: Topics include a review of the fundamentals of algebra; logarithms; graphs of trigonometric functions; graphs of y = a sin (bx + c) and y — a cos (bs + c); vectors; solution of linear, fractional, quadratic quadratic type and radical equations; relations, functions and transformations (CAIG-107 or equivalent).

208: Topics include quadratic functions and conic sections; logarithmic and exponential functions and equations; circular functions; trigonometric identities and equations; inverse trigonometric functions; complex numbers and DeMoivre's theorem. (CAIG-207 or equivalent).

Class: 4, Recitation 2
Credit: 4

Communication Course Descriptions

CAIG-104 Communication Skills I
Registration #0274-104
A review of basic skills in reading, writing, listening, speaking, study skills and time management.

Class 2, Recitation 1, Lab 1, Credit 2

CAIG-105 Communicating on the Job
Registration #0274-105
An application of communication skills to entry-level jobs. Includes writing business letters and memos, giving and following directions, filling out forms, practicing interpersonal communications in simulated job scenes. (CAIG-104).

Class 3, Recitation 1.5, Credit 3

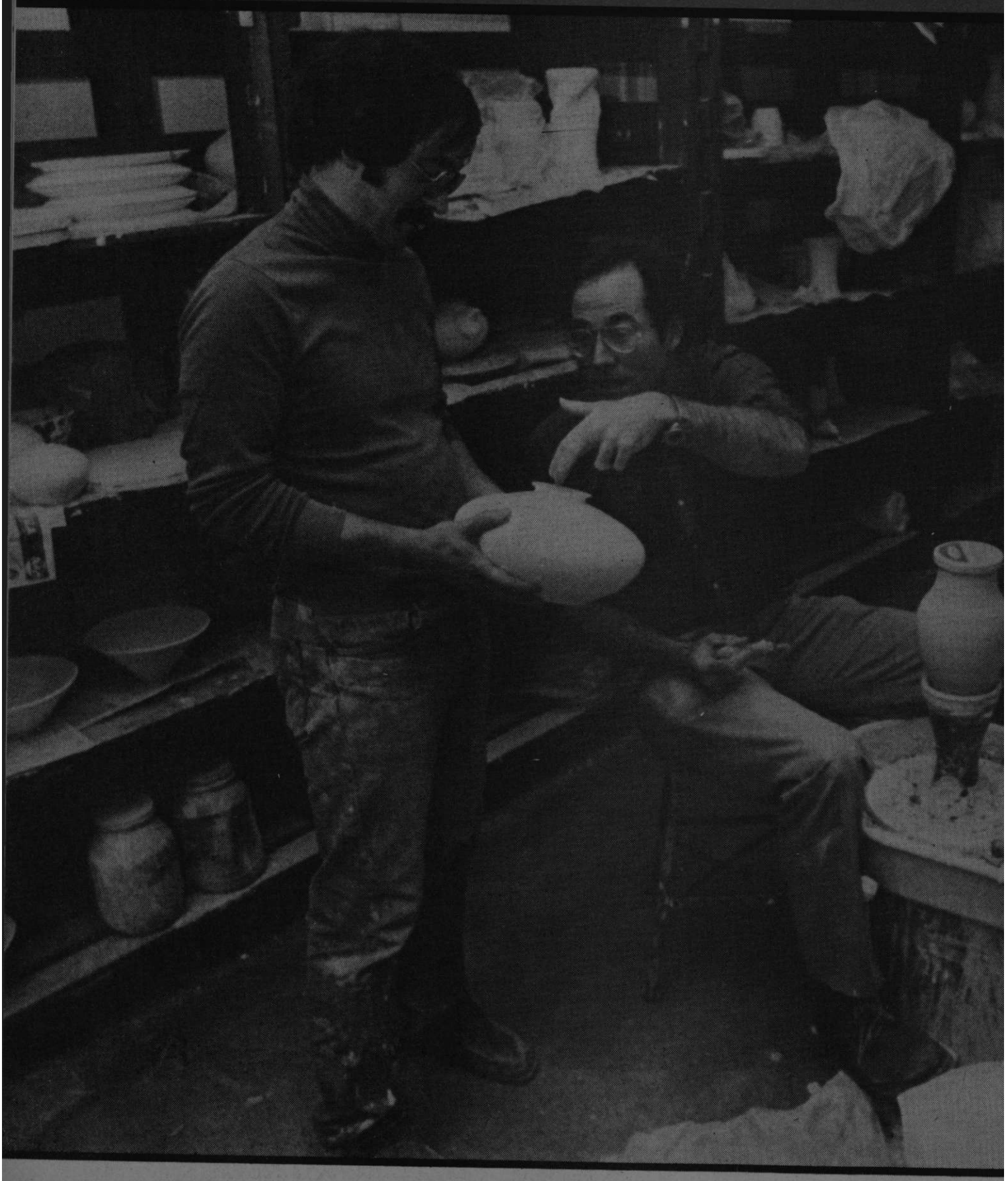
CAIG-204 Composition-Written and Oral
Registration #0274-204
An emphasis on developing the college essay and on adopting the writing process to oral presentations. Topics include reasoning and persuasion, planning and organization, using rhetorical devices, and revising. A documented, library research project is required. (CAIG-104)

Class 4.5, Credit 4

CAIG-206 Technical Communication
Registration #0274-206
An introduction to the principles of technical writing for the technician. Assignments typically related to projects in the student's major field of study and include a proposal, short informal reports, instructions, and a formal technical report. An extensive Job Search Module prepares students to locate, apply and interview for employment. (CAIG-105, 204)

Class 4.5, Credit 4

Personnel



College of Continuing Education Administrative Officers and Staff

Robert A. Clark, BS, Ph.D.; Dean; Professor

Frederick P. Gardner, BS, MS, Ed.D.; Associate Dean; Professor

Norman A. Flannigan, BS, M.Ed., Ph.D.; Assistant Dean Operations; Associate Professor

Delores Baxter, Administrative Assistant to the Dean

Loftus C. Carson, BA, MA; Director Community Programs & Services

Betty J. Glasenapp, ABA; Administrative Coordinator, Summer Session

Irene M. Hawryschuk, BA; Coordinator, Information and Advising Services

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Marianne Yarzinsky, BS; Coordinator, Operational Services

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Robert M. Way, AB, MS; Program Consultant, Associate Professor

Helen I. Widrick, BS, MS; Program Consultant, Lecturer

Susan Rogers, BFA, MS; Consultant Cable TV

ACADEMIC AREAS

Business Management Studies

Rolf Z. Zerges, BS, MA; Director, Chairperson Business Administration and Community Studies; Associate Professor

Lynda Rummel, BS, MA, Ph.D.; Chairperson, Management Development Program; Assistant Professor

Daniel Smialek, BS; Chairperson, Business Studies; Assistant Professor

Humanistic Studies

Andrea C. **Walter,** BA, MA, Ed.D.; Director, Humanistic Studies Chairperson, Behavioral Science; Professor

Walter R. Bieder, BA, MA; Behavioral Science; Assistant Professor

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Frances Welles, MFA; Arts Manager Chairperson, Crafts

Technical Studies

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Lloyd B. Andrus, Lecturer

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Alfred C. Haacke, BS; Chairperson, Computer Systems, Physics; Associate Professor

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Charles DeRoller, BS, ME; Chairperson, Manufacturing Engineering Technology; Associate Professor

Robert N. Klafehn, BS, MS; Chairperson, Electromechanical; Associate Professor

Orville H. Adler, AAS, B. Tech.; Chairperson, Machine Shop

School of Applied Industrial Studies

James D. Forman, AAS, BS, MS; Director, Russel McCarthy; Professor

Orville H. Adler, AAS, B. Tech.; Chairperson, Machine Tool Technology

John Amon, AAS; Senior Technical Associate; Lecturer

Doris DeMers, B, BA, M.Ed.; Senior Technical Associate, Lecturer

Joseph Donoghue, BA, MA; Student Affairs

William Foos, Senior Technical Associate, Lecturer

Robert Holdrldge, Senior Technical Associate, Lecturer

Robert Holmes, BSME; Senior Technical Associate, Lecturer

William C. Kicherer, BSEE; Manager Academic Technical Services

Robert N. Klafehn, BS, MS; Chairperson, Electro-mechanical; Associate Professor

Carol Lennox, BS, MS; Senior Technical Associate, Lecturer

D. Kevin Loucks, AAS; Senior Technical Associate, Lecturer

Richard Merriam, BS; Senior Technical Associate, Lecturer

Ruth L. Mets, BA, Ed.M.; Communications, Lecturer

Sheila Mitchell, BA, MS; Mathematics, Lecturer

James E. Morton, MA, Th.B.; Senior Technical Associate, Lecturer

Marcus E. O'Conneli, Senior Technical Associate, Lecturer

Elizabeth Paciorek, BS; Senior Technical Associate, Lecturer

Frank Pachla, Senior Technical Associate, Lecturer

John Peck, BA; Career Development Specialist

Ronald Perry, AAS; Senior Technical Associate, Lecturer

Alan J. Reiter, BS, MS Ed.; Senior Technical Associate, Lecturer

William Stanton, AAS, BS; Senior Technical Associate, Lecturer

Marion Toth, BA; Senior Technical Associate, Lecturer

Deborah Urquhart, BS, MS; Admissions Counselor

Please select your employer code from this list and enter on the registration form.

CODE NO.

00220834 Abex Corporation Engineered Products Division
00221195 Addison Tool Co.
,00220517 Alliance Mold Co., Inc.
00220610 Alliance Tool Corporation
00246753 American Can Co.
00220768 Art Craft Optical Co.
00220713 Bastian Brothers
00220775 Bausch&LombInc.
BIRDS EYE-Avon
See: General Foods Corporation
00009290 Brown Boveri Electric Inc.
00001290 Builders' Exchange (Building Trades Employers Association)
00221526 Burroughs Corporation
00221261 C-B Foods (Curtice-Burns Inc.)
00220636 Case-HoytCorp.
01309517 The Castle Co., Div. of Sybron
00001617 Central Trust Co.
00246285 Columbia Banking Savings & Loan Assn.
05596292 Crosman Airguns; A. Coleman Co.
00221114 Cunningham Corporation
02222848 CVC Products Inc.
04307748 Dansville Press Inc.
00221522 Delco Products Division-General Motors Corp.
Democrat & Chronicle
See: The Times Union & Democrat & Chronicle
00002380 Doehler-Jarvis Division-National Lead Co.
00220582 Dollinger Corporation
Dynacolor Corp. (see 3-M)
00221271 Dynalec Corporation
00222107 E.I. Dupontde Nemours & Co.
Eastman Kodak Company:
04129345 K.A.D., Camera Works, Hawkeye, Lincoln
00393084 Distillation Products Industries
00220618 Kodak Office
04307139 Kodak Park Works
01314205 Eastman Kodak Miscellaneous Buildings, Etc.
00210372 Eaton Yale & Towne
00220719 E E. Fairchild Corporation
00002980 Farrel Corporation
00220630 Fasco Industries Inc.
04307530 FightonInc.
00699387 B. FormanCo.
00220559 Foster Wheeler Corporation
00220569 Gannett Co., Inc.
See: The Times Union & Democrat & Chronicle
00221092 GarlockInc.
00222191 General Electric Co.
00220937 General Foods Corporation - Birds Eye Division
00223511 General Railway Signal Co.
00003380 Genesee Hospital
00222072 Gerber Products Co.
00221102 Germanow-Simon Machine Co.
00220575 Gleason Works
05364729 T.H. Green Electric Co.
04129509 Hartman Engineering
00220784 Hickey-Freeman Co.
05364943 Highland Hospital
04129386 IBM
00220840 International Paper Co.
00220560 International Salt Co.
00100459 Itek Corporation
00221120 Jasco Tool Company
00221112 Kee Lox Manufacturing
00220614 Labelon Corporation
00892256 Langie Fuel Sen/ice Co.
00220822 Lawyers Co-operative Publishing Co.
00246643 Leach Steel Corp.
00220846 Liberty Tool & Die Corporation
04206414 Lincoln First Banks, Inc.
00005330 Marine Midland Trust Co. of Rochester
00699398 McCurdyCo.
00220785 Michaels Stern & Co.
00221149 Micro Instrument Corporation of Rochester
04560648 Minnesota Mining & Manufacturing Co. (3-M)
00220721 Mixing Equipment Co., Inc.
05794456 Model Cities
00170444 Mobil Chemical Co.-Foam Products Department
00222073 Mobil Chemical Co.
Plastics Div.
00005715 Monroe County
Civil Service Commission and Personnel
00220536 Morgan Machine Company
00220680 Morgood Tools Inc.
00220530 Money Machine Company
04128858 The Nalge Co.-Div. of Sybron Corp.
00699402 Neisner Brothers, Inc.
NY. State, Dept. /Rehab.
See: Vocational Rehabilitation
00221975 Penn Walt Corporation (Strasenburgh)
01312858 Pfaudler Co. Div. of Sybron
02126638 Ragu Foods, Inc.
00220460 R.F. Communications Div. of Harris Corp
00222364 R.I.T. Faculty & Staff
01313208 Ritter Company, Div. of Sybron Corp.
00007185 Rochester Button Co.
00699404 Rochester Gas & Electric Corporation
05596162 Rochester Hospital Services
00222055 Rochester Instrument Systems
00221523 Rochester Products-Division of General Motors Corp.
00007405 Rochester Savings Bank
00699406 Rochester Telephone Corporation
00222315 Rumrill-Hoyt Inc.
Rush Henrietta High School Students:
00332340 (James Sperry High)
00332339 (Roth High) |
04307766 St. Mary's Hospital
00220624 Sargent & Greenleaf, Inc.
00220708 Schlegel Corporation
00007935 Security Trust Company
00022160 Shuron Division of Textron, Inc.
00008065 Sibley, Lindsay & CUIT Co.
00220901 Southco Inc.
00896584 Star Supermarkets Inc. (Do not send gr.)
00220563 Stecher-Traung-Schmidt Corporation
00220585 William P. Stein & Co., Inc.
04560588 Stone Construction Equipment, Inc.
00222327 Stromberg Carlson Corporation
00246714 Sybron Corporation
00221141 Taylor Instrument, Div. of Sybron Corp.
00220598 Telex Communications, Inc.
00220569 Times Union and Democrat & Chronicle
00220737 Trott Electronics Inc.
00009170 U.S. Post Office
00009500 Vocational Rehabilitation, Division of
00221095 Walz & Krenzer, Inc.
00699410 Wegmans Food & Drug
00220466 Wischmeyer Industries, Inc.
00220748 Xerox Corporation

1983-84

DO NOT USE THIS FORM if you were registered in the most current quarter. You should receive a preprinted registration form and instructions.
USE THIS FORM if you do not receive a preprint or you are a new student.

Rochester Institute of Technology

One Lomb Memorial Drive
Rochester, NY 14623

COLLEGE OF CONTINUING EDUCATION REGISTRATION FORM

Please Circle Quarter for Which you are Registering Fall (831) Winter (832) Spring (833) Summer (834)

Today's Date _____ **Social Security Number** ☐☐☐☐☐☐☐☐☐

Name 02100 _____
Last First Middle Suffix

Permanent Address 662 _____ 663 _____ 664 ☐☐
Street City State Abbr.

666 _____ 665 ☐☐ 129 ☐☐☐ 127 ☐☐
Zip Code Country (if other than U.S.A.) County at time of 1st RIT attendance State at time of 1st RIT attendance

Employer _____ **Home Telephone Number** 667 _____
Area Code (use numerals)

Branch/Plant _____ 370 ☐☐☐☐☐☐☐☐
Company Code (See page 152)

I authorize the release of grades and tuition information to the employer indicated.

393Y _____ _____
Signature Today's Date

Daytime Telephone Number (if different from above) 113 _____ 114 _____
Area Code (use numerals) Extension

If taking course off campus, indicate location _____

Marital Status 112
☐ S Single
☐ M Married
☐ T Other

Sex 109
☐ M
☐ F

Higher Educational Level at time of original RIT attendance 245
☐ 7 Bachelors
☐ 5 Associates
☐ 3 High School Graduate
☐ 9 Masters or Higher
☐ 2 Equiv. Diploma

Date of Birth 106 ☐☐☐☐☐☐
mo. date year

Is this your first term at RIT? ☐ Yes ☐ No 162

If no, what program or course? _____

Last quarter enrolled _____

Have you applied for matriculation to a RIT Degree Program ☐ Yes ☐ No 385

Term in which you expect to complete your program requirements _____

For office use only

311 ☐☐☐☐ College/class

317 ☐☐☐ Program

315 ☐☐☐ Degree

Please Note:
***Mail registrations** must be received by:

For Fall Quarter	August 12
For Winter Quarter	November 4
For Spring Quarter	February 10*
For Summer Quarter:	
Eleven week and first five-week session	May 4
Second five-week session	June 22

***Walk in registrations** will be accepted through:

For Fall Quarter	August 26
For Winter Quarter	November 18
For Spring Quarter	February 24
For Summer Quarter:	
Eleven week and first five-week session	May 18
Second five-week session	July 6

REGISTRATION FORM
See quarterly schedule of courses for current course offerings*

Name

Social Security No.

16 ADD

Registration Number (Use Numbers Only)	Must indicate section number	Cr. Hrs.	Course Title*	Start Time	Tuition—Full Plan	Tuition—Partial Plan (50%)

Student Association Fee	$1.00	$1.00
Partial Payment Fee		$10.00
Total Payment		

DO NOT USE THIS FORM if you were registered in the most current quarter. You should receive a preprinted registration form and instructions.

USE THIS FORM if you do not receive a preprint or you are a new student.

Charge Payment on Veteran's Deferred Plan

☐ Yes ☐ No

If yes, include appropriate deferment card obtained from the RIT-VA-Office

Authorization to use Credit Card Account

Credit Card No. _____

Expiration Date _____

☐ Mastercard ☐ VISA

DO NOT WRITE FOR BURSAR ONLY

Mail registration form with payment to:

Rochester Institute of Technology

Bursar, Dept. 50
One Lomb Memorial Drive
Rochester, NY 14623

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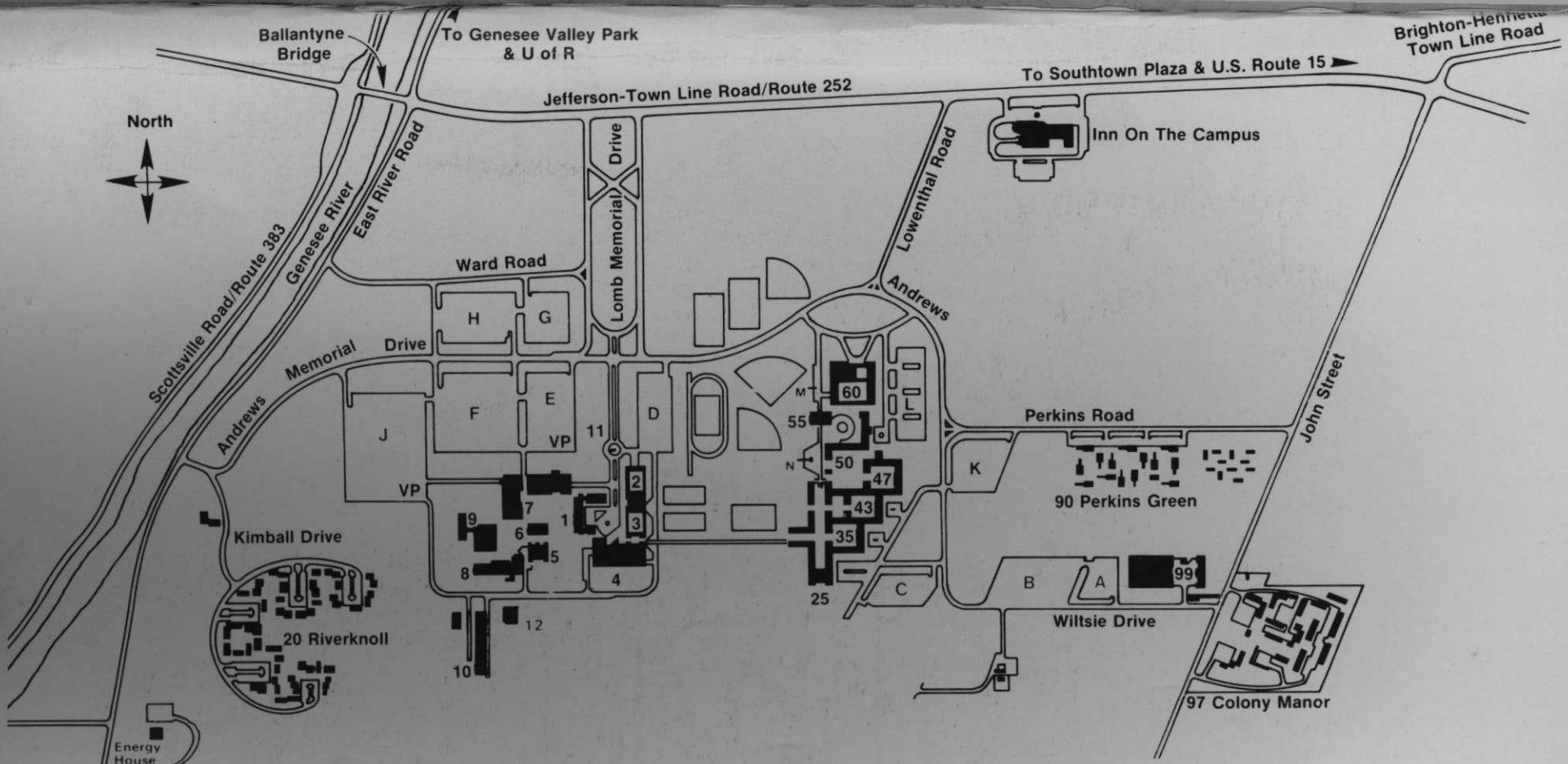

Building Numbers and Names

1 George Eastman Memorial Building: Administration tower, College of Continuing Education, College of Applied Science and Technology, School of Human Services

2 Frank Ritter Memorial Ice Arena—

3 George H. Clark Memorial Gymnasium; Edith Woodward Memorial Pool

4 College-Alumni Union and Ingle Memorial Auditorium

5 Wallace Memorial Library

6 College of Liberal Arts

7 James E. Booth Memorial Building: College of Fine and Applied Arts. **Bevier Gallery, Frank E. Gannett Memorial Building:** College of Graphic Arts and Photography

8 Chester F. Carlson Memorial Building: College of Science

9 James E. Gleason Memorial Building: College of Engineering

10 Ross Memorial Building: Office of Computer Services, School of Computer Science and Technology

11 Information Center

12 Max Lowenthal Memorial Building: College of Business

20 Riverknoll: Campus apartment housing

25 Grace Watson Hall: Resident dining facilities, Counseling Center, Campus Safety, Residence Life Office

35 Kate Gleason, Eugene Colby, Frances Baker halls: Residences

43 Nathaniel Rochester, Helen Fish halls: Residences

47 Sol Heumann, Carlton Gibson halls: Residences

50 Mark Ellingson, Peter Peterson, Alexander Graham Bell halls: NTID Residences

55 Hettie L. Shumway Dining Commons: NTID residence dining facilities

60 Lyndon B. Johnson Building: NTID Academics

90 Perkins Green: Campus apartment housing

97 Colony Manor: Campus apartment housing

99 Physical Plant buildings

VP: visitors' parking area

Rochester Institute of Technology

College of Continuing Education
One Lomb Memorial Drive
Post Office Box 9887
Rochester, NY 14623